Appendix C

Round 6.3 Cooperative Forecast Projections
Area and Nonroad Inventories and Projections

Summary of Intermediate Employment Forecasts
Round 6.3 Cooperative Forecasts
(Thousands)

JURISDICTION	1990	1995	2000	2005	2010	2015	2020	2025	2030	2000 to 2030 Number	2000 to 2030 % Change	Regional Share
District of Columbia	747.3	701.9	678.0	720.4	752.0	783.7	807.1	831.2	831.2	**153.2**	**22.6%**	**11.7%**
Arlington County	183.1	195.8	201.7	209.7	236.0	255.0	274.1	293.2	301.9	**100.2**	**49.7%**	**7.6%**
City of Alexandria	93.2	91.9	98.6	104.1	120.7	128.3	137.0	141.9	148.1	**49.5**	**50.3%**	**3.8%**
Central Jurisdictions	**1,023.6**	**989.6**	**978.3**	**1,034.2**	**1,108.7**	**1,167.0**	**1,218.2**	**1,266.3**	**1,281.2**	**302.9**	**31.0%**	**23.1%**
Montgomery County (1)	466.0	462.5	545.0	585.0	630.0	660.0	680.0	695.0	705.0	**160.0**	**29.4%**	**12.2%**
Rockville (2)	56.9	62.7	68.7	80.6	92.8	98.3	101.3	102.4	103.5	**34.8**	**50.7%**	**2.7%**
Prince George's County	310.4	301.3	327.5	357.9	399.9	426.4	465.0	516.8	550.0	**222.5**	**67.9%**	**17.0%**
Fairfax County (3)	403.7	459.6	532.8	595.0	653.2	678.4	708.5	736.5	758.9	**226.1**	**42.4%**	**17.3%**
City of Fairfax	26.9	29.7	32.9	33.1	33.9	33.9	33.9	33.8	33.8	**0.9**	**2.7%**	**0.1%**
City of Falls Church	9.2	9.3	9.4	9.5	10.0	10.3	10.5	10.6	10.7	**1.3**	**13.8%**	**0.1%**
Inner Suburbs	**1,216.1**	**1,262.4**	**1,447.6**	**1,580.5**	**1,727.0**	**1,809.0**	**1,897.9**	**1,992.7**	**2,058.4**	**610.8**	**42.2%**	**46.6%**
Loudoun County	39.3	53.2	87.0	109.9	137.1	166.2	195.3	224.0	253.6	**166.6**	**191.5%**	**12.7%**
Prince William County	68.8	78.0	91.6	106.3	124.0	139.4	152.8	164.4	173.5	**81.9**	**89.4%**	**6.3%**
City of Manassas	17.2	18.5	19.9	21.5	23.0	23.7	24.1	24.1	24.2	**4.3**	**21.6%**	**0.3%**
City of Manassas Park	2.3	2.5	2.7	3.0	4.7	4.9	5.1	5.2	5.2	**2.5**	**92.6%**	**0.2%**
Calvert County (4)	18.1	21.5	25.9	29.4	32.9	33.7	34.5	35.1	35.6	**9.7**	**37.5%**	**0.7%**
Charles County (4)	38.7	44.6	50.1	56.5	62.9	64.8	66.8	67.9	69.1	**19.0**	**37.9%**	**1.5%**
Frederick County	54.0	68.0	99.7	109.2	120.7	134.6	148.5	162.5	177.8	**78.1**	**78.3%**	**6.0%**
Stafford County (5)	11.0	13.9	25.3	31.8	38.4	43.8	49.2	54.5	59.7	**34.4**	**136.0%**	**2.6%**
Anne Arundel County (6)	*249.4*	*258.3*	*291.7*	*302.0*	*312.0*	*317.5*	*322.0*	*326.0*	*330.1*	**38.4**	**13.2%**	**n/a**
Howard County (6)	*106.3*	*123.6*	*160.0*	*180.0*	*200.0*	*215.0*	*230.0*	*245.0*	*249.9*	**89.9**	**56.2%**	**n/a**
Outer Suburbs (6)	**249.4**	**300.2**	**402.2**	**467.6**	**543.7**	**611.1**	**676.3**	**737.7**	**798.7**	**396.5**	**98.6%**	**30.3%**
Northern Virginia	**854.7**	**952.4**	**1,101.9**	**1,223.9**	**1,381.0**	**1,483.9**	**1,590.5**	**1,688.2**	**1,769.6**	**667.7**	**60.6%**	**51.0%**
Suburban Maryland (6)	**887.1**	**897.9**	**1,048.2**	**1,138.0**	**1,246.4**	**1,319.5**	**1,394.8**	**1,477.3**	**1,537.5**	**489.3**	**46.7%**	**37.3%**
REGIONAL TOTAL (6)	**2,489.1**	**2,552.2**	**2,828.1**	**3,082.3**	**3,379.4**	**3,587.1**	**3,792.4**	**3,996.7**	**4,138.3**	**1,310.2**	**46.3%**	**100.0%**

(1) Forecasts for years 2000 to 2030 include all of Takoma Park.
(2) Included in Montgomery County total.
(3) Totals for all years include Fairfax County Government employees working in the Massey Complex.
(4)Tri-County Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County, Charles County and St. Mary's County.
(5) Source: Rappahanock Area Development Commission (RADCO), March 2003.
(6) Baltimore Metropolitan Council (BMC) Round 5-D Forecasts (2000 to 2025) for Anne Arundel and Howard counties are shown for reference purposes only and are not included in any other totals. Howard County and Anne Arundel County provided 2000 to 2025 projections and the Metropolitan Washington Council of Governments extrapolated their data to 2030. The official forecasts for Anne Arundel County for 2030 will not be available until January 2004.

Summary of Intermediate Population Forecasts
Round 6.3 Cooperative Forecasts
(Thousands)

JURISDICTION	1990	1995	2000	2005	2010	2015	2020	2025	2030	2000 to 2030 Number	2000 to 2030 % Change	Regional Share
District of Columbia (1)	606.9	554.3	572.1	607.0	627.0	673.7	688.1	702.4	702.4	**130.3**	**22.8%**	**8.4%**
Arlington County	170.9	187.9	189.5	197.4	202.5	209.1	215.5	219.5	221.9	**32.4**	**17.1%**	**2.1%**
City of Alexandria	111.2	117.3	128.3	136.5	142.9	145.9	147.8	150.0	151.7	**23.4**	**18.2%**	**1.5%**
Central Jurisdictions	**889.0**	**859.4**	**889.9**	**940.9**	**972.4**	**1,028.7**	**1,051.4**	**1,071.9**	**1,076.0**	**186.1**	**20.9%**	**12.0%**
Montgomery County (2)	757.0	810.0	873.3	925.0	975.0	1,020.0	1,050.0	1,070.0	1,080.0	**206.7**	**23.7%**	**13.4%**
Rockville (3)	44.8	47.0	47.4	53.7	60.4	62.8	63.3	63.5	64.4	**17.0**	**35.9%**	**1.1%**
Prince George's County	729.3	767.0	808.0	856.6	881.1	907.7	932.3	952.1	967.8	**159.8**	**19.8%**	**10.3%**
Fairfax County (4)	818.6	879.4	969.8	1,045.0	1,114.1	1,149.8	1,174.6	1,187.4	1,197.4	**227.6**	**23.5%**	**14.7%**
City of Fairfax	19.6	20.4	22.9	23.5	24.1	24.4	24.7	24.5	24.3	**1.4**	**6.1%**	**0.1%**
City of Falls Church	9.6	10.0	10.4	10.6	11.3	11.6	11.9	12.1	12.2	**1.8**	**17.3%**	**0.1%**
Inner Suburbs	**2,334.1**	**2,486.8**	**2,684.4**	**2,860.7**	**3,005.6**	**3,113.5**	**3,193.5**	**3,246.1**	**3,281.7**	**597.3**	**22.3%**	**38.6%**
Loudoun County	86.1	112.8	169.6	239.3	300.4	351.2	393.7	423.0	441.9	**272.3**	**160.6%**	**17.6%**
Prince William County	215.7	249.9	280.8	339.9	376.2	400.6	414.8	425.9	433.1	**152.3**	**54.2%**	**9.8%**
City of Manassas	28.0	32.0	35.1	36.2	36.9	37.0	37.1	37.4	37.5	**2.4**	**6.8%**	**0.2%**
City of Manassas Park	6.7	7.6	10.3	14.8	15.3	15.5	15.7	15.7	15.8	**5.5**	**53.4%**	**0.4%**
Calvert County (5)	51.4	63.9	74.6	80.6	86.6	91.1	95.6	100.0	104.4	**29.8**	**39.9%**	**1.9%**
Charles County (5)	101.2	111.1	120.5	134.0	147.4	165.2	183.0	194.0	205.0	**84.5**	**70.1%**	**5.5%**
Frederick County	150.2	174.2	195.3	216.6	238.3	260.0	281.9	299.6	324.6	**129.3**	**66.2%**	**8.4%**
Stafford County (6)	61.2	80.2	92.5	107.1	121.7	136.4	151.0	165.7	180.4	**87.9**	**95.0%**	**5.7%**
Anne Arundel County (7)	*427.2*	*459.7*	*489.7*	*520.0*	*532.2*	*542.5*	*552.7*	*563.0*	*572.0*	**82.3**	**16.8%**	**n/a**
Howard County (7)	*187.3*	*220.0*	*250.7*	*261.7*	*274.2*	*286.2*	*294.6*	*296.8*	*292.1*	**41.4**	**16.5%**	**n/a**
Outer Suburbs (7)	**700.5**	**831.8**	**978.7**	**1,168.5**	**1,322.8**	**1,457.0**	**1,572.8**	**1,661.3**	**1,742.7**	**764.0**	**78.1%**	**49.4%**
Northern Virginia	**1,527.7**	**1,697.5**	**1,909.2**	**2,150.3**	**2,345.4**	**2,481.5**	**2,586.8**	**2,661.2**	**2,716.2**	**807.0**	**42.3%**	**52.2%**
Suburban Maryland (7)	**1,789.0**	**1,926.2**	**2,071.7**	**2,212.8**	**2,328.4**	**2,444.0**	**2,542.8**	**2,615.7**	**2,681.8**	**610.1**	**29.4%**	**39.4%**
REGIONAL TOTAL (7)	**3,923.6**	**4,178.0**	**4,553.0**	**4,970.1**	**5,300.8**	**5,599.2**	**5,817.7**	**5,979.3**	**6,100.4**	**1,547.4**	**34.0%**	**100.0%**

(1) The Round 6.3 population and household forecasts for the District of Columbia reflect Census 2000 counts which showed the city's population to be higher than estimated in Round 6.2.

(2) Forecasts for years 2000 to 2030 include all of Takoma Park.

(3) Included in Montgomery County total.

(4) Includes Fairfax County group quarters population in the Massey Complex.

(5)Tri-County Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County, Charles County and St. Mary's County.

(6) Source: Rappahanock Area Development Commission (RADCO), March 2003. The estimates for 2010, 2020 and 2030 are control totals provided by the Virginia Employment Commission (VEC) and should only be used for transportation planning purposes. Incremental five-year estimates (2005, 2015, and 2025) have been developed by MWCOG for the purpose of transportation modeling and air quality analysis.

(7) Baltimore Metropolitan Council (BMC) Round 5-D Forecasts (2000 to 2025) for Anne Arundel and Howard counties are shown for reference purposes only and are not included in any other totals. Howard County and Anne Arundel County provided 2000 to 2025 projections and the Metropolitan Washington Council of Governments extrapolated their data to 2030. The official forecasts for Anne Arundel County for 2030 will not be available until January 2004.

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Summary of Intermediate Household Forecasts
Round 6.3 Cooperative Forecasts
(Thousands)

JURISDICTION	1990	1995	2000	2005	2010	2015	2020	2025	2030	2000 to 2030 Number	2000 to 2030 % Change	Regional Share
District of Columbia (1)	249.6	232.1	248.3	263.9	272.2	292.9	298.7	304.4	304.4	**56.1**	**22.6%**	**8.7%**
Arlington County	78.5	86.9	86.4	90.9	94.6	98.7	102.5	104.9	106.2	**19.8**	**22.9%**	**3.1%**
City of Alexandria	53.3	56.4	61.9	66.2	70.0	71.8	73.0	74.3	75.3	**13.4**	**21.6%**	**2.1%**
Central Jurisdictions	**381.4**	**375.4**	**396.6**	**421.0**	**436.8**	**463.4**	**474.2**	**483.6**	**485.9**	**89.3**	**22.5%**	**13.9%**
Montgomery County (2)	282.0	299.0	324.6	346.5	370.0	390.0	405.0	415.0	420.0	**95.4**	**29.4%**	**14.9%**
Rockville (3)	15.7	16.1	17.2	20.0	22.8	24.0	24.2	24.3	24.7	**7.5**	**43.6%**	**1.2%**
Prince George's County	258.0	278.1	288.6	304.5	319.0	333.6	346.7	359.6	369.8	**81.2**	**28.1%**	**12.7%**
Fairfax County	292.3	317.0	350.7	381.2	408.7	421.8	430.5	435.0	438.4	**87.7**	**25.0%**	**13.7%**
City of Fairfax	7.4	7.7	8.5	9.0	9.3	9.4	9.5	9.6	9.7	**1.2**	**14.1%**	**0.2%**
City of Falls Church	4.2	4.4	4.5	4.6	4.9	5.1	5.2	5.3	5.4	**0.9**	**20.0%**	**0.1%**
Inner Suburbs	**843.9**	**906.2**	**976.9**	**1,045.8**	**1,111.9**	**1,159.9**	**1,196.9**	**1,224.5**	**1,243.3**	**266.4**	**27.3%**	**41.5%**
Loudoun County	30.7	40.9	59.9	84.9	106.6	124.6	139.6	150.0	156.7	**96.8**	**161.6%**	**15.1%**
Prince William County	69.7	82.2	94.6	113.4	127.3	137.2	143.4	148.3	152.1	**57.5**	**60.8%**	**9.0%**
City of Manassas	9.5	13.4	11.8	12.3	12.7	13.1	13.2	13.5	13.6	**1.8**	**15.3%**	**0.3%**
City of Manassas Park	2.2	2.5	3.3	4.2	4.2	4.3	4.3	4.3	4.3	**1.0**	**8.5%**	**0.2%**
Calvert County (4)	17.0	21.1	25.4	27.3	29.1	31.0	33.0	34.8	36.6	**11.2**	**44.1%**	**1.7%**
Charles County (4)	33.0	36.3	41.7	46.5	51.3	58.9	66.4	71.3	76.1	**34.4**	**82.5%**	**5.4%**
Frederick County	52.6	62.4	70.1	76.2	84.7	93.2	101.7	110.1	120.2	**50.1**	**71.5%**	**7.8%**
Stafford County (5)	19.4	26.9	30.7	36.1	41.4	46.9	52.4	58.0	63.5	**32.8**	**106.8%**	**5.1%**
Anne Arundel County (6)	*149.1*	*162.7*	*178.7*	*193.1*	*202.1*	*210.1*	*217.0*	*223.2*	*229.8*	**51.1**	**28.6%**	**n/a**
Howard County (6)	*68.3*	*81.2*	*91.0*	*100.0*	*107.5*	*115.0*	*121.0*	*121.7*	*121.7*	**30.7**	**33.7%**	**n/a**
Outer Suburbs (6)	**234.0**	**285.6**	**337.5**	**400.9**	**457.3**	**509.2**	**554.0**	**590.3**	**623.1**	**285.6**	**84.6%**	**44.5%**
Northern Virginia	**567.2**	**638.2**	**712.3**	**802.8**	**879.7**	**932.9**	**973.6**	**1,003.2**	**1,025.2**	**312.9**	**43.9%**	**48.8%**
Suburban Maryland (6)	**642.5**	**696.9**	**750.4**	**801.0**	**854.1**	**906.7**	**952.8**	**990.8**	**1,022.7**	**272.3**	**36.3%**	**42.5%**
REGIONAL TOTAL (6)	**1,459.3**	**1,567.2**	**1,711.0**	**1,867.7**	**2,006.0**	**2,132.5**	**2,225.1**	**2,298.4**	**2,352.3**	**641.3**	**37.5%**	**100.0%**

(1) The Round 6.3 population and household forecasts for the District of Columbia reflect Census 2000 counts which showed the city's population to be higher than estimated in Round 6.2.
(2) Forecasts for years 2000 to 2030 include all of Takoma Park.
(3) Included in Montgomery County total.
(4)Tri-County Council for Southern Maryland develops ten-year incremental population, housing unit and employment forecasts for Calvert County, Charles County and St. Mary's County.
(5) Source: Rappahanock Area Development Commission (RADCO), March 2003.
(6) Baltimore Metropolitan Council (BMC) Round 5-D Forecasts (2000 to 2025) for Anne Arundel and Howard counties are shown for reference purposes only and are not included in any other totals. Howard County and Anne Arundel County provided 2000 to 2025 projections and the Metropolitan Washington Council of Governments extrapolated their data to 2030. The official forecasts for Anne Arundel County for 2030 will not be available until January 2004.

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Non-road Emission Inventory Calculations

The following series of spreadsheets present the non-road inventory used in development of the SIP. Emissions are reported for the following five scenarios:

- 1990 non-road baseline inventory;
- 2002 non-road uncontrolled inventory (1990 baseline projected to 2002 using Round 6.3 Cooperative Forecasts and assuming no non-road controls measures after 1990);
- 2002 non-road controlled inventory (with emission reductions from the nonroad control measures in place by 2002, as documented in Chapter 7);
- 2005 non-road uncontrolled inventory (1990 baseline projected to 2005 using Round 6.3 Cooperative Forecasts and assuming no non-road controls measures after 1990);
- 2005 non-road controlled inventory (with emission reductions from the nonroad control measures in place by 2005, as documented in Chapter 7).

For each of these five scenarios, a summary spreadsheet is included that presents emissions for each jurisdiction for nine equipment categories (lawn and garden, airport service, recreational-land, recreational-marine, light commercial, industrial, construction, agricultural, and logging).

After the summary spreadsheet for each scenario are spreadsheets presenting the equipment types in a fine level of detail. For each of the nine categories listed in the paragraph above, the sub category is identified (e.g., leaf blowers in the lawn and garden category). These sub categories are grouped by fuel/engine type: diesel equipment is presented first, the repeated for 4-stroke gasoline equipment and again for 2-stroke gasoline equipment.

The non-road control measures included in the SIP are:

7.2.7 Phase I and Phase II emission standards for gasoline-powered non-road utility engines.
7.2.8 Emissions standards for diesel-powered non-road utility engines of 50 or more horsepower.
7.2.10 Emissions standards for spark ignition marine engines.
7.2.11 Emissions standards for large spark ignition engines.
7.4.2 Reformulated gasoline used in non-road motor vehicles and equipment.

The reductions resulting from each control measure are documented in the Chapter 7. The controlled emissions spreadsheets for 2002 and 2005 apply the emission reduction percentages from each of the control measures to the appropriate equipment sub-category. These adjustments can be found on the right hand side of the controlled emission inventory spreadsheets. If there is an adjustment for that particular sub category of equipment , the adjustment factor will appear in the columns titled “VOC adjust” or “NOx adjust” with a notation in the cell to the right indicating which control measure is applied.

1990 Baseline Non-Road VOC and NOx Inventories

1990 Non-road Baseline Ozone Season Day Emissions - Metropolitan Washington Region

VOC Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	2.61	0.43	0.74	1.76	11.97	5.66	0.41	2.02	9.96	1.43	2.20	0.64	20.56	16.65	**39.82**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.54	0.22	0.22	0.00	0.00	0.37	0.98	**1.35**
Recreational-Land	0.00	0.30	0.63	0.91	0.00	0.00	0.00	0.00	0.00	0.71	0.47	0.37	1.84	1.55	**3.39**
Recreational-Marine	1.61	0.57	0.22	0.03	0.03	0.06	0.33	0.27	3.12	0.59	2.29	1.07	0.91	7.66	**10.19**
Light Commercial	0.59	0.02	0.07	0.18	1.02	0.87	0.22	0.17	1.08	0.11	0.18	0.04	2.16	1.80	**4.55**
Industrial	0.23	0.01	0.02	0.11	0.31	0.20	0.05	0.08	0.27	0.05	0.10	0.01	0.65	0.55	**1.43**
Construction	0.73	0.10	0.18	0.41	2.43	2.07	0.29	0.18	2.21	0.31	0.70	0.11	5.20	3.79	**9.72**
Agricultural	0.00	0.20	0.28	0.81	0.31	0.24	0.00	0.00	0.05	0.36	0.08	0.06	1.85	0.55	**2.40**
Logging	0.01	0.02	0.04	0.07	0.13	0.05	0.00	0.02	0.10	0.03	0.04	0.02	0.30	0.22	**0.52**
VOC - Totals	**5.77**	**1.65**	**2.18**	**4.29**	**16.20**	**9.53**	**1.29**	**3.28**	**17.00**	**3.80**	**6.06**	**2.32**	**33.84**	**33.76**	**73.37**

NOx Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	0.06	0.01	0.01	0.03	0.26	0.13	0.01	0.05	0.22	0.03	0.04	0.01	0.44	0.36	**0.86**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.68	0.37	0.37	0.00	0.00	0.17	1.43	**1.60**
Recreational-Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	**0.02**
Recreational-Marine	0.14	0.07	0.03	0.00	0.00	0.01	0.02	0.02	0.18	0.03	0.13	0.06	0.11	0.44	**0.69**
Light Commercial	0.08	0.00	0.01	0.02	0.14	0.12	0.03	0.02	0.15	0.01	0.02	0.01	0.30	0.25	**0.62**
Industrial	0.49	0.02	0.04	0.24	0.64	0.43	0.10	0.17	0.57	0.10	0.21	0.02	1.37	1.17	**3.02**
Construction	4.68	0.66	1.12	2.64	15.54	13.25	1.86	1.16	14.11	1.98	4.46	0.69	33.21	24.26	**62.15**
Agricultural	0.00	0.89	1.24	3.54	1.36	1.06	0.00	0.00	0.20	1.57	0.36	0.27	8.09	2.39	**10.49**
Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
NOx - Total	**5.45**	**1.65**	**2.45**	**6.48**	**17.95**	**15.18**	**2.01**	**2.10**	**15.79**	**4.10**	**5.23**	**1.06**	**43.71**	**30.29**	**79.45**

1990 Non-Road Baseline Emission Inventory

				Growth Factors 1990 to 2002 Round 6.2 Cooperativ						RVP Adjustment VOC										
					Regional					Diesel		100.0%								
				Employm	1.000					4-St & 2-St		99.55%								
				Populatic	1.000															
						73.17	84.96	227.03	73.45	84.96	705.68	73.17	84.96	227.03	Lawn&Garden RES		0.1708		0.2213
						Daily Emissions (tpsd)			BASE YEAR EMIS			Adjusted for Rules			Lawn&Garden COM		0.8292		0.7787
						VOC	NOx	CO	1990-VO	1990-NO	1990-CO	Base Year 1990		CO	Reduction Factor	Rule				
				Cat Typ	Tot Activity	VOC	NOx	CO	VOC	NOx	CO	Diesel VOC	Diesel NOx	Diesel CO (tpsd)						
SCC	NEVES ID																			
2270004026	D-01	Trimmers/Edgers/B	Lawn and Garden Equipment (Com)	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004011	D-02	Lawn mowers	Lawn and Garden Equipment (Com)	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004031	D-03	Leafblowers/Vacuu	Lawn and Garden Equipment (Com)	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004041	D-04	Rear Engine Riding	Lawn and Garden Equipment (Com)	4	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004046	D-05	Front Mowers	Lawn and Garden Equipment (Com)	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004021	D-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Com)	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004051	D-07	Shredders < 6 HP	Lawn and Garden Equipment (Com)	7	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004016	D-08	Rotary Tillers < 6 H	Lawn and Garden Equipment (Com)	8	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004056	D-09	Lawn & Garden Tra	Lawn and Garden Equipment (Com)	9	1.0	0.03	0.19	0.12	0.03	0.19	0.12	0.03	0.19	0.12						
2270004061	D-10	Wood Splitters (Co	Lawn and Garden Equipment (Com)	10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
2270004036	D-11	Snowblowers	Lawn and Garden Equipment (Com)	11	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004066	D-12	Chippers/Stump Gr	Lawn and Garden Equipment (Com)	12	1.0	0.02	0.11	0.07	0.02	0.11	0.07	0.02	0.11	0.07		1.000				
2270004071	D-13	Commercial Turf E	Lawn and Garden Equipment (Com)	13	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270004076	D-14	Other Lawn & Gard	Lawn and Garden Equipment (Com)	14	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270008005	D-15	Airport Ground Sup	Airport Equipment	1	1.0	0.06	0.52	0.22	0.06	0.52	0.22	0.06	0.52	0.22		1.000				
2270003070	D-16	Terminal Tractors	Airport Equipment	2	1.0	0.73	6.44	2.79	0.73	6.44	2.79	0.73	6.44	2.79		1.000				
2270001030	D-17+18+	Offroad Motorcycle	Recreational Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270001030	D-17+18+	Offroad Motorcycle	Recreational Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270001030	D-17+18+	Offroad Motorcycle	Recreational Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270001050	D-20	Golf Carts	Recreational Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270001020	D-21	Snowmobiles	Recreational Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270001060	D-22	Speciality Vehicle C	Recreational Equipment	6	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	1	1.0	0.01	0.08	0.02	0.01	0.08	0.02	0.01	0.08	0.02						
2282020010	D-24+27	Outboards	Pleasure Craft	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	4	1.0	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01						
2282020015	D-27	Personal Water Cra	Pleasure Craft	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270006005	D-28	Generator Sets	Commercial Equipment	1	1.0	0.04	0.25	0.16	0.04	0.25	0.16	0.04	0.25	0.16						
2270006010	D-29	Pumps	Commercial Equipment	2	1.0	0.01	0.08	0.05	0.01	0.08	0.05	0.01	0.08	0.05						
2270006015	D-30	Air Compressors	Commercial Equipment	3	1.0	0.01	0.04	0.02	0.01	0.04	0.02	0.01	0.04	0.02						
2270006020	D-31	Gas Compressors	Commercial Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270006025	D-32	Welders	Commercial Equipment	5	1.0	0.02	0.15	0.10	0.02	0.15	0.10	0.02	0.15	0.10						
2270006030	D-33	Pressure Washers	Commercial Equipment	6	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270003010	D-34	Aerial Lifts	Industrial Equipment	1	1.0	0.01	0.06	0.03	0.01	0.06	0.03	0.01	0.06	0.03						
2270003020	D-35	Forklifts	Industrial Equipment	2	1.0	0.09	0.81	0.35	0.09	0.81	0.35	0.09	0.81	0.35		1.000				
2270003030	D-36	Sweepers/Scrubbe	Industrial Equipment	3	1.0	0.07	0.62	0.27	0.07	0.62	0.27	0.07	0.62	0.27		1.000				
2270003040	D-37	Other General Indu	Industrial Equipment	4	1.0	0.02	0.17	0.07	0.02	0.17	0.07	0.02	0.17	0.07		1.000				
2270003050	D-38	Other Material Han	Industrial Equipment	5	1.0	0.00	0.03	0.01	0.00	0.03	0.01	0.00	0.03	0.01		1.000				
2270002003	D-39+42?	Pavers	Construction and Mining Equipment	1	1.0	0.02	0.27	0.08	0.02	0.27	0.08	0.02	0.27	0.08		1.000				
2270002006	D-40	Tampers/Rammers	Construction and Mining Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270002009	D-41	Plate Compactors	Construction and Mining Equipment	3	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270002003	D-39+42?	Pavers	Construction and Mining Equipment	4	1.0	0.02	0.15	0.07	0.02	0.15	0.07	0.02	0.15	0.07		1.000				
2270002015	D-43	Rollers	Construction and Mining Equipment	5	1.0	0.05	0.62	0.20	0.05	0.62	0.20	0.05	0.62	0.20		1.000				
2270002018	D-44	Scrapers	Construction and Mining Equipment	6	1.0	0.23	2.84	1.63	0.23	2.84	1.63	0.23	2.84	1.63		1.000				
2270002021	D-45	Paving Equipment	Construction and Mining Equipment	7	1.0	0.09	1.02	0.42	0.09	1.02	0.42	0.09	1.02	0.42		1.000				
2270002024	D-46	Surfacing Equipme	Construction and Mining Equipment	8	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270002027	D-47	Signal Boards/Ligh	Construction and Mining Equipment	9	1.0	0.01	0.05	0.03	0.01	0.05	0.03	0.01	0.05	0.03						

Council of Governments : Lawn and Garden gasoline equipment Residential and Commercial split obtained from NONROAD model

1990 Non-Road Baseline Emission Inventory

2270002030	D-48	Trenchers	Construction and Mining Equipment	10	1.0	0.09	0.58	0.53	0.09	0.58	0.53	0.09	0.58	0.53						
2270002033	D-49	Bore/Drill Rigs	Construction and Mining Equipment	11	1.0	0.05	0.42	0.35	0.05	0.42	0.35	0.05	0.42	0.35		1.000				
2270002036	D-50	Excavators	Construction and Mining Equipment	12	1.0	0.25	3.74	1.81	0.25	3.74	1.81	0.25	3.74	1.81		1.000				
2270002039	D-51	Concrete/Industrial	Construction and Mining Equipment	13	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
2270002042	D-52	Cement & Mortar M	Construction and Mining Equipment	14	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270002045	D-53	Cranes	Construction and Mining Equipment	15	1.0	0.59	4.74	1.94	0.59	4.74	1.94	0.59	4.74	1.94		1.000				
2270002048	D-54	Graders	Construction and Mining Equipment	16	1.0	0.39	2.39	0.95	0.39	2.39	0.95	0.39	2.39	0.95		1.000				
2270002051	D-55	Off-highway Trucks	Construction and Mining Equipment	17	1.0	0.45	5.05	1.47	0.45	5.05	1.47	0.45	5.05	1.47		1.000				
2270002054	D-56	Crushing/Proc. Equ	Construction and Mining Equipment	18	1.0	0.07	0.52	0.44	0.07	0.52	0.44	0.07	0.52	0.44		1.000				
2270002057	D-57	Rough Terrain Fork	Construction and Mining Equipment	19	1.0	0.21	0.99	1.24	0.21	0.99	1.24	0.21	0.99	1.24		1.000				
2270002060	D-58	Rubber Tire Loader	Construction and Mining Equipment	20	1.0	0.69	8.17	3.81	0.69	8.17	3.81	0.69	8.17	3.81		1.000				
2270002063	D-59	Rubber Tire Tractor	Construction and Mining Equipment	21	1.0	0.09	1.02	0.30	0.09	1.02	0.30	0.09	1.02	0.30		1.000				
2270002066	D-60	Tractors/Loaders/B	Construction and Mining Equipment	22	1.0	0.92	6.47	4.36	0.92	6.47	4.36	0.92	6.47	4.36		1.000				
2270002069	D-61	Crawler Tractor/Do	Construction and Mining Equipment	23	1.0	2.04	16.29	7.59	2.04	16.29	7.59	2.04	16.29	7.59		1.000				
2270002072	D-62	Skid Steer Loaders	Construction and Mining Equipment	24	1.0	0.37	1.65	1.55	0.37	1.65	1.55	0.37	1.65	1.55						
2270002075	D-63	Off-Highway Tractor	Construction and Mining Equipment	25	1.0	0.93	4.44	5.47	0.93	4.44	5.47	0.93	4.44	5.47		1.000				
2270002078	D-64	Dumpers/Tenders	Construction and Mining Equipment	26	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270002081	D-65	Other Construction	Construction and Mining Equipment	27	1.0	0.07	0.52	0.44	0.07	0.52	0.44	0.07	0.52	0.44		1.000				
2270005010	D-66	2-Wheel Tractors	Agricultural Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270005015	D-67	Agricultural Tractor	Agricultural Equipment	2	1.0	1.98	9.76	7.78	1.98	9.76	7.78	1.98	9.76	7.78		1.000				
2270005030	D-68	Agricultural Mowers	Agricultural Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270005020	D-69	Combines	Agricultural Equipment	4	1.0	0.06	0.53	0.19	0.06	0.53	0.19	0.06	0.53	0.19		1.000				
2270005035	D-70	Sprayers	Agricultural Equipment	5	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
2270005025	D-71	Balers	Agricultural Equipment	6	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
2270005040	D-72	Tillers > 6 HP	Agricultural Equipment	7	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270005045	D-73	Swathers	Agricultural Equipment	8	1.0	0.01	0.11	0.02	0.01	0.11	0.02	0.01	0.11	0.02		1.000				
2270005050	D-74	Hydro Power Units	Agricultural Equipment	9	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270005055	D-75	Other Agricultural E	Agricultural Equipment	10	1.0	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01		1.000				
2270007005	D-76	Chain Saws > 6 H	Logging Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270007010	D-77	Shredders > 6 HP	Logging Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2270007015	D-79+78	Forest Eqp - Feller/	Logging Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
2270007015	D-79+78	Forest Eqp - Feller/	Logging Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.000				
						10.79	81.93	46.96	10.79	81.93	46.96	10.79	81.93	46.96						
						Daily Emissions			Base Year			Adjusted Daily								
						2002-VO	2002-NOx		1990-VO	1990-NOx		Base Year 1990								
				Cat Type		VOC	NOx		VOC	NOx		4-St VOC	4-St NOx	4-St CO (tpsd)						
2265004025	4s-01	Trimmers/Edgers/B	Lawn and Garden Equipment (Res)	1	1.0	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.000	1.00				
2265004026	4s-01	Trimmers/Edgers/B	Lawn and Garden Equipment (Com)		1.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2265004010	4s-02	Lawn mowers	Lawn and Garden Equipment (Res)	2	1.0	2.08	0.01	0.00	9.44	0.08	84.14	2.08	0.01	0.00	1.000	1.00				
2265004011	4s-02	Lawn mowers	Lawn and Garden Equipment (Com)		1.0	7.32	0.07	0.00				7.32	0.07	0.00	1.000	1.00				
2265004030	4s-03	Leafblowers/Vacuu	Lawn and Garden Equipment (Res)	3	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2265004031	4s-03	Leafblowers/Vacuu	Lawn and Garden Equipment (Com)		1.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2265004040	4s-04	Rear Engine Riding	Lawn and Garden Equipment (Res)	4	1.0	0.05	0.00	0.00	0.21	0.01	5.19	0.05	0.00	0.00	1.000	1.00				
2265004041	4s-04	Rear Engine Riding	Lawn and Garden Equipment (Com)		1.0	0.16	0.01	0.00				0.16	0.01	0.00	1.000	1.00				
2265004046	4s-05	Front Mowers	Lawn and Garden Equipment (Com)	5	1.0	0.08	0.00	0.00	0.08	0.00	1.48	0.08	0.00	0.00	1.000	1.00				
2265004020	4s-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Res)	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2265004021	4s-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Com)		0.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2265004051	4s-07	Shredders < 6 HP	Lawn and Garden Equipment (Com)	7	1.0	0.03	0.00	0.00	0.03	0.00	0.21	0.03	0.00	0.00	1.000	1.00				
2265004015	4s-08	Rotary Tillers < 6 H	Lawn and Garden Equipment (Res)	8	1.0	0.14	0.00	0.00	0.66	0.01	5.72	0.14	0.00	0.00	1.000	1.00				
2265004016	4s-08	Rotary Tillers < 6 H	Lawn and Garden Equipment (Com)		1.0	0.51	0.01	0.00				0.51	0.01	0.00	1.000	1.00				
2265004055	4s-09	Lawn & Garden Tra	Lawn and Garden Equipment (Res)	9	1.0	2.33	0.06	0.00	10.58	0.33	258.45	2.33	0.06	0.00	1.000	1.00				
2265004056	4s-09	Lawn & Garden Tra	Lawn and Garden Equipment (Com)		1.0	8.20	0.27	0.00				8.20	0.27	0.00	1.000	1.00				
2265004060	4s-10	Wood Splitters (Re	Lawn and Garden Equipment (Res)	10	1.0	0.03	0.00	0.00	0.14	0.00	1.22	0.03	0.00	0.00	1.000	1.00				
2265004061	4s-10	Wood Splitters (Co	Lawn and Garden Equipment (Com)		1.0	0.11	0.00	0.00				0.11	0.00	0.00	1.000	1.00				
2265004035	4s-11	Snowblowers	Lawn and Garden Equipment (Res)	11	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				

2265004036	4s-11	Snowblowers	Lawn and Garden Equipment (Com)		1.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2265004066	4s-12	Chippers/Stump Gr	Lawn and Garden Equipment (Com)	12	1.0	0.68	0.02	0.00	0.68	0.02	5.37	0.68	0.02	0.00	1.000	1.00				
2265004071	4s-13	Commercial Turf E	Lawn and Garden Equipment (Com)	13	1.0	2.67	0.10	0.00	2.68	0.10	81.66	2.67	0.10	0.00	1.000	1.00				
2265004075	4s-14	Other Lawn & Gard	Lawn and Garden Equipment (Res)	14	1.0	0.01	0.00	0.00	0.03	0.00	0.26	0.01	0.00	0.00	1.000	1.00				
2265004076	4s-14	Other Lawn & Gard	Lawn and Garden Equipment (Com)		1.0	0.02	0.00	0.00				0.02	0.00	0.00	1.000	1.00				
2265008005	4s-15	Airport Ground Sup	Airport Equipment	1	1.0	0.05	0.02	0.90	0.05	0.02	0.90	0.05	0.02	0.90	1.000	1.000				
2265003070	4s-16	Terminal Tractors	Airport Equipment	2	1.0	0.31	0.13	6.29	0.31	0.13	6.29	0.31	0.13	6.29	1.000	1.000				
2265001030	4s-17+18	Offroad Motorcycle	Recreational Equipment	1	1.0	0.65	0.01	4.23	0.65	0.01	4.23	0.65	0.01	4.23						
2265001030	4s-17+18	Offroad Motorcycle	Recreational Equipment	2	1.0	0.01	0.00	0.07	0.01	0.00	0.07	0.01	0.00	0.07						
2265001030	4s-17+18	Offroad Motorcycle	Recreational Equipment	3	1.0	0.03	0.00	0.17	0.03	0.00	0.17	0.03	0.00	0.17						
2265001050	4s-20	Golf Carts	Recreational Equipment	4	1.0	0.61	0.01	4.51	0.61	0.01	4.51	0.61	0.01	4.51	1.000	1.00				
2265001020	4s-21	Snowmobiles	Recreational Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2265001060	4s-22	Speciality Vehicles/	Recreational Equipment	6	1.0	0.04	0.00	0.29	0.04	0.00	0.29	0.04	0.00	0.29	1.000	1.00				
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	1	1.0	0.37	0.07	2.47	0.37	0.07	2.47	0.37	0.07	2.47						
2282010010	4s-24	Inboard/Sterndrive	Pleasure Craft	2	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07						
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	3	1.0	1.32	0.44	15.33	1.33	0.44	15.33	1.32	0.44	15.33						
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	4	1.0	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.02						
2282010015	4s-27	Personal Water Cra	Pleasure Craft	5	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2265006005	4s-28	Generator Sets	Commercial Equipment	1	1.0	1.81	0.05	46.02	1.81	0.05	46.02	1.81	0.05	46.02	1.000	1.00				
2265006010	4s-29	Pumps	Commercial Equipment	2	1.0	0.38	0.01	9.00	0.38	0.01	9.00	0.38	0.01	9.00	1.000	1.00				
2265006015	4s-30	Air Compressors	Commercial Equipment	3	1.0	0.23	0.01	6.03	0.23	0.01	6.03	0.23	0.01	6.03	1.000	1.00				
2265006020	4s-31	Gas Compressors	Commercial Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265006025	4s-32	Welders	Commercial Equipment	5	1.0	0.35	0.01	9.00	0.35	0.01	9.00	0.35	0.01	9.00	1.000	1.00				
2265006030	4s-33	Pressure Washers	Commercial Equipment	6	1.0	0.12	0.00	2.95	0.13	0.00	2.95	0.12	0.00	2.95	1.000	1.00				
2265003010	4s-34	Aerial Lifts	Industrial Equipment	1	1.0	0.10	0.04	2.03	0.10	0.04	2.03	0.10	0.04	2.03	1.000	1.000				
2265003020	4s-35	Forklifts	Industrial Equipment	2	1.0	0.58	0.23	11.40	0.58	0.23	11.40	0.58	0.23	11.40	1.000	1.000				
2265003030	4s-36	Sweepers/Scrubbe	Industrial Equipment	3	1.0	0.05	0.02	0.94	0.05	0.02	0.94	0.05	0.02	0.94	1.000	1.000				
2265003040	4s-37	Other General Indu	Industrial Equipment	4	1.0	0.03	0.01	0.56	0.03	0.01	0.56	0.03	0.01	0.56	1.000	1.00				
2265003050	4s-38	Other Material Han	Industrial Equipment	5	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000				
2265002003	4s-39+42	Pavers	Construction and Mining Equipment	1	1.0	0.01	0.00	0.21	0.01	0.00	0.21	0.01	0.00	0.21	1.000	1.000				
2265002006	4s-40	Tampers/Rammers	Construction and Mining Equipment	2	1.0	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	1.000	1.00				
2265002009	4s-41	Plate Compactors	Construction and Mining Equipment	3	1.0	0.08	0.01	1.41	0.08	0.01	1.41	0.08	0.01	1.41	1.000	1.00				
2265002003	4s-39+42	Pavers	Construction and Mining Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002015	4s-43	Rollers	Construction and Mining Equipment	5	1.0	0.11	0.01	1.85	0.11	0.01	1.85	0.11	0.01	1.85	1.000	1.00				
2265002018	4s-44	Scrapers	Construction and Mining Equipment	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2265002021	4s-45	Paving Equipment	Construction and Mining Equipment	7	1.0	0.21	0.02	3.89	0.21	0.02	3.89	0.21	0.02	3.89	1.000	1.00				
2265002024	4s-46	Surfacing Equipme	Construction and Mining Equipment	8	1.0	0.07	0.01	1.35	0.07	0.01	1.35	0.07	0.01	1.35	1.000	1.00				
2265002027	4s-47	Signal Boards/Light	Construction and Mining Equipment	9	1.0	0.00	0.00	0.06	0.00	0.00	0.06	0.00	0.00	0.06						
2265002030	4s-48	Trenchers	Construction and Mining Equipment	10	1.0	0.09	0.03	1.77	0.09	0.03	1.77	0.09	0.03	1.77	1.000	1.000				
2265002033	4s-49	Bore/Drill Rigs	Construction and Mining Equipment	11	1.0	0.04	0.01	0.66	0.04	0.01	0.66	0.04	0.01	0.66	1.000	1.000				
2265002036	4s-50	Excavators	Construction and Mining Equipment	12	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002039	4s-51	Concrete/Industrial	Construction and Mining Equipment	13	1.0	0.27	0.03	5.77	0.28	0.03	5.77	0.27	0.03	5.77	1.000	1.00				
2265002042	4s-52	Cement & Mortar M	Construction and Mining Equipment	14	1.0	0.11	0.01	1.95	0.11	0.01	1.95	0.11	0.01	1.95	1.000	1.00				
2265002045	4s-53	Cranes	Construction and Mining Equipment	15	1.0	0.02	0.01	0.47	0.02	0.01	0.47	0.02	0.01	0.47	1.000	1.000				
2265002048	4s-54	Graders	Construction and Mining Equipment	16	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002051	4s-55	Off-highway Trucks	Construction and Mining Equipment	17	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002054	4s-56	Crushing/Proc. Equ	Construction and Mining Equipment	18	1.0	0.01	0.00	0.22	0.01	0.00	0.22	0.01	0.00	0.22	1.000	1.000				
2265002057	4s-57	Rough Terrain Fork	Construction and Mining Equipment	19	1.0	0.02	0.01	0.44	0.02	0.01	0.44	0.02	0.01	0.44	1.000	1.000				
2265002060	4s-58	Rubber Tire Loader	Construction and Mining Equipment	20	1.0	0.03	0.01	0.52	0.03	0.01	0.52	0.03	0.01	0.52	1.000	1.000				
2265002063	4s-59	Rubber Tire Tractor	Construction and Mining Equipment	21	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002066	4s-60	Tractors/Loaders/B	Construction and Mining Equipment	22	1.0	0.02	0.00	0.30	0.02	0.00	0.30	0.02	0.00	0.30	1.000	1.000				
2265002069	4s-61	Crawler Tractor/Do	Construction and Mining Equipment	23	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002072	4s-62	Skid Steer Loaders	Construction and Mining Equipment	24	1.0	0.06	0.02	1.24	0.06	0.02	1.24	0.06	0.02	1.24	1.000	1.000				
2265002075	4s-63	Off-Highway Tracto	Construction and Mining Equipment	25	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265002078	4s-64	Dumpers/Tenders	Construction and Mining Equipment	26	1.0	0.01	0.00	0.28	0.01	0.00	0.28	0.01	0.00	0.28	1.000	1.00				
2265002081	4s-65	Other Construction	Construction and Mining Equipment	27	1.0	0.02	0.01	0.48	0.02	0.01	0.48	0.02	0.01	0.48	1.000	1.000				
2265005010	4s-66	2-Wheel Tractors	Agricultural Equipment	1	1.0	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	1.000	1.00				
2265005015	4s-67	Agricultural Tractor	Agricultural Equipment	2	1.0	0.02	0.01	0.34	0.02	0.01	0.34	0.02	0.01	0.34	1.000	1.000				

1990 Non-Road Baseline Emission Inventory

2265005030	4s-68	Agricultural Mowers	Agricultural Equipment	3	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.00				
2265005020	4s-69	Combines	Agricultural Equipment	4	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000				
2265005035	4s-70	Sprayers	Agricultural Equipment	5	1.0	0.01	0.00	0.24	0.01	0.00	0.24	0.01	0.00	0.24	1.000	1.00				
2265005025	4s-71	Balers	Agricultural Equipment	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2265005040	4s-72	Tillers > 6 HP	Agricultural Equipment	7	1.0	0.17	0.00	1.36	0.17	0.00	1.36	0.17	0.00	1.36	1.000	1.00				
2265005045	4s-73	Swathers	Agricultural Equipment	8	1.0	0.13	0.04	1.92	0.13	0.04	1.92	0.13	0.04	1.92	1.000	1.000				
2265005050	4s-74	Hydro Power Units	Agricultural Equipment	9	1.0	0.01	0.00	0.24	0.01	0.00	0.24	0.01	0.00	0.24	1.000	1.00				
2265005055	4s-75	Other Agricultural E	Agricultural Equipment	10	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000				
2265007005	4s-76	Chain Saws > 6 H	Logging Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2265007010	4s-77	Shredders > 6 HF	Logging Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2265007015	4s-78+79	Forest Eqp - Feller/	Logging Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2265007015	4s-78+79	Forest Eqp - Feller/	Logging Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
						33.01	1.87	149.60	33.15	1.87	593.31	33.01	1.87	149.60						
						Daily Emissions (tpsd)			BASE YEAR EMIS			Annual EMISSIONS								
						2002-VO	2002-NOx		1990-VO	1990-NO	1990-CO	Base Year 1990								
				Cat Type		VOC	NOx		VOC	NOx		2-St VOC	2-St NOx	2-St CO (tpsd)						
2260004025	2s-01	Trimmers/Edgers/B	Lawn and Garden Equipment (Res)	1	1.0	0.64	0.00	0.00	2.92	0.01	8.10	0.64	0.00	0.00	1.000	1.00				
2260004026	2s-01	Trimmers/Edgers/B	Lawn and Garden Equipment (Com)		1.0	2.26	0.01	0.00				2.26	0.01	0.00	1.000	1.00				
2260004010	2s-02	Lawn mowers	Lawn and Garden Equipment (Res)	2	1.0	1.40	0.00	0.00	6.36	0.00	13.16	1.40	0.00	0.00	1.000	1.00				
2260004011	2s-02	Lawn mowers	Lawn and Garden Equipment (Com)		1.0	4.93	0.00	0.00				4.93	0.00	0.00	1.000	1.00				
2260004030	2s-03	Leafblowers/Vacuu	Lawn and Garden Equipment (Res)	3	1.0	0.29	0.00	0.00	1.32	0.00	3.88	0.29	0.00	0.00	1.000	1.00				
2260004031	2s-03	Leafblowers/Vacuu	Lawn and Garden Equipment (Com)		1.0	1.02	0.00	0.00				1.02	0.00	0.00	1.000	1.00				
2260004040	2s-04	Rear Engine Riding	Lawn and Garden Equipment (Res)	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004041	2s-04	Rear Engine Riding	Lawn and Garden Equipment (Com)		0.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2260004046	2s-05	Front Mowers	Lawn and Garden Equipment (Com)	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004020	2s-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Res)	6	1.0	1.05	0.00	0.00	4.77	0.01	9.66	1.05	0.00	0.00	1.000	1.00				
2260004021	2s-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Com)		1.0	3.70	0.01	0.00				3.70	0.01	0.00	1.000	1.00				
2260004051	2s-07	Shredders < 6 HP	Lawn and Garden Equipment (Com)	7	1.0	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	1.000	1.00				
2260004015	2s-08	Rotary Tillers < 6 H	Lawn and Garden Equipment (Res)	8	1.0	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	1.000	1.00				
2260004016	2s-08	Rotary Tillers < 6 H	Lawn and Garden Equipment (Com)		1.0	0.01	0.00	0.00				0.01	0.00	0.00	1.000	1.00				
2260004055	2s-09	Lawn & Garden Tra	Lawn and Garden Equipment (Res)	9	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004056	2s-09	Lawn & Garden Tra	Lawn and Garden Equipment (Com)		0.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2260004060	2s-10	Wood Splitters (Re	Lawn and Garden Equipment (Res)	10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004061	2s-10	Wood Splitters (Co	Lawn and Garden Equipment (Com)		0.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2260004035	2s-11	Snowblowers	Lawn and Garden Equipment (Res)	11	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004036	2s-11	Snowblowers	Lawn and Garden Equipment (Com)		1.0	0.00	0.00	0.00				0.00	0.00	0.00	1.000	1.00				
2260004066	2s-12	Chippers/Stump Gr	Lawn and Garden Equipment (Com)	12	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004071	2s-13	Commercial Turf E	Lawn and Garden Equipment (Com)	13	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260004075	2s-14	Other Lawn & Gard	Lawn and Garden Equipment (Res)	14	1.0	0.01	0.00	0.00	0.06	0.00	0.11	0.01	0.00	0.00	1.000	1.00				
2260004076	2s-14	Other Lawn & Gard	Lawn and Garden Equipment (Com)		1.0	0.04	0.00	0.00				0.04	0.00	0.00	1.000	1.00				
2260008005	2s-15	Airport Ground Sup	Airport Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2260003070	2s-16	Terminal Tractors	Airport Equipment	2	1.0	0.00	0.01	0.04	0.00	0.01	0.04	0.00	0.01	0.04	1.000	1.000				
2260001030	2s-17+18	Offroad Motorcycle	Recreational Equipment	1	1.0	0.33	0.00	0.39	0.33	0.00	0.39	0.33	0.00	0.39						
2260001030	2s-17+18	Offroad Motorcycle	Recreational Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260001030	2s-17+18	Offroad Motorcycle	Recreational Equipment	3	1.0	0.39	0.00	0.45	0.39	0.00	0.45	0.39	0.00	0.45						
2260001050	2s-20	Golf Carts	Recreational Equipment	4	1.0	0.94	0.00	1.14	0.95	0.00	1.14	0.94	0.00	1.14	1.000	1.00				
2260001020	2s-21	Snowmobiles	Recreational Equipment	5	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260001060	2s-22	Speciality Vehicles/	Recreational Equipment	6	1.0	0.39	0.00	0.45	0.39	0.00	0.45	0.39	0.00	0.45	1.000	1.00				
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282005010	2s-24	Outboard	Pleasure Craft	2	1.0	8.46	0.08	15.73	8.50	0.08	15.73	8.46	0.08	15.73	1.000	1.000				
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2282005015	2s-27	Personal Water Cra	Pleasure Craft	5	1.0	0.02	0.00	0.03	0.02	0.00	0.03	0.02	0.00	0.03	1.000	1.000				
2260006005	2s-28	Generator Sets	Commercial Equipment	1	1.0	1.54	0.00	3.25	1.55	0.00	3.25	1.54	0.00	3.25	1.000	1.00				
2260006010	2s-29	Pumps	Commercial Equipment	2	1.0	0.03	0.01	0.47	0.03	0.01	0.47	0.03	0.01	0.47	1.000	1.00				

2260006015	2s-30	Air Compressors	Commercial Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260006020	2s-31	Gas Compressors	Commercial Equipment	4	1.0	0.01	0.01	0.21	0.01	0.01	0.21	0.01	0.01	0.21	1.000	1.000				
2260006025	2s-32	Welders	Commercial Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260006030	2s-33	Pressure Washers	Commercial Equipment	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260003010	2s-34	Aerial Lifts	Industrial Equipment	1	1.0	0.01	0.02	0.09	0.01	0.02	0.09	0.01	0.02	0.09	1.000	1.000				
2260003020	2s-35	Forklifts	Industrial Equipment	2	1.0	0.39	0.97	4.50	0.39	0.97	4.50	0.39	0.97	4.50	1.000	1.000				
2260003030	2s-36	Sweepers/Scrubbe	Industrial Equipment	3	1.0	0.01	0.04	0.16	0.01	0.04	0.16	0.01	0.04	0.16	1.000	1.000				
2260003040	2s-37	Other General Indu	Industrial Equipment	4	1.0	0.06	0.00	0.12	0.06	0.00	0.12	0.06	0.00	0.12	1.000	1.00				
2260003050	2s-38	Other Material Han	Industrial Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002003	2s-39+42	Pavers	Construction and Mining Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002006	2s-40	Tampers/Rammers	Construction and Mining Equipment	2	1.0	0.25	0.00	0.52	0.25	0.00	0.52	0.25	0.00	0.52	1.000	1.00				
2260002009	2s-41	Plate Compactors	Construction and Mining Equipment	3	1.0	0.39	0.00	0.82	0.39	0.00	0.82	0.39	0.00	0.82	1.000	1.00				
2260002003	2s-39+42	Pavers	Construction and Mining Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002015	2s-43	Rollers	Construction and Mining Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002018	2s-44	Scrapers	Construction and Mining Equipment	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002021	2s-45	Paving Equipment	Construction and Mining Equipment	7	1.0	0.25	0.00	0.52	0.25	0.00	0.52	0.25	0.00	0.52	1.000	1.00				
2260002024	2s-46	Surfacing Equipme	Construction and Mining Equipment	8	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002027	2s-47	Signal Boards/Ligh	Construction and Mining Equipment	9	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002030	2s-48	Trenchers	Construction and Mining Equipment	10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2260002033	2s-49	Bore/Drill Rigs	Construction and Mining Equipment	11	1.0	0.01	0.00	0.03	0.01	0.00	0.03	0.01	0.00	0.03	1.000	1.000				
2260002036	2s-50	Excavators	Construction and Mining Equipment	12	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000				
2260002039	2s-51	Concrete/Industrial	Construction and Mining Equipment	13	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002042	2s-52	Cement & Mortar M	Construction and Mining Equipment	14	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002045	2s-53	Cranes	Construction and Mining Equipment	15	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002048	2s-54	Graders	Construction and Mining Equipment	16	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002051	2s-55	Off-highway Trucks	Construction and Mining Equipment	17	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002054	2s-56	Crushing/Proc. Equ	Construction and Mining Equipment	18	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002057	2s-57	Rough Terrain Fork	Construction and Mining Equipment	19	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002060	2s-58	Rubber Tire Loader	Construction and Mining Equipment	20	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002063	2s-59	Rubber Tire Tractor	Construction and Mining Equipment	21	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002066	2s-60	Tractors/Loaders/B	Construction and Mining Equipment	22	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002069	2s-61	Crawler Tractor/Do	Construction and Mining Equipment	23	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002072	2s-62	Skid Steer Loaders	Construction and Mining Equipment	24	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002075	2s-63	Off-Highway Tracto	Construction and Mining Equipment	25	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260002078	2s-64	Dumpers/Tenders	Construction and Mining Equipment	26	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260002081	2s-65	Other Construction	Construction and Mining Equipment	27	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260005010	2s-66	2-Wheel Tractors	Agricultural Equipment	1	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260005015	2s-67	Agricultural Tractor	Agricultural Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260005030	2s-68	Agricultural Mowers	Agricultural Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260005020	2s-69	Combines	Agricultural Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260005035	2s-70	Sprayers	Agricultural Equipment	5	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260005025	2s-71	Balers	Agricultural Equipment	6	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260005040	2s-72	Tillers > 6 HP	Agricultural Equipment	7	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260005045	2s-73	Swathers	Agricultural Equipment	8	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260005050	2s-74	Hydro Power Units	Agricultural Equipment	9	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.00				
2260005055	2s-75	Other Agricultural E	Agricultural Equipment	10	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260007005	2s-76	Chain Saws > 6 H	Logging Equipment	1	1.0	0.52	0.00	1.54	0.53	0.00	1.54	0.52	0.00	1.54	1.000	1.00				
2260007010	2s-77	Shredders > 6 HF	Logging Equipment	2	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260007015	2s-78+79	Forest Eqp - Feller/	Logging Equipment	3	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
2260007015	2s-78+79	Forest Eqp - Feller/	Logging Equipment	4	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						

2002 Area Source VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2002 CONTROLLED AREA SOURCE INVENTORY

	VOC				NOx			
	DC	MD	VA	**Total**	DC	MD	VA	**Total**
1990 BASELINE	20.1	94.0	77.0	191.1	4.3	15.8	27.6	47.7
2002 UNCONTROLLED	20.1	111.3	99.0	230.5	4.3	19.2	36.3	59.8
2002 CONTROLLED	15.6	67.7	57.0	140.3	4.2	17.0	34.2	55.3

		VOC Benefit				NOx Benefit			
Measure #	Measure Name	DC	MD	VA	**Total**	DC	MD	VA	**Total**
7.2.2	Stage II Vapor Recovery	0.0	8.1	7.1	**15.1**	0.0	0.0	0.0	**0.0**
7.2.6	Gasoline Volatility Controls	0.1	1.3	1.2	**2.6**	0.0	0.0	0.0	**0.0**
7.3.1	Architectural and Industrial Coatings	1.7	8.5	6.4	**16.7**	0.0	0.0	0.0	**0.0**
7.3.2	Consumer Products	0.5	1.8	1.7	**4.1**	0.0	0.0	0.0	**0.0**
7.3.4	Industrial Cleaning Solvents	0.0	0.4	0.5	**0.9**	0.0	0.0	0.0	**0.0**
7.3.5	Locomotives	0.0	0.0	0.0	**0.0**	0.1	1.3	1.5	**2.9**
7.4.3	Surface Cleaning/Degreasing Technology measures	0.1	2.5	1.6	**4.1**	0.0	0.0	0.0	**0.0**
7.4.4	Landfills - MD & VA	0.0	1.2	1.1	**2.4**	0.0	0.0	0.0	**0.0**
7.4.5	Seasonal Open Burning Restrictions - MD & VA	0.0	4.4	3.0	**7.4**	0.0	0.9	0.6	**1.6**
7.4.6	Stage I Vapor Recovery Expansion - MD & VA	0.0	0.9	0.6	**1.5**	0.0	0.0	0.0	**0.0**
7.4.8	Graphic Arts Controls	0.6	1.6	1.7	**3.8**	0.0	0.0	0.0	**0.0**
7.4.9	Autobody Refinishing	0.5	5.7	3.1	**9.3**	0.0	0.0	0.0	**0.0**
7.4.11	OTC Portable Fuel Containers	0.0	0.9	0.0	**0.9**	0.0	0.0	0.0	**0.0**
7.4.12	OTC Architectural & Industrial Maintenance Coatings	1.1	6.2	5.0	**12.3**	0.0	0.0	0.0	**0.0**
7.4.14	OTC Solvent Cleaning	0.0	0.0	9.0	**9.0**	0.0	0.0	0.0	**0.0**
TOTAL AREA SOURCE REDUCTIONS		4.6	43.6	42.0	**90.2**	0.1	2.2	2.1	**4.5**

1990 Area Source Inventory - VOC
VOC - Ozone Nonattainment Area Jurisdictional Estimates
Tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	1.653	0.000	0.097	0.340	0.545	0.000	0.000	0.000	0.000	0.000	0.315	0.000	0.356	0.671	0.982
gas	Submerged/Balanced	3.480	0.287	0.000	0.000	0.000	0.540	0.593	0.227	0.229	1.270	0.000	0.334	0.000	2.060	1.133
gas	Vehicle Fueling	20.443	0.511	0.143	0.501	0.805	4.352	4.829	0.914	0.915	5.108	0.469	1.364	0.532	9.302	10.630
gas	Underground Tank Breathing	1.955	0.159	0.013	0.045	0.073	0.397	0.436	0.082	0.083	0.458	0.042	0.120	0.047	0.832	0.964
gas	Losses Fom Gasoline Tank Trucks	0.080	0.006	0.000	0.001	0.002	0.011	0.012	0.005	0.005	0.026	0.002	0.007	0.003	0.048	0.026
emp	Aircraft Refueling	0.215	0.000	0.000	0.000	0.008	0.003	0.139	0.021	0.000	0.014	0.019	0.011	0.000	0.065	0.150
emp	Petroleum Vessel Loading and Unl	0.029	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.017	0.000
pop	Dry Cleaning	6.210	0.716	0.000	0.000	0.133	1.605	0.429	0.784	0.410	1.575	0.115	0.443	0.000	3.327	2.167
emp	Surface Cleaning	7.110	0.267	0.045	0.142	0.326	1.436	1.406	0.179	0.223	1.930	0.185	0.904	0.067	3.488	3.355
	Surface Coatings															
pop	Architectural	32.142	4.972	0.421	0.829	1.230	6.201	5.974	1.400	0.911	6.945	0.706	2.051	0.502	12.515	14.655
pop	Traffic Markings	3.772	0.584	0.049	0.097	0.144	0.728	0.701	0.164	0.107	0.815	0.083	0.241	0.059	1.469	1.719
emp	Auto Refinishing	15.138	1.333	0.000	0.447	0.785	3.566	2.788	0.000	0.961	3.999	0.494	0.765	0.000	6.219	7.586
emp	Industrial Product	19.017	0.644	0.036	0.968	2.671	1.333	10.495	0.151	0.219	1.249	0.466	0.728	0.057	2.870	15.503
emp	Special Purpose	11.783	2.568	0.079	0.156	0.231	1.165	1.122	0.723	0.470	3.587	0.364	1.059	0.259	6.462	2.753
pop	Graphic Arts	7.239	1.517	0.074	0.253	0.099	1.693	0.259	0.427	0.278	1.881	0.215	0.390	0.153	3.344	2.378
pop	Asphalt Paving	0.021	0.003	0.000	0.001	0.001	0.004	0.004	0.001	0.001	0.005	0.000	0.001	0.000	0.008	0.010
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Us	33.860	5.238	0.443	0.873	1.296	6.533	6.294	1.475	0.960	7.316	0.743	2.161	0.528	13.183	15.439
emp	Synthetic Organic Chemical Storag	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	1.667	0.258	0.022	0.043	0.064	0.321	0.310	0.073	0.047	0.360	0.037	0.106	0.026	0.649	0.760
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.022	0.013	0.000	0.000	0.000	0.000	0.001	0.001	0.005	0.001	0.000	0.000	0.000	0.008	0.001
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Waste Treatment, Storage & Dispos	0.000													0.000	0.000
pop	Municipal Landfills	3.021	0.000	0.000	0.115	0.341	0.357	0.844	0.000	0.000	1.046	0.035	0.119	0.164	1.364	1.657
pop	On-Site Incineration	0.158	0.000	0.001	0.004	0.005	0.010	0.010	0.014	0.009	0.072	0.007	0.021	0.005	0.128	0.030
na	Open Burning	7.910	0.000	0.415	1.494	1.731	0.652	0.295	0.000	0.000	1.835	1.038	0.450	0.000	3.323	4.587
pop	Fuel Oil Consumption	0.126	0.019	0.002	0.003	0.005	0.024	0.023	0.006	0.004	0.027	0.003	0.008	0.002	0.050	0.057
pop	Coal Consumption*	0.546	0.004	0.001	0.004	0.008	0.002	0.006	0.066	0.045	0.312	0.044	0.046	0.008	0.521	0.021
pop	Natural Gas and Liquified Petroleu	0.348	0.098	0.000	0.004	0.001	0.043	0.040	0.020	0.011	0.086	0.010	0.028	0.007	0.162	0.088
hhs	Other Fuels Consumption (Resider	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.313	0.373	0.000	0.000	0.000	0.001	0.000	0.105	0.068	0.521	0.053	0.154	0.038	0.939	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tan	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	1.596	0.000	0.000	0.000	0.000	0.000	0.000	0.345	0.000	0.626	0.626	0.000	0.000	1.596	0.000
pop	General Aviation Airports	0.302	0.000	0.000	0.005	0.039	0.027	0.018	0.067	0.000	0.030	0.056	0.060	0.000	0.213	0.089
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.408	0.114	0.000	0.021	0.035	0.015	0.075	0.014	0.016	0.044	0.000	0.039	0.035	0.148	0.146
	1990 Area Source Total	***191.132***	***20.129***	***2.054***	***6.597***	***12.889***	***33.986***	***38.498***	***7.404***	***6.047***	***41.572***	***7.072***	***11.904***	***2.980***	***76.979***	***94.024***

Growth Rates, Round 6.3	Area Total	Dist. of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	Pr. Will County	Stafford County	VA Total	MD Total
Emp	1.191	0.971	1.498	1.368	1.818	1.218	1.123	1.116	1.094	1.367	2.440	1.385	2.513	1.346	1.226
Pop	1.213	1.000	1.455	1.260	1.354	1.176	1.140	1.124	1.182	1.220	2.423	1.449	1.599	1.326	1.189
Households	1.224	1.046	1.486	1.327	1.360	1.185	1.144	1.126	1.194	1.242	2.415	1.477	1.688	1.332	1.197
Gas	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165	1.165

2002 Area Source Inventory - VOC - UNCONTROLLED
VOC - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.2
Tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	1.925	0.000	0.113	0.396	0.635	0.000	0.000	0.000	0.000	0.000	0.367	0.000	0.415	0.782	1.144
gas	Submerged/Balanced	4.054	0.334	0.000	0.000	0.000	0.629	0.691	0.264	0.267	1.479	0.000	0.389	0.000	2.399	1.320
gas	Vehicle Fueling	23.812	0.595	0.167	0.584	0.938	5.069	5.625	1.065	1.066	5.950	0.546	1.589	0.620	10.835	12.382
gas	Underground Tank Breathing	2.277	0.185	0.015	0.052	0.085	0.462	0.508	0.096	0.097	0.533	0.049	0.140	0.055	0.969	1.123
gas	Losses Fom Gasoline Tank Trucks	0.093	0.007	0.000	0.001	0.002	0.013	0.014	0.006	0.006	0.030	0.002	0.008	0.003	0.056	0.030
emp	Aircraft Refueling	0.278	0.000	0.000	0.001	0.015	0.003	0.156	0.023	0.000	0.020	0.046	0.015	0.000	0.104	0.174
emp	Petroleum Vessel Loading and Unl	0.035	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.023	0.000
pop	Dry Cleaning	7.481	0.716	0.000	0.000	0.180	1.887	0.489	0.881	0.485	1.922	0.279	0.642	0.000	4.208	2.557
emp	Surface Cleaning	9.395	0.259	0.067	0.194	0.593	1.749	1.579	0.200	0.244	2.638	0.451	1.252	0.168	4.954	4.182
	Surface Coatings															
pop	Architectural	39.006	4.972	0.613	1.045	1.665	7.292	6.810	1.574	1.077	8.473	1.711	2.972	0.803	16.609	17.425
pop	Traffic Markings	4.578	0.584	0.071	0.122	0.195	0.856	0.799	0.184	0.126	0.994	0.201	0.349	0.094	1.950	2.044
emp	Auto Refinishing	19.590	1.294	0.000	0.611	1.427	4.343	3.131	0.000	1.051	5.467	1.205	1.060	0.000	8.783	9.513
emp	Industrial Product	24.673	0.625	0.054	1.324	4.856	1.624	11.786	0.169	0.240	1.707	1.137	1.008	0.143	4.404	19.644
emp	Special Purpose	15.154	2.494	0.118	0.213	0.420	1.419	1.260	0.807	0.514	4.903	0.888	1.467	0.651	9.230	3.431
pop	Graphic Arts	8.798	1.517	0.108	0.319	0.134	1.991	0.295	0.480	0.329	2.295	0.521	0.565	0.245	4.434	2.847
	Graphic Arts - Lithography		*0.971*	*0.069*	*0.204*	*0.086*	*1.274*	*0.189*	*0.307*	*0.210*	*1.469*	*0.333*	*0.362*	*0.157*	*2.838*	*1.822*
	Graphic Arts - Flexographic		*0.273*	*0.019*	*0.057*	*0.024*	*0.358*	*0.053*	*0.086*	*0.059*	*0.413*	*0.094*	*0.102*	*0.044*	*0.798*	*0.512*
	Graphic Arts - Rotogravure		*0.273*	*0.019*	*0.057*	*0.024*	*0.358*	*0.053*	*0.086*	*0.059*	*0.413*	*0.094*	*0.102*	*0.044*	*0.798*	*0.512*
pop	Asphalt Paving	0.025	0.003	0.000	0.001	0.001	0.005	0.005	0.001	0.001	0.006	0.000	0.001	0.000	0.010	0.012
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Us	41.089	5.238	0.645	1.100	1.755	7.683	7.175	1.658	1.135	8.926	1.800	3.131	0.844	17.494	18.357
emp	Synthetic Organic Chemical Storag	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	2.023	0.258	0.032	0.054	0.087	0.377	0.353	0.082	0.056	0.439	0.090	0.154	0.042	0.862	0.904
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.025	0.013	0.000	0.000	0.000	0.000	0.001	0.001	0.007	0.002	0.000	0.000	0.000	0.010	0.002
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Waste Treatment, Storage & Dispos	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Municipal Landfills	3.784	0.000	0.000	0.145	0.462	0.420	0.962	0.000	0.000	1.276	0.085	0.172	0.262	1.796	1.989
pop	On-Site Incineration	0.206	0.000	0.001	0.005	0.007	0.012	0.011	0.016	0.011	0.088	0.017	0.030	0.008	0.170	0.036
na	Open Burning	7.910	0.000	0.415	1.494	1.731	0.652	0.295	0.000	0.000	1.835	1.038	0.450	0.000	3.323	4.587
pop	Fuel Oil Consumption	0.153	0.019	0.003	0.004	0.007	0.028	0.026	0.007	0.005	0.033	0.007	0.012	0.003	0.066	0.068
pop	Coal Consumption*	0.725	0.004	0.001	0.005	0.011	0.002	0.007	0.074	0.053	0.381	0.107	0.067	0.013	0.694	0.027
pop	Natural Gas and Liquified Petroleu	0.417	0.098	0.000	0.005	0.001	0.051	0.046	0.022	0.013	0.105	0.024	0.041	0.011	0.216	0.103
hhs	Other Fuels Consumption (Resider	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.621	0.373	0.000	0.000	0.000	0.001	0.000	0.118	0.080	0.636	0.128	0.223	0.061	1.246	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tan	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.168	0.000	0.308	0.308	0.000	0.000	0.783	0.000
pop	General Aviation Airports	0.445	0.000	0.000	0.006	0.053	0.031	0.021	0.076	0.000	0.037	0.135	0.086	0.000	0.333	0.112
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.541	0.111	0.000	0.029	0.064	0.018	0.084	0.016	0.018	0.060	0.000	0.054	0.088	0.235	0.195
	2002 Area Source Total Uncontrolled	***230.465***	***20.145***	***2.637***	***7.962***	***17.633***	***39.587***	***43.524***	***8.126***	***6.948***	***50.982***	***12.089***	***16.171***	***4.661***	***98.978***	***111.342***

2002 Area Source Inventory - CONTROLLED
VOC - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.2
tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	0.426	0.000	0.020	0.072	0.115	0.000	0.000	0.000	0.000	0.000	0.103	0.000	0.116	0.219	0.207
gas	Submerged/Balanced	4.054	0.334	0.000	0.000	0.000	0.629	0.691	0.264	0.267	1.479	0.000	0.389	0.000	2.399	1.320
gas	Vehicle Fueling	6.142	0.531	0.040	0.141	0.227	1.225	1.359	0.257	0.258	1.438	0.132	0.384	0.150	2.618	2.992
gas	Underground Tank Breathing	2.277	0.185	0.015	0.052	0.085	0.462	0.508	0.096	0.097	0.533	0.049	0.140	0.055	0.969	1.123
gas	Losses Fom Gasoline Tank Trucks	0.093	0.007	0.000	0.001	0.002	0.013	0.014	0.006	0.006	0.030	0.002	0.008	0.003	0.056	0.030
emp	Aircraft Refueling	0.278	0.000	0.000	0.001	0.015	0.003	0.156	0.023	0.000	0.020	0.046	0.015	0.000	0.104	0.174
emp	Petroleum Vessel Loading and Unl	0.035	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.000	0.000	0.000	0.023	0.000
pop	Dry Cleaning	7.481	0.716	0.000	0.000	0.180	1.887	0.489	0.881	0.485	1.922	0.279	0.642	0.000	4.208	2.557
emp	Surface Cleaning	4.321	0.151	0.021	0.060	0.184	0.542	0.489	0.116	0.142	1.532	0.262	0.727	0.098	2.876	1.295
	Surface Coatings															
pop	Architectural	31.205	3.978	0.490	0.836	1.332	5.834	5.448	1.259	0.861	6.778	1.369	2.378	0.642	13.287	13.940
pop	Traffic Markings	3.662	0.467	0.057	0.098	0.156	0.685	0.639	0.147	0.101	0.795	0.161	0.279	0.075	1.560	1.635
emp	Auto Refinishing	10.285	0.832	0.000	0.245	0.571	1.737	1.252	0.000	0.676	3.515	0.775	0.681	0.000	5.647	3.805
emp	Industrial Product	19.738	0.500	0.043	1.059	3.885	1.299	9.429	0.135	0.192	1.366	0.910	0.807	0.115	3.523	15.715
emp	Special Purpose	12.124	1.995	0.095	0.171	0.336	1.135	1.008	0.645	0.411	3.923	0.711	1.173	0.521	7.384	2.745
	Graphic Arts															
pop	*Graphic Arts - Lithography (64%)*	*3.090*	*0.602*	*0.028*	*0.082*	*0.034*	*0.510*	*0.076*	*0.190*	*0.130*	*0.911*	*0.207*	*0.224*	*0.097*	*1.759*	*0.729*
pop	*Graphic Arts - Flexographic (16%)*	*0.869*	*0.169*	*0.008*	*0.023*	*0.010*	*0.143*	*0.021*	*0.054*	*0.037*	*0.256*	*0.058*	*0.063*	*0.027*	*0.495*	*0.205*
pop	*Graphic Arts - Rotogravure (16%)*	*0.994*	*0.169*	*0.012*	*0.037*	*0.016*	*0.230*	*0.034*	*0.054*	*0.037*	*0.256*	*0.058*	*0.063*	*0.027*	*0.495*	*0.329*
pop	Asphalt Paving	0.025	0.003	0.000	0.001	0.001	0.005	0.005	0.001	0.001	0.006	0.000	0.001	0.000	0.010	0.012
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Us	37.001	4.717	0.580	0.991	1.580	6.918	6.461	1.493	1.022	8.038	1.621	2.820	0.760	15.754	16.531
emp	Synthetic Organic Chemical Storag	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	2.023	0.258	0.032	0.054	0.087	0.377	0.353	0.082	0.056	0.439	0.090	0.154	0.042	0.862	0.904
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.025	0.013	0.000	0.000	0.000	0.000	0.001	0.001	0.007	0.002	0.000	0.000	0.000	0.010	0.002
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Hazardous Waste Treatment, Stora	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Municipal Landfills	1.411	0.000	0.000	0.054	0.172	0.157	0.359	0.000	0.000	0.476	0.032	0.064	0.098	0.669	0.741
pop	On-Site Incineration	0.206	0.000	0.001	0.005	0.007	0.012	0.011	0.016	0.011	0.088	0.017	0.030	0.008	0.170	0.036
na	Open Burning	0.479	0.000	0.013	0.048	0.055	0.021	0.009	0.000	0.000	0.184	0.104	0.045	0.000	0.332	0.147
pop	Fuel Oil Consumption	0.153	0.019	0.003	0.004	0.007	0.028	0.026	0.007	0.005	0.033	0.007	0.012	0.003	0.066	0.068
pop	Coal Consumption*	0.725	0.004	0.001	0.005	0.011	0.002	0.007	0.074	0.053	0.381	0.107	0.067	0.013	0.694	0.027
pop	Natural Gas and Liquified Petroleu	0.417	0.098	0.000	0.005	0.001	0.051	0.046	0.022	0.013	0.105	0.024	0.041	0.011	0.216	0.103
hhs	Other Fuels Consumption (Resider	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.621	0.373	0.000	0.000	0.000	0.001	0.000	0.118	0.080	0.636	0.128	0.223	0.061	1.246	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tan	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.168	0.000	0.308	0.308	0.000	0.000	0.783	0.000
pop	General Aviation Airports	0.445	0.000	0.000	0.006	0.053	0.031	0.021	0.076	0.000	0.037	0.135	0.086	0.000	0.333	0.112
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.525	0.109	0.000	0.028	0.062	0.018	0.081	0.015	0.017	0.058	0.000	0.052	0.085	0.227	0.188
	2002 Area Source Total Controlled	***162.482***	***16.677***	***1.674***	***4.328***	***11.493***	***26.924***	***30.389***	***6.341***	***5.032***	***35.982***	***8.639***	***11.863***	***3.140***	***70.997***	***74.809***

2002 Reduction Factors:

Stage II Vapor Recovery	0.65	Weighted average of reduction factors obtained in MOBILE6. 70% control efficiency in MD, 77% in VA
Gasoline Volatility Controls	0.11	Weighted average of reduction factors obtained in MOBILE6.
MD-Surface Cleaning/Degreasing Techn	0.59	(67% reduction from technology rules and 0.06857 from good housekeeping practices; 0.8 remaining after reformulation)
DC & VA -Surface Cleaning/Degreasing	0.32	[0.8*(Measure1: 0.1*0.8 + Measure2: 1.0*0.4*0.8)] ??
Landfills - MD & VA	0.63	(98% reduction factor * 80% capture efficiency * 80% rule effectiveness factor)
Seasonal Open Burning Restrictions - VA	0.90	(100% ban * 90% rule compliance factor from EH Pechan report)
Seasonal Open Burning Restrictions - MI	0.97	(100% ban * 96.8% rule compliance factor based on MARAMA report)
Stage I Vapor Recovery Expansion - MD	0.82	(90% reduction factor * 91% rule effectiveness, applied in Frederick, Charles, and Calvert Counties)
Stage I Vapor Recovery Expansion - VA	0.72	(90% reduction factor * 80% rule effectiveness, applied in Stafford and Loudoun Counties)
Graphic Arts Controls - VA and DC	0.38	(75% reduction factor * 80% rule effectiveness * 64% Penetration)
Graphic Arts Controls MD-Lithography (6	0.60	(75% reduction factor * 80% rule effectiveness * 64% Penetration)
Graphic Arts Controls MD-Flexography (1	0.43	(60% reduction factor * 90% emissions from ink solvent evaportion * 80% rule effectiveness * 18% Penetration)
Graphic Arts Controls MD-Rotogravure (1	0.50	(70% reduction factor * 90% emissions from ink solvent evaportion * 80% rule effectiveness * 18% Penetration)
Autobody Refinishing - MD	0.60	
Autobody Refinishing - VA, DC	0.36	
Architectural and Industrial Coatings	0.20	(National Standards for Achitectural coatings - 20% reduction)
Consumer and Commercial Products	0.10	(National Standards for Consumer/Commercial solvents - 20% reduction on 49.7449% Penetration - 3.9 lbs/person subset of 7.84 lbs/person total)
Locomotives	0.03	(Locomotives New standards - 3.3% reduction)

CHECK:

	Category	2002 Uncontrol	2002 Controlled	Delta	
	Tank Truck Unloading (Stage I)				
gas	Submerged	1.93	0.43	1.50	
gas	Submerged/Balanced	4.05	4.05	0.00	
gas	Vehicle Fueling	23.81	6.14	17.67	
gas	Underground Tank Breathing	2.28	2.28	0.00	
gas	Losses Fom Gasoline Tank Trucks	0.09	0.09	0.00	
emp	Aircraft Refueling	0.28	0.28	0.00	
emp	Petroleum Vessel Loading and Unl	0.03	0.03	0.00	
pop	Dry Cleaning	7.48	7.48	0.00	
emp	Surface Cleaning	9.40	4.32	5.07	
	Surface Coating				
pop	Architectural	39.01	31.20	7.80	
pop	Traffic Markings	4.58	3.66	0.92	**16.68**
emp	Auto Refinishing	19.59	10.28	9.31	
emp	Industrial Product	24.67	19.74	4.93	
emp	Special Purpose	15.15	12.12	3.03	
pop	Graphic Arts	8.80	4.95	3.84	
pop	Asphalt Paving	0.02	0.02	0.00	
na	Pesticide Application	7.31	7.31	0.00	
pop	Commercial/Consumer Solvent Us	41.09	37.00	4.09	
emp	Synthetic Organic Chemical Storag	0.00	0.00	0.00	
emp	Barge, Tank, Tank Truck, Rail Car	0.00	0.00	0.00	
pop	Bakeries	2.02	2.02	0.00	
pop	Breweries	0.00	0.00	0.00	
pop	Wineries	0.00	0.00	0.00	
pop	Distilleries	0.00	0.00	0.00	
na	Oil Spills	0.10	0.10	0.00	
hhs	Publicly Owned Treatment Works	0.03	0.03	0.00	
emp	Industrial Wastewater Treatment	0.00	0.00	0.00	
emp	Hazardous Waste Treatment, Stora	0.00	0.00	0.00	
pop	Municipal Landfills	3.78	1.41	2.37	
pop	On-Site Incineration	0.21	0.21	0.00	
na	Open Burning	7.91	0.48	7.43	
pop	Fuel Oil Consumption	0.15	0.15	0.00	
pop	Coal Consumption*	0.72	0.72	0.00	
pop	Natural Gas and Liquified Petroleu	0.42	0.42	0.00	
hhs	Other Fuels Consumption (Resider	0.00	0.00	0.00	
pop	Small Electric Utility Boilers	0.00	0.00	0.00	
na	Slash/Prescribed Burning	0.01	0.01	0.00	
na	Forest Fires	0.50	0.50	0.00	
na	Agricultural Burning	0.00	0.00	0.00	
pop	Structure Fires	1.62	1.62	0.00	
na	Orchard Heaters	0.00	0.00	0.00	
na	Leaking Underground Storage Tan	1.46	1.46	0.00	
emp	Commercial Airports	0.78	0.78	0.00	
pop	General Aviation Airports	0.45	0.45	0.00	
na	Military Airports	0.18	0.18	0.00	
emp	Railroad Locomotives	0.54	0.53	0.02	
	2002 Area Source Total-VOC	***230.47***	***162.48***	***67.98***	
		Uncontrolled	***Controlled***	***Delta***	

1990 Area Source Inventory -NOx
NOx - Ozone Nonattainment Area Jurisdictional Estimate
Tons per Day

Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	**4.686**	0.000	0.001	0.004	0.005	0.010	0.010	0.521	0.339	2.584	0.262	0.763	0.187	4.656	0.030
Open Burning	**1.665**	0.000	0.087	0.315	0.364	0.137	0.062	0.000	0.000	0.386	0.219	0.095	0.000	0.700	0.965
Fuel Oil Consumption	**9.714**	0.942	0.119	0.235	0.349	1.761	1.696	0.516	0.336	2.559	0.260	0.756	0.185	4.612	4.160
Coal Consumption	**6.387**	0.000	0.056	1.037	0.767	0.146	0.577	0.492	0.338	2.310	0.343	0.284	0.037	3.804	2.583
Natural Gas and Liquified Petroleum Gas Consumptio	**11.566**	1.890	0.015	0.187	0.090	2.301	1.948	0.633	0.360	2.732	0.309	0.874	0.227	5.135	4.541
Forest Fires	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	**0.167**	0.048	0.000	0.000	0.000	0.000	0.000	0.013	0.009	0.066	0.007	0.020	0.005	0.120	0.000
Commercial Airports	**5.102**	0.000	0.000	0.000	0.000	0.000	0.000	2.713	0.000	1.195	1.195	0.000	0.000	5.102	0.000
General Aviation Airports	**0.045**	0.000	0.000	0.001	0.006	0.004	0.003	0.009	0.000	0.004	0.008	0.010	0.000	0.031	0.014
Military Airports	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	**8.253**	1.443	0.000	0.498	0.822	0.353	1.728	0.322	0.337	1.024	0.000	0.916	0.810	3.409	3.401
Total	**47.712**	**4.323**	**0.283**	**2.306**	**2.415**	**4.736**	**6.066**	**5.220**	**1.719**	**12.868**	**2.603**	**3.722**	**1.452**	**27.583**	**15.807**

NOx 2002 Area Source Inventory -NO CONTROLS
NOx - Ozone Nonattainment Area Jurisdictional Estimates, Round 6
Tons per Day

Category		NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	pop	**6.690**	0.000	0.001	0.005	0.009	0.012	0.011	0.581	0.371	3.532	0.639	1.057	0.470	6.651	0.039
Open Burning	na	**1.665**	0.000	0.087	0.315	0.364	0.137	0.062	0.000	0.000	0.386	0.219	0.095	0.000	0.700	0.965
Fuel Oil Consumptior	pop	**12.009**	0.942	0.173	0.296	0.473	2.071	1.933	0.580	0.397	3.122	0.630	1.095	0.296	6.120	4.946
Coal Consumption	pop	**8.329**	0.000	0.081	1.307	1.039	0.172	0.658	0.553	0.400	2.818	0.831	0.412	0.059	5.072	3.256
Natural Gas and Liquified Petroleum Gas Consumptio	pop	**14.044**	1.890	0.022	0.236	0.122	2.706	2.221	0.711	0.426	3.333	0.749	1.266	0.363	6.848	5.306
Forest Fires	na	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	na	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	pop	**0.207**	0.048	0.000	0.000	0.000	0.000	0.000	0.015	0.010	0.081	0.017	0.028	0.008	0.159	0.000
Commercial Airports	emp	**5.275**	0.000	0.000	0.000	0.000	0.000	0.000	1.730	0.000	1.773	1.773	0.000	0.000	5.275	0.000
General Aviation Airports	pop	**0.067**	0.000	0.000	0.001	0.008	0.005	0.003	0.010	0.000	0.005	0.020	0.014	0.000	0.050	0.018
Military Airports	na	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	emp	**11.379**	1.401	0.000	0.681	1.494	0.430	1.941	0.359	0.369	1.400	0.000	1.269	2.036	5.432	4.546
Total		**59.791**	**4.281**	**0.370**	**2.870**	**3.520**	**5.557**	**6.871**	**4.541**	**1.972**	**16.457**	**4.878**	**5.241**	**3.232**	**36.321**	**19.189**

Growth Rates 1990-2002		Area Total	Dist. of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	Pr. Will County	Stafford County	VA Total	MD Total
Round 6.3	Emp	1.191	0.971	1.498	1.368	1.818	1.218	1.123	1.116	1.094	1.367	2.440	1.385	2.513	1.346	1.226
	Pop	1.213	1.000	1.455	1.260	1.354	1.176	1.140	1.124	1.182	1.220	2.423	1.449	1.599	1.326	1.189

Control measures

Seasonal Open Burning Restrictions - Vi	0.900 (100% ban * 90% rule compliance factor from Pechan report
Seasonal Open Burning Restrictions - MI	0.968 (100% ban * 96.8% rule compliance factor based on MARAMA report
Locomotive Emissions Reduction Factor	0.278 (New Standards would reduce NOx 27.8% by year 200

NOx 2002 Area Source Inventory -WITH CONTROLS
NOx - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.
Tons per Day

Category		NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	pop	**6.690**	0.000	0.001	0.005	0.009	0.012	0.011	0.581	0.371	3.532	0.639	1.057	0.470	6.651	0.039
Open Burning	na	**0.101**	0.000	0.003	0.010	0.012	0.004	0.002	0.000	0.000	0.039	0.022	0.010	0.000	0.070	0.031
Fuel Oil Consumptior	pop	**12.009**	0.942	0.173	0.296	0.473	2.071	1.933	0.580	0.397	3.122	0.630	1.095	0.296	6.120	4.946
Coal Consumption	pop	**8.329**	0.000	0.081	1.307	1.039	0.172	0.658	0.553	0.400	2.818	0.831	0.412	0.059	5.072	3.256
Natural Gas and Liquified Petroleum Gas Consumptio	pop	**14.044**	1.890	0.022	0.236	0.122	2.706	2.221	0.711	0.426	3.333	0.749	1.266	0.363	6.848	5.306
Forest Fires	na	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	na	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	pop	**0.207**	0.048	0.000	0.000	0.000	0.000	0.000	0.015	0.010	0.081	0.017	0.028	0.008	0.159	0.000
Commercial Airports	emp	**5.275**	0.000	0.000	0.000	0.000	0.000	0.000	1.730	0.000	1.773	1.773	0.000	0.000	5.275	0.000
General Aviation Airports	pop	**0.067**	0.000	0.000	0.001	0.008	0.005	0.003	0.010	0.000	0.005	0.020	0.014	0.000	0.050	0.018
Military Airports	na	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	emp	**8.477**	1.273	0.000	0.492	1.079	0.310	1.401	0.259	0.266	1.011	0.000	0.916	1.470	3.922	3.282
Total - With CONTROLS		**55.324**	**4.152**	**0.286**	**2.376**	**2.753**	**5.305**	**6.272**	**4.441**	**1.870**	**15.721**	**4.681**	**4.803**	**2.666**	**34.181**	**16.991**

Check - 2002 NOx

Category	Uncontrolled	Controlled	Delta
On-Site Incineration	6.690	6.690	**0.00**
Open Burning	1.665	0.101	**1.56**
Fuel Oil Consumptior	12.009	12.009	**0.00**
Coal Consumption	8.329	8.329	**0.00**
Natural Gas and Liquified Petroleum Gas Consumptio	14.044	14.044	**0.00**
Forest Fires	0.084	0.084	**0.00**
Slash/Prescribed Burning	0.019	0.019	**0.00**
Structure Fires	0.207	0.207	**0.00**
Commercial Airports	5.275	5.275	**0.00**
General Aviation Airports	0.067	0.067	**0.00**
Military Airports	0.023	0.023	**0.00**
Railroad Locomotives	11.379	8.477	**2.90**
Total	***59.791***	***55.324***	**4.47**

2002 Uncontrolled Non-Road VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2002 Non-road Uncontrolled Ozone Season Day Emissions - Round 6.3

VOC Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	2.53	0.65	1.01	3.20	14.58	6.35	0.45	2.25	13.62	3.48	3.05	1.60	25.79	24.45	**52.77**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.04	0.10	0.10	0.00	0.00	0.37	0.24	**0.61**
Recreational-Land	0.00	0.43	0.80	1.23	0.00	0.00	0.00	0.00	0.00	1.73	0.68	0.59	2.46	3.00	**5.46**
Recreational-Marine	1.61	0.83	0.28	0.04	0.03	0.07	0.39	0.30	3.80	1.42	3.32	1.71	1.26	10.95	**13.81**
Light Commercial	0.59	0.02	0.09	0.25	1.20	0.99	0.26	0.20	1.31	0.27	0.26	0.06	2.55	2.36	**5.50**
Industrial	0.23	0.01	0.02	0.21	0.37	0.23	0.05	0.09	0.37	0.11	0.14	0.03	0.84	0.79	**1.85**
Construction	0.71	0.15	0.24	0.75	2.96	2.33	0.32	0.20	3.02	0.76	0.96	0.27	6.43	5.53	**12.67**
Agricultural	0.00	0.20	0.28	0.81	0.31	0.24	0.00	0.00	0.05	0.36	0.08	0.06	1.85	0.55	**2.40**
Logging	0.01	0.02	0.04	0.07	0.13	0.05	0.00	0.02	0.10	0.03	0.04	0.02	0.30	0.22	**0.52**
VOC - Totals	**5.66**	**2.33**	**2.76**	**6.56**	**19.59**	**10.63**	**1.46**	**3.10**	**22.37**	**8.26**	**8.54**	**4.35**	**41.86**	**48.07**	**95.60**

NOx Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	0.06	0.01	0.01	0.05	0.32	0.14	0.01	0.05	0.30	0.07	0.06	0.03	0.54	0.52	**1.13**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.44	0.51	0.51	0.00	0.00	0.17	1.46	**1.63**
Recreational-Land	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.02	**0.03**
Recreational-Marine	0.14	0.10	0.03	0.01	0.00	0.01	0.02	0.02	0.22	0.08	0.19	0.10	0.15	0.62	**0.92**
Light Commercial	0.08	0.00	0.01	0.03	0.17	0.14	0.04	0.03	0.18	0.04	0.03	0.01	0.35	0.32	**0.75**
Industrial	0.48	0.02	0.05	0.43	0.78	0.49	0.11	0.19	0.78	0.24	0.29	0.06	1.78	1.66	**3.91**
Construction	4.54	0.99	1.53	4.80	18.92	14.88	2.03	1.30	19.28	4.83	6.18	1.74	41.13	35.36	**81.03**
Agricultural	0.00	0.89	1.24	3.54	1.36	1.06	0.00	0.00	0.20	1.57	0.36	0.27	8.09	2.39	**10.49**
Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
NOx - Total	**5.30**	**2.02**	**2.89**	**8.87**	**21.56**	**16.89**	**2.21**	**2.01**	**21.47**	**7.34**	**7.12**	**2.20**	**52.24**	**42.35**	**99.89**

2002 Controlled Non-Road VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2002 CONTROLLED NON-ROAD INVENTORY

	VOC				NOx			
	DC	MD	VA	**Total**	DC	MD	VA	**Total**
1990 BASELINE				73.4				79.5
2002 UNCONTROLLED	5.7	41.9	48.1	95.6	5.3	52.2	42.3	99.9
2002 CONTROLLED	4.2	29.8	35.4	69.4	4.5	44.3	36.2	85.0

		VOC Benefit				NOx Benefit			
Measure #	Measure Name	DC	MD	VA	**Total**	DC	MD	VA	**Total**
7.2.7	EPA Non-Road Gasoline Engines Rule	1.1	10.8	10.2	**22.2**	0.0	0.0	0.0	**0.0**
7.2.8	EPA Non-Road Diesel Engines Rule	0.0	0.0	0.0	**0.0**	0.8	8.0	6.2	**14.9**
7.2.10	Emission standards for spark-ignition marine engines	0.1	0.1	1.0	**1.3**	0.0	0.0	0.0	**0.0**
7.2.11	Emission standards for large spark-ignition engines	0.0	0.0	0.0	**0.0**	0.0	0.0	0.0	**0.0**
7.4.2	Reformulated Gasoline (Off-Road)	0.2	1.2	1.4	**2.7**	0.0	0.0	0.0	**0.0**
	TOTAL AREA SOURCE REDUCTIONS	**1.4**	**12.0**	**12.7**	**26.2**	**0.8**	**8.0**	**6.2**	**14.9**

2002 Non-road Controlled Ozone Season Day Emissions - Round 6.3
Excluding Benefits of Off-Road RFG

VOC Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	1.64	0.43	0.67	2.11	9.49	4.13	0.29	1.46	8.86	2.28	2.00	1.05	16.83	15.94	**34.41**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.04	0.10	0.10	0.00	0.00	0.37	0.24	**0.61**
Recreational-Land	0.00	0.36	0.66	1.02	0.00	0.00	0.00	0.00	0.00	1.43	0.56	0.49	2.04	2.49	**4.53**
Recreational-Marine	1.47	0.77	0.25	0.04	0.03	0.07	0.35	0.27	3.45	1.29	3.01	1.55	1.16	9.92	**12.55**
Light Commercial	0.39	0.02	0.06	0.17	0.81	0.67	0.17	0.13	0.88	0.18	0.18	0.04	1.72	1.58	**3.69**
Industrial	0.22	0.01	0.02	0.20	0.36	0.22	0.05	0.09	0.36	0.11	0.14	0.03	0.83	0.77	**1.82**
Construction	0.67	0.15	0.23	0.71	2.80	2.21	0.30	0.19	2.86	0.72	0.91	0.26	6.09	5.24	**12.00**
Agricultural	0.00	0.20	0.28	0.79	0.30	0.24	0.00	0.00	0.04	0.35	0.08	0.06	1.80	0.53	**2.33**
Logging	0.00	0.01	0.02	0.04	0.08	0.03	0.00	0.01	0.06	0.02	0.03	0.02	0.19	0.14	**0.34**
VOC - Totals	**4.40**	**1.94**	**2.20**	**5.08**	**13.88**	**7.93**	**1.16**	**2.20**	**16.62**	**6.47**	**6.90**	**3.50**	**31.03**	**36.85**	**72.28**

NOx Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	0.06	0.01	0.01	0.05	0.30	0.13	0.01	0.05	0.28	0.07	0.06	0.02	0.51	0.49	**1.05**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.44	0.51	0.51	0.00	0.00	0.17	1.46	**1.63**
Recreational-Land	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02	**0.04**
Recreational-Marine	0.14	0.10	0.03	0.01	0.00	0.01	0.02	0.02	0.22	0.08	0.19	0.10	0.16	0.63	**0.93**
Light Commercial	0.08	0.00	0.01	0.03	0.16	0.14	0.03	0.03	0.18	0.03	0.03	0.01	0.35	0.32	**0.74**
Industrial	0.44	0.02	0.05	0.40	0.72	0.45	0.10	0.17	0.72	0.22	0.27	0.05	1.63	1.52	**3.59**
Construction	3.82	0.83	1.29	4.04	15.92	12.52	1.71	1.09	16.22	4.06	5.20	1.46	34.60	29.74	**68.17**
Agricultural	0.00	0.75	1.05	2.99	1.15	0.90	0.00	0.00	0.17	1.32	0.30	0.23	6.83	2.02	**8.85**
Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
NOx - Total	**4.54**	**1.73**	**2.45**	**7.52**	**18.25**	**14.31**	**1.87**	**1.79**	**18.29**	**6.31**	**6.06**	**1.88**	**44.26**	**36.19**	**84.99**

2002 Non-road Controlled Inventory
Round 6.3 Cooperative Forecasts

Growth Factors 1990 to 2002 Round 6.3 Cooperative Forecasts-COG)

	DC	Calvert	Charles	Frederick	Mont	PG	Alex	Arlington	Fairfax	Loudoun	Pr. William	Stafford	Regional
Employn	0.971	1.498	1.368	1.818	1.218	1.123	1.094	1.116	1.367	2.440	1.385	2.513	1.191
Populati	1.000	1.455	1.260	1.354	1.176	1.140	1.182	1.124	1.220	2.423	1.449	1.599	1.213

RVP Adjustment VOC

Diesel	100.0%
4-St & 2-St	99.55%

Equipment HP -->	50-100 HP (NOx)	100-175 HP	> 175HP (VOC)
CI Rule on Diesel (I	0.843	0.836	
SI Rule on 2 and 4-stroke		1.46	
Phase 2 SI Rule - Handheld			
Phase 2 SI Rule - Non-Handheld			
Large SI engine rule			
Lawn&Garden RES		0.1708	
Lawn&Garden COM		0.8292	

	NOx	VOC
NR SI Marine Engine Rule	1.110	0.891

SCC	NEVES ID	Equipment	Category	Cat Typ	DC	CALVERT	CHARLES	FREDERI(	MONTGOI	PRINCE G	ALEXAND	ARLINGT(	FAIRFAX	LOUDOUI	PRINCE W	STAFFOR	Tot Activity	Daily Emissions (tpsd) 2002-VOC VOC	2002-NOx NOx	2002-CO CO	BASE YEAR EMIS 1990-VOC VOC	1990-NOx NOx	1990-CO CO	Adjusted for Rules Base Year 1990 Diesel VOC	Diesel NOx	CO Diesel CO (tpsd)	Reduction Facto	Rule (VOC ad NOx adjust)
																		72.40	85.30	914.83	73.45	84.96	705.68	54.96	67.67	705.68		
2270004026	D-01	Trimmers/Edgers/Brush Cutter	Lawn and Garden Equipment (Com)	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270004011	D-02	Lawn mowers	Lawn and Garden Equipment (Com)	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270004031	D-03	Leafblowers/Vacuums	Lawn and Garden Equipment (Com)	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004041	D-04	Rear Engine Riding Mowers	Lawn and Garden Equipment (Com)	4	0.0730	0.0113	0.0206	0.0547	0.3754	0.1689	0.0164	0.0588	0.3494	0.0734	0.0626	0.0378	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004046	D-05	Front Mowers	Lawn and Garden Equipment (Com)	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004021	D-06	Chain Saws < 6 HP	Lawn and Garden Equipment (Com)	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004051	D-07	Shredders < 6 HP	Lawn and Garden Equipment (Com)	7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004016	D-08	Rotary Tillers < 6 HP	Lawn and Garden Equipment (Com)	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	[illegible]		
2270004056	D-09	Lawn & Garden Tractors	Lawn and Garden Equipment (Com)	9	0.0706	0.0108	0.0163	0.0610	0.3753	0.1665	0.0127	0.0595	0.3535	0.0811	0.0686	0.0299	1.3	0.04	0.24	0.15	0.03	0.19	0.12	0.03	[illegible]	[illegible]		
2270004061	D-10	Wood Splitters (Commercial)	Lawn and Garden Equipment (Com)	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	
2270004036	D-11	Snowblowers	Lawn and Garden Equipment (Com)	11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270004066	D-12	Chippers/Stump Grinders	Lawn and Garden Equipment (Com)	12	0.0712	0.0116	0.0158	0.0632	0.3762	0.1648	0.0127	0.0603	0.3483	0.0848	0.0695	0.0291	1.3	0.02	0.12	0.09	0.02	0.11	0.07	0.02	0.09	0.07	0.84	
2270004071	D-13	Commercial Turf Equipment	Lawn and Garden Equipment (Com)	13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270004076	D-14	Other Lawn & Garden Eqp.	Lawn and Garden Equipment (Com)	14	0.0000	0.0000	0.0000	0.0000	0.6090	0.0000	0.0000	0.0000	0.6835	0.0000	0.0000	0.0000	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270008005	D-15	Airport Ground Support Equipment	Airport Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6927	0.2492	0.2492	0.0000	0.0000	1.2	0.73	1.94	0.26	0.06	0.52	0.22	0.61	1.63	0.22	(0.836 removed)	(100-175 HP CI removed)
2270003070	D-16	Terminal Tractors	Airport Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6948	0.2481	0.2481	0.0000	0.0000	1.2	0.00	0.00	3.32	0.73	6.44	2.79	0.00	0.00	2.79	(0.843 removed)	(50-100 HP CI removed)
2270001030	D-17+18+	Offroad Motorcycles/ATVs	Recreational Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270001030	D-17+18+	Offroad Motorcycles/ATVs	Recreational Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270001030	D-17+18+	Offroad Motorcycles/ATVs	Recreational Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270001050	D-20	Golf Carts	Recreational Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270001020	D-21	Snowmobiles	Recreational Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270001060	D-22	Speciality Vehicle Carts	Recreational Equipment	6	0.0000	0.1532	0.1990	0.3562	0.0000	0.0000	0.0000	0.0000	0.0000	0.5102	0.2288	0.1683	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	1	0.4000	0.4175	0.1424	0.0235	0.0205	0.0397	0.0103	0.0098	0.0637	0.0211	0.0504	0.0278	1.2	0.01	0.10	0.02	0.01	0.08	0.02	0.01	0.08	0.02		
2282020010	D-24+27	Outboards	Pleasure Craft	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2282020005	D-23+25+	Inboard/Sterndrive	Pleasure Craft	4	0.2686	0.2344	0.0781	0.0112	0.0097	0.0189	0.0244	0.0186	0.2370	0.0901	0.2036	0.1057	1.3	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01		
2282020015	D-27	Personal Water Craft	Pleasure Craft	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270006005	D-28	Generator Sets	Commercial Equipment	1	0.1292	0.0048	0.0201	0.0550	0.2639	0.2171	0.0574	0.0434	0.2883	0.0581	0.0579	0.0138	1.2	0.05	0.30	0.19	0.04	0.25	0.16	0.04	0.25	0.16		
2270006010	D-29	Pumps	Commercial Equipment	2	0.1285	0.0062	0.0189	0.0551	0.2644	0.2173	0.0582	0.0433	0.2900	0.0571	0.0559	0.0137	1.2	0.01	0.09	0.06	0.01	0.08	0.05	0.01	0.08	0.05		
2270006015	D-30	Air Compressors	Commercial Equipment	3	0.1261	0.0000	0.0212	0.0569	0.2668	0.2203	0.0596	0.0472	0.2871	0.0611	0.0487	0.0134	1.2	0.01	0.05	0.03	0.01	0.04	0.02	0.01	0.04	0.02		
2270006020	D-31	Gas Compressors	Commercial Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270006025	D-32	Welders	Commercial Equipment	5	0.1288	0.0057	0.0199	0.0552	0.2643	0.2172	0.0575	0.0428	0.2886	0.0573	0.0571	0.0147	1.2	0.03	0.19	0.12	0.02	0.15	0.10	0.02	0.15	0.10		
2270006030	D-33	Pressure Washers	Commercial Equipment	6	0.1428	0.0000	0.0000	0.0484	0.2940	0.2443	0.0422	0.0402	0.2614	0.0866	0.0518	0.0000	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270003010	D-34	Aerial Lifts	Industrial Equipment	1	0.1618	0.0000	0.0228	0.1515	0.2639	0.1685	0.0365	0.0558	0.2506	0.0813	0.0923	0.0000	1.3	0.01	0.08	0.04	0.01	0.06	0.03	0.01	0.06	0.03		
2270003020	D-35	Forklifts	Industrial Equipment	2	0.1575	0.0077	0.0175	0.1440	0.2598	0.1592	0.0349	0.0613	0.2584	0.0779	0.0973	0.0193	1.3	0.12	0.89	0.46	0.09	0.81	0.35	0.09	0.69	0.35	0.843	50-100HP CI
2270003030	D-36	Sweepers/Scrubbers	Industrial Equipment	3	0.1564	0.0083	0.0152	0.1414	0.2571	0.1622	0.0365	0.0620	0.2582	0.0813	0.1000	0.0140	1.3	0.09	0.68	0.35	0.07	0.62	0.27	0.07	0.53	0.27	0.843	50-100HP CI
2270003040	D-37	Other General Industrial Eqp	Industrial Equipment	4	0.1545	0.0000	0.0155	0.1446	0.2630	0.1659	0.0373	0.0634	0.2485	0.0832	0.0944	0.0286	1.3	0.02	0.18	0.09	0.02	0.17	0.07	0.02	0.14	0.07	0.836	100-175HP CI
2270003050	D-38	Other Material Handling Eqp	Industrial Equipment	5	0.1554	0.0000	0.0000	0.1454	0.2436	0.1797	0.0438	0.0446	0.2734	0.0976	0.1108	0.0000	1.3	0.00	0.03	0.02	0.00	0.03	0.01	0.00	0.02	0.01	0.836	100-175HP CI
2270002003	D-39+42?	Pavers	Construction and Mining Equipment	1	0.0722	0.0167	0.0254	0.0743	0.3079	0.2421	0.0325	0.0207	0.3100	0.0816	0.0927	0.0280	1.3	0.02	0.29	0.11	0.02	0.27	0.08	0.02	0.22	0.08	0.843	50-100HP CI
2270002006	D-40	Tampers/Rammers	Construction and Mining Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270002009	D-41	Plate Compactors	Construction and Mining Equipment	3	0.0728	0.0000	0.0342	0.0909	0.3045	0.2527	0.0274	0.0279	0.3076	0.0610	0.1039	0.0000	1.3	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270002003	D-39+42?	Pavers	Construction and Mining Equipment	4	0.0708	0.0156	0.0285	0.0757	0.3045	0.2340	0.0342	0.0233	0.3133	0.0762	0.1010	0.0262	1.3	0.02	0.16	0.09	0.02	0.15	0.07	0.02	0.12	0.07	0.836	100-175HP CI
2270002015	D-43	Rollers	Construction and Mining Equipment	5	0.0734	0.0165	0.0259	0.0773	0.3050	0.2387	0.0327	0.0211	0.3100	0.0769	0.0981	0.0277	1.3	0.07	0.68	0.27	0.05	0.62	0.20	0.05	0.52	0.20	0.843	50-100HP CI
2270002018	D-44	Scrapers	Construction and Mining Equipment	6	0.0731	0.0161	0.0235	0.0782	0.3038	0.2391	0.0329	0.0216	0.3116	0.0787	0.0983	0.0270	1.3	0.30	3.06	2.13	0.23	2.84	1.63	0.23	2.34	1.63	0.826	>= 175HP CI
2270002021	D-45	Paving Equipment	Construction and Mining Equipment	7	0.0730	0.0158	0.0253	0.0767	0.3053	0.2400	0.0332	0.0206	0.3102	0.0773	0.0987	0.0265	1.3	0.12	1.12	0.55	0.09	1.02	0.42	0.09	0.86	0.42	0.843	50-100HP CI
2270002024	D-46	Surfacing Equipment	Construction and Mining Equipment	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270002027	D-47	Signal Boards/Light Plants	Construction and Mining Equipment	9	0.0734	0.0168	0.0230	0.0764	0.3036	0.2391	0.0337	0.0219	0.3102	0.0752	0.1009	0.0282	1.3	0.01	0.06	0.04	0.01	0.05	0.03	0.01	0.05	0.03		
2270002030	D-48	Trenchers	Construction and Mining Equipment	10	0.0728	0.0170	0.0249	0.0764	0.3045	0.2399	0.0323	0.0203	0.3107	0.0776	0.0992	0.0286	1.3	0.11	0.75	0.69	0.09	0.58	0.53	0.09	0.58	0.53		
2270002033	D-49	Bore/Drill Rigs	Construction and Mining Equipment	11	0.0719	0.0111	0.0203	0.0808	0.3068	0.2412	0.0324	0.0248	0.3038	0.0723	0.1026	0.0372	1.3	0.07	0.45	0.46	0.05	0.42	0.35	0.05	0.34	0.35	0.826	>= 175HP CI
2270002036	D-50	Excavators	Construction and Mining Equipment	12	0.0726	0.0168	0.0256	0.0765	0.3039	0.2393	0.0327	0.0209	0.3104	0.0775	0.0997	0.0282	1.3	0.33	4.08	2.36	0.25	3.74	1.81	0.25	3.13	1.81	0.836	100-175HP CI
2270002039	D-51	Concrete/Industrial Saws	Construction and Mining Equipment	13	0.0000	0.0000	0.0000	0.0000	0.6090	0.5615	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.843	50-100HP CI
2270002042	D-52	Cement & Mortar Mixers	Construction and Mining Equipment	14	0.0704	0.0217	0.0198	0.0790	0.3001	0.2441	0.0317	0.0162	0.3170	0.0707	0.1004	0.0364	1.3	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270002045	D-53	Cranes	Construction and Mining Equipment	15	0.0731	0.0166	0.0248	0.0775	0.3043	0.2393	0.0326	0.0208	0.3104	0.0783	0.0986	0.0279	1.3	0.77	5.11	2.53	0.59	4.74	1.94	0.59	3.92	1.94	0.826	>= 175HP CI
2270002048	D-54	Graders	Construction and Mining Equipment	16	0.0732	0.0159	0.0246	0.0774	0.3043	0.2391	0.0323	0.0210	0.3101	0.0779	0.0998	0.0288	1.3	0.51	2.60	1.23	0.39	2.39	0.95	0.39	2.00	0.95	0.836	100-175HP CI
2270002051	D-55	Off-highway Trucks	Construction and Mining Equipment	17	0.0744	0.0157	0.0238	0.0760	0.3056	0.2387	0.0343	0.0194	0.3096	0.0765	0.1013	0.0263	1.3	0.59	5.43	1.92	0.45	5.05	1.47	0.45	4.17	1.47	0.826	>= 175HP CI
2270002054	D-56	Crushing/Proc. Equipment	Construction and Mining Equipment	18	0.0705	0.0121	0.0221	0.0733	0.3045	0.2445	0.0353	0.0180	0.3087	0.0787	0.1117	0.0203	1.3	0.09	0.57	0.57	0.07	0.52	0.44	0.07	0.44	0.44	0.836	100-175HP CI
2270002057	D-57	Rough Terrain Forklifts	Construction and Mining Equipment	19	0.0736	0.0160	0.0248	0.0776	0.3042	0.2397	0.0327	0.0202	0.3107	0.0781	0.0990	0.0268	1.3	0.28	1.09	1.61	0.21	0.99	1.24	0.21	0.84	1.24	0.843	50-100HP CI
2270002060	D-58	Rubber Tire Loaders	Construction and Mining Equipment	20	0.0732	0.0160	0.0251	0.0772	0.3044	0.2394	0.0324	0.0208	0.3106	0.0776	0.0991	0.0282	1.3	0.89	8.91	4.96	0.69	8.17	3.81	0.69	6.83	3.81	0.836	100-175HP CI
2270002063	D-59	Rubber Tire Tractor/Dozers	Construction and Mining Equipment	21	0.0719	0.0111	0.0203	0.0808	0.3068	0.2412	0.0324	0.0248	0.3038	0.0723	0.1026	0.0372	1.3	0.12	1.10	0.39	0.09	1.02	0.30	0.09	0.85	0.30	0.826	>= 175HP CI
2270002066	D-60	Tractors/Loaders/Backhoes	Construction and Mining Equipment	22	0.0730	0.0161	0.0249	0.0771	0.3045	0.2396	0.0325	0.0208	0.3105	0.0777	0.0991	0.0280	1.3	1.19	7.11	5.68	0.92	6.47	4.36	0.92	5.45	4.36	0.843	50-100HP CI
2270002069	D-61	Crawler Tractor/Dozers	Construction and Mining Equipment	23	0.0731	0.0162	0.0250	0.0774	0.3044	0.2394	0.0325	0.0208	0.3106	0.0779	0.0990	0.0277	1.3	2.66	17.76	9.90	2.04	16.29	7.59	2.04	13.62	7.59	0.836	100-175HP CI
2270002072	D-62	Skid Steer Loaders	Construction and Mining Equipment	24	0.0732	0.0160	0.0251	0.0772	0.3043	0.2397	0.0326	0.0209	0.3106	0.0775	0.0986	0.0279	1.3	0.48	2.16	2.02	0.37	1.65	1.55	0.37	1.65	1.55		
2270002075	D-63	Off-Highway Tractors	Construction and Mining Equipment	25	0.0729	0.0154	0.0242	0.0776	0.3032	0.2398	0.0322	0.0214	0.3100	0.0791	0.0999	0.0296	1.3	1.22	4.78	7.14	0.93	4.44	5.47	0.93	3.66	5.47	0.826	>= 175HP CI
2270002078	D-64	Dumpers/Tenders	Construction and Mining Equipment	26	0.0000	0.0000	0.0000	0.0000	0.4060	0.3743	0.0000	0.0000	0.4557	0.0000	0.0000	0.0000	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270002081	D-65	Other Construction Equipment	Construction and Mining Equipment	27	0.0747	0.0144	0.0263	0.0787	0.3045	0.2376	0.0316	0.0215	0.3089	0.0821	0.0999	0.0242	1.3	0.09	0.57	0.57	0.07	0.52	0.44	0.07	0.44	0.44	0.836	100-175HP CI
2270005010	D-66	2-Wheel Tractors	Agricultural Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270005015	D-67	Agricultural Tractors	Agricultural Equipment	2	0.0000	0.0852	0.1183	0.3375	0.1296	0.1014	0.0000	0.0000	0.0190	0.1493	0.0342	0.0257	1.0	1.98	8.23	7.78	1.98	9.76	7.78	1.98	8.23	7.78	0.843	50-100HP CI
2270005030	D-68	Agricultural Mowers	Agricultural Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270005020	D-69	Combines	Agricultural Equipment	4	0.0000	0.0844	0.1176	0.3375	0.1300	0.1010	0.0000	0.0000	0.0194	0.1494	0.0346	0.0263	1.0	0.06	0.44	0.19	0.06	0.53	0.19	0.06	0.44	0.19	0.836	100-175HP CI
2270005035	D-70	Sprayers	Agricultural Equipment	5	0.0000	0.0833	0.1250	0.3333	0.1250	0.0833	0.0000	0.0000	0.0000	0.1667	0.0417	0.0417	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.843	50-100HP CI
2270005025	D-71	Balers	Agricultural Equipment	6	0.0000	0.1000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.843	50-100HP CI
2270005040	D-72	Tillers > 6 HP	Agricultural Equipment	7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270005045	D-73	Swathers	Agricultural Equipment	8	0.0000	0.0873	0.1190	0.3413	0.1270	0.1032	0.0000	0.0000	0.0159	0.1508	0.0317	0.0238	1.0	0.01	0.09	0.02	0.01	0.11	0.02	0.01	0.09	0.02	0.843	50-100HP CI
2270005050	D-74	Hydro Power Units	Agricultural Equipment	9	0.0000	0.1429	0.1429	0.2857	0.1429	0.1429	0.0000	0.0000	0.0000	0.1429	0.0000	0.0000	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270005055	D-75	Other Agricultural Equipment	Agricultural Equipment	10	0.0000	0.0870	0.1087	0.3261	0.1304	0.1087	0.0000	0.0000	0.0217	0.1522	0.0435	0.0217	1.0	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01	0.843	50-100HP CI
2270007005	D-76	Chain Saws > 6 HP	Logging Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270007010	D-77	Shredders > 6 HP	Logging Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2270007015	D-79+78	Forest Eqp - Feller/Bunch/Skidder	Logging Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.836	100-175HP CI
2270007015	D-79+78	Forest Eqp - Feller/Bunch/Skidder	Logging Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.826	>= 175HP CI
																		13.14	81.55	58.43	10.79	81.93	46.96	10.61	64.78	46.96		

1994 CI Rule: RIA Document
Tables A-11 and A-12

NOx Reductions (tpy)

	50-100 hp	100-175 hp	>175 hp	All
2002 uncontrolled emissions	1,422,386	548,781	496,588	2,467,754
2002 controlled emissions	1,198,966	458,893	409,960	2,067,820
Difference	223,420	89,888	86,628	399,934
% Reduction	15.707%	16.380%	17.445%	16.206%
	0.2378291	0.2309551	0.2312216	0.2349711

COG: November 12, 2002 VDEQ obtained info from Phil Carlson, EPA: Handheld engines 2002: 4% reduction in HC, no change in NOx Nonhandheld engines 2002: 9%

SI Non-road Marine Engine Rule (Oct. 4, 1996) FR Vol 61, No. 194, p. 52088 VOC reduction and NOx dis-benefit (%) for outboard and personal watercraft gasoline engines. Source: EPA RIA, June 1996, Tables A-06 and A-07 VOC 10.94% reduction in year 2002 NOx disbenefit 10.99% i.e., adjustment factor is 1.1099 in year 2002

Council of Governments : Lawn and Garden gasoline equipment Residential and

Council of Governments : February 2002 CI Non-road Engine Rule (1994). RIA, Tables A-11 and A-12 NOx reduction (%) in the year 2002 50-100 HP - 15.7% 100-175 HP - 16.4% > 175 HP - 17.4%

Council of Governments : Lawn and Garden gasoline equipment Residential and Commercial split obtained from NONROAD model

COG: Source: Final Reg Support Doc, Control of Emissions from Unregulated Nonroad Engines, EPA420-R-02-022, Sept 2002 NO REDUCTIONS in 2002 for VOC or NOx

Council of Governments : Lawn and Garden gasoline equipment Residential and Commercial split obtained from NONROAD model

Council of Governments : February 2003 SI Non-road Engine Rule (1995) VOC reduction and NOx dis-benefit (%) for the covered gasoline equipment for 2002: VOC 29.35% (in year 2002 - interpolated from Table 2 in final rule) NOx disbenefit 46.3% (i.e., adjustment factor is 1.463) (in year 2002 - interpolated from Table 2 in final rule)

Council of Governments : Lawn and Garden gasoline equipment Residential and Commercial split

SCC	NEVES ID	Equipment	Category	Cat Typ	DC	Calvert	Charles	Frederick	Mont	PG	Alex	Alrington	Fairfax	Loudoun	Pr. William	Stafford		Daily Emissions 2002-VOC VOC	2002-NOx NOx		Base Year 1990-VOC VOC	1990-NOx NOx		Adjusted Daily Base Year 1990 4-St VOC	4-St NOx	4-St CO (tpsd)				
2265004025	4s-01	Trimmers/Edgers/Brush Cutter	Lawn and Garden Equipment (Res)	1	0.0706	0.0107	0.0167	0.0611	0.3751	0.1666	0.0129	0.0596	0.3532	0.0810	0.0687	0.0296	1.3	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2265004026	4s-01	Trimmers/Edgers/Brush Cutter	Lawn and Garden Equipment (Com)		0.0706	0.0107	0.0167	0.0611	0.3751	0.1666	0.0129	0.0596	0.3532	0.0810	0.0687	0.0296	1.3	0.00	0.00	0.01				0.00	0.00	0.01	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2265004010	4s-02	Lawn mowers	Lawn and Garden Equipment (Res)	2	0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	1.75	0.02	18.76	9.44	0.08	84.14	1.34	0.01	14.37	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004011	4s-02	Lawn mowers	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	6.15	0.08	91.09				4.71	0.06	69.77	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004030	4s-03	Leafblowers/Vacuums	Lawn and Garden Equipment (Res)	3	0.0620	0.0000	0.0291	0.0774	0.3628	0.1673	0.0233	0.0475	0.3490	0.1038	0.0589	0.0535	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (HH)
2265004031	4s-03	Leafblowers/Vacuums	Lawn and Garden Equipment (Com)		0.0620	0.0000	0.0291	0.0774	0.3628	0.1673	0.0233	0.0475	0.3490	0.1038	0.0589	0.0535	1.3	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (HH)
2265004040	4s-04	Rear Engine Riding Mowers	Lawn and Garden Equipment (Res)	4	0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0687	0.0297	1.3	0.04	0.00	1.16	0.21	0.01	5.19	0.03	0.00	0.89	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004041	4s-04	Rear Engine Riding Mowers	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0687	0.0297	1.3	0.14	0.01	5.62				0.10	0.00	4.31	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004046	4s-05	Front Mowers	Lawn and Garden Equipment (Com)	5	0.0706	0.0107	0.0165	0.0610	0.3752	0.1665	0.0129	0.0594	0.3536	0.0806	0.0688	0.0296	1.3	0.06	0.00	1.93	0.08	0.00	1.48	0.05	0.00	1.48	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004020	4s-06	C	Lawn and Garden Equipment (Res)	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2265004021	4s-06	C	Lawn and Garden Equipment (Com)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2265004051	4s-07	S	Lawn and Garden Equipment (Com)	7	0.0704	0.0110	0.0168	0.0614	0.3748	0.1662	0.0128	0.0596	0.3535	0.0809	0.0689	0.0293	1.3	0.02	0.00	0.27	0.03	0.00	0.21	0.02	0.00	0.21	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004015	4s-08	R	Lawn and Garden Equipment (Res)	8	0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.12	0.00	1.27	0.66	0.01	5.72	0.09	0.00	0.98	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)

MWCG03: Chain saws < 4 HP Lawn and Garden category

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2265004016	4s-08	R	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.43	0.01	6.19				0.33	0.00	4.74	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004055	4s-09	Lawn & Garden Tractors	Lawn and Garden Equipment (Res)	9	0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	1.96	0.07	57.63	10.58	0.33	258.45	1.50	0.05	44.14	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004056	4s-09	Lawn & Garden Tractors	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	6.89	0.32	279.80				5.28	0.25	214.30	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004060	4s-10	Wood Splitters (Residential)	Lawn and Garden Equipment (Res)	10	0.0706	0.0108	0.0165	0.0611	0.3751	0.1665	0.0128	0.0594	0.3536	0.0807	0.0688	0.0297	1.3	0.03	0.00	0.27	0.14	0.00	1.22	0.02	0.00	0.21	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004061	4s-10	Wood Splitters (Commercial)	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0165	0.0611	0.3751	0.1665	0.0128	0.0594	0.3536	0.0807	0.0688	0.0297	1.3	0.09	0.00	1.32				0.07	0.00	1.01	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004035	4s-11	Snowblowers	Lawn and Garden Equipment (Res)	11	0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0127	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004036	4s-11	S MWCG03: SNOW blowers	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0127	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004066	4s-12	C inders	Lawn and Garden Equipment (Com)	12	0.0718	0.0117	0.0160	0.0637	0.3744	0.1660	0.0128	0.0608	0.3511	0.0760	0.0701	0.0293	1.3	0.57	0.02	7.00	0.68	0.02	5.37	0.43	0.02	5.37	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004071	4s-13	C uipment	Lawn and Garden Equipment (Com)	13	0.0706	0.0108	0.0165	0.0611	0.3752	0.1666	0.0128	0.0593	0.3537	0.0806	0.0687	0.0297	1.3	2.24	0.12	106.62	2.68	0.10	81.66	1.72	0.09	81.66	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004075	4s-14	O en Eqp.	Lawn and Garden Equipment (Res)	14	0.0706	0.0107	0.0164	0.0611	0.3751	0.1667	0.0127	0.0594	0.3537	0.0808	0.0687	0.0297	1.3	0.01	0.00	0.06	0.03	0.00	0.26	0.00	0.00	0.05	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265004076	4s-14	Other Lawn & Garden Eqp.	Lawn and Garden Equipment (Com)		0.0706	0.0107	0.0164	0.0611	0.3751	0.1667	0.0127	0.0594	0.3537	0.0808	0.0687	0.0297	1.3	0.02	0.00	0.29				0.01	0.00	0.22	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2265008005	4s-15	Airport Ground Support Equipment	Airport Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6895	0.2507	0.2507	0.0000	0.0000	1.2	0.00	0.00	1.07	0.05	0.02	0.90	0.00	0.00	0.90	1.000	1.000		Large SI Rule
2265003070	4s-16	Terminal Tractors	Airport Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6941	0.2484	0.2484	0.0000	0.0000	1.2	0.00	0.00	7.50	0.31	0.13	6.29	0.00	0.00	6.29	1.000	1.000		Large SI Rule
2265001030	4s-17+18	Offroad Motorcycles/ATVs	Recreational Equipment	1	0.0000	0.1270	0.2354	0.3638	0.0000	0.0000	0.0000	0.0000	0.0000	0.5104	0.1987	0.1750	1.6	1.05	0.01	6.82	0.65	0.01	4.23	0.65	0.01	4.23				
2265001030	4s-17+18	Offroad Motorcycles/ATVs	Recreational Equipment	2	0.0000	0.1249	0.2351	0.3638	0.0000	0.0000	0.0000	0.0000	0.0000	0.5151	0.2000	0.1731	1.6	0.01	0.00	0.12	0.01	0.00	0.07	0.01	0.00	0.07				
2265001030	4s-17+18	Offroad Motorcycles/ATVs	Recreational Equipment	3	0.0000	0.1263	0.2358	0.3636	0.0000	0.0000	0.0000	0.0000	0.0000	0.5105	0.1991	0.1749	1.6	0.05	0.00	0.27	0.03	0.00	0.17	0.03	0.00	0.17				
2265001050	4s-20	Golf Carts	Recreational Equipment	4	0.0000	0.1272	0.2352	0.3631	0.0000	0.0000	0.0000	0.0000	0.0000	0.5097	0.1996	0.1753	1.6	0.69	0.02	7.26	0.61	0.01	4.51	0.43	0.01	4.51	0.707	1.46		SI Rule
2265001020	4s-21	Snowmobiles	Recreational Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265001060	4s-22	Speciality Vehicles/Carts	Recreational Equipment	6	0.0000	0.1273	0.2351	0.3637	0.0000	0.0000	0.0000	0.0000	0.0000	0.5101	0.1991	0.1749	1.6	0.05	0.00	0.46	0.04	0.00	0.29	0.03	0.00	0.29	0.707	1.46		SI Rule
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	1	0.4030	0.4213	0.1392	0.0222	0.0176	0.0357	0.0071	0.0050	0.0674	0.0253	0.0562	0.0310	1.2	0.46	0.09	3.04	0.37	0.07	2.47	0.37	0.07	2.47				
2282010010	4s-24	Inboard/Sterndrive	Pleasure Craft	2	0.1479	0.0681	0.0226	0.0037	0.0027	0.0057	0.0393	0.0304	0.3857	0.1441	0.3371	0.1739	1.4	0.00	0.00	0.09	0.00	0.00	0.07	0.00	0.00	0.07				
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	3	0.1492	0.0700	0.0231	0.0037	0.0027	0.0059	0.0391	0.0302	0.3842	0.1435	0.3356	0.1731	1.4	1.80	0.60	20.86	1.33	0.44	15.33	1.32	0.44	15.33				
2282010005	4s-23+25	Inboard/Sterndrive	Pleasure Craft	4	0.2664	0.2423	0.0840	0.0227	0.0000	0.0191	0.0198	0.0188	0.2441	0.0804	0.1933	0.1066	1.3	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.02				
2282010015	4s-27	Personal Water Craft	Pleasure Craft	5	0.2069	0.1505	0.0434	0.0156	0.0000	0.0131	0.0272	0.0258	0.3085	0.1114	0.2831	0.1470	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265006005	4s-28	Generator Sets	Commercial Equipment	1	0.1291	0.0049	0.0202	0.0550	0.2638	0.2172	0.0571	0.0434	0.2883	0.0585	0.0578	0.0141	1.2	1.41	0.06	55.66	1.81	0.05	46.02	1.16	0.05	46.02	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265006010	4s-29	Pumps	Commercial Equipment	2	0.1292	0.0050	0.0202	0.0549	0.2640	0.2173	0.0570	0.0433	0.2882	0.0585	0.0579	0.0139	1.2	0.29	0.01	10.88	0.38	0.01	9.00	0.24	0.01	9.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265006015	4s-30	Air Compressors	Commercial Equipment	3	0.1291	0.0055	0.0199	0.0549	0.2640	0.2174	0.0568	0.0430	0.2885	0.0582	0.0577	0.0144	1.2	0.18	0.01	7.30	0.23	0.01	6.03	0.15	0.01	6.03	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265006020	4s-31	Gas Compressors	Commercial Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265006025	4s-32	Welders	Commercial Equipment	5	0.1290	0.0049	0.0204	0.0552	0.2639	0.2172	0.0571	0.0432	0.2881	0.0585	0.0579	0.0139	1.2	0.27	0.01	10.88	0.35	0.01	9.00	0.22	0.01	9.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265006030	4s-33	Pressure Washers	Commercial Equipment	6	0.1291	0.0046	0.0201	0.0548	0.2642	0.2172	0.0570	0.0434	0.2885	0.0584	0.0580	0.0138	1.2	0.10	0.00	3.56	0.13	0.00	2.95	0.08	0.00	2.95	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265003010	4s-34	Aerial Lifts	Industrial Equipment	1	0.1537	0.0108	0.0197	0.1439	0.2541	0.1616	0.0315	0.0642	0.2655	0.0702	0.0996	0.0181	1.3	0.13	0.05	2.63	0.10	0.04	2.03	0.10	0.04	2.03	1.000	1.000		Large SI Rule
2265003020	4s-35	Forklifts	Industrial Equipment	2	0.1576	0.0084	0.0170	0.1435	0.2595	0.1595	0.0345	0.0617	0.2589	0.0770	0.0968	0.0198	1.3	0.75	0.29	14.75	0.58	0.23	11.40	0.58	0.23	11.40	1.000	1.000		Large SI Rule
2265003030	4s-36	Sweepers/Scrubbers	Industrial Equipment	3	0.1529	0.0118	0.0215	0.1432	0.2589	0.1592	0.0345	0.0615	0.2583	0.0768	0.0981	0.0198	1.3	0.06	0.02	1.21	0.05	0.02	0.94	0.05	0.02	0.94	1.000	1.000		Large SI Rule
2265003040	4s-37	Other General Industrial Eqp	Industrial Equipment	4	0.1604	0.0130	0.0119	0.1423	0.2648	0.1562	0.0381	0.0582	0.2496	0.0849	0.0963	0.0219	1.3	0.03	0.02	0.73	0.03	0.01	0.56	0.02	0.02	0.56	0.707	1.46		SI Rule
2265003050	4s-38	Other Material Handling Eqp	Industrial Equipment	5	0.2427	0.0000	0.0000	0.2273	0.3045	0.1404	0.0000	0.1395	0.1709	0.0000	0.0000	0.0000	1.2	0.00	0.00	0.09	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000		Large SI Rule
2265002003	4s-39+42	Pavers	Construction and Mining Equipment	1	0.0719	0.0277	0.0253	0.0673	0.2932	0.2288	0.0405	0.0207	0.3038	0.0904	0.1026	0.0465	1.3	0.01	0.01	0.28	0.01	0.00	0.21	0.01	0.00	0.21	1.000	1.000		Large SI Rule
2265002006	4s-40	Tampers/Rammers	Construction and Mining Equipment	2	0.0730	0.0147	0.0266	0.0750	0.3044	0.2398	0.0320	0.0217	0.3120	0.0768	0.0974	0.0303	1.3	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.707	1.46		SI Rule
2265002009	4s-41	Plate Compactors	Construction and Mining Equipment	3	0.0729	0.0160	0.0249	0.0776	0.3043	0.2397	0.0324	0.0207	0.3107	0.0781	0.0991	0.0278	1.3	0.07	0.02	1.84	0.08	0.01	1.41	0.05	0.01	1.41	0.707	1.46		SI Rule
2265002003	4s-39+42	Pavers	Construction and Mining Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002015	4s-43	Rollers	Construction and Mining Equipment	5	0.0737	0.0157	0.0251	0.0761	0.3061	0.2411	0.0315	0.0204	0.3113	0.0767	0.0979	0.0263	1.3	0.10	0.02	2.41	0.11	0.01	1.85	0.08	0.01	1.85	0.707	1.46		SI Rule
2265002018	4s-44	Scrapers	Construction and Mining Equipment	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule
2265002021	4s-45	Paving Equipment	Construction and Mining Equipment	7	0.0732	0.0160	0.0248	0.0773	0.3044	0.2396	0.0324	0.0208	0.3107	0.0777	0.0989	0.0281	1.3	0.19	0.04	5.07	0.21	0.02	3.89	0.15	0.03	3.89	0.707	1.46		SI Rule
2265002024	4s-46	Surfacing Equipment	Construction and Mining Equipment	8	0.0722	0.0167	0.0254	0.0777	0.3034	0.2400	0.0325	0.0207	0.3100	0.0771	0.1004	0.0280	1.3	0.06	0.02	1.76	0.07	0.01	1.35	0.05	0.01	1.35	0.707	1.46		SI Rule
2265002027	4s-47	Signal Boards/Light Plants	Construction and Mining Equipment	9	0.0777	0.0000	0.0000	0.0727	0.3411	0.2695	0.0437	0.0446	0.2734	0.0976	0.0554	0.0000	1.3	0.00	0.00	0.07	0.00	0.00	0.06	0.00	0.00	0.06				
2265002030	4s-48	Trenchers	Construction and Mining Equipment	10	0.0737	0.0158	0.0260	0.0767	0.3032	0.2393	0.0323	0.0212	0.3115	0.0772	0.0993	0.0265	1.3	0.12	0.04	2.30	0.09	0.03	1.77	0.09	0.03	1.77	1.000	1.000		Large SI Rule
2265002033	4s-49	Bore/Drill Rigs	Construction and Mining Equipment	11	0.0712	0.0200	0.0274	0.0727	0.3004	0.2396	0.0292	0.0223	0.3099	0.0813	0.1016	0.0335	1.3	0.05	0.02	0.87	0.04	0.01	0.66	0.04	0.01	0.66	1.000	1.000		Large SI Rule
2265002036	4s-50	Excavators	Construction and Mining Equipment	12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002039	4s-51	Concrete/Industrial Saws	Construction and Mining Equipment	13	0.0727	0.0164	0.0256	0.0766	0.3059	0.2400	0.0324	0.0209	0.3114	0.0761	0.0972	0.0274	1.3	0.25	0.06	7.51	0.28	0.03	5.77	0.19	0.04	5.77	0.707	1.46		SI Rule
2265002042	4s-52	Cement & Mortar Mixers	Construction and Mining Equipment	14	0.0730	0.0163	0.0250	0.0773	0.3044	0.2396	0.0325	0.0207	0.3106	0.0778	0.0990	0.0280	1.3	0.10	0.02	2.55	0.11	0.01	1.95	0.08	0.01	1.95	0.707	1.46		SI Rule
2265002045	4s-53	Cranes	Construction and Mining Equipment	15	0.0694	0.0000	0.0326	0.0866	0.3190	0.2406	0.0260	0.0266	0.3255	0.0581	0.0989	0.0000	1.3	0.03	0.01	0.61	0.02	0.01	0.47	0.02	0.01	0.47	1.000	1.000		Large SI Rule
2265002048	4s-54	Graders	Construction and Mining Equipment	16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002051	4s-55	Off-highway Trucks	Construction and Mining Equipment	17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002054	4s-56	Crushing/Proc. Equipment	Construction and Mining Equipment	18	0.0571	0.0000	0.0000	0.1069	0.2866	0.2642	0.0644	0.0000	0.3216	0.1435	0.0815	0.0000	1.3	0.01	0.01	0.29	0.01	0.00	0.22	0.01	0.00	0.22	1.000	1.000		Large SI Rule
2265002057	4s-57	Rough Terrain Forklifts	Construction and Mining Equipment	19	0.0767	0.0000	0.0360	0.0957	0.3205	0.2364	0.0288	0.0294	0.3238	0.0642	0.0729	0.0000	1.3	0.03	0.01	0.57	0.02	0.01	0.44	0.02	0.01	0.44	1.000	1.000		Large SI Rule
2265002060	4s-58	Rubber Tire Loaders	Construction and Mining Equipment	20	0.0796	0.0246	0.0224	0.0894	0.2995	0.2393	0.0359	0.0183	0.2913	0.0800	0.0908	0.0412	1.3	0.04	0.02	0.68	0.03	0.01	0.52	0.03	0.01	0.52	1.000	1.000		Large SI Rule
2265002063	4s-59	Rubber Tire Tractor/Dozers	Construction and Mining Equipment	21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002066	4s-60	Tractors/Loaders/Backhoes	Construction and Mining Equipment	22	0.0883	0.0000	0.0000	0.0826	0.3322	0.2552	0.0497	0.0000	0.3107	0.1109	0.0630	0.0000	1.3	0.02	0.01	0.39	0.02	0.00	0.30	0.02	0.00	0.30	1.000	1.000		Large SI Rule
2265002069	4s-61	Crawler Tractor/Dozers	Construction and Mining Equipment	23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002072	4s-62	Skid Steer Loaders	Construction and Mining Equipment	24	0.0724	0.0155	0.0255	0.0790	0.3051	0.2395	0.0317	0.0208	0.3113	0.0758	0.1004	0.0260	1.3	0.08	0.03	1.61	0.06	0.02	1.24	0.06	0.02	1.24	1.000	1.000		Large SI Rule
2265002075	4s-63	Off-Highway Tractors	Construction and Mining Equipment	25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265002078	4s-64	Dumpers/Tenders	Construction and Mining Equipment	26	0.0733	0.0177	0.0258	0.0772	0.3045	0.2384	0.0335	0.0211	0.3095	0.0748	0.0980	0.0296	1.3	0.01	0.00	0.37	0.01	0.00	0.28	0.01	0.00	0.28	0.707	1.46		SI Rule
2265002081	4s-65	Other Construction Equipment	Construction and Mining Equipment	27	0.0539	0.0000	0.0000	0.1010	0.3383	0.2496	0.0608	0.0000	0.3038	0.1356	0.0769	0.0000	1.3	0.03	0.01	0.64	0.02	0.01	0.48	0.02	0.01	0.48	1.000	1.000		Large SI Rule
2265005010	4s-66	2-Wheel Tractors	Agricultural Equipment	1	0.0000	0.0833	0.1111	0.3333	0.1389	0.1111	0.0000	0.0000	0.0278	0.1389	0.0278	0.0278	1.0	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.707	1.46		SI Rule
2265005015	4s-67	Agricultural Tractors	Agricultural Equipment	2	0.0000	0.0667	0.1333	0.3333	0.1333	0.1333	0.0000	0.0000	0.0000	0.1333	0.0667	0.0000	1.0	0.02	0.01	0.34	0.02	0.01	0.34	0.02	0.01	0.34	1.000	1.000		Large SI Rule
2265005030	4s-68	Agricultural Mowers	Agricultural Equipment	3	0.0000	0.0750	0.1250	0.3500	0.1250	0.1000	0.0000	0.0000	0.0250	0.1500	0.0250	0.0250	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	0.707	1.46		SI Rule
2265005020	4s-69	Combines	Agricultural Equipment	4	0.0000	0.0000	0.2000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000		Large SI Rule
2265005035	4s-70	Sprayers	Agricultural Equipment	5	0.0000	0.0860	0.1183	0.3333	0.1290	0.1022	0.0000	0.0000	0.0215	0.1505	0.0323	0.0269	1.0	0.01	0.01	0.24	0.01	0.00	0.24	0.01	0.01	0.24	0.707	1.46		SI Rule
2265005025	4s-71	Balers	Agricultural Equipment	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2265005040	4s-72	Tillers > 6 HP	Agricultural Equipment	7	0.0000	0.0851	0.1184	0.3375	0.1295	0.1013	0.0000	0.0000	0.0191	0.1491	0.0343	0.0257	1.0	0.11	0.00	1.36	0.17	0.00	1.36	0.11	0.00	1.36	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265005045	4s-73	Swathers	Agricultural Equipment	8	0.0000	0.0843	0.1205	0.3373	0.1325	0.0964	0.0000	0.0000	0.0241	0.1446	0.0361	0.0241	1.0	0.13	0.04	1.92	0.13	0.04	1.92	0.13	0.04	1.92	1.000	1.000		Large SI Rule
2265005050	4s-74	Hydro Power Units	Agricultural Equipment	9	0.0000	0.0769	0.1282	0.3333	0.1282	0.1026	0.0000	0.0000	0.0256	0.1538	0.0256	0.0256	1.0	0.01	0.00	0.24	0.01	0.00	0.24	0.01	0.00	0.24	0.707	1.46		SI Rule
2265005055	4s-75	Other Agricultural Equipment	Agricultural Equipment	10	0.0000	0.0667	0.1333	0.3333	0.1333	0.1333	0.0000	0.0000	0.0000	0.1333	0.0667	0.0000	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	1.000	1.000		Large SI Rule
2265007005	4s-76	C MWCG03: Chainsaws > 4 HP	Logging Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)
2265007010	4s-77	S	Logging Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265007015	4s-78+79	F ch/Skidder	Logging Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265007015	4s-78+79	F ch/Skidder	Logging Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
																		29.35	2.24	768.70	33.15	1.87	593.31	22.39	1.72	593.31				
																		Daily Emissions (tpsd)			BASE YEAR EMIS			Annual EMISSIONS						
																		2002-VO	2002-NOx		1990-VO	1990-NO	1990-CO	Base Year 1990						
				Cat Typ	DC	Calvert	Charles	Frederick	Mont	PG	Alex	Alrington	Fairfax	Loudoun	Pr. Willia	Stafford		VOC	NOx		VOC	NOx		2-St VOC	2-St NOx	2-St CO (tpsd)				
2260004025	2s-01	Trimmers/Edgers/Brush Cutter	Lawn and Garden Equipment (Res)	1	0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.57	0.00	1.81	2.92	0.01	8.10	0.44	0.00	1.38	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004026	2s-01	Trimmers/Edgers/Brush Cutter	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	2.01	0.01	8.77				1.54	0.01	6.71	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004010	2s-02	Lawn mowers	Lawn and Garden Equipment (Res)	2	0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	1.18	0.00	2.94	6.36	0.00	13.16	0.90	0.00	2.25	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004011	2s-02	Lawn mowers	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	4.14	0.00	14.25				3.17	0.00	10.92	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004030	2s-03	Leafblowers/Vacuums	Lawn and Garden Equipment (Res)	3	0.0706	0.0107	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3537	0.0807	0.0688	0.0297	1.3	0.26	0.00	0.86	1.32	0.00	3.88	0.20	0.00	0.66	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004031	2s-03	Leafblowers/Vacuums	Lawn and Garden Equipment (Com)		0.0706	0.0107	0.0164	0.0612	0.3752	0.1666	0.0128	0.0593	0.3537	0.0807	0.0688	0.0297	1.3	0.90	0.00	4.20				0.69	0.00	3.22	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004040	2s-04	Rear Engine Riding Mowers	Lawn and Garden Equipment (Res)	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004041	2s-04	Rear Engine Riding Mowers	Lawn and Garden Equipment (Com)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004046	2s-05	Front Mowers	Lawn and Garden Equipment (Com)	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004020	2s-06	C MWCG03:	Lawn and Garden Equipment (Res)	6	0.0111	0.0576	0.0914	0.2213	0.2993	0.1079	0.0000	0.0352	0.2570	0.1383	0.1343	0.1169	1.5	1.05	0.00	2.43	4.77	0.01	9.66	0.71	0.00	1.65	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004021	2s-06	C MWCG03: Chain saws < 4 HP	Lawn and Garden Equipment (Com)		0.0111	0.0576	0.0914	0.2213	0.2993	0.1079	0.0000	0.0352	0.2570	0.1383	0.1343	0.1169	1.5	3.69	0.01	11.77				2.51	0.01	8.01	0.679	1.46	1	SI Rule - Phase 1 and 2 (HH)
2260004051	2s-07	S Lawn and Garden category	Lawn and Garden Equipment (Com)	7	0.0705	0.0110	0.0172	0.0617	0.3748	0.1660	0.0126	0.0595	0.3535	0.0803	0.0695	0.0289	1.3	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004015	2s-08	R MWCG03:	Lawn and Garden Equipment (Res)	8	0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0127	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.00	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.01	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004016	2s-08	R MWCG03: Tillers < 5 HP	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0165	0.0612	0.3752	0.1666	0.0127	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.01	0.00	0.03				0.01	0.00	0.03	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004055	2s-09	L s	Lawn and Garden Equipment (Res)	9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004056	2s-09	L Lawn and Garden category s	Lawn and Garden Equipment (Com)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004060	2s-10	W ntial)	Lawn and Garden Equipment (Res)	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004061	2s-10	Wood Splitters (Commercial)	Lawn and Garden Equipment (Com)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004035	2s-11	Snowblowers	Lawn and Garden Equipment (Res)	11	0.0706	0.0108	0.0165	0.0612	0.3751	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004036	2s-11	Snowblowers	Lawn and Garden Equipment (Com)		0.0706	0.0108	0.0165	0.0612	0.3751	0.1666	0.0128	0.0593	0.3536	0.0807	0.0688	0.0297	1.3	0.00	0.00	0.00				0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004066	2s-12	Chippers/Stump Grinders	Lawn and Garden Equipment (Com)	12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004071	2s-13	Commercial Turf Equipment	Lawn and Garden Equipment (Com)	13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004075	2s-14	Other Lawn & Garden Eqp.	Lawn and Garden Equipment (Res)	14	0.0706	0.0107	0.0164	0.0611	0.3751	0.1667	0.0127	0.0594	0.3537	0.0808	0.0687	0.0297	1.3	0.01	0.00	0.03	0.06	0.00	0.11	0.01	0.00	0.02	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260004076	2s-14	Other Lawn & Garden Eqp.	Lawn and Garden Equipment (Com)		0.0706	0.0107	0.0164	0.0611	0.3751	0.1667	0.0127	0.0594	0.3537	0.0808	0.0687	0.0297	1.3	0.04	0.00	0.12				0.03	0.00	0.09	0.643	0.91	1	SI Rule - Phase 1 and 2 (NHH)
2260008005	2s-15	Airport Ground Support Equipment	Airport Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule
2260003070	2s-16	Terminal Tractors	Airport Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6941	0.2484	0.2484	0.0000	0.0000	1.2	0.00	0.00	0.05	0.00	0.01	0.04	0.00	0.00	0.04	1.000	1.000		Large SI Rule
2260001030	2s-17+18	C MWCG03: Vs	Recreational Equipment	1	0.0000	0.1270	0.2354	0.3638	0.0000	0.0000	0.0000	0.0000	0.0000	0.5104	0.1987	0.1750	1.6	0.53	0.00	0.63	0.33	0.00	0.39	0.33	0.00	0.39				

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2260001030	2s-17+18	MWCG03: Vs	Recreational Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260001030	2s-17+18	MWCG03: Vs	Recreational Equipment	3	0.0000	0.1263	0.2358	0.3636	0.0000	0.0000	0.0000	0.0000	0.0000	0.5104	0.1991	0.1749	1.6	0.62	0.00	0.72	0.39	0.00	0.45	0.39	0.00	0.45									
2260001050	2s-20	G	Recreational Equipment	4	0.0000	0.1272	0.2352	0.3631	0.0000	0.0000	0.0000	0.0000	0.0000	0.5097	0.1996	0.1753	1.6	1.07	0.00	1.83	0.95	0.00	1.14	0.67	0.00	1.14	0.707	1.46		SI Rule						
2260001020	2s-21	S	Recreational Equipment	5	0.0000	0.1268	0.2350	0.3642	0.0000	0.0000	0.0000	0.0000	0.0000	0.5109	0.1983	0.1753	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260001060	2s-22	S s	Recreational Equipment	6	0.0000	0.1273	0.2351	0.3637	0.0000	0.0000	0.0000	0.0000	0.0000	0.5101	0.1991	0.1749	1.6	0.44	0.00	0.73	0.39	0.00	0.45	0.27	0.00	0.45	0.707	1.46		SI Rule						
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2282005010	2s-24	Outboard	Pleasure Craft	2	0.1479	0.0681	0.0226	0.0037	0.0028	0.0057	0.0393	0.0303	0.3858	0.1441	0.3370	0.1738	1.4	10.25	0.13	21.41	8.50	0.08	15.73	7.53	0.09	15.73	0.891	1.110		Marine Rule						
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2282005005	2s-23+25	Inboard/Sterndrive	Pleasure Craft	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2282005015	2s-27	P ft	Pleasure Craft	5	0.2006	0.1415	0.0472	0.0082	0.0053	0.0119	0.0318	0.0253	0.3197	0.1197	0.2797	0.1437	1.3	0.02	0.00	0.04	0.02	0.00	0.03	0.02	0.00	0.03	0.891	1.110		Marine Rule						
2260006005	2s-28	G	Commercial Equipment	1	0.1291	0.0049	0.0202	0.0550	0.2638	0.2172	0.0571	0.0434	0.2883	0.0585	0.0578	0.0141	1.2	1.32	0.00	3.93	1.55	0.00	3.25	1.09	0.00	3.25	0.707	1.46		SI Rule						
2260006010	2s-29	P	Commercial Equipment	2	0.1292	0.0050	0.0202	0.0549	0.2640	0.2173	0.0570	0.0433	0.2882	0.0585	0.0579	0.0139	1.2	0.02	0.01	0.57	0.03	0.01	0.47	0.02	0.00	0.47	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)						
2260006015	2s-30	A	Commercial Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)						
2260006020	2s-31	Gas Compressors	Commercial Equipment	4	0.0000	0.0000	0.0000	0.0000	0.3920	0.3800	0.0000	0.0000	0.4067	0.0000	0.0000	0.0000	1.2	0.01	0.01	0.25	0.01	0.01	0.21	0.01	0.01	0.21	1.000	1.000		Large SI Rule						
2260006025	2s-32	Welders	Commercial Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)						
2260006030	2s-33	Pressure Washers	Commercial Equipment	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)						
2260003010	2s-34	Aerial Lifts	Industrial Equipment	1	0.1537	0.0108	0.0197	0.1439	0.2541	0.1616	0.0315	0.0642	0.2655	0.0702	0.0996	0.0181	1.3	0.01	0.02	0.11	0.01	0.02	0.09	0.01	0.02	0.09	1.000	1.000		Large SI Rule						
2260003020	2s-35	Forklifts	Industrial Equipment	2	0.1576	0.0084	0.0170	0.1435	0.2595	0.1595	0.0345	0.0617	0.2589	0.0770	0.0968	0.0198	1.3	0.50	1.26	5.83	0.39	0.97	4.50	0.39	0.97	4.50	1.000	1.000		Large SI Rule						
2260003030	2s-36	Sweepers/Scrubbers	Industrial Equipment	3	0.1529	0.0118	0.0215	0.1431	0.2589	0.1592	0.0345	0.0615	0.2583	0.0768	0.0981	0.0198	1.3	0.02	0.05	0.21	0.01	0.04	0.16	0.01	0.04	0.16	1.000	1.000		Large SI Rule						
2260003040	2s-37	Other General Industrial Eqp	Industrial Equipment	4	0.1604	0.0130	0.0119	0.1423	0.2648	0.1562	0.0381	0.0582	0.2496	0.0849	0.0964	0.0218	1.3	0.06	0.00	0.16	0.06	0.00	0.12	0.04	0.00	0.12	0.707	1.46		SI Rule						
2260003050	2s-38	Other Material Handling Eqp	Industrial Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002003	2s-39+42	Pavers	Construction and Mining Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002006	2s-40	Tampers/Rammers	Construction and Mining Equipment	2	0.0731	0.0145	0.0286	0.0750	0.3045	0.2399	0.0319	0.0217	0.3119	0.0770	0.0975	0.0305	1.3	0.23	0.00	0.68	0.25	0.00	0.52	0.18	0.00	0.52	0.707	1.46		SI Rule						
2260002009	2s-41	Plate Compactors	Construction and Mining Equipment	3	0.0729	0.0160	0.0249	0.0776	0.3043	0.2397	0.0324	0.0207	0.3107	0.0781	0.0991	0.0278	1.3	0.36	0.00	1.07	0.39	0.00	0.82	0.27	0.00	0.82	0.707	1.46		SI Rule						
2260002003	2s-39+42	Pavers	Construction and Mining Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002015	2s-43	Rollers	Construction and Mining Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002018	2s-44	Scrapers	Construction and Mining Equipment	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002021	2s-45	Paving Equipment	Construction and Mining Equipment	7	0.0732	0.0160	0.0248	0.0773	0.3044	0.2396	0.0324	0.0208	0.3107	0.0777	0.0989	0.0281	1.3	0.23	0.00	0.67	0.25	0.00	0.52	0.18	0.00	0.52	0.707	1.46		SI Rule						
2260002024	2s-46	Surfacing Equipment	Construction and Mining Equipment	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002027	2s-47	Signal Boards/Light Plants	Construction and Mining Equipment	9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002030	2s-48	Trenchers	Construction and Mining Equipment	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule						
2260002033	2s-49	Bore/Drill Rigs	Construction and Mining Equipment	11	0.0712	0.0200	0.0274	0.0727	0.3003	0.2396	0.0291	0.0223	0.3097	0.0814	0.1016	0.0336	1.3	0.02	0.00	0.04	0.01	0.00	0.03	0.01	0.00	0.03	1.000	1.000		Large SI Rule						
2260002036	2s-50	Excavators	Construction and Mining Equipment	12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.000	1.000		Large SI Rule						
2260002039	2s-51	Concrete/Industrial Saws	Construction and Mining Equipment	13	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002042	2s-52	Cement & Mortar Mixers	Construction and Mining Equipment	14	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002045	2s-53	Cranes	Construction and Mining Equipment	15	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002048	2s-54	Graders	Construction and Mining Equipment	16	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002051	2s-55	Off-highway Trucks	Construction and Mining Equipment	17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002054	2s-56	Crushing/Proc. Equipment	Construction and Mining Equipment	18	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002057	2s-57	Rough Terrain Forklifts	Construction and Mining Equipment	19	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002060	2s-58	Rubber Tire Loaders	Construction and Mining Equipment	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002063	2s-59	Rubber Tire Tractor/Dozers	Construction and Mining Equipment	21	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002066	2s-60	Tractors/Loaders/Backhoes	Construction and Mining Equipment	22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002069	2s-61	Crawler Tractor/Dozers	Construction and Mining Equipment	23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002072	2s-62	Skid Steer Loaders	Construction and Mining Equipment	24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002075	2s-63	Off-Highway Tractors	Construction and Mining Equipment	25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260002078	2s-64	Dumpers/Tenders	Construction and Mining Equipment	26	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260002081	2s-65	Other Construction Equipment	Construction and Mining Equipment	27	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260005010	2s-66	2-Wheel Tractors	Agricultural Equipment	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260005015	2s-67	Agricultural Tractors	Agricultural Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260005030	2s-68	Agricultural Mowers	Agricultural Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260005020	2s-69	Combines	Agricultural Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260005035	2s-70	Sprayers	Agricultural Equipment	5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260005025	2s-71	Balers	Agricultural Equipment	6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260005040	2s-72	Tillers > 6 HP	Agricultural Equipment	7	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260005045	2s-73	Swathers	Agricultural Equipment	8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260005050	2s-74	Hydro Power Units	Agricultural Equipment	9	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.707	1.46		SI Rule						
2260005055	2s-75	Other Agricultural Equipment	Agricultural Equipment	10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260007005	2s-76	C	Logging Equipment	1	0.0110	0.0392	0.0675	0.1240	0.2496	0.0973	0.0000	0.0314	0.1915	0.0581	0.0832	0.0471	1.0	0.34	0.00	1.54	0.53	0.00	1.54	0.34	0.00	1.54	0.643	0.91		SI Rule - Phase 1 and 2 (NHH)						
2260007010	2s-77	S	Logging Equipment	2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260007015	2s-78+79	F ch/Skidder	Logging Equipment	3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									
2260007015	2s-78+79	F ch/Skidder	Logging Equipment	4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00									

MWCG03: ATVs + OffRoad Motorcycles

MWCG03: Sailboat Auxiliary Outboard Engines

MWCG03: Chainsaws > 4 HP

2005 Area Source VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2005 CONTROLLED AREA SOURCE INVENTORY

	VOC				NOx			
	DC	MD	VA	**Total**	DC	MD	VA	**Total**
1990 BASELINE	20.1	94.0	77.0	191.1	4.3	15.8	27.6	47.7
2005 UNCONTROLLED	20.2	115.7	105.1	240.9	4.3	20.0	40.8	65.1
2005 CONTROLLED	15.4	70.4	61.5	147.3	4.1	17.8	38.5	60.4

		VOC Benefit				NOx Benefit			
Measure #	Measure Name	DC	MD	VA	**Total**	DC	MD	VA	**Total**
7.2.2	Stage II Vapor Recovery	0.0	8.0	7.0	**15.1**	0.0	0.0	0.0	**0.0**
7.2.6	Gasoline Volatility Controls	0.1	1.2	1.0	**2.3**	0.0	0.0	0.0	**0.0**
7.3.1	Architectural and Industrial Coatings	1.7	8.9	6.9	**17.5**	0.0	0.0	0.0	**0.0**
7.3.2	Consumer Products	0.5	1.9	1.8	**4.3**	0.0	0.0	0.0	**0.0**
7.3.4	Industrial Cleaning Solvents	0.0	0.4	0.5	**1.0**	0.0	0.0	0.0	**0.0**
7.3.5	Locomotives	0.0	0.0	0.0	**0.0**	0.1	1.3	1.6	**3.1**
7.4.3	Surface Cleaning/Degreasing Technology measures	0.1	2.6	1.7	**4.4**	0.0	0.0	0.0	**0.0**
7.4.4	Landfills - MD & VA	0.0	1.3	1.2	**2.5**	0.0	0.0	0.0	**0.0**
7.4.5	Seasonal Open Burning Restrictions - MD & VA	0.0	4.4	3.0	**7.4**	0.0	0.9	0.6	**1.6**
7.4.6	Stage I Vapor Recovery Expansion - MD & VA	0.0	1.0	0.6	**1.6**	0.0	0.0	0.0	**0.0**
7.4.8	Graphic Arts Controls	0.6	1.6	1.8	**4.0**	0.0	0.0	0.0	**0.0**
7.4.9	Autobody Refinishing	0.5	6.0	3.4	**9.8**	0.0	0.0	0.0	**0.0**
7.4.11	OTC Portable Fuel Containers	0.2	1.7	0.7	**2.6**	0.0	0.0	0.0	**0.0**
7.4.12	OTC Architectural & Industrial Maintenance Coatings	1.1	6.2	5.0	**12.3**	0.0	0.0	0.0	**0.0**
7.4.14	OTC Solvent Cleaning	0.0	0.0	9.0	**9.0**	0.0	0.0	0.0	**0.0**
TOTAL AREA SOURCE REDUCTIONS		4.7	45.3	43.6	**93.6**	0.1	2.3	2.3	**4.7**

1990 Area Source Inventory - VOC
VOC - Ozone Nonattainment Area Jurisdictional Estimates
Tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	1.653	0.000	0.097	0.340	0.545	0.000	0.000	0.000	0.000	0.000	0.315	0.000	0.356	0.671	0.982
gas	Submerged/Balanced	3.480	0.287	0.000	0.000	0.000	0.540	0.593	0.227	0.229	1.270	0.000	0.334	0.000	2.060	1.133
gas	Vehicle Fueling	20.443	0.511	0.143	0.501	0.805	4.352	4.829	0.914	0.915	5.108	0.469	1.364	0.532	9.302	10.630
gas	Underground Tank Breathing	1.955	0.159	0.013	0.045	0.073	0.397	0.436	0.082	0.083	0.458	0.042	0.120	0.047	0.832	0.964
gas	Losses Fom Gasoline Tank Trucks in	0.080	0.006	0.000	0.001	0.002	0.011	0.012	0.005	0.005	0.026	0.002	0.007	0.003	0.048	0.026
emp	Aircraft Refueling	0.215	0.000	0.000	0.000	0.008	0.003	0.139	0.021	0.000	0.014	0.019	0.011	0.000	0.065	0.150
emp	Petroleum Vessel Loading and Unloac	0.029	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.017	0.000
pop	Dry Cleaning	6.210	0.716	0.000	0.000	0.133	1.605	0.429	0.784	0.410	1.575	0.115	0.443	0.000	3.327	2.167
emp	Surface Cleaning	7.110	0.267	0.045	0.142	0.326	1.436	1.406	0.179	0.223	1.930	0.185	0.904	0.067	3.488	3.355
	Surface Coatings															
pop	Architectural	32.142	4.972	0.421	0.829	1.230	6.201	5.974	1.400	0.911	6.945	0.706	2.051	0.502	12.515	14.655
pop	Traffic Markings	3.772	0.584	0.049	0.097	0.144	0.728	0.701	0.164	0.107	0.815	0.083	0.241	0.059	1.469	1.719
emp	Auto Refinishing	15.138	1.333	0.000	0.447	0.785	3.566	2.788	0.000	0.961	3.999	0.494	0.765	0.000	6.219	7.586
emp	Industrial Product	19.017	0.644	0.036	0.968	2.671	1.333	10.495	0.151	0.219	1.249	0.466	0.728	0.057	2.870	15.503
emp	Special Purpose	11.783	2.568	0.079	0.156	0.231	1.165	1.122	0.723	0.470	3.587	0.364	1.059	0.259	6.462	2.753
pop	Graphic Arts	7.239	1.517	0.074	0.253	0.099	1.693	0.259	0.427	0.278	1.881	0.215	0.390	0.153	3.344	2.378
pop	Asphalt Paving	0.021	0.003	0.000	0.001	0.001	0.004	0.004	0.001	0.001	0.005	0.000	0.001	0.000	0.008	0.010
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Use	33.860	5.238	0.443	0.873	1.296	6.533	6.294	1.475	0.960	7.316	0.743	2.161	0.528	13.183	15.439
emp	Synthetic Organic Chemical Storage T	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car anc	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	1.667	0.258	0.022	0.043	0.064	0.321	0.310	0.073	0.047	0.360	0.037	0.106	0.026	0.649	0.760
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.022	0.013	0.000	0.000	0.000	0.000	0.001	0.001	0.005	0.001	0.000	0.000	0.000	0.008	0.001
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	s Waste Treatment, Storage & Disposa	0.000													0.000	0.000
pop	Municipal Landfills	3.021	0.000	0.000	0.115	0.341	0.357	0.844	0.000	0.000	1.046	0.035	0.119	0.164	1.364	1.657
pop	On-Site Incineration	0.158	0.000	0.001	0.004	0.005	0.010	0.010	0.014	0.009	0.072	0.007	0.021	0.005	0.128	0.030
na	Open Burning	7.910	0.000	0.415	1.494	1.731	0.652	0.295	0.000	0.000	1.835	1.038	0.450	0.000	3.323	4.587
pop	Fuel Oil Consumption	0.126	0.019	0.002	0.003	0.005	0.024	0.023	0.006	0.004	0.027	0.003	0.008	0.002	0.050	0.057
pop	Coal Consumption*	0.546	0.004	0.001	0.004	0.008	0.002	0.006	0.066	0.045	0.312	0.044	0.046	0.008	0.521	0.021
pop	Natural Gas and Liquified Petroleum G	0.348	0.098	0.000	0.004	0.001	0.043	0.040	0.020	0.011	0.086	0.010	0.028	0.007	0.162	0.088
hhs	Other Fuels Consumption (Residential	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.313	0.373	0.000	0.000	0.000	0.001	0.000	0.105	0.068	0.521	0.053	0.154	0.038	0.939	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tanks	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	1.596	0.000	0.000	0.000	0.000	0.000	0.000	0.345	0.000	0.626	0.626	0.000	0.000	1.596	0.000
pop	General Aviation Airports	0.302	0.000	0.000	0.005	0.039	0.027	0.018	0.067	0.000	0.030	0.056	0.060	0.000	0.213	0.089
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.408	0.114	0.000	0.021	0.035	0.015	0.075	0.014	0.016	0.044	0.000	0.039	0.035	0.148	0.146
	1990 Area Source Total	***191.132***	***20.129***	***2.054***	***6.597***	***12.889***	***33.986***	***38.498***	***7.404***	***6.047***	***41.572***	***7.072***	***11.904***	***2.980***	***76.979***	***94.024***

Growth Rates, Round 6.3	Area Total	Dist. of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	Pr. Will County	Stafford County	VA Total	MD Total
Emp	1.238	0.964	1.622	1.460	2.022	1.273	1.153	1.145	1.117	1.450	2.800	1.481	2.891	1.432	1.283
Pop	1.267	1.000	1.569	1.325	1.442	1.221	1.175	1.155	1.228	1.273	2.778	1.561	1.749	1.408	1.237
Households	1.280	1.057	1.607	1.409	1.449	1.231	1.180	1.158	1.242	1.299	2.769	1.596	1.859	1.415	1.247
Gas	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206	1.206

2005 Area Source Inventory - VOC - UNCONTROLLED
VOC - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.2
Tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	1.994	0.000	0.117	0.410	0.657	0.000	0.000	0.000	0.000	0.000	0.380	0.000	0.429	0.809	1.184
gas	Submerged/Balanced	4.197	0.346	0.000	0.000	0.000	0.651	0.715	0.274	0.276	1.532	0.000	0.403	0.000	2.484	1.366
gas	Vehicle Fueling	24.654	0.616	0.172	0.604	0.971	5.249	5.824	1.102	1.103	6.160	0.566	1.645	0.642	11.218	12.820
gas	Underground Tank Breathing	2.358	0.192	0.016	0.054	0.088	0.479	0.526	0.099	0.100	0.552	0.051	0.145	0.057	1.003	1.163
gas	Losses Fom Gasoline Tank Trucks in	0.096	0.007	0.000	0.001	0.002	0.013	0.014	0.006	0.006	0.031	0.002	0.008	0.004	0.058	0.031
emp	Aircraft Refueling	0.294	0.000	0.000	0.001	0.016	0.003	0.160	0.024	0.000	0.021	0.053	0.016	0.000	0.114	0.180
emp	Petroleum Vessel Loading and Unloac	0.036	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.025	0.000
pop	Dry Cleaning	7.797	0.716	0.000	0.000	0.192	1.960	0.504	0.906	0.503	2.005	0.319	0.692	0.000	4.425	2.656
emp	Surface Cleaning	9.949	0.257	0.073	0.207	0.659	1.828	1.621	0.205	0.249	2.799	0.518	1.339	0.194	5.303	4.389
	Surface Coatings															
pop	Architectural	40.713	4.972	0.661	1.098	1.774	7.571	7.019	1.617	1.119	8.841	1.961	3.202	0.878	17.618	18.124
pop	Traffic Markings	4.778	0.584	0.077	0.129	0.208	0.889	0.824	0.189	0.131	1.037	0.231	0.376	0.103	2.068	2.126
emp	Auto Refinishing	20.667	1.285	0.000	0.653	1.588	4.540	3.215	0.000	1.073	5.799	1.383	1.133	0.000	9.388	9.994
emp	Industrial Product	26.068	0.621	0.058	1.413	5.402	1.697	12.101	0.173	0.245	1.811	1.305	1.078	0.165	4.776	20.671
emp	Special Purpose	15.966	2.476	0.128	0.228	0.467	1.483	1.294	0.828	0.525	5.201	1.019	1.568	0.749	9.890	3.600
pop	Graphic Arts	9.185	1.517	0.116	0.335	0.143	2.067	0.304	0.493	0.341	2.395	0.597	0.609	0.268	4.703	2.966
	Graphic Arts - Lithography		*0.971*	*0.074*	*0.215*	*0.091*	*1.323*	*0.195*	*0.316*	*0.218*	*1.532*	*0.382*	*0.390*	*0.171*	*3.010*	*1.898*
	Graphic Arts - Flexographic		*0.273*	*0.021*	*0.060*	*0.026*	*0.372*	*0.055*	*0.089*	*0.061*	*0.431*	*0.108*	*0.110*	*0.048*	*0.846*	*0.534*
	Graphic Arts - Rotogravure		*0.273*	*0.021*	*0.060*	*0.026*	*0.372*	*0.055*	*0.089*	*0.061*	*0.431*	*0.108*	*0.110*	*0.048*	*0.846*	*0.534*
pop	Asphalt Paving	0.026	0.003	0.000	0.001	0.001	0.005	0.005	0.001	0.001	0.006	0.000	0.002	0.000	0.010	0.012
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Use	42.887	5.238	0.695	1.157	1.869	7.977	7.395	1.704	1.179	9.313	2.064	3.373	0.923	18.557	19.093
emp	Synthetic Organic Chemical Storage T	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car and	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	2.112	0.258	0.035	0.057	0.092	0.392	0.364	0.084	0.058	0.458	0.103	0.165	0.045	0.914	0.940
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.026	0.014	0.000	0.000	0.000	0.000	0.001	0.001	0.007	0.002	0.000	0.000	0.000	0.011	0.002
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	s Waste Treatment, Storage & Disposa	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Municipal Landfills	3.973	0.000	0.000	0.152	0.492	0.436	0.992	0.000	0.000	1.332	0.097	0.186	0.287	1.901	2.072
pop	On-Site Incineration	0.218	0.000	0.002	0.005	0.007	0.012	0.012	0.016	0.011	0.092	0.019	0.033	0.009	0.180	0.038
na	Open Burning	7.910	0.000	0.415	1.494	1.731	0.652	0.295	0.000	0.000	1.835	1.038	0.450	0.000	3.323	4.587
pop	Fuel Oil Consumption	0.160	0.019	0.003	0.004	0.007	0.029	0.027	0.007	0.005	0.034	0.008	0.012	0.003	0.071	0.071
pop	Coal Consumption*	0.769	0.004	0.002	0.005	0.012	0.002	0.007	0.076	0.055	0.397	0.122	0.072	0.014	0.737	0.028
pop	Natural Gas and Liquified Petroleum G	0.434	0.098	0.000	0.005	0.001	0.053	0.047	0.023	0.014	0.109	0.028	0.044	0.012	0.230	0.106
hhs	Other Fuels Consumption (Residential	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.696	0.373	0.000	0.000	0.000	0.001	0.000	0.121	0.084	0.663	0.147	0.240	0.066	1.322	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tanks	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	1.340	0.000	0.000	0.000	0.000	0.000	0.000	0.380	0.000	0.480	0.480	0.000	0.000	1.340	0.000
pop	General Aviation Airports	0.481	0.000	0.000	0.006	0.057	0.033	0.021	0.078	0.000	0.039	0.154	0.093	0.000	0.364	0.117
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.574	0.110	0.000	0.031	0.071	0.019	0.086	0.016	0.018	0.064	0.000	0.058	0.101	0.257	0.207
	2005 Area Source Total Uncontrolled	***240.927***	***20.150***	***2.782***	***8.303***	***18.817***	***41.008***	***44.769***	***8.563***	***7.174***	***53.449***	***13.594***	***17.236***	***5.082***	***105.098***	***115.679***

2005 Area Source Inventory - CONTROLLED
VOC - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.2
tons per day

	Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
	Tank Truck Unloading (Stage I)															
gas	Submerged	0.441	0.000	0.021	0.074	0.119	0.000	0.000	0.000	0.000	0.000	0.106	0.000	0.120	0.227	0.214
gas	Submerged/Balanced	4.197	0.346	0.000	0.000	0.000	0.651	0.715	0.274	0.276	1.532	0.000	0.403	0.000	2.484	1.366
gas	Vehicle Fueling	7.299	0.559	0.048	0.169	0.272	1.472	1.633	0.309	0.309	1.727	0.159	0.461	0.180	3.146	3.595
gas	Underground Tank Breathing	2.358	0.192	0.016	0.054	0.088	0.479	0.526	0.099	0.100	0.552	0.051	0.145	0.057	1.003	1.163
gas	Losses Fom Gasoline Tank Trucks in	0.096	0.007	0.000	0.001	0.002	0.013	0.014	0.006	0.006	0.031	0.002	0.008	0.004	0.058	0.031
emp	Aircraft Refueling	0.294	0.000	0.000	0.001	0.016	0.003	0.160	0.024	0.000	0.021	0.053	0.016	0.000	0.114	0.180
emp	Petroleum Vessel Loading and Unloac	0.036	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.000	0.000	0.000	0.025	0.000
pop	Dry Cleaning	7.797	0.716	0.000	0.000	0.192	1.960	0.504	0.906	0.503	2.005	0.319	0.692	0.000	4.425	2.656
emp	Surface Cleaning	4.587	0.149	0.023	0.064	0.204	0.566	0.502	0.119	0.145	1.625	0.301	0.777	0.112	3.078	1.359
	Surface Coatings	0.000														
pop	Architectural	32.570	3.978	0.528	0.879	1.419	6.057	5.616	1.294	0.895	7.073	1.569	2.561	0.702	14.094	14.499
pop	Traffic Markings	3.822	0.467	0.062	0.103	0.166	0.711	0.659	0.152	0.105	0.830	0.184	0.301	0.083	1.655	1.700
emp	Auto Refinishing	10.861	0.826	0.000	0.261	0.635	1.816	1.286	0.000	0.690	3.728	0.889	0.728	0.000	6.037	3.998
emp	Industrial Product	20.855	0.497	0.047	1.131	4.321	1.358	9.681	0.138	0.196	1.449	1.044	0.863	0.132	3.821	16.537
emp	Special Purpose	12.773	1.980	0.103	0.182	0.374	1.186	1.035	0.662	0.420	4.161	0.815	1.255	0.599	7.912	2.880
	Graphic Arts															
pop	*Graphic Arts - Lithography (64%)*	*3.227*	*0.602*	*0.030*	*0.086*	*0.037*	*0.529*	*0.078*	*0.196*	*0.135*	*0.950*	*0.237*	*0.242*	*0.106*	*1.866*	*0.759*
pop	*Graphic Arts - Flexographic (16%)*	*0.997*	*0.169*	*0.012*	*0.034*	*0.015*	*0.211*	*0.031*	*0.055*	*0.038*	*0.267*	*0.067*	*0.068*	*0.030*	*0.525*	*0.303*
pop	*Graphic Arts - Rotogravure (16%)*	*0.959*	*0.169*	*0.010*	*0.030*	*0.013*	*0.185*	*0.027*	*0.055*	*0.038*	*0.267*	*0.067*	*0.068*	*0.030*	*0.525*	*0.265*
pop	Asphalt Paving	0.026	0.003	0.000	0.001	0.001	0.005	0.005	0.001	0.001	0.006	0.000	0.002	0.000	0.010	0.012
na	Pesticide Application	7.308	0.015	0.167	0.152	2.206	2.707	0.984	0.000	0.000	0.032	0.830	0.127	0.088	1.077	6.216
pop	Commercial/Consumer Solvent Use	38.621	4.717	0.626	1.042	1.683	7.183	6.660	1.534	1.062	8.387	1.859	3.038	0.832	16.710	17.193
emp	Synthetic Organic Chemical Storage T	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Barge, Tank, Tank Truck, Rail Car and	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Bakeries	2.112	0.258	0.035	0.057	0.092	0.392	0.364	0.084	0.058	0.458	0.103	0.165	0.045	0.914	0.940
pop	Breweries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Wineries	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.000
pop	Distilleries	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Oil Spills	0.101	0.076	0.000	0.005	0.003	0.006	0.010	0.000	0.000	0.001	0.000	0.000	0.000	0.001	0.024
hhs	Publicly Owned Treatment Works	0.026	0.014	0.000	0.000	0.000	0.000	0.001	0.001	0.007	0.002	0.000	0.000	0.000	0.011	0.002
emp	Industrial Wastewater Treatment	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
emp	Hazardous Waste Treatment, Storage	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Municipal Landfills	1.481	0.000	0.000	0.057	0.183	0.163	0.370	0.000	0.000	0.496	0.036	0.069	0.107	0.709	0.772
pop	On-Site Incineration	0.218	0.000	0.002	0.005	0.007	0.012	0.012	0.016	0.011	0.092	0.019	0.033	0.009	0.180	0.038
na	Open Burning	0.479	0.000	0.013	0.048	0.055	0.021	0.009	0.000	0.000	0.184	0.104	0.045	0.000	0.332	0.147
pop	Fuel Oil Consumption	0.160	0.019	0.003	0.004	0.007	0.029	0.027	0.007	0.005	0.034	0.008	0.012	0.003	0.071	0.071
pop	Coal Consumption*	0.769	0.004	0.002	0.005	0.012	0.002	0.007	0.076	0.055	0.397	0.122	0.072	0.014	0.737	0.028
pop	Natural Gas and Liquified Petroleum G	0.434	0.098	0.000	0.005	0.001	0.053	0.047	0.023	0.014	0.109	0.028	0.044	0.012	0.230	0.106
hhs	Other Fuels Consumption (Residential	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Small Electric Utility Boilers	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Slash/Prescribed Burning	0.008	0.000	0.000	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008
na	Forest Fires	0.504	0.000	0.032	0.072	0.073	0.142	0.178	0.000	0.000	0.001	0.001	0.003	0.002	0.007	0.497
na	Agricultural Burning	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
pop	Structure Fires	1.696	0.373	0.000	0.000	0.000	0.001	0.000	0.121	0.084	0.663	0.147	0.240	0.066	1.322	0.001
na	Orchard Heaters	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
na	Leaking Underground Storage Tanks	1.462	0.342	0.014	0.014	0.028	0.112	0.126	0.140	0.070	0.322	0.112	0.140	0.042	0.826	0.294
emp	Commercial Airports	1.340	0.000	0.000	0.000	0.000	0.000	0.000	0.380	0.000	0.480	0.480	0.000	0.000	1.340	0.000
pop	General Aviation Airports	0.481	0.000	0.000	0.006	0.057	0.033	0.021	0.078	0.000	0.039	0.154	0.093	0.000	0.364	0.117
na	Military Airports	0.184	0.000	0.000	0.000	0.000	0.000	0.097	0.000	0.000	0.060	0.003	0.024	0.000	0.087	0.097
emp	Railroad Locomotives	0.557	0.109	0.000	0.030	0.068	0.018	0.084	0.016	0.017	0.062	0.000	0.056	0.098	0.248	0.200
	2005 Area Source Total Controlled	***171.138***	***16.697***	***1.792***	***4.581***	***12.352***	***28.077***	***31.468***	***6.765***	***5.240***	***38.069***	***9.872***	***12.751***	***3.474***	***76.171***	***78.270***

2005 Reduction Factors:

Stage II Vapor Recovery	0.63	Weighted average of reduction factors obtained in MOBILE6. 70% control efficiency in MD, 77% in V
Gasoline Volatility Controls	0.09	
MD-Surface Cleaning/Degreasing Technolog	0.59	(67% reduction from technology rules and 0.06857 from good housekeeping practices; 0.8 remaining after reformulation
DC & VA -Surface Cleaning/Degreasing Tec	0.32	[0.8*(Measure1: 0.1*0.8 + Measure2: 1.0*0.4*0.8)] ??
Landfills - MD & VA	0.63	(98% reduction factor * 80% capture efficiency * 80% rule effectiveness factor)
Seasonal Open Burning Restrictions - VA	0.90	(100% ban * 90.3% rule compliance factor from EH Pechan report)
Seasonal Open Burning Restrictions - MD	0.97	(100% ban * 96.8% rule compliance factor based on MARAMA report)
Stage I Vapor Recovery Expansion - MD	0.82	(90% reduction factor * 91% rule effectiveness, applied in Frederick, Charles, and Calvert Counties
Stage I Vapor Recovery Expansion - VA	0.72	(90% reduction factor * 80% rule effectiveness, applied in Stafford and Loudoun Counties
Graphic Arts Controls - VA and DC	0.38	(75% reduction factor * 80% rule effectiveness * 64% Penetration)
Graphic Arts Controls MD-Lithography (64%	0.60	(75% reduction factor * 80% rule effectiveness * 64% Penetration)
Graphic Arts Controls MD-Flexography (16%	0.43	(60% reduction factor * 90% emissions from ink solvent evaportion * 80% rule effectiveness * 18% Penetration
Graphic Arts Controls MD-Rotogravure (16%	0.50	(70% reduction factor * 90% emissions from ink solvent evaportion * 80% rule effectiveness * 18% Penetration
Autobody Refinishing - MD	0.60	
Autobody Refinishing - VA, DC	0.36	
Architectural and Industrial Coatings	0.20	(National Standards for Achitectural coatings - 20% reduction
Consumer and Commercial Products	0.10	(National Standards for Consumer/Commercial solvents - 20% reduction on 49.7449% Penetration - 3.9 lbs/person subset of 7.84 lbs/person tota
Locomotives	0.03	(Locomotives New standards - 3.3% reduction)

CHECK:

	Category	2005 Uncontrol	2005 Controlled	Delta	
	Tank Truck Unloading (Stage I)				
gas	Submerged	1.99	0.44	1.55	
gas	Submerged/Balanced	4.20	4.20	0.00	
gas	Vehicle Fueling	24.65	7.30	17.35	
gas	Underground Tank Breathing	2.36	2.36	0.00	
gas	Losses Fom Gasoline Tank Trucks in	0.10	0.10	0.00	
emp	Aircraft Refueling	0.29	0.29	0.00	
emp	Petroleum Vessel Loading and Unloac	0.04	0.04	0.00	
pop	Dry Cleaning	7.80	7.80	0.00	
emp	Surface Cleaning	9.95	4.59	5.36	
	Surface Coating				
pop	Architectural	40.71	32.57	8.14	
pop	Traffic Markings	4.78	3.82	0.96	**17.50**
emp	Auto Refinishing	20.67	10.86	9.81	
emp	Industrial Product	26.07	20.85	5.21	
emp	Special Purpose	15.97	12.77	3.19	
pop	Graphic Arts	9.19	5.18	4.00	
pop	Asphalt Paving	0.03	0.03	0.00	
na	Pesticide Application	7.31	7.31	0.00	
pop	Commercial/Consumer Solvent Use	42.89	38.62	4.27	
emp	Synthetic Organic Chemical Storage T	0.00	0.00	0.00	
emp	Barge, Tank, Tank Truck, Rail Car and	0.00	0.00	0.00	
pop	Bakeries	2.11	2.11	0.00	
pop	Breweries	0.00	0.00	0.00	
pop	Wineries	0.00	0.00	0.00	
pop	Distilleries	0.00	0.00	0.00	
na	Oil Spills	0.10	0.10	0.00	
hhs	Publicly Owned Treatment Works	0.03	0.03	0.00	
emp	Industrial Wastewater Treatment	0.00	0.00	0.00	
emp	Hazardous Waste Treatment, Storage	0.00	0.00	0.00	
pop	Municipal Landfills	3.97	1.48	2.49	
pop	On-Site Incineration	0.22	0.22	0.00	
na	Open Burning	7.91	0.48	7.43	
pop	Fuel Oil Consumption	0.16	0.16	0.00	
pop	Coal Consumption*	0.77	0.77	0.00	
pop	Natural Gas and Liquified Petroleum G	0.43	0.43	0.00	
hhs	Other Fuels Consumption (Residential	0.00	0.00	0.00	
pop	Small Electric Utility Boilers	0.00	0.00	0.00	
na	Slash/Prescribed Burning	0.01	0.01	0.00	
na	Forest Fires	0.50	0.50	0.00	
na	Agricultural Burning	0.00	0.00	0.00	
pop	Structure Fires	1.70	1.70	0.00	
na	Orchard Heaters	0.00	0.00	0.00	
na	Leaking Underground Storage Tanks	1.46	1.46	0.00	
emp	Commercial Airports	1.34	1.34	0.00	
pop	General Aviation Airports	0.48	0.48	0.00	
na	Military Airports	0.18	0.18	0.00	
emp	Railroad Locomotives	0.57	0.56	0.02	
	2005 Area Source Total-VOC	***240.93***	***171.14***	***69.79***	
		Uncontrolled	***Controlled***	***Delta***	

1990 Area Source Inventory -NOx
NOx - Ozone Nonattainment Area Jurisdictional Estimate
Tons per Day

Category	NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	**4.686**	0.000	0.001	0.004	0.005	0.010	0.010	0.521	0.339	2.584	0.262	0.763	0.187	4.656	0.030
Open Burning	**1.665**	0.000	0.087	0.315	0.364	0.137	0.062	0.000	0.000	0.386	0.219	0.095	0.000	0.700	0.965
Fuel Oil Consumptior	**9.714**	0.942	0.119	0.235	0.349	1.761	1.696	0.516	0.336	2.559	0.260	0.756	0.185	4.612	4.160
Coal Consumption	**6.387**	0.000	0.056	1.037	0.767	0.146	0.577	0.492	0.338	2.310	0.343	0.284	0.037	3.804	2.583
Natural Gas and Liquified Petroleum Gas Consumptio	**11.566**	1.890	0.015	0.187	0.090	2.301	1.948	0.633	0.360	2.732	0.309	0.874	0.227	5.135	4.541
Forest Fires	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	**0.167**	0.048	0.000	0.000	0.000	0.000	0.000	0.013	0.009	0.066	0.007	0.020	0.005	0.120	0.000
Commercial Airports	**5.102**	0.000	0.000	0.000	0.000	0.000	0.000	2.713	0.000	1.195	1.195	0.000	0.000	5.102	0.000
General Aviation Airports	**0.045**	0.000	0.000	0.001	0.006	0.004	0.003	0.009	0.000	0.004	0.008	0.010	0.000	0.031	0.014
Military Airports	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	**8.253**	1.443	0.000	0.498	0.822	0.353	1.728	0.322	0.337	1.024	0.000	0.916	0.810	3.409	3.401
Total	**47.712**	**4.323**	**0.283**	**2.306**	**2.415**	**4.736**	**6.066**	**5.220**	**1.719**	**12.868**	**2.603**	**3.722**	**1.452**	**27.583**	**15.807**

NOx 2005 Area Source Inventory -NO CONTROLS
NOx - Ozone Nonattainment Area Jurisdictional Estimates, Round 6
Tons per Day

Category		NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	pop	**7.168**	0.000	0.002	0.006	0.010	0.013	0.012	0.597	0.379	3.747	0.734	1.130	0.541	7.126	0.042
Open Burning	na	**1.665**	0.000	0.087	0.315	0.364	0.137	0.062	0.000	0.000	0.386	0.219	0.095	0.000	0.700	0.965
Fuel Oil Consumptior	pop	**12.578**	0.942	0.187	0.311	0.503	2.150	1.993	0.596	0.413	3.258	0.722	1.180	0.324	6.492	5.144
Coal Consumption	pop	**8.809**	0.000	0.088	1.374	1.106	0.178	0.678	0.568	0.415	2.941	0.953	0.443	0.065	5.385	3.424
Natural Gas and Liquified Petroleum Gas Consumptio	pop	**14.660**	1.890	0.024	0.248	0.130	2.810	2.289	0.731	0.442	3.478	0.858	1.364	0.397	7.271	5.500
Forest Fires	na	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	na	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	pop	**0.216**	0.048	0.000	0.000	0.000	0.000	0.000	0.015	0.011	0.084	0.019	0.031	0.009	0.169	0.000
Commercial Airports	emp	**7.660**	0.000	0.000	0.000	0.000	0.000	0.000	2.850	0.000	2.405	2.405	0.000	0.000	7.660	0.000
General Aviation Airports	pop	**0.073**	0.000	0.000	0.001	0.008	0.005	0.004	0.011	0.000	0.005	0.023	0.015	0.000	0.054	0.018
Military Airports	na	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	emp	**12.151**	1.391	0.000	0.727	1.662	0.449	1.992	0.369	0.376	1.485	0.000	1.357	2.342	5.928	4.831
Total		**65.107**	**4.271**	**0.392**	**3.011**	**3.796**	**5.766**	**7.071**	**5.737**	**2.036**	**17.796**	**5.934**	**5.620**	**3.677**	**40.799**	**20.037**

Growth Rates 1990-2005		Area Total	Dist. of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	Pr. Will County	Stafford County	VA Total	MD Total
Round 6.2	Emp	1.238	0.964	1.622	1.460	2.022	1.273	1.153	1.145	1.117	1.450	2.800	1.481	2.891	1.432	1.283
	Pop	1.267	1.000	1.569	1.325	1.442	1.221	1.175	1.155	1.228	1.273	2.778	1.561	1.749	1.408	1.237

Control measures

Seasonal Open Burning Restrictions - Vi	0.900 (100% ban * 90% rule compliance factor based on Pechan repor
Seasonal Open Burning Restrictions - MI	0.968 (100% ban * 96.8% rule compliance factor based on MARAMA report
Locomotive Emissions Reduction Factor	0.278 (New Standards would reduce NOx 27.8% by year 200

NOx 2005 Area Source Inventory -WITH CONTROLS
NOx - Ozone Nonattainment Area Jurisdictional Estimates, Round 6.
Tons per Day

Category		NAA Total	Dist. Of Columbia	Calvert County	Charles County	Fredrck County	Montg County	P.G. County	Arlington County	City of Alxndria	Fairfax County	Loudoun County	P. Willm County	Stafford County	VA Total	MD Total
On-Site Incineration	pop	**7.168**	0.000	0.002	0.006	0.010	0.013	0.012	0.597	0.379	3.747	0.734	1.130	0.541	7.126	0.042
Open Burning	na	**0.101**	0.000	0.003	0.010	0.012	0.004	0.002	0.000	0.000	0.039	0.022	0.010	0.000	0.070	0.031
Fuel Oil Consumptior	pop	**12.578**	0.942	0.187	0.311	0.503	2.150	1.993	0.596	0.413	3.258	0.722	1.180	0.324	6.492	5.144
Coal Consumption	pop	**8.809**	0.000	0.088	1.374	1.106	0.178	0.678	0.568	0.415	2.941	0.953	0.443	0.065	5.385	3.424
Natural Gas and Liquified Petroleum Gas Consumptio	pop	**14.660**	1.890	0.024	0.248	0.130	2.810	2.289	0.731	0.442	3.478	0.858	1.364	0.397	7.271	5.500
Forest Fires	na	**0.084**	0.000	0.005	0.012	0.012	0.024	0.030	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.083
Slash/Prescribed Burning	na	**0.019**	0.000	0.000	0.017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.002	0.017
Structure Fires	pop	**0.216**	0.048	0.000	0.000	0.000	0.000	0.000	0.015	0.011	0.084	0.019	0.031	0.009	0.169	0.000
Commercial Airports	emp	**7.660**	0.000	0.000	0.000	0.000	0.000	0.000	2.850	0.000	2.405	2.405	0.000	0.000	7.660	0.000
General Aviation Airports	pop	**0.073**	0.000	0.000	0.001	0.008	0.005	0.004	0.011	0.000	0.005	0.023	0.015	0.000	0.054	0.018
Military Airports	na	**0.023**	0.000	0.000	0.000	0.000	0.000	0.012	0.000	0.000	0.008	0.000	0.003	0.000	0.011	0.012
Railroad Locomotives	emp	**9.032**	1.263	0.000	0.525	1.200	0.324	1.439	0.266	0.272	1.072	0.000	0.979	1.691	4.280	3.488
Total - With CONTROLS		**60.424**	**4.143**	**0.308**	**2.504**	**2.981**	**5.509**	**6.458**	**5.634**	**1.931**	**17.036**	**5.737**	**5.157**	**3.026**	**38.521**	**17.760**

Check - 2005 NOx

Category	Uncontrolled	Controlled	Delta
On-Site Incineration	7.168	7.168	**0.00**
Open Burning	1.665	0.101	**1.56**
Fuel Oil Consumptior	12.578	12.578	**0.00**
Coal Consumption	8.809	8.809	**0.00**
Natural Gas and Liquified Petroleum Gas Consumptio	14.660	14.660	**0.00**
Forest Fires	0.084	0.084	**0.00**
Slash/Prescribed Burning	0.019	0.019	**0.00**
Structure Fires	0.216	0.216	**0.00**
Commercial Airports	7.660	7.660	**0.00**
General Aviation Airports	0.073	0.073	**0.00**
Military Airports	0.023	0.023	**0.00**
Railroad Locomotives	12.151	9.032	**3.12**
Total	***65.107***	***60.424***	**4.68**

2005 Uncontrolled Non-Road VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2005 Non-road Uncontrolled Ozone Season Day Emissions - Round 6.3

VOC Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	2.51	0.71	1.08	3.56	15.24	6.52	0.46	2.31	14.45	4.00	3.26	1.84	27.10	26.31	**55.92**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.18	0.17	0.17	0.00	0.00	0.37	0.51	**0.88**
Recreational-Land	0.00	0.46	0.84	1.31	0.00	0.00	0.00	0.00	0.00	1.98	0.73	0.65	2.62	3.36	**5.98**
Recreational-Marine	1.61	0.90	0.29	0.05	0.04	0.07	0.40	0.31	3.97	1.63	3.58	1.88	1.34	11.76	**14.71**
Light Commercial	0.59	0.02	0.10	0.27	1.25	1.02	0.27	0.20	1.37	0.30	0.28	0.07	2.65	2.50	**5.73**
Industrial	0.22	0.01	0.03	0.23	0.39	0.23	0.05	0.09	0.39	0.13	0.15	0.03	0.89	0.84	**1.96**
Construction	0.71	0.17	0.26	0.84	3.09	2.39	0.32	0.21	3.20	0.87	1.03	0.31	6.74	5.94	**13.39**
Agricultural	0.00	0.20	0.28	0.81	0.31	0.24	0.00	0.00	0.05	0.36	0.08	0.06	1.85	0.55	**2.40**
Logging	0.01	0.02	0.04	0.07	0.13	0.05	0.00	0.02	0.10	0.03	0.04	0.02	0.30	0.22	**0.52**
VOC - Totals	**5.64**	**2.50**	**2.91**	**7.12**	**20.44**	**10.90**	**1.50**	**3.31**	**23.69**	**9.46**	**9.16**	**4.86**	**43.87**	**51.98**	**101.49**

NOx Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	0.06	0.01	0.02	0.06	0.34	0.15	0.01	0.05	0.32	0.08	0.06	0.03	0.57	0.56	**1.19**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.59	0.68	0.68	0.00	0.00	0.17	1.95	**2.12**
Recreational-Land	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.02	**0.03**
Recreational-Marine	0.14	0.11	0.04	0.01	0.00	0.01	0.02	0.02	0.23	0.09	0.20	0.11	0.17	0.67	**0.97**
Light Commercial	0.08	0.00	0.01	0.04	0.17	0.14	0.04	0.03	0.19	0.04	0.04	0.01	0.37	0.34	**0.78**
Industrial	0.47	0.02	0.05	0.48	0.82	0.50	0.11	0.19	0.83	0.27	0.32	0.06	1.88	1.78	**4.13**
Construction	4.51	1.07	1.64	5.34	19.78	15.28	2.07	1.33	20.45	5.54	6.61	2.00	43.11	38.01	**85.63**
Agricultural	0.00	0.89	1.24	3.54	1.36	1.06	0.00	0.00	0.20	1.57	0.36	0.27	8.09	2.39	**10.49**
Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
NOx - Total	**5.26**	**2.12**	**3.00**	**9.47**	**22.47**	**17.31**	**2.25**	**2.21**	**22.90**	**8.29**	**7.59**	**2.48**	**54.37**	**45.72**	**105.35**

2005 Controlled Non-Road VOC and NOx Inventories

(with Round 6.3 Cooperative Forecasts)

2005 NON-ROAD CONTROLLED INVENTORY

	VOC				NOx			
	DC	MD	VA	**Total**	DC	MD	VA	**Total**
1990 BASELINE				73.4				79.5
2005 UNCONTROLLED	5.6	43.9	52.0	101.5	5.3	54.4	45.7	105.3
2005 CONTROLLED	3.8	29.3	35.0	68.2	4.2	42.4	36.2	82.8

		VOC Benefit				NOx Benefit			
Measure #	Measure Name	DC	MD	VA	**Total**	DC	MD	VA	**Total**
7.2.7	EPA Non-Road Gasoline Engines Rule	1.3	12.8	12.5	**26.6**	0.0	0.0	0.0	**0.0**
7.2.8	EPA Non-Road Diesel Engines Rule	0.0	0.0	0.0	**0.0**	1.1	11.8	9.3	**22.1**
7.2.10	Emission standards for spark-ignition marine engines	0.3	0.2	2.6	**3.1**	0.0	0.0	0.0	**0.0**
7.2.11	Emission standards for large spark-ignition engines	0.0	0.3	0.3	**0.6**	0.0	0.2	0.2	**0.5**
7.4.2	Reformulated Gasoline (Off-Road)	0.2	1.2	1.5	**2.9**	0.0	0.0	0.0	**0.0**
	TOTAL AREA SOURCE REDUCTIONS	**1.8**	**14.6**	**16.9**	**33.3**	**1.1**	**12.0**	**9.5**	**22.6**

2005 Non-road Controlled Ozone Season Day Emissions - Round 6.3
Excluding Benefits of Off-Road RFG

VOC Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	1.51	0.43	0.65	2.15	9.16	3.92	0.27	1.39	8.68	2.41	1.96	1.11	16.30	15.82	**33.63**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.18	0.17	0.17	0.00	0.00	0.37	0.51	**0.88**
Recreational-Land	0.00	0.38	0.69	1.08	0.00	0.00	0.00	0.00	0.00	1.63	0.60	0.53	2.15	2.76	**4.91**
Recreational-Marine	1.29	0.74	0.24	0.04	0.03	0.06	0.31	0.24	3.10	1.27	2.80	1.47	1.10	9.19	**11.58**
Light Commercial	0.37	0.02	0.06	0.17	0.80	0.65	0.17	0.13	0.87	0.19	0.18	0.04	1.69	1.59	**3.66**
Industrial	0.18	0.01	0.02	0.18	0.31	0.19	0.04	0.07	0.31	0.10	0.12	0.03	0.70	0.66	**1.54**
Construction	0.66	0.16	0.24	0.78	2.90	2.24	0.30	0.19	3.00	0.81	0.96	0.29	6.32	5.57	**12.54**
Agricultural	0.00	0.19	0.27	0.77	0.30	0.23	0.00	0.00	0.04	0.34	0.08	0.06	1.76	0.52	**2.28**
Logging	0.00	0.01	0.02	0.04	0.08	0.03	0.00	0.01	0.06	0.02	0.03	0.01	0.18	0.13	**0.31**
VOC - Totals	**4.01**	**1.94**	**2.20**	**5.21**	**13.56**	**7.68**	**1.10**	**2.21**	**16.23**	**6.94**	**6.73**	**3.54**	**30.58**	**36.76**	**71.35**

NOx Emissions (tpsd)

Equipment Category	DC	Calvert	Charles	Frederick	Montgom	PG	Alexandr	Arlington	Fairfax	Loudoun	Pr.Williar	Stafford	MD Total	VA Total	Region Total
Lawn and Garden	0.05	0.01	0.01	0.05	0.30	0.13	0.01	0.05	0.29	0.07	0.06	0.03	0.51	0.50	**1.06**
Airport Service	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.59	0.68	0.68	0.00	0.00	0.17	1.95	**2.12**
Recreational-Land	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02	**0.04**
Recreational-Marine	0.14	0.11	0.04	0.01	0.00	0.01	0.02	0.02	0.23	0.10	0.21	0.11	0.17	0.69	**1.00**
Light Commercial	0.08	0.00	0.01	0.04	0.17	0.14	0.04	0.03	0.18	0.04	0.04	0.01	0.36	0.33	**0.76**
Industrial	0.37	0.02	0.04	0.38	0.64	0.39	0.09	0.15	0.65	0.21	0.25	0.05	1.47	1.39	**3.23**
Construction	3.51	0.83	1.27	4.15	15.38	11.88	1.61	1.03	15.90	4.31	5.14	1.56	33.51	29.55	**66.57**
Agricultural	0.00	0.68	0.95	2.70	1.04	0.81	0.00	0.00	0.15	1.19	0.27	0.21	6.18	1.82	**8.00**
Logging	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**
NOx - Total	**4.15**	**1.66**	**2.33**	**7.33**	**17.53**	**13.53**	**1.77**	**1.86**	**18.08**	**6.62**	**5.96**	**1.96**	**42.38**	**36.26**	**82.79**

2002 Non-road Controlled Inventory
Round 6.3 Cooperative Forecasts

	DC	Calvert	Charles	Frederick	Mont	PG	Alex	Alrington	Fairfax	Loudoun	Pr. Willia	Stafford	Regional
	0.964	1.622	1.460	2.022	1.273	1.153	1.117	1.145	1.450	2.800	1.481	2.891	1.238
	1.000	1.569	1.325	1.442	1.221	1.175	1.228	1.155	1.273	2.778	1.561	1.749	1.268

RVP Adjustment VOC	
Diesel	100.0%
4-St & 2-St	99.55%

	NOx			VOC
Equipment HP -->	50-100 HP	100-175H	> 175HP	
CI Rule on Diesel (N	0.762	0.769	0.769	0.867
SI Rule on 2 and 4-stroke		1.51		0.695
Phase 2 SI Rule - Handheld			nc	0.880
Phase 2 SI Rule - Non-Handheld			0.860	0.860
Large SI engine rule			0.790	0.760
Lawn&Garden RES		0.1708		0.2213
Lawn&Garden COM		0.8292		0.7787
Reduction Facto	Rule			

	NOx	VOC
NR SI Marine Engine Rule	1.206	0.745

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COG:
November 12, 2002
VDEQ obtained info from Phil Carlson, EPA:
Handheld engines 2003: 12% reduction in HC, no change in NOx
Nonhandheld engines 2003: 14% reduction in HC, 14% reduction NOx

Council of Governments :
October 16, 2002
CI Non-road Engine Rule (1994). RIA, Tables A-11 and A-12
NOx reduction (%) in the year 2005
50-100 HP - 23.8%
100-175 HP - 23.1%%
> 175 HP - 23.1%

COG:
Source: Final Reg Support Doc, Control of Emissions from Unregulated Nonraod Engines, EPA420-R-02-022, Sept 2002
VOC: Table 6.2.2-6: 24% reduction in 2005
NOx: Table 6.2.2-8: 21% reduction in 2005
Applicability: Table 6.2.2-1

COG :
Lawn and Garden gasoline equipment Residential and Commercial split obtained from NONROAD model

SCC	NEVES ID		DC	CALVERT	CHARLES	FREDERI(	MONTGO(	PRINCE G	ALEXAND	ARLINGT(	FAIRFAX	LOUDOUN	PRINCE W	STAFFOR	Tot Activity	VOC (2005-VOC)	NOx (2005-NOx)	CO (2005-CO)	VOC (1990-VOC)	NOx (1990-NOx)	CO (1990-CO)	Diesel VOC (Base Year 1990)	Diesel NOx	Diesel CO (tpsd)	VOC ad	NOx adjust	
																Daily Emissions (tpsd)			BASE YEAR EMIS			Adjusted for Rules		CO			
																70.88	82.36	965.84	73.45	84.96	705.68	50.82	62.15	705.68			
2270004026	D-01	Trimmers/Edgers/Brush Cutter	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004011	D-02	Lawn mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004031	D-03	Leafblowers/Vacuums	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004041	D-04	Rear Engine Riding Mowers	0.0725	0.0122	0.0219	0.0609	0.3924	0.1734	0.0168	0.0603	0.3707	0.0843	0.0669	0.0434	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004046	D-05	Front Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004021	D-06	Chain Saws < 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004051	D-07	Shredders < 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004016	D-08	Rotary Tillers < 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004056	D-09	Lawn & Garden Tractors	0.0701	0.0117	0.0174	0.0678	0.3923	0.1710	0.0130	0.0610	0.3750	0.0930	0.0734	0.0344	1.4	0.04	0.26	0.16	0.03	0.19	0.12	0.03	0.19	0.12			
2270004061	D-10	Wood Splitters (Commercial)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.762	50-100HP CI
2270004036	D-11	Snowblowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004066	D-12	Chippers/Stump Grinders	0.0707	0.0125	0.0169	0.0703	0.3932	0.1692	0.0129	0.0619	0.3695	0.0973	0.0743	0.0335	1.4	0.02	0.12	0.10	0.02	0.11	0.07	0.02	0.08	0.07		0.762	50-100HP CI
2270004071	D-13	Commercial Turf Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270004076	D-14	Other Lawn & Garden Eqp.	0.0000	0.0000	0.0000	0.0000	0.6365	0.0000	0.0000	0.0000	0.7250	0.0000	0.0000	0.0000	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270008005	D-15	Airport Ground Support Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7200	0.2590	0.2590	0.0000	0.0000	1.2	0.41	1.68	0.27	0.06	0.52	0.22	0.33	1.36	0.22			(0.836 removed) (100-175 HP CI removed)
2270003070	D-16	Terminal Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7222	0.2579	0.2579	0.0000	0.0000	1.2	0.00	0.00	3.45	0.73	6.44	2.79	0.00	0.00	2.79			(0.843 removed) (50-100 HP CI removed)
2270001030	D-17+18+	Offroad Motorcycles/ATVs	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270001030	D-17+18+	Offroad Motorcycles/ATVs	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270001030	D-17+18+	Offroad Motorcycles/ATVs	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270001050	D-20	Golf Carts	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270001020	D-21	Snowmobiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270001060	D-22	Speciality Vehicle Carts	0.0000	0.1652	0.2092	0.3793	0.0000	0.0000	0.0000	0.0000	0.0000	0.5849	0.2465	0.1841	1.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2282020005	D-23+25+	Inboard/Sterndrive	0.4000	0.4502	0.1498	0.0251	0.0212	0.0409	0.0107	0.0100	0.0664	0.0242	0.0543	0.0304	1.3	0.01	0.10	0.02	0.01	0.08	0.02	0.01	0.08	0.02			
2282020010	D-24+27	Outboards	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2282020005	D-23+25+	Inboard/Sterndrive	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2282020005	D-23+25+	Inboard/Sterndrive	0.2686	0.2528	0.0821	0.0119	0.0101	0.0195	0.0253	0.0191	0.2473	0.1033	0.2193	0.1156	1.4	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01			
2282020015	D-27	Personal Water Craft	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270006005	D-28	Generator Sets	0.1292	0.0052	0.0212	0.0586	0.2740	0.2237	0.0597	0.0446	0.3009	0.0666	0.0624	0.0151	1.3	0.05	0.31	0.20	0.04	0.25	0.16	0.04	0.25	0.16			
2270006010	D-29	Pumps	0.1285	0.0067	0.0199	0.0587	0.2745	0.2239	0.0605	0.0445	0.3026	0.0654	0.0602	0.0150	1.3	0.01	0.10	0.06	0.01	0.08	0.05	0.01	0.08	0.05			
2270006015	D-30	Air Compressors	0.1261	0.0000	0.0223	0.0606	0.2770	0.2271	0.0619	0.0485	0.2995	0.0700	0.0525	0.0147	1.3	0.01	0.05	0.03	0.01	0.04	0.02	0.01	0.04	0.02			
2270006020	D-31	Gas Compressors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270006025	D-32	Welders	0.1288	0.0062	0.0209	0.0587	0.2744	0.2239	0.0597	0.0440	0.3011	0.0657	0.0615	0.0161	1.3	0.03	0.19	0.12	0.02	0.15	0.10	0.02	0.15	0.10			
2270006030	D-33	Pressure Washers	0.1428	0.0000	0.0000	0.0515	0.3052	0.2518	0.0439	0.0413	0.2728	0.0992	0.0558	0.0000	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270003010	D-34	Aerial Lifts	0.1607	0.0000	0.0243	0.1685	0.2758	0.1730	0.0372	0.0572	0.2658	0.0933	0.0987	0.0000	1.4	0.01	0.09	0.04	0.01	0.06	0.03	0.01	0.06	0.03			
2270003020	D-35	Forklifts	0.1564	0.0083	0.0186	0.1601	0.2715	0.1635	0.0357	0.0629	0.2741	0.0894	0.1040	0.0222	1.4	0.13	0.85	0.48	0.09	0.81	0.35	0.09	0.62	0.35		0.762	50-100HP CI
2270003030	D-36	Sweepers/Scrubbers	0.1553	0.0090	0.0162	0.1573	0.2687	0.1665	0.0372	0.0636	0.2739	0.0933	0.1070	0.0161	1.4	0.10	0.65	0.37	0.07	0.62	0.27	0.07	0.48	0.27		0.762	50-100HP CI
2270003040	D-37	Other General Industrial Eqp	0.1534	0.0000	0.0166	0.1609	0.2749	0.1703	0.0381	0.0651	0.2636	0.0955	0.1010	0.0329	1.4	0.03	0.18	0.10	0.02	0.17	0.07	0.02	0.13	0.07		0.769	100-175HP CI
2270003050	D-38	Other Material Handling Eqp	0.1542	0.0000	0.0000	0.1618	0.2546	0.1845	0.0447	0.0458	0.2900	0.1120	0.1185	0.0000	1.4	0.00	0.03	0.02	0.00	0.03	0.01	0.00	0.02	0.01		0.769	100-175HP CI
2270002003	D-39+42?	Pavers	0.0717	0.0181	0.0271	0.0827	0.3218	0.2486	0.0332	0.0213	0.3288	0.0937	0.0991	0.0322	1.4	0.02	0.28	0.11	0.02	0.27	0.08	0.02	0.20	0.08		0.762	50-100HP CI
2270002006	D-40	Tampers/Rammers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270002009	D-41	Plate Compactors	0.0723	0.0000	0.0365	0.1011	0.3183	0.2594	0.0279	0.0286	0.3263	0.0700	0.1111	0.0000	1.4	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270002003	D-39+42?	Pavers	0.0703	0.0169	0.0304	0.0843	0.3182	0.2402	0.0349	0.0239	0.3323	0.0875	0.1080	0.0301	1.4	0.02	0.15	0.09	0.02	0.15	0.07	0.02	0.11	0.07		0.769	100-175HP CI
2270002015	D-43	Rollers	0.0729	0.0179	0.0276	0.0860	0.3188	0.2451	0.0334	0.0216	0.3288	0.0882	0.1050	0.0319	1.4	0.07	0.65	0.28	0.05	0.62	0.20	0.05	0.47	0.20		0.762	50-100HP CI
2270002018	D-44	Scrapers	0.0726	0.0174	0.0251	0.0870	0.3176	0.2455	0.0336	0.0222	0.3305	0.0903	0.1051	0.0311	1.4	0.32	3.01	2.25	0.23	2.84	1.63	0.23	2.18	1.63		0.769	>= 175HP CI
2270002021	D-45	Paving Equipment	0.0725	0.0171	0.0270	0.0854	0.3191	0.2464	0.0339	0.0211	0.3290	0.0887	0.1055	0.0305	1.4	0.13	1.07	0.58	0.09	1.02	0.42	0.09	0.78	0.42		0.762	50-100HP CI
2270002024	D-46	Surfacing Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270002027	D-47	Signal Boards/Light Plants	0.0729	0.0182	0.0245	0.0850	0.3174	0.2455	0.0344	0.0225	0.3290	0.0863	0.1079	0.0324	1.4	0.01	0.06	0.04	0.01	0.05	0.03	0.01	0.05	0.03			
2270002030	D-48	Trenchers	0.0723	0.0184	0.0265	0.0850	0.3182	0.2463	0.0330	0.0208	0.3295	0.0891	0.1060	0.0329	1.4	0.12	0.80	0.73	0.09	0.58	0.53	0.09	0.58	0.53			
2270002033	D-49	Bore/Drill Rigs	0.0714	0.0120	0.0216	0.0899	0.3206	0.2477	0.0331	0.0254	0.3222	0.0830	0.1097	0.0428	1.4	0.07	0.44	0.48	0.05	0.42	0.35	0.05	0.32	0.35		0.769	>= 175HP CI
2270002036	D-50	Excavators	0.0721	0.0182	0.0273	0.0851	0.3177	0.2457	0.0334	0.0214	0.3293	0.0890	0.1066	0.0324	1.4	0.34	3.96	2.50	0.25	3.74	1.81	0.25	2.88	1.81		0.769	100-175HP CI
2270002039	D-51	Concrete/Industrial Saws	0.0000	0.0000	0.0000	0.0000	0.6365	0.5765	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.762	50-100HP CI
2270002042	D-52	Cement & Mortar Mixers	0.0699	0.0235	0.0212	0.0879	0.3136	0.2506	0.0324	0.0166	0.3362	0.0812	0.1073	0.0419	1.4	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270002045	D-53	Cranes	0.0726	0.0180	0.0264	0.0862	0.3181	0.2457	0.0333	0.0214	0.3293	0.0899	0.1055	0.0321	1.4	0.82	5.03	2.67	0.59	4.74	1.94	0.59	3.65	1.94		0.769	>= 175HP CI
2270002048	D-54	Graders	0.0726	0.0173	0.0263	0.0861	0.3180	0.2455	0.0329	0.0216	0.3290	0.0894	0.1067	0.0331	1.4	0.54	2.53	1.30	0.39	2.39	0.95	0.39	1.84	0.95		0.769	100-175HP CI
2270002051	D-55	Off-highway Trucks	0.0739	0.0170	0.0254	0.0846	0.3194	0.2451	0.0350	0.0199	0.3284	0.0878	0.1084	0.0302	1.4	0.62	5.34	2.03	0.45	5.05	1.47	0.45	3.88	1.47		0.769	>= 175HP CI
2270002054	D-56	Crushing/Proc. Equipment	0.0700	0.0131	0.0235	0.0815	0.3182	0.2511	0.0360	0.0185	0.3274	0.0903	0.1194	0.0233	1.4	0.09	0.55	0.60	0.07	0.52	0.44	0.07	0.40	0.44		0.769	100-175HP CI
2270002057	D-57	Rough Terrain Forklifts	0.0730	0.0173	0.0265	0.0863	0.3179	0.2461	0.0334	0.0208	0.3296	0.0896	0.1059	0.0309	1.4	0.29	1.04	1.70	0.21	0.99	1.24	0.21	0.76	1.24		0.762	50-100HP CI
2270002060	D-58	Rubber Tire Loaders	0.0727	0.0173	0.0268	0.0859	0.3182	0.2458	0.0331	0.0213	0.3294	0.0890	0.1059	0.0325	1.4	0.95	8.66	5.24	0.69	8.17	3.81	0.69	6.28	3.81		0.769	100-175HP CI
2270002063	D-59	Rubber Tire Tractor/Dozers	0.0714	0.0120	0.0216	0.0899	0.3206	0.2477	0.0331	0.0254	0.3222	0.0830	0.1097	0.0428	1.4	0.13	1.09	0.41	0.09	1.02	0.30	0.09	0.79	0.30		0.769	>= 175HP CI
2270002066	D-60	Tractors/Loaders/Backhoes	0.0725	0.0174	0.0266	0.0858	0.3183	0.2460	0.0332	0.0213	0.3294	0.0892	0.1060	0.0322	1.4	1.26	6.79	6.00	0.92	6.47	4.36	0.92	4.93	4.36		0.762	50-100HP CI
2270002069	D-61	Crawler Tractor/Dozers	0.0726	0.0176	0.0267	0.0861	0.3181	0.2458	0.0332	0.0214	0.3295	0.0894	0.1058	0.0319	1.4	2.81	17.26	10.46	2.04	16.29	7.59	2.04	12.53	7.59		0.769	100-175HP CI
2270002072	D-62	Skid Steer Loaders	0.0727	0.0174	0.0268	0.0859	0.3180	0.2461	0.0333	0.0215	0.3295	0.0889	0.1054	0.0321	1.4	0.51	2.28	2.13	0.37	1.65	1.55	0.37	1.65	1.55			
2270002075	D-63	Off-Highway Tractors	0.0724	0.0167	0.0258	0.0864	0.3168	0.2462	0.0329	0.0219	0.3289	0.0907	0.1069	0.0341	1.4	1.29	4.71	7.55	0.93	4.44	5.47	0.93	3.41	5.47		0.769	>= 175HP CI
2270002078	D-64	Dumpers/Tenders	0.0000	0.0000	0.0000	0.0000	0.4243	0.3843	0.0000	0.0000	0.4833	0.0000	0.0000	0.0000	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270002081	D-65	Other Construction Equipment	0.0742	0.0156	0.0281	0.0875	0.3183	0.2439	0.0322	0.0220	0.3276	0.0942	0.1068	0.0278	1.4	0.09	0.56	0.60	0.07	0.52	0.44	0.07	0.40	0.44		0.769	100-175HP CI
2270005010	D-66	2-Wheel Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270005015	D-67	Agricultural Tractors	0.0000	0.0852	0.1183	0.3375	0.1296	0.1014	0.0000	0.0000	0.0190	0.1493	0.0342	0.0257	1.0	1.98	7.44	7.78	1.98	9.76	7.78	1.98	7.44	7.78		0.762	50-100HP CI
2270005030	D-68	Agricultural Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270005020	D-69	Combines	0.0000	0.0844	0.1176	0.3375	0.1300	0.1010	0.0000	0.0000	0.0194	0.1494	0.0346	0.0263	1.0	0.06	0.41	0.19	0.06	0.53	0.19	0.06	0.41	0.19		0.769	100-175HP CI
2270005035	D-70	Sprayers	0.0000	0.0833	0.1250	0.3333	0.1250	0.0833	0.0000	0.0000	0.0000	0.1667	0.0417	0.0417	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.762	50-100HP CI
2270005025	D-71	Balers	0.0000	0.1000	0.1000	0.4000	0.1000	0.1000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.762	50-100HP CI
2270005040	D-72	Tillers > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270005045	D-73	Swathers	0.0000	0.0873	0.1190	0.3413	0.1270	0.1032	0.0000	0.0000	0.0159	0.1508	0.0317	0.0238	1.0	0.01	0.08	0.02	0.01	0.11	0.02	0.01	0.08	0.02		0.762	50-100HP CI
2270005050	D-74	Hydro Power Units	0.0000	0.1429	0.1429	0.2857	0.1429	0.1429	0.0000	0.0000	0.0000	0.1429	0.0000	0.0000	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270005055	D-75	Other Agricultural Equipment	0.0000	0.0870	0.1087	0.3261	0.1304	0.1087	0.0000	0.0000	0.0217	0.1522	0.0435	0.0217	1.0	0.00	0.02	0.01	0.00	0.02	0.01	0.00	0.02	0.01		0.762	50-100HP CI
2270007005	D-76	Chain Saws > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270007010	D-77	Shredders > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
2270007015	D-79+78	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.769	100-175HP CI
2270007015	D-79+78	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.769	>= 175HP CI
																13.40	78.84	61.22	10.79	81.93	46.96	10.33	59.60	46.96			

1994 CI Rule: RIA Document
Tables A-11 and A-12

NOx Reductions (tpy)	50-100 hp	100-175 hp	>175 hp	All
2002 uncontrolled emissions	1,503,058	579,905	524,752	2,607,716
2002 controlled emissions	1,145,587	445,973	403,418	1,994,978
Difference	357,471	133,932	121,334	612,738
% Reduction	23.783%	23.096%	23.122%	23.497%
	0.2378291	0.2309551	0.2312216	0.2349711

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2002 Non-road Controlled Inventory
Round 6.3 Cooperative Forecasts

																Daily Emissions			Base Year			Adjusted Daily						
																2002-VO	2002-NOx		1990-VO	1990-NOx		Base Year 1990						
			DC	Calvert	Charles	Frederick	Mont	PG	Alex	Alrington	Fairfax	Loudoun	Pr. Willia	Stafford		VOC	NOx		VOC	NOx		4-St VOC	4-St NOx	4-St CO (tpsd)				
2265004025	4s-01	Trimmers/Edgers/Brush Cutter	0.0701	0.0116	0.0178	0.0680	0.3921	0.1710	0.0131	0.0611	0.3747	0.0929	0.0734	0.0340	1.4	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2265004026	4s-01	Trimmers/Edgers/Brush Cutter	0.0701	0.0116	0.0178	0.0680	0.3921	0.1710	0.0131	0.0611	0.3747	0.0929	0.0734	0.0340	1.4	0.00	0.00	0.01				0.00	0.00	0.01	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2265004010	4s-02	Lawn mowers	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	1.72	0.02	19.83	9.44	0.08	84.14	1.24	0.01	14.37	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004011	4s-02	Lawn mowers	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	6.04	0.08	96.27				4.38	0.06	69.77	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004030	4s-03	Leafblowers/Vacuums	0.0615	0.0000	0.0311	0.0861	0.3792	0.1717	0.0238	0.0487	0.3702	0.1191	0.0630	0.0615	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (HH)
2265004031	4s-03	Leafblowers/Vacuums	0.0615	0.0000	0.0311	0.0861	0.3792	0.1717	0.0238	0.0487	0.3702	0.1191	0.0630	0.0615	1.4	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (HH)
2265004040	4s-04	Rear Engine Riding Mowers	0.0701	0.0117	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.04	0.00	1.22	0.21	0.01	5.19	0.03	0.00	0.89	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004041	4s-04	Rear Engine Riding Mowers	0.0701	0.0117	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.13	0.01	5.94				0.10	0.00	4.31	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004046	4s-05	Front Mowers	0.0701	0.0116	0.0176	0.0678	0.3922	0.1710	0.0132	0.0610	0.3750	0.0925	0.0736	0.0341	1.4	0.06	0.00	2.04	0.08	0.00	1.48	0.05	0.00	1.48	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004020	4s-06	Chain Saws < 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2265004021	4s-06	Chain Saws < 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2265004051	4s-07	Shredders < 6 HP	0.0699	0.0120	0.0179	0.0683	0.3918	0.1707	0.0130	0.0612	0.3750	0.0929	0.0737	0.0338	1.4	0.02	0.00	0.29	0.03	0.00	0.21	0.02	0.00	0.21	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004015	4s-08	Rotary Tillers < 6 HP	0.0701	0.0117	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.12	0.00	1.35	0.66	0.01	5.72	0.09	0.00	0.98	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004016	4s-08	Rotary Tillers < 6 HP	0.0701	0.0117	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.42	0.01	6.54				0.30	0.00	4.74	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004055	4s-09	Lawn & Garden Tractors	0.0701	0.0116	0.0175	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	1.92	0.07	60.91	10.58	0.33	258.45	1.39	0.05	44.14	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004056	4s-09	Lawn & Garden Tractors	0.0701	0.0116	0.0175	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	6.76	0.32	295.70				4.90	0.23	214.30	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004060	4s-10	Wood Splitters (Residential)	0.0701	0.0117	0.0176	0.0680	0.3920	0.1709	0.0131	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.02	0.00	0.29	0.14	0.00	1.22	0.02	0.00	0.21	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004061	4s-10	Wood Splitters (Commercial)	0.0701	0.0117	0.0176	0.0680	0.3920	0.1709	0.0131	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.09	0.00	1.40				0.06	0.00	1.01	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004035	4s-11	Snowblowers	0.0701	0.0117	0.0176	0.0680	0.3921	0.1710	0.0130	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004036	4s-11	Snowblowers	0.0701	0.0117	0.0176	0.0680	0.3921	0.1710	0.0130	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004066	4s-12	Chippers/Stump Grinders	0.0713	0.0126	0.0170	0.0708	0.3913	0.1705	0.0130	0.0624	0.3724	0.0872	0.0749	0.0337	1.4	0.56	0.02	7.40	0.68	0.02	5.37	0.40	0.02	5.37	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004071	4s-13	Commercial Turf Equipment	0.0701	0.0117	0.0176	0.0680	0.3921	0.1710	0.0131	0.0608	0.3752	0.0925	0.0735	0.0342	1.4	2.20	0.12	112.68	2.68	0.10	81.66	1.60	0.09	81.66	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004075	4s-14	Other Lawn & Garden Eqp.	0.0701	0.0116	0.0175	0.0680	0.3921	0.1711	0.0130	0.0610	0.3752	0.0927	0.0734	0.0341	1.4	0.01	0.00	0.06	0.03	0.00	0.26	0.00	0.00	0.05	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265004076	4s-14	Other Lawn & Garden Eqp.	0.0701	0.0116	0.0175	0.0680	0.3921	0.1711	0.0130	0.0610	0.3752	0.0927	0.0734	0.0341	1.4	0.02	0.00	0.30				0.01	0.00	0.22	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2265008005	4s-15	Airport Ground Support Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7167	0.2606	0.2606	0.0000	0.0000	1.2	0.00	0.00	1.12	0.05	0.02	0.90	0.00	0.00	0.90	0.760	0.790		Large SI Rule
2265003070	4s-16	Terminal Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7215	0.2582	0.2582	0.0000	0.0000	1.2	0.00	0.00	7.79	0.31	0.13	6.29	0.00	0.00	6.29	0.760	0.790		Large SI Rule
2265001030	4s-17+18	Offroad Motorcycles/ATVs	0.0000	0.1369	0.2476	0.3875	0.0000	0.0000	0.0000	0.0000	0.0000	0.5852	0.2140	0.1914	1.8	1.15	0.02	7.46	0.65	0.01	4.23	0.65	0.01	4.23				
2265001030	4s-17+18	Offroad Motorcycles/ATVs	0.0000	0.1347	0.2472	0.3874	0.0000	0.0000	0.0000	0.0000	0.0000	0.5906	0.2155	0.1893	1.8	0.02	0.00	0.13	0.01	0.00	0.07	0.01	0.00	0.07				
2265001030	4s-17+18	Offroad Motorcycles/ATVs	0.0000	0.1362	0.2480	0.3872	0.0000	0.0000	0.0000	0.0000	0.0000	0.5853	0.2145	0.1913	1.8	0.06	0.00	0.30	0.03	0.00	0.17	0.03	0.00	0.17				
2265001050	4s-20	Golf Carts	0.0000	0.1371	0.2473	0.3867	0.0000	0.0000	0.0000	0.0000	0.0000	0.5844	0.2151	0.1917	1.8	0.74	0.02	7.94	0.61	0.01	4.51	0.42	0.01	4.51	0.695	1.51		SI Rule
2265001020	4s-21	Snowmobiles	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265001060	4s-22	Speciality Vehicles/Carts	0.0000	0.1373	0.2472	0.3874	0.0000	0.0000	0.0000	0.0000	0.0000	0.5848	0.2144	0.1913	1.8	0.05	0.00	0.51	0.04	0.00	0.29	0.03	0.00	0.29	0.695	1.51		SI Rule
2282010005	4s-23+25	Inboard/Sterndrive	0.4030	0.4543	0.1463	0.0237	0.0182	0.0368	0.0073	0.0052	0.0703	0.0290	0.0606	0.0339	1.3	0.48	0.09	3.18	0.37	0.07	2.47	0.37	0.07	2.47				
2282010010	4s-24	Inboard/Sterndrive	0.1479	0.0734	0.0238	0.0039	0.0028	0.0059	0.0408	0.0312	0.4025	0.1652	0.3632	0.1903	1.5	0.01	0.01	0.10	0.00	0.00	0.07	0.00	0.00	0.07				
2282010005	4s-23+25	Inboard/Sterndrive	0.1492	0.0754	0.0243	0.0040	0.0029	0.0061	0.0407	0.0310	0.4009	0.1645	0.3615	0.1894	1.5	1.92	0.64	22.23	1.33	0.44	15.33	1.32	0.44	15.33				
2282010005	4s-23+25	Inboard/Sterndrive	0.2664	0.2613	0.0884	0.0242	0.0000	0.0197	0.0206	0.0194	0.2547	0.0922	0.2082	0.1166	1.4	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.02				
2282010015	4s-27	Personal Water Craft	0.2069	0.1623	0.0457	0.0166	0.0000	0.0135	0.0282	0.0266	0.3219	0.1277	0.3050	0.1608	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265006005	4s-28	Generator Sets	0.1291	0.0053	0.0212	0.0586	0.2739	0.2238	0.0593	0.0446	0.3008	0.0671	0.0623	0.0154	1.3	1.36	0.06	58.06	1.81	0.05	46.02	1.08	0.05	46.02	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265006010	4s-29	Pumps	0.1292	0.0054	0.0212	0.0585	0.2741	0.2239	0.0593	0.0445	0.3007	0.0670	0.0624	0.0152	1.3	0.28	0.01	11.35	0.38	0.01	9.00	0.23	0.01	9.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265006015	4s-30	Air Compressors	0.1291	0.0059	0.0209	0.0585	0.2741	0.2241	0.0590	0.0442	0.3010	0.0667	0.0621	0.0158	1.3	0.17	0.01	7.61	0.23	0.01	6.03	0.14	0.01	6.03	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265006020	4s-31	Gas Compressors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265006025	4s-32	Welders	0.1290	0.0053	0.0215	0.0587	0.2740	0.2238	0.0593	0.0444	0.3006	0.0671	0.0624	0.0152	1.3	0.26	0.01	11.35	0.35	0.01	9.00	0.21	0.01	9.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265006030	4s-33	Pressure Washers	0.1291	0.0050	0.0211	0.0584	0.2743	0.2239	0.0592	0.0446	0.3010	0.0670	0.0625	0.0151	1.3	0.09	0.00	3.72	0.13	0.00	2.95	0.07	0.00	2.95	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265003010	4s-34	Aerial Lifts	0.1526	0.0117	0.0210	0.1600	0.2656	0.1659	0.0321	0.0659	0.2817	0.0806	0.1065	0.0208	1.4	0.11	0.04	2.77	0.10	0.04	2.03	0.08	0.03	2.03	0.760	0.790		Large SI Rule
2265003020	4s-35	Forklifts	0.1565	0.0091	0.0181	0.1596	0.2712	0.1638	0.0353	0.0633	0.2746	0.0884	0.1035	0.0228	1.4	0.60	0.25	15.57	0.58	0.23	11.40	0.44	0.18	11.40	0.760	0.790		Large SI Rule
2265003030	4s-36	Sweepers/Scrubbers	0.1518	0.0128	0.0230	0.1592	0.2706	0.1634	0.0352	0.0631	0.2740	0.0882	0.1050	0.0228	1.4	0.05	0.02	1.28	0.05	0.02	0.94	0.04	0.02	0.94	0.760	0.790		Large SI Rule
2265003040	4s-37	Other General Industrial Eqp	0.1593	0.0141	0.0127	0.1583	0.2767	0.1604	0.0389	0.0597	0.2648	0.0974	0.1030	0.0251	1.4	0.03	0.02	0.77	0.03	0.01	0.56	0.02	0.02	0.56	0.695	1.51		SI Rule
2265003050	4s-38	Other Material Handling Eqp	0.2410	0.0000	0.0000	0.2528	0.3182	0.1441	0.0000	0.1431	0.1813	0.0000	0.0000	0.0000	1.3	0.00	0.00	0.09	0.00	0.00	0.07	0.00	0.00	0.07	0.760	0.790		Large SI Rule
2265002003	4s-39+42	Pavers	0.0714	0.0300	0.0270	0.0749	0.3065	0.2349	0.0414	0.0212	0.3222	0.1037	0.1097	0.0535	1.4	0.01	0.00	0.30	0.01	0.00	0.21	0.01	0.00	0.21	0.760	0.790		Large SI Rule
2265002006	4s-40	Tampers/Rammers	0.0725	0.0159	0.0283	0.0835	0.3182	0.2463	0.0326	0.0222	0.3310	0.0882	0.1041	0.0349	1.4	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.695	1.51		SI Rule
2265002009	4s-41	Plate Compactors	0.0724	0.0173	0.0265	0.0863	0.3180	0.2461	0.0331	0.0213	0.3295	0.0896	0.1060	0.0320	1.4	0.07	0.02	1.95	0.08	0.01	1.41	0.05	0.01	1.41	0.695	1.51		SI Rule
2265002003	4s-39+42	Pavers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002015	4s-43	Rollers	0.0732	0.0170	0.0268	0.0847	0.3199	0.2475	0.0322	0.0210	0.3302	0.0880	0.1047	0.0303	1.4	0.11	0.02	2.54	0.11	0.01	1.85	0.08	0.01	1.85	0.695	1.51		SI Rule
2265002018	4s-44	Scrapers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2265002021	4s-45	Paving Equipment	0.0726	0.0173	0.0265	0.0860	0.3182	0.2460	0.0331	0.0214	0.3296	0.0891	0.1057	0.0324	1.4	0.20	0.04	5.35	0.21	0.02	3.89	0.14	0.03	3.89	0.695	1.51		SI Rule
2265002024	4s-46	Surfacing Equipment	0.0717	0.0181	0.0271	0.0865	0.3171	0.2465	0.0332	0.0213	0.3288	0.0885	0.1074	0.0322	1.4	0.07	0.02	1.86	0.07	0.01	1.35	0.05	0.01	1.35	0.695	1.51		SI Rule
2265002027	4s-47	Signal Boards/Light Plants	0.0771	0.0000	0.0000	0.0809	0.3565	0.2767	0.0447	0.0458	0.2900	0.1120	0.0592	0.0000	1.3	0.00	0.00	0.08	0.00	0.00	0.06	0.00	0.00	0.06				
2265002030	4s-48	Trenchers	0.0732	0.0171	0.0277	0.0853	0.3169	0.2457	0.0330	0.0217	0.3304	0.0886	0.1062	0.0305	1.4	0.10	0.04	2.43	0.09	0.03	1.77	0.07	0.03	1.77	0.760	0.790		Large SI Rule
2265002033	4s-49	Bore/Drill Rigs	0.0707	0.0216	0.0292	0.0809	0.3140	0.2460	0.0298	0.0229	0.3287	0.0933	0.1086	0.0385	1.4	0.04	0.01	0.92	0.04	0.01	0.66	0.03	0.01	0.66	0.760	0.790		Large SI Rule
2265002036	4s-50	Excavators	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002039	4s-51	Concrete/Industrial Saws	0.0722	0.0177	0.0273	0.0852	0.3197	0.2464	0.0331	0.0214	0.3303	0.0874	0.1040	0.0316	1.4	0.26	0.06	7.94	0.28	0.03	5.77	0.19	0.04	5.77	0.695	1.51		SI Rule
2265002042	4s-52	Cement & Mortar Mixers	0.0724	0.0176	0.0267	0.0860	0.3182	0.2460	0.0331	0.0212	0.3294	0.0893	0.1058	0.0322	1.4	0.11	0.02	2.69	0.11	0.01	1.95	0.08	0.01	1.95	0.695	1.51		SI Rule
2265002045	4s-53	Cranes	0.0689	0.0000	0.0348	0.0963	0.3334	0.2471	0.0266	0.0273	0.3452	0.0667	0.1058	0.0000	1.4	0.02	0.01	0.64	0.02	0.01	0.47	0.02	0.01	0.47	0.760	0.790		Large SI Rule
2265002048	4s-54	Graders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002051	4s-55	Off-highway Trucks	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002054	4s-56	Crushing/Proc. Equipment	0.0567	0.0000	0.0000	0.1190	0.2995	0.2713	0.0657	0.0000	0.3412	0.1647	0.0871	0.0000	1.4	0.01	0.00	0.31	0.01	0.00	0.22	0.01	0.00	0.22	0.760	0.790		Large SI Rule
2265002057	4s-57	Rough Terrain Forklifts	0.0761	0.0000	0.0384	0.1064	0.3350	0.2427	0.0294	0.0301	0.3434	0.0737	0.0779	0.0000	1.4	0.02	0.01	0.60	0.02	0.01	0.44	0.02	0.01	0.44	0.760	0.790		Large SI Rule
2265002060	4s-58	Rubber Tire Loaders	0.0790	0.0266	0.0239	0.0995	0.3130	0.2457	0.0366	0.0188	0.3090	0.0918	0.0971	0.0474	1.4	0.03	0.01	0.72	0.03	0.01	0.52	0.02	0.01	0.52	0.760	0.790		Large SI Rule
2265002063	4s-59	Rubber Tire Tractor/Dozers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002066	4s-60	Tractors/Loaders/Backhoes	0.0876	0.0000	0.0000	0.0919	0.3472	0.2620	0.0508	0.0000	0.3295	0.1273	0.0673	0.0000	1.4	0.02	0.00	0.41	0.02	0.00	0.30	0.01	0.00	0.30	0.760	0.790		Large SI Rule
2265002069	4s-61	Crawler Tractor/Dozers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002072	4s-62	Skid Steer Loaders	0.0719	0.0168	0.0272	0.0879	0.3189	0.2459	0.0324	0.0213	0.3302	0.0870	0.1073	0.0299	1.4	0.07	0.03	1.70	0.06	0.02	1.24	0.05	0.02	1.24	0.760	0.790		Large SI Rule
2265002075	4s-63	Off-Highway Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265002078	4s-64	Dumpers/Tenders	0.0728	0.0191	0.0275	0.0859	0.3183	0.2447	0.0342	0.0216	0.3283	0.0858	0.1048	0.0341	1.4	0.01	0.00	0.39	0.01	0.00	0.28	0.01	0.00	0.28	0.695	1.51		SI Rule
2265002081	4s-65	Other Construction Equipment	0.0536	0.0000	0.0000	0.1124	0.3536	0.2562	0.0621	0.0000	0.3222	0.1556	0.0823	0.0000	1.4	0.03	0.01	0.68	0.02	0.01	0.48	0.02	0.01	0.48	0.760	0.790		Large SI Rule
2265005010	4s-66	2-Wheel Tractors	0.0000	0.0833	0.1111	0.3333	0.1389	0.1111	0.0000	0.0000	0.0278	0.1389	0.0278	0.0278	1.0	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.695	1.51		SI Rule
2265005015	4s-67	Agricultural Tractors	0.0000	0.0667	0.1333	0.3333	0.1333	0.1333	0.0000	0.0000	0.0000	0.1333	0.0667	0.0000	1.0	0.02	0.01	0.34	0.02	0.01	0.34	0.02	0.01	0.34	0.760	0.790		Large SI Rule
2265005030	4s-68	Agricultural Mowers	0.0000	0.0750	0.1250	0.3500	0.1250	0.1000	0.0000	0.0000	0.0250	0.1500	0.0250	0.0250	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	0.695	1.51		SI Rule
2265005020	4s-69	Combines	0.0000	0.0000	0.2000	0.4000	0.2000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	0.760	0.790		Large SI Rule
2265005035	4s-70	Sprayers	0.0000	0.0860	0.1183	0.3333	0.1290	0.1022	0.0000	0.0000	0.0215	0.1505	0.0323	0.0269	1.0	0.01	0.01	0.24	0.01	0.00	0.24	0.01	0.01	0.24	0.695	1.51		SI Rule
2265005025	4s-71	Balers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2265005040	4s-72	Tillers > 6 HP	0.0000	0.0851	0.1184	0.3375	0.1295	0.1013	0.0000	0.0000	0.0191	0.1491	0.0343	0.0257	1.0	0.10	0.00	1.36	0.17	0.00	1.36	0.10	0.00	1.36	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265005045	4s-73	Swathers	0.0000	0.0843	0.1205	0.3373	0.1325	0.0964	0.0000	0.0000	0.0241	0.1446	0.0361	0.0241	1.0	0.10	0.03	1.92	0.13	0.04	1.92	0.10	0.03	1.92	0.760	0.790		Large SI Rule
2265005050	4s-74	Hydro Power Units	0.0000	0.0769	0.1282	0.3333	0.1282	0.1026	0.0000	0.0000	0.0256	0.1538	0.0256	0.0256	1.0	0.01	0.00	0.24	0.01	0.00	0.24	0.01	0.00	0.24	0.695	1.51		SI Rule
2265005055	4s-75	Other Agricultural Equipment	0.0000	0.0667	0.1333	0.3333	0.1333	0.1333	0.0000	0.0000	0.0000	0.1333	0.0667	0.0000	1.0	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.07	0.760	0.790		Large SI Rule
2265007005	4s-76	Chain Saws > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2265007010	4s-77	Shredders > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265007015	4s-78+79	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2265007015	4s-78+79	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
																28.93	2.20	811.45	33.15	1.87	593.31	20.83	1.59	593.31				

2002 Non-road Controlled Inventory
Round 6.3 Cooperative Forecasts

																Daily Emissions (tpsd)			BASE YEAR EMIS			Annual EMISSIONS						
																2002-VO	2002-NOx		1990-VO	1990-NO	1990-CO	Base Year 1990						
			DC	Calvert	Charles	Fredericl	Mont	PG	Alex	Alrington	Fairfax	Loudoun	Pr. Willia	Stafford		VOC	NOx		VOC	NOx		2-St VOC	2-St NOx	2-St CO (tpsd)				
2260004025	2s-01	Trimmers/Edgers/Brush Cutter	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	0.54	0.00	1.91	2.92	0.01	8.10	0.39	0.00	1.38	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004026	2s-01	Trimmers/Edgers/Brush Cutter	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	1.91	0.01	9.27				1.38	0.01	6.71	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004010	2s-02	Lawn mowers	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	1.15	0.00	3.10	6.36	0.00	13.16	0.84	0.00	2.25	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004011	2s-02	Lawn mowers	0.0701	0.0116	0.0176	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0341	1.4	4.06	0.00	15.06				2.95	0.00	10.92	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004030	2s-03	Leafblowers/Vacuums	0.0701	0.0116	0.0175	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.24	0.00	0.91	1.32	0.00	3.88	0.18	0.00	0.66	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004031	2s-03	Leafblowers/Vacuums	0.0701	0.0116	0.0175	0.0681	0.3921	0.1710	0.0130	0.0609	0.3751	0.0926	0.0735	0.0342	1.4	0.86	0.01	4.44				0.62	0.00	3.22	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004040	2s-04	Rear Engine Riding Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004041	2s-04	Rear Engine Riding Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004046	2s-05	Front Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004020	2s-06	Chain Saws < 6 HP	0.0110	0.0624	0.0975	0.2462	0.3128	0.1108	0.0000	0.0362	0.2726	0.1587	0.1436	0.1345	1.6	1.02	0.00	2.62	4.77	0.01	9.66	0.64	0.00	1.65	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004021	2s-06	Chain Saws < 6 HP	0.0110	0.0624	0.0975	0.2462	0.3128	0.1108	0.0000	0.0362	0.2726	0.1587	0.1436	0.1345	1.6	3.59	0.02	12.70				2.26	0.01	8.01	0.612	1.51	1	SI Rule - Phase 1 and 2 (HH)
2260004051	2s-07	Shredders < 6 HP	0.0700	0.0119	0.0183	0.0687	0.3917	0.1705	0.0128	0.0610	0.3750	0.0922	0.0743	0.0332	1.4	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004015	2s-08	Rotary Tillers < 6 HP	0.0701	0.0117	0.0176	0.0681	0.3922	0.1710	0.0130	0.0608	0.3751	0.0926	0.0736	0.0342	1.4	0.00	0.00	0.01	0.02	0.00	0.03	0.00	0.00	0.01	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004016	2s-08	Rotary Tillers < 6 HP	0.0701	0.0117	0.0176	0.0681	0.3922	0.1710	0.0130	0.0608	0.3751	0.0926	0.0736	0.0342	1.4	0.01	0.00	0.04				0.01	0.00	0.03	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004055	2s-09	Lawn & Garden Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004056	2s-09	Lawn & Garden Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004060	2s-10	Wood Splitters (Residential)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004061	2s-10	Wood Splitters (Commercial)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004035	2s-11	Snowblowers	0.0701	0.0117	0.0176	0.0680	0.3921	0.1710	0.0130	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004036	2s-11	Snowblowers	0.0701	0.0117	0.0176	0.0680	0.3921	0.1710	0.0130	0.0609	0.3751	0.0927	0.0735	0.0342	1.4	0.00	0.00	0.00				0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004066	2s-12	Chippers/Stump Grinders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004071	2s-13	Commercial Turf Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004075	2s-14	Other Lawn & Garden Eqp.	0.0701	0.0116	0.0175	0.0680	0.3921	0.1711	0.0130	0.0610	0.3752	0.0927	0.0735	0.0341	1.4	0.01	0.00	0.03	0.06	0.00	0.11	0.01	0.00	0.02	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260004076	2s-14	Other Lawn & Garden Eqp.	0.0701	0.0116	0.0175	0.0680	0.3921	0.1711	0.0130	0.0610	0.3752	0.0927	0.0735	0.0341	1.4	0.04	0.00	0.13				0.03	0.00	0.09	0.598	0.86	1	SI Rule - Phase 1 and 2 (NHH)
2260008005	2s-15	Airport Ground Support Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2260003070	2s-16	Terminal Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7215	0.2582	0.2582	0.0000	0.0000	1.2	0.00	0.00	0.05	0.00	0.01	0.04	0.00	0.00	0.04	0.760	0.790		Large SI Rule
2260001030	2s-17+18	Offroad Motorcycles/ATVs	0.0000	0.1369	0.2476	0.3875	0.0000	0.0000	0.0000	0.0000	0.0000	0.5852	0.2141	0.1914	1.8	0.59	0.00	0.69	0.33	0.00	0.39	0.33	0.00	0.39				
2260001030	2s-17+18	Offroad Motorcycles/ATVs	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260001030	2s-17+18	Offroad Motorcycles/ATVs	0.0000	0.1362	0.2480	0.3872	0.0000	0.0000	0.0000	0.0000	0.0000	0.5852	0.2145	0.1914	1.8	0.68	0.00	0.79	0.39	0.00	0.45	0.39	0.00	0.45				
2260001050	2s-20	Golf Carts	0.0000	0.1371	0.2473	0.3867	0.0000	0.0000	0.0000	0.0000	0.0000	0.5844	0.2151	0.1917	1.8	1.15	0.00	2.00	0.95	0.00	1.14	0.65	0.00	1.14	0.695	1.51		SI Rule
2260001020	2s-21	Snowmobiles	0.0000	0.1368	0.2471	0.3879	0.0000	0.0000	0.0000	0.0000	0.0000	0.5858	0.2136	0.1918	1.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260001060	2s-22	Speciality Vehicles/Carts	0.0000	0.1373	0.2472	0.3874	0.0000	0.0000	0.0000	0.0000	0.0000	0.5849	0.2145	0.1913	1.8	0.48	0.00	0.80	0.39	0.00	0.45	0.27	0.00	0.45	0.695	1.51		SI Rule
2282005005	2s-23+25	Inboard/Sterndrive	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2282005010	2s-24	Outboard	0.1479	0.0734	0.0237	0.0039	0.0029	0.0059	0.0409	0.0312	0.4026	0.1652	0.3631	0.1902	1.5	9.15	0.15	22.82	8.50	0.08	15.73	6.30	0.10	15.73	0.745	1.206		Marine Rule
2282005005	2s-23+25	Inboard/Sterndrive	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2282005005	2s-23+25	Inboard/Sterndrive	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2282005015	2s-27	Personal Water Craft	0.2006	0.1526	0.0496	0.0087	0.0055	0.0122	0.0330	0.0260	0.3336	0.1372	0.3013	0.1572	1.4	0.02	0.00	0.04	0.02	0.00	0.03	0.01	0.00	0.03	0.745	1.206		Marine Rule
2260006005	2s-28	Generator Sets	0.1291	0.0053	0.0212	0.0586	0.2739	0.2238	0.0593	0.0446	0.3008	0.0671	0.0623	0.0154	1.3	1.35	0.00	4.10	1.55	0.00	3.25	1.07	0.00	3.25	0.695	1.51		SI Rule
2260006010	2s-29	Pumps	0.1292	0.0054	0.0212	0.0585	0.2741	0.2239	0.0593	0.0445	0.3007	0.0670	0.0623	0.0152	1.3	0.02	0.01	0.59	0.03	0.01	0.47	0.02	0.00	0.47	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2260006015	2s-30	Air Compressors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2260006020	2s-31	Gas Compressors	0.0000	0.0000	0.0000	0.0000	0.4070	0.3917	0.0000	0.0000	0.4243	0.0000	0.0000	0.0000	1.2	0.01	0.01	0.26	0.01	0.01	0.21	0.01	0.01	0.21	0.760	0.790		Large SI Rule
2260006025	2s-32	Welders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2260006030	2s-33	Pressure Washers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2260003010	2s-34	Aerial Lifts	0.1526	0.0117	0.0210	0.1600	0.2656	0.1659	0.0321	0.0659	0.2817	0.0806	0.1065	0.0208	1.4	0.01	0.02	0.12	0.01	0.02	0.09	0.01	0.02	0.09	0.760	0.790		Large SI Rule
2260003020	2s-35	Forklifts	0.1565	0.0091	0.0181	0.1596	0.2712	0.1638	0.0353	0.0633	0.2746	0.0884	0.1035	0.0228	1.4	0.40	1.05	6.15	0.39	0.97	4.50	0.29	0.77	4.50	0.760	0.790		Large SI Rule
2260003030	2s-36	Sweepers/Scrubbers	0.1518	0.0128	0.0230	0.1592	0.2706	0.1634	0.0352	0.0631	0.2740	0.0882	0.1050	0.0228	1.4	0.01	0.04	0.22	0.01	0.04	0.16	0.01	0.03	0.16	0.760	0.790		Large SI Rule
2260003040	2s-37	Other General Industrial Eqp	0.1593	0.0141	0.0127	0.1583	0.2767	0.1604	0.0389	0.0597	0.2648	0.0974	0.1030	0.0251	1.4	0.06	0.00	0.17	0.06	0.00	0.12	0.04	0.00	0.12	0.695	1.51		SI Rule
2260003050	2s-38	Other Material Handling Eqp	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002003	2s-39+42	Pavers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002006	2s-40	Tampers/Rammers	0.0725	0.0157	0.0283	0.0835	0.3182	0.2463	0.0325	0.0222	0.3308	0.0884	0.1042	0.0351	1.4	0.24	0.00	0.72	0.25	0.00	0.52	0.17	0.00	0.52	0.695	1.51		SI Rule
2260002009	2s-41	Plate Compactors	0.0724	0.0173	0.0265	0.0863	0.3180	0.2461	0.0331	0.0213	0.3295	0.0896	0.1060	0.0320	1.4	0.37	0.00	1.13	0.39	0.00	0.82	0.27	0.00	0.82	0.695	1.51		SI Rule
2260002003	2s-39+42	Pavers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002015	2s-43	Rollers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002018	2s-44	Scrapers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002021	2s-45	Paving Equipment	0.0726	0.0173	0.0265	0.0860	0.3182	0.2460	0.0331	0.0214	0.3296	0.0891	0.1057	0.0323	1.4	0.24	0.00	0.71	0.25	0.00	0.52	0.17	0.00	0.52	0.695	1.51		SI Rule
2260002024	2s-46	Surfacing Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002027	2s-47	Signal Boards/Light Plants	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002030	2s-48	Trenchers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2260002033	2s-49	Bore/Drill Rigs	0.0707	0.0217	0.0292	0.0809	0.3139	0.2460	0.0297	0.0229	0.3286	0.0935	0.1087	0.0387	1.4	0.01	0.00	0.04	0.01	0.00	0.03	0.01	0.00	0.03	0.760	0.790		Large SI Rule
2260002036	2s-50	Excavators	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.760	0.790		Large SI Rule
2260002039	2s-51	Concrete/Industrial Saws	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002042	2s-52	Cement & Mortar Mixers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002045	2s-53	Cranes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002048	2s-54	Graders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002051	2s-55	Off-highway Trucks	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002054	2s-56	Crushing/Proc. Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002057	2s-57	Rough Terrain Forklifts	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002060	2s-58	Rubber Tire Loaders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002063	2s-59	Rubber Tire Tractor/Dozers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002066	2s-60	Tractors/Loaders/Backhoes	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002069	2s-61	Crawler Tractor/Dozers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002072	2s-62	Skid Steer Loaders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002075	2s-63	Off-Highway Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260002078	2s-64	Dumpers/Tenders	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260002081	2s-65	Other Construction Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260005010	2s-66	2-Wheel Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260005015	2s-67	Agricultural Tractors	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260005030	2s-68	Agricultural Mowers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260005020	2s-69	Combines	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260005035	2s-70	Sprayers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260005025	2s-71	Balers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260005040	2s-72	Tillers > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260005045	2s-73	Swathers	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260005050	2s-74	Hydro Power Units	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.695	1.51		SI Rule
2260005055	2s-75	Other Agricultural Equipment	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260007005	2s-76	Chain Saws > 6 HP	0.0110	0.0392	0.0675	0.1240	0.2496	0.0973	0.0000	0.0314	0.1915	0.0581	0.0832	0.0471	1.0	0.31	0.00	1.54	0.53	0.00	1.54	0.31	0.00	1.54	0.598	0.86		SI Rule - Phase 1 and 2 (NHH)
2260007010	2s-77	Shredders > 6 HP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260007015	2s-78+79	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
2260007015	2s-78+79	Forest Eqp - Feller/Bunch/Skidder	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

Documentation for Revised Baseline, 2002 and 2005 Airport Emission Inventories

JUN 26 2003

James E. Sydnor
Director, Office of Long Range Environmental Planning
Department of Environmental Quality
629 East Main Street
Richmond, VA 23219

Re: Emissions Estimates for 1990, 2002 and 2005
Ronald Reagan Washington National Airport and Washington Dulles International Airport

Dear Mr. Sydnor:

I am enclosing for your use copies of the supporting data for the emissions estimates I provided earlier this year for 1990, 2002 and 2005 for our two airports. These estimates cover aircraft and ground support equipment. Summary tables are attached to this letter.

Please feel free to call me at 703-417-8168 if you have any questions or need additional information.

Sincerely,

J. Charles Baummer, Jr., Ph.D.
Environmental Planning Engineer

Enclosures

cc: Joan Rohlfs, Metropolitan Washington Council of Governments

Summary of Emissions

Ronald Reagan Washington National Airport
1990 Emissions Summary - Aircraft and Ground Support Equipment

Total Annual (tons/yr)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	1,275.941	115.086	125.985	990.339	102.979	n/a
Auxiliary Power Units and Ground Support Equipment	4,527.678	180.949	198.085	249.769	25.030	7.161
Total Annual (tons/yr)	5,803.619	296.035	324.070	1,240.108	128.009	7.161

Average Daily (tons/day)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	3.496	0.315	0.345	2.713	0.282	n/a
Auxiliary Power Units and Ground Support Equipment	12.405	0.496	0.543	0.684	0.069	0.020
Total (tons/day)	15.900	0.811	0.888	3.398	0.351	0.020

n/a = not availavle; not estimated by EDMS.
Note: daily average equals annual/365.

Washington Dulles International Airport
1990 Emissions Summary - Aircraft and Ground Support Equipment

Total Annual (tons/yr)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	1,434.809	379.692	415.649	793.693	77.069	n/a
Auxiliary Power Units and Ground Support Equipment Excluding Mobile Lounges	3,271.828	131.119	143.536	183.440	18.144	5.452
Mobile Lounges	1.845	3.111	3.125	64.166	3.427	n/a
Total Annual (tons/yr)	4,708.482	513.922	562.310	1,041.299	98.640	5.452

Average Weekday Peak Month (tons/day)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	4.319	1.143	1.251	2.389	0.232	n/a
Auxiliary Power Units and Ground Support Equipment Excluding Mobile Lounges	9.848	0.395	0.432	0.552	0.055	0.016
Mobile Lounges	0.006	0.009	0.009	0.193	0.010	n/a
Total (tons/day)	14.173	1.547	1.693	3.134	0.297	0.016

n/a = not availavle; not estimated by EDMS.

Note: operations for average weekday in peak month (August) are 0.301% of annual.

Ronald Reagan Washington National Airport
2002 Emissions Summary - Aircraft and Ground Support Equipment

Total Annual (tons/yr)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	585.986	55.984	61.286	631.568	58.841	n/a
Auxiliary Power Units and Ground Support Equipment	91.909	14.357	15.717	159.309	23.181	10.614
Total Annual (tons/yr)	677.895	70.341	77.002	790.877	82.022	10.614

Average Daily (tons/day)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	1.605	0.153	0.168	1.730	0.161	n/a
Auxiliary Power Units and Ground Support Equipment	0.252	0.039	0.043	0.436	0.064	0.029
Total (tons/day)	1.857	0.193	0.211	2.167	0.225	0.029

n/a = not availavle; not estimated by EDMS.
Note: daily average equals annual/365.

Washington Dulles International Airport
2002 Emissions Summary - Aircraft and Ground Support Equipment

Total Annual (tons/yr)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	1,530.336	186.659	204.336	1,177.458	104.113	n/a
Auxiliary Power Units and Ground Support Equipment Excluding Mobile Lounges	1,044.697	56.115	61.429	233.017	30.279	11.448
Mobile Lounges	3.050	5.112	5.135	105.925	5.651	2.243
Total Annual (tons/yr)	2,578.083	247.886	270.900	1,516.400	140.043	13.691

Average Weekday Peak Month (tons/day)

	CO	HC	VOC	NOX	SOX	PM10
Aircraft Engine Emissions	4.606	0.562	0.615	3.544	0.313	n/a
Auxiliary Power Units and Ground Support Equipment Excluding Mobile Lounges	3.145	0.169	0.185	0.701	0.091	0.034
Mobile Lounges	0.009	0.015	0.015	0.319	0.017	0.007
Total (tons/day)	7.760	0.746	0.815	4.564	0.422	0.041

n/a = not availavle; not estimated by EDMS.

Note: operations for average weekday in peak month (August) are 0.301% of annual.

2005 DCA Emissions Summary

	Emissions (tons/yr)						Emissions (tons/day)					
	CO	HC	VOC	NOx	SOx	PM10	CO	HC	VOC	NOx	SOx	PM10
Aircraft Engines	1,712.78	139.61	152.83	1,039.95	53.42	0.00	4.69	0.38	0.42	2.85	0.15	0.00
APU	89.08	5.25	5.75	41.24	0.00	0.00	0.24	0.01	0.02	0.11	0.00	0.00
Ground Support Equipment												
Gasoline Baggage Tugs	2,541.79	42.36	46.37	42.37	2.70	0.00	6.96	0.12	0.13	0.12	0.01	0.00
Other GSE	135.03	18.49	20.24	133.09	3.33	7.78	0.37	0.05	0.06	0.36	0.01	0.02
Total GSE	2,676.82	60.85	66.61	175.46	6.03	7.78	7.33	0.17	0.18	0.48	0.02	0.02
Total Airside Emissions	4,478.69	205.71	225.19	1,256.65	59.44	7.78	12.27	0.56	0.62	3.44	0.16	0.02

Revised 2005 Emissions Inventory
Aircraft and Ground Support Equipment
Washington Dulles International Airport

	Emissions (tons/yr)						Average Weekday in Peak Month Emissions (tons/day)					
	CO	HC	VOC	NOx	SOx	PM10	CO	HC	VOC	NOx	SOx	PM10
Aircraft Engines	[illegible]	291	318	1,599	77	0	6.52	0.88	0.96	4.81	0.23	[illegible]
Aircraft Auliliary Power Units	**117**	**6**	**7**	**72**	**0**	**0**	**0.35**	**0.02**	**0.02**	**0.22**	**0.00**	**0.00**
Ground Support Equipment (GSE)												
Mobile Lounges	3	5	5	109	6	2	0.01	0.02	0.02	0.33	0.02	0.01
Baggage Tugs	3,418	57	62	57	4	0	10.29	0.17	0.19	0.17	0.01	0.00
Other GSE	306	31	34	213	5	12	0.92	0.09	0.10	0.64	0.02	0.04
Total GSE	3,727	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Airside Emissions	**6,010**	**391**	**427**	**2,050**	**92**	**14**	**18.09**	**1.18**	**1.29**	**6.17**	**0.28**	**0.04**

Note: operations for average weekday in peak month (August) are 0.301% of annual.

Documentation for Benefits from Ozone Transport Commission Rules

Beth Lowe

Subject: OTC measures - Emission benefits in the District

-----Original Message-----
From: Tangirala, Rama [mailto:rtangirala@dchealth.com]
Sent: Monday, March 24, 2003 12:32 PM
To: Joan Rohlfs (E-mail); Beth Lowe (E-mail)
Cc: Tracey, Stanley; Wambsgans, Donald
Subject: OTC measures - Emission benefits in the District
Importance: High

Joan/Beth: As you know, DC's emission benefits data you have are rounded numbers and they show "zero" tons/day benefits for a couple of measures. Recently, you requested us if we could provide a revised estimates of the OTC measures' benefits in the District. Given below is a table with a better precision data. Note that these data were retrieved from the OTC's analysis tables (by Pechan, dated Jan 2001). Call me with any questions. Thank you.
Ram

OTC Model Rules' Benefit for 2005 (tons/day)- District of Columbia

OTC Rule	Emissions benefit (tons/day)
Consumer Products	1.12
AIM Coatings	1.11
Mobile Equipment Refinishing	0.61
Solvent Cleaning Operations	2.68
Portable Fuel Containers	0.43
Total VOC reductions (by 2005)	5.96

==========
Ram Tangirala, PhD
Air Quality Division
Environmental Health Administration
DC Department of Health
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Phone: (202) 535-2989
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Reductions from Maryland Portable Fuel Containers Rule
Table Provided by MDE on 3/28/03

County	1996 Emissions (tons VOC/day)	2005 Emissions (Base Case) (tons VOC/day)	2005 Emissions (Model Rule) (tons VOC/day)	2005 Emissions Reductions (tons VOC/day)	2007 Emissions (Base Case) (tons VOC/day)	2007 Emissions (Model Rule) (tons VOC/day)	2007 Emission Reductions (tor VOC/day)
Calvert Co	0.234	0.253	0.207	0.046	0.256	0.172	
Charles Co	0.448	0.475	0.388	0.087	0.480	0.322	
Frederick Co	0.872	0.903	0.738	0.165	0.908	0.610	
Montgomery Co	4.993	5.077	4.150	0.927	5.086	3.415	
Prince Georges Co	3.116	3.265	2.669	0.596	3.289	2.209	

Compliance required Jan 1, 2004.

Total emission reductions from affected counties in 2005: 1.821 tpd VOC

Annual emission reductions accrued: 0.91 tpd VOC

CONTROL MEASURE DEVELOPMENT SUPPORT ANALYSIS OF OZONE TRANSPORT COMMISSION MODEL RULES

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Prepared for:

Ozone Transport Commission
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Prepared by:

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March 31, 2001

Pechan Rpt. No. 01.02.001/9408.000

DISCLAIMER

This report was prepared by E.H. Pechan & Associates, Inc. under contract to the Ozone Transport Commission. This document is a product of E.H. Pechan & Associates, Inc., and does not reflect views of the Ozone Transport Commission or member States.

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TABLES

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ACRONYMS AND ABBREVIATIONS

AIM	architectural and industrial maintenance
ARB	Air Resources Board
BEA	Bureau of Economic Analysis
Btus	British thermal units
CAA	Clean Air Act
CBG	Cleaner Burning Gasoline
CE	control efficiency
E-GAS	Economic Growth Analysis System
EGU	electricity generating unit
EIC	emission inventory code
EPA	U.S. Environmental Protection Agency
FIRE	Factor Information Retrieval
g/l	grams per liter
HAP	hazardous air pollutant
km	kilometers
lbs/yr/person	pounds per year per person
lbs/capita	pounds per capita
MACT	maximum achievable control technology
MERR	mobile equipment repair and refinishing
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NET96	1996 National Emission Trends Inventory
NO_x	nitrogen oxides
NPCA	National Paint and Coatings Association
OTC	Ozone Transport Commission
OTR	Ozone Transport Region
PADD	Petroleum Administration for Defense Districts
PM	particulate matter
ppm	parts per million
psi	pounds per square inch
RACT	reasonably available control technology
RE	rule effectiveness
RP	rule penetration
RVP	Reid vapor pressure
SCAQMD	South Coast Air Quality Management District
SCC	Source Classification Code
SCM	Suggested Control Measure
SICs	Standard Industrial Classifications
SIP	State Implementation Plan
STAPPA/ ALAPCO	State and Territorial Air Pollution Program Administrators/ Association of Local Air Pollution Control Officials
TNRCC	Texas Natural Resource Conservation Commission
tpd	tons per day
VOC	volatile organic compound

EXECUTIVE SUMMARY

The States of the Ozone Transport Commission (OTC) are considering adopting additional control measures as part of their attainment and maintenance plans for the health-based Federal ozone standard. The analyses in this report provide estimates of the emission reductions and associated costs for adopting five volatile organic compound (VOC) model rules and one nitrogen oxides (NO_x) model rule throughout the Ozone Transport Region (OTR). The VOC model rules have the potential to reduce emissions from consumer products, portable fuel containers, architectural and industrial maintenance (AIM) coatings, mobile equipment refinishing and repair operations, and solvent cleaning operations. The NO_x model rule has the potential to reduce emissions from stationary internal combustion engines, gas turbines, industrial boilers, and cement kilns. This NO_x model rule will yield additional reductions for smaller NO_x sources that are not regulated under current regional or Federal NO_x programs.

The analysis for this study assesses additional emission reductions from OTC model rules taking into account the expected emissions reduction from current Federal and State regulations and State Implementation Plan (SIP) assumptions; this ensures no double counting. Population based emission factors were used for the four VOC source category model rules. The portable fuel container analysis was done for residential and commercial usage using housing and business indicators.

The NO_x model rule analysis presented in this report is the product of an extensive review of available data and a review process with the OTC States during the project period. This was important because previous regulatory efforts have focused on NO_x sources that are larger than those affected by the OTC NO_x model rule.

Table ES-1 summarizes the expected model rule emission reductions for the three severe ozone nonattainment areas in the Northeast OTR: the Baltimore, Maryland area; the Philadelphia-Wilmington-Trenton area; and the New York-Northern New Jersey-Long Island-Southwest Connecticut area. The emission reductions listed in this table are either for 2005 or 2007, depending on the area's attainment date.

Figure ES-1 shows the OTC VOC model rule expected 2005 emission reductions by State. The largest estimated VOC emission reductions are in the most populous States – Pennsylvania and New York. Emission reduction estimates for each State are proportional to population: those areas with regulation already in place will show smaller reductions. Since these rules will yield additional reductions beyond 2005, those States having 2007 attainment dates will report higher emission reductions for SIP accounting purposes.

Table ES-1
OTC Model Rule Estimated Benefits for Severe Ozone Nonattainment Areas

Nonattainment Area	Attainment Date	Model Rule	2005/2007 Benefit (tpd)		EPA Shortfall (tpd)	
			NO_x	VOC	NO_x	VOC
Baltimore, MD	2005	NO_x Model Rule	5	0		
		Consumer Products	0	4		
		Portable Fuel Containers	0	2		
		AIM Coatings	0	8		
		Mobile Equipment Refinishing	0	0		
		Solvent Cleaning Operations	0	0		
		Total	**5**	**13**	**0**	**13**
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD	2005	NO_x Model Rule	6	0		
		Consumer Products	0	9		
		Portable Fuel Containers	0	5		
		AIM Coatings	0	19		
		Mobile Equipment Refinishing	0	6		
		Solvent Cleaning Operations	0	20		
		Total	**6**	**59**	**3**	**62**
New York-N. New Jersey-Long Island, NY-NJ-CT	2007	NO_x Model Rule	22	0		
		Consumer Products	0	26		
		Portable Fuel Containers	0	25		
		AIM Coatings	0	42		
		Mobile Equipment Refinishing	0	20		
		Solvent Cleaning Operations	0	7		
		Total	**22**	**120**	**7**	**85**

NOTES: Emission benefits estimates in this table are provided as integer values. Any emission benefit of less than 0.5 tpd is listed as a zero in this table. Totals may not equal the sum of the individual rule benefits because of rounding.

Figure ES-2 provides a similar display for the NO_x model rule. The biggest NO_x model rule-associated emission reductions are expected in New York, followed by those in New Jersey and Pennsylvania.

Figure ES-3 summarizes the expected VOC and NO_x emission reductions from the OTC model rules for the different geographic areas that have been examined in this analysis. The total emission reductions in the three severe ozone nonattainment areas for all of the model rules combined in 2005 are 180 tons VOC per day and 32 NO_x tons per day (tpd). Expanding the analysis area to counties within 100 kilometers (km) of these three severe ozone nonattainment areas provides an additional 168 tpd in VOC emission benefits, and another 11 tpd in NO_x emission reductions. OTR-wide model rule benefits total 533 VOC tpd and 65 NO_x tpd in 2005.

CHAPTER I
INTRODUCTION

The OTC was formed by Congress through the Clean Air Act (CAA) Amendments of 1990 to help coordinate control plans for reducing ground-level ozone in the Northeast and mid-Atlantic States. Since its inception, OTC has focused on a number of tasks, including: assessing the nature and magnitude of the ozone problem in the region, evaluating potential control approaches, and recommending regional control measures. Twelve States and the District of Columbia are represented in the OTC.

OTC States continue to work individually and collectively to ensure attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). This includes identifying any remaining control measures that may be necessary to attain and maintain the one-hour NAAQS, as well as to start reducing eight-hour average ozone levels. Six States (Connecticut, Delaware, Maryland, New Jersey, New York, and Pennsylvania) in particular are focusing on additional control measures as a part of their one-hour attainment demonstrations. However, all States will benefit from additional emission reductions of ozone precursors for purposes of maintaining the one-hour standard.

The analysis in this report provides estimates of the emission reductions and associated costs for adopting five VOC model rules and one NO_x model rule throughout the Northeast OTR. The VOC model rules have the potential to reduce emissions from consumer products, portable fuel containers, AIM coatings, mobile equipment refinishing and repair operations, and solvent cleaning operations. The NO_x model rule has the potential to reduce emissions from stationary internal combustion engines, gas turbines, industrial boilers, and cement kilns. This NO_x model rule will yield additional reductions for smaller NO_x sources that are not covered under current regional NO_x programs.

Chapter II describes the methods used to estimate the emission benefits of the VOC model rules. This chapter delineates the existing OTC State regulations that affect VOC emissions from the model rule source categories. It has separate sections that describe analysis methods for each of the individual VOC model rules.

NO_x model rule analysis methods are described in Chapter III. Existing State regulations affecting NO_x emissions from industrial boilers, internal combustion engines, gas turbines, and cement kilns are presented in the first section of this chapter. This chapter also describes the data bases that were developed and applied in this analysis, and the methods used to estimate model rule benefits.

Chapter IV presents estimates of the expected 2005/2007 model rule emission benefits. Estimated emission benefits are presented first for the three severe ozone nonattainment areas within the Northeast OTR. These are the areas for which the U.S. Environmental Protection Agency (EPA) has estimated emission shortfalls. Because the model rules may not achieve all of the needed VOC and NO_x emission reductions to meet these shortfalls,

the analysis also examines the expected emission benefits within 100 km of these severe ozone nonattainment areas.

Chapter V provides the results of an AIM coatings market survey, which was performed to investigate the availability of AIM coatings that comply with the VOC limits of the OTC Model Rule. Chapter VI is the diesel fuel sampling plan. Caveats and uncertainties associated with this analysis are described in Chapter VII.

CHAPTER II
VOC MODEL RULE ANALYSIS METHODS

Base and future year VOC emission estimates for the consumer products rule, the AIM coatings rule, the mobile equipment refinishing and repair rule, and the solvent cleaning rule use per capita emission factors. U.S. Census Bureau *1996 County Population Estimates* were used to estimate 1996 VOC emissions for these States (Census, 2000). The July 1, 1996 population estimates were used for each OTC State. The U.S. Census Bureau released these population estimates to the public in March 2000. They contain revisions of estimates from previous years and the results of special censuses and test censuses conducted by the U.S. Census Bureau.

The Economic Growth Analysis System (E-GAS) model was run to obtain specific growth factors for both the nonattainment areas and remaining counties in a State. These growth factors were then applied to 1996 population to project county-level populations for 2005 and 2007.

A. EXISTING STATE RULES

Table II-1 summarizes OTC State VOC regulations for four of the source categories whose emissions are potentially affected by the OTC draft model VOC rules. If no regulation is listed in Table II-1, then the future VOC emissions from that source category are limited by the applicable Federal rule. There are no State regulations that affect portable fuel container VOC emissions, so this source category is not included in the table.

B. CONSUMER PRODUCTS RULE

1. Model Rule Summary

The Federal consumer product rule became effective in December 1998 (63FR48819, 1998). It regulates 24 product categories representing 48 percent of the consumer products inventory, nationally, and reduces VOC emissions from those product categories by 20 percent. Over one-half of the inventory is unregulated in the OTR. In order to capture additional emission reductions from this sector, the OTC is developing a model rule for this source category.

The OTC model rule regulates approximately 80 consumer product categories, and uses more stringent VOC content limits than the Federal rule. Some of the limits are currently in effect in California, and are known to be technologically feasible; others have future effective dates. The proposed compliance date for the model rule limits is January 1, 2005. Manufacturers are to ensure compliance with the limits by reformulating

Table II-1
OTC State VOC Regulations for the Model Rule Categories

State	Consumer Products	AIM Coating	Solvent Cleaning Operations	Mobile Equipment Repair and Refinishing
Connecticut	n/a	n/a	- MERR sources can opt in to a general permit which requires the use of HVLP sprayers, electrostatic equipment, or other application methods guaranteed to achieve at least 65% transfer efficiency. Closed applicator cleaning devices and work practices minimizing solvent losses are also required. VOC limits are not specified, but total VOC emissions are limited to 5 tpy (facilities constructed/ modified after 1998) or major source thresholds (facilities constructed/modified through 1998). Many eligible sources have opted into the general permit. - No previous SIP credit has been requested for this permitting program.	n/a
District of Columbia	n/a	n/a	n/a	n/a
Maine	n/a	n/a	n/a	n/a
Delaware	n/a	n/a	- Regulation #24, Section 33 - Effective May 31, 1995 - Standards for cold cleaning, open top vapor degreasing, and conveyorized degreasing	- Regulation #24, Section11 - Effective April 1, 1996 - This rule sets limits on VOC content of the coatings - VOC limits similar to National Rule

Table II-1 (continued)

State	Consumer Products	AIM Coating	Solvent Cleaning Operations	Mobile Equipment Repair and Refinishing
Maryland	n/a	n/a	- COMAR 26.11.19.09 - Final State Implementation Plan (SIP) rule was effective in 1997 - After May 15, 1996, a person may not use any VOC degreasing material that has a vapor pressure greater than 1 millimeter mercury at 20^{o} C. - The use of any halogenated substance that is a VOC is prohibited. - The use of VOC degreasing material is prohibited, unless the vapor degreaser is equipped with a condenser or a pollution control device with an overall control efficiency of at least 90%	- COMAR 26.11.19.23 - Final SIP rule was effective in 1997 - The rule establishes standards for vehicle refinishing based on VOC content of coatings - Requires both the use of HVLP spray guns and enclosures for cleaning spray guns and lines - This rule sets a VOC limit for precoat coatings, which is not included in the National Rule
Massachusetts	- 310 CMR 7.25 (12) - Effective 1995 - VOC limits similar to NY/NJ Rule and National Rule - National Rule covers more product categories than the MA Rule - Provision in MA Rule stating that EPA VOC limits will override MA VOC limits	- 310 CMR 7.25 (11) - Effective 1995 - VOC limits similar to NJ Rule - National Rules covers more AIM Coatings categories than the MA Rule - For some categories, the MA Rule has more stringent VOC limits than the National Rule, and vice versa - Provision in MA Rule stating that EPA VOC limits will override MA VOC limits	- EPA's Compliance Technical Guideline - Effective early 1980s	- 310 CMR 7.18 (28) - Effective 1995 - VOC limits similar to National Rule - HVLP guns and enclosed gun cleaning requirements or equivalent.
New Hampshire	n/a	n/a	n/a	n/a

Table II-1 (continued)

State	Consumer Products	AIM Coating	Solvent Cleaning Operations	Mobile Equipment Repair and Refinishing
New Jersey	- Title 7, Chapter 27, Subchapter 24 - Effective 1995 - Rule covers entire State - VOC limits similar to National Rule - Provision in NJ Rule stating that EPA VOC limits will override NJ VOC limits	- Title 7, Chapter 27, Subchapter 23 - Effective 1989 - Rule covers entire State - VOC limits similar to National Rule and NY Rule - National Rules covers more AIM Coatings categories than the NJ Rule - For some categories, the NJ Rule has more stringent VOC limits than the National Rule, and vice versa	- Title 7, Chapter 27 Subchapter 16 - EPA's Compliance Technical Guideline effective 1986	n/a
New York	- 6 NYCRR Part 235 - Effective 1996 (last amended) - Rule covers entire State - VOC limits similar to National Rule - National Rule covers more product categories than the NY Rule	- 6 NYCRR Part 205 - Effective 1989 - Rule covers only NYC metropolitan area - VOC limits similar to National Rule - National Rules covers more AIM Coatings categories than the NY Rule - For some categories, the NY Rule has more stringent VOC limits than the National Rule, and vice versa	- 6 NYCRR Part 226 - Effective in the NYC metropolitan area for 1990 and 1996 - This rule implements good housekeeping procedures for surface cleaning operations - In 1999, the NYC metropolitan area will be subject to the NESHAP for Solvent Cleaning (40 CFR 63,460, Subpart T, Vol. 59, No. 231)	- 6 NYCRR Part 228 - Effective 1990 for the NYC metropolitan area/LOCMA - In 1996, the entire State will be effected by the National Rule
Pennsylvania	n/a	n/a	- Section 129.63 Degreasing Operations	- Section 129.75 adopted November 24, 1999, effective November 27, 1999
Rhode Island	- Regulation #31 - Effective 1994 (last amended 1996) - VOC limits similar to National Rule	- Regulation #33 - Effective 1996 - VOC limits similar to NJ Rule - National Rules covers more AIM Coatings categories than the RI Rule - For some categories, the RI Rule has more stringent VOC limits than the National Rule, and vice versa	- EPA's Compliance Technical Guideline-Effective 1979 - Organic Solvent Cleaning NESHAP-Effective 1996	- Regulation #30 - Effective 1994 (last amended 1996) - VOC limits similar to National Rule - HVLP guns and enclosed gun cleaning requirements or equivalent
Vermont	n/a	n/a	n/a	n/a
Virginia	n/a	n/a	n/a	n/a

NOTE: Portable fuel containers are not included in this table because they are not currently regulated by any OTC States.

products and substituting products with compliant products that are already on the market.

The OTC model rule contains requirements for approximately 80 product categories. Examples include aerosol adhesives, floor wax strippers, dry cleaning fluids, and general purpose cleaners. It also contains administrative requirements for labeling, reporting, code-dating, and a "most restrictive limit" scenario. There is a reporting requirement, such that manufacturers may be required to submit information to the State upon written notice.

A California Air Resources Board (ARB) test method would be primarily used to demonstrate compliance. Alternative accepted test methods are also allowed. Enforcement with the product VOC content limits and other requirements would be performed on a State-by-State basis.

If complying with the VOC content limits becomes difficult, flexibility options are provided for in the draft model rule. These include an innovative product exemption (e.g., a non-compliant product with a delivery system that puts it in compliance with the limits); variances; exemptions; an alternative control plan; and a provision that allows products to be sold that are manufactured before the rule applicability date.

2. Analysis Methods

The VOC emission reductions in 2005 and 2007 attributable to the EPA final rule regulating consumer products were estimated using the EPA guidance that was issued June 22, 1995 (Seitz, 1995a). At that time, development of a Federal consumer products rule was still in progress. The purpose of the Seitz memo was to provide guidance concerning credit that could be taken in rate-of-progress plans for reductions associated with the consumer products rule.

The memorandum said that the States were allowed to take credit for a 20 percent reduction from the national consumer products rule. Based on EPA's study, baseline emissions from the categories covered by this rule (i.e., a subset of all consumer products) were estimated to be approximately 3.9 pounds per capita annually. A 20 percent reduction would be about 0.8 pounds per capita annually. A control efficiency (CE) of 14.2 percent was developed from the 20 percent reduction anticipated from the Federal regulation. A rule effectiveness (RE) value of 100 percent was applied because any Federal rule would require all products to comply. A rule penetration (RP) value of 48.6 percent was applied in the analysis because VOC content limits only apply to that portion of the potentially affected products.

The equation for computing the VOC emission factor for consumer products after control by the National/Federal Rule is listed below:

Post-control emission factor = Pre-control emission factor [1-CE(RP)(RE)]
Post-control emission factor = 7.84 pounds per capita (lbs/capita) [1-(.2)(1.00)(0.486)]
= 7.06 lbs/capita

The OTC model rule requires manufacturers of particular products to reformulate them to meet VOC limits. The VOC limits in the model rule are based on rules adopted or under consideration by ARB. Consumer product emission reductions for the OTC model rule are estimated to be 14.2 percent of the total consumer product inventory of the national rule reduction. These estimated reductions were based on information in the ARB staff report and surveys (ARB, 1989; 1999a). Recent information can be found on the ARB website *Consumer Products Program* section (http://www.arb.ca.gov/consprod/consprod.htm). A rule penetration value of 100 percent is applied for the OTC model rule because the estimated 14.2 percent control efficiency accounts for the percentage of affected projects. Rule effectiveness is 100 percent because compliance is via product reformulation.

The credit for the OTC model rule affecting consumer products relative to the National Rule was computed as shown below:

Post OTC model rule control emission factor = 7.06 lbs/capita [1-(0.142)(1.00)(1.00)]
= 6.06 lbs/capita

3. Cost Estimates

ARB has estimated the cost of their rule to be $800 per ton (ARB, 1999a). Since the OTC model rule emission limits are based on California's, this value should be approximate costs that would be incurred to meet the same limits in the OTC States. However, because compliance costs are spread over a larger portion of sales in the OTC than in California, costs incurred by manufacturers are expected to be lower than $800 per ton.

C. PORTABLE FUEL CONTAINER RULE

1. Model Rule Summary

This draft model rule addresses VOC emissions from portable fuel containers. The rule specifies performance standards for portable fuel containers and/or spouts which are intended to reduce emissions from storage, transport and refueling activities. The rule states that any portable fuel container and/or spout must provide the following:

- only one opening for both filling and pouring;
- an automatic shut-off to prevent overfill during refueling;
- automatic closing and sealing of the container and/or spout when not dispensing fuel;
- a fuel flow rate and fill level as specified in the rule;
- a permeation rate of less than or equal to 0.4 grams per gallon per day; and
- a warranty by the manufacturer as specified in the rule.

The draft model rule applies to any person or entity who will sell, supply, offer for sale or manufacture for sale portable fuel containers and/or spouts on or after January 1, 2003. Manufacturers of portable fuel containers are required to verify compliance through testing and record-keeping. The rule also specifies administrative and labeling requirements. The rule affects all portable fuel containers and/or spouts except:

- containers with a capacity of less than or equal to one quart;
- rapid refueling devices with capacities greater than or equal to four gallons;
- safety cans and portable marine fuel tanks that operate in conjunction with outboard engines; and
- products which result in cumulative VOC emissions below those of a representative container and/or spout.

2. Analysis Methods

Base case emissions were calculated by accounting for emissions from five different components related to gas container use, including permeation, diurnal, transport-spillage, spillage and vapor displacement emissions for two sectors: residential and commercial. Emission estimation methodologies for portable fuel containers were obtained from ARB's Mailout MSC 99-25, "Public Meeting to Consider Approval of CA's Portable Gasoline-Container Emissions Inventory," (ARB, 1999b). The estimated portable fuel container population and usage data for both residential and commercial sectors were developed using survey information collected by ARB. Emission rates were based on tests conducted by ARB and EPA for various portable fuel container activities.

To estimate permeation, diurnal, and transport-spillage emissions, the number of portable fuel containers for both residential and commercial sectors was used as activity data. Spillage and vapor displacement emissions are estimated using data on the population of nonroad equipment assumed to be refueled with portable fuel containers. The method for estimating activity data for each of these is discussed below.

The number of residential containers in the OTR was estimated using the number of housing units as an indicator. Occupied housing units by county were obtained for the year 1990 from the U.S. Census Bureau (Census, 1999). These data were then grown to 1996 using the change in U.S. Census Bureau estimates of county-level population estimates between 1990 and 1996. The 1996 occupied housing units by county were then projected to the years 2005 and 2007 using population as an indicator. Growth factors corresponding to the change in population between 1996 and 2005, as well as between 1996 and 2007 were obtained from the E-GAS model. The expected number of containers per household, the portable gas can material, amount of fuel stored and storage condition (open/closed) were based on the ARB survey results.

The number of portable fuel containers used by commercial businesses was estimated using the number of establishments expected to have at least one gas can. The number of establishments for 1996 was taken from the Dun & Bradstreet Marketplace3.0 Database. Establishment data for all counties within the OTR were compiled for the following Standard Industrial Classifications (SICs), which are the establishments most likely to own and use portable gasoline containers:

- 01 - Agricultural Crops
- 02 - Agricultural Livestock
- 07 - Agricultural Service (except 074 and 075)
- 08 - Forestry
- 15, 16, 17 - Construction
- 55 - Automotive Dealers and Gasoline Service Stations

- 75 - Automotive Repair, Services and Parking

Establishment data were then projected from 1996 to 2005 and 2007 using employment projections from the U.S. Department of Labor's Bureau of Labor Statistics (BLS, 1999). Employment projections were only available for the years 1998 and 2008. Employment in 2005 and 2007 was estimated using linear interpolation. Growth factors were developed for all of the above SIC codes, and then weighted based on the number of establishments within each SIC. A weighted growth factor was then applied to the number of total establishments per county in all of the above SIC codes. The expected number of containers per commercial business, the portable gas can material, amount of fuel stored, and storage condition (open/closed) were obtained from the ARB survey results.

Spillage and vapor displacement emissions are estimated using data on the population of nonroad equipment assumed to be refueled with gas cans. Data on the characteristics of nonroad engines were used as the activity (e.g., amount of fuel consumed per day, fuel tank size). The calculations only account for equipment likely to be refueled with a gas can, instead of at the pump. Daily fuel consumption estimates by county were obtained from EPA's NONROAD model for the years 1996 and 2007 (EPA, 2000a). Fuel consumption estimates for 2005 were estimated by applying an average annual rate of change each year from 1996 to 2007.

Baseline emissions for permeation, diurnal, transport-spillage, spillage and vapor displacement emissions were then calculated for the years 1996, 2005 and 2007. Emission estimates were calculated using the emission rates and equations developed by ARB. For the vapor displacement emission factor, an average Reid vapor pressure (RVP) of 7.8 pounds per square inch (psi) and an average temperature of 88EF were assumed. These values were based on RVP and temperature values used to estimate highway vehicle emissions in the Philadelphia, PA SIP.

Table II-2 compares the emissions estimates calculated for the OTC to those calculated for California. The region of New York, New Jersey and Connecticut was selected for the comparison since they have similar residential housing unit and commercial business populations to California. The emission estimates for permeation, diurnal, and transport-spillage for both the residential and commercial sectors are similar to those estimated for California. Spillage and refueling vapor displacement are estimated for both residential and commercial simultaneously using combined fuel consumption data calculated from the NONROAD model. The emission estimates for spillage and vapor displacement for NY, NJ, and CT are significantly higher than the emission estimates produced for California. This is due to higher fuel consumption estimates produced by the NONROAD model compared to fuel consumption from ARB's Off-Highway Emissions Estimate Model (OFFROAD).

Table II-2
Comparison of OTC and California Emission Estimates

	Residential Emissions (tons per day [tpd])		Commercial Emissions (tpd)		Total by Emissions Type (tpd)	
	CT, NJ, NY	CA	CT, NJ, NY	CA	CT, NJ, NY	CA
Population	10,812,566	11,390,000	193,928	84,712		
Emission Type						
Permeation	6.6	6.8	1.0	0.4	7.6	7.2
Diurnal	57.4	59.1	10.1	5.2	67.5	64.3
Transport-Spillage	3.1	3.2	6.1	2.6	9.2	5.8
Spillage					27.7	6.9
Refuel Vapor Displace					7.6	2.3
Total	**67.2**	**69.1**	**17.1**	**8.2**	**119.6**	**86.5**

The OTC model rule requires manufacturers to comply with the requirements by January 1, 2003. Rule penetration can be assessed through sales and container turnover as consumers buy new compliant fuel containers to replace existing ones. California conducted an industry survey on portable fuel container sales, and determined that there is a five-year turnover rate for fuel containers. For the purpose of this analysis, the OTC chose to assume a more conservative ten-year turnover rate, with 100 percent rule penetration by January 1, 2013.

For the purposes of this analysis, a constant rate of turnover was assumed (i.e., every year after 2003, 1/10 of the total fuel containers would be replaced, until all are replaced by 2013). Therefore, the emission benefits were calculated for July of 2005 and 2007, 2-1/2 and 4-1/2 years, respectively, from the compliance date. The number of replaced units was assumed to be 0.25 and 0.45 of the total number of containers in the base year of 1996.

ARB has identified gasoline containers as a potentially significant source of VOC emissions during the ozone season. Emission estimates for the five evaporative components (permeation, diurnal, transport-spillage, spillage and vapor displacement emissions) need to be allocated to a specific Source Classification Code (SCC) for reporting in the inventory.

Spillage and *vapor displacement* emissions occur during the refueling of some nonroad equipment with gas cans. Spillage emissions result when fuel is spilled during the refueling process, and vapor displacement emissions result when new liquid added to a fuel tank displaces fuel vapors already present in the tank. EPA's NONROAD model calculates spillage and vapor displacement emissions (in addition to diurnal emissions from fuel present in the equipment tank). Therefore, if a State is using NONROAD to develop their emission inventory, evaporative VOC emissions for spillage and vapor displacement during nonroad equipment refueling with gas cans is already taken into account. If a State then added emission estimates for these components developed using ARB's method to their nonroad inventory, double counting of refueling emissions may occur. For States not using EPA's NONROAD model, the SCC-level estimates that were generated for this analysis using the ARB methodology can be used directly.

If a State developed VOC exhaust emission estimates for specific nonroad SCC's using a method besides the NONROAD model, potential overlapping SCCs reporting exhaust and refueling emissions would need to be identified. In these cases, the evaporative VOC component would need to be added to the exhaust VOC component to estimate total VOC emissions. The NONROAD model automatically adds the exhaust and evaporative VOC emissions together to estimate total VOC.

Diurnal and *permeation* emissions associated with the fuel present in stored gas cans, and *transport-spillage* emissions associated with refueling of a gas can at the gasoline pump are not modeled in NONROAD. These emissions result during gas can storage and transport and are not tied directly to nonroad equipment. An EPA SCC is not available for gas container evaporative emissions. In the absence of an existing SCC, the diurnal, permeation, and transport-spillage emissions could be reported under nonroad equipment SCCs based on the contribution of nonroad categories to refueling emissions. Table II-3 shows the VOC refueling emission estimates calculated for the OTR for this analysis using ARB methods. The percentage contribution for each nonroad category is also presented. For some categories, the percent contribution is less than 1 percent. When assigning the remaining non-refueling emissions to SCCs, these categories could be ignored. States could also evaluate the refueling emissions for their own State and calculate their own refueling emissions distribution. If EPA's NONROAD model is used, the NONROAD model refueling estimates could also be used to calculate the appropriate allocation percentages.

Table II-3
Summary of 1996 Refueling Emissions for the OTC States, and Percent Contribution for Nonroad Equipment Categories

SCC	SCC Description	Spillage Emissions (tpd)	Vapor Displacement Emissions (tpd)	Total Refueling Emissions (tpd)	% Refueling Total
2260001xxx	2-stroke gasoline recreational	0.197	0.163	0.360	0%
2260003xxx	2-stroke gasoline industrial	0.000	0.001	0.001	0%
2260004xxx	2-stroke gasoline lawn and garden	24.114	1.601	25.715	28%
2260006xxx	2-stroke gasoline light commercial	0.189	0.049	0.237	0%
2260007xxx	2-stroke gasoline logging	5.834	0.427	6.260	7%
2265001xxx	4-stroke gasoline recreational	0.021	0.043	0.064	0%
2265003xxx	4-stroke gasoline industrial	0.097	0.503	0.601	1%
2265004xxx	4-stroke gasoline lawn and garden	34.683	13.374	48.057	53%
2265006xxx	4-stroke gasoline light commercial	6.389	2.119	8.509	9%
2265007xxx	4-stroke gasoline logging	0.041	0.014	0.054	0%
2282xxxxxx	Gasoline recreational marine	0.184	0.493	0.677	1%
	Total	**71.8**	**18.8**	**90.5**	**100%**

ARB accounts for gasoline container diurnal, permeation and transport-spillage emissions under a separate emission inventory code (EIC). ARB's EIC system is comparable to EPA's SCC reporting system. Calculations for estimating these three components are modeled in their OFFROAD model, which also estimates the nonroad equipment spillage and vapor displacement emissions. Since the emissions from a particular gas can could potentially be associated with multiple nonroad equipment types, especially for residential uses, ARB decided to create a separate EIC for gasoline containers.

Additional information about the ARB emission estimation methods for portable fuel containers is provided in Appendix A.

3. Cost Estimates

Sales prices of portable fuel containers were based on the ARB staff report (ARB, 1999c). The ARB report includes both average sales prices of existing portable fuel containers and estimates of sales prices for containers which meet the draft model rule performance specifications. Costs vary based on container size. These cost estimates are presented in Table II-4.

Table II-4
Estimated Sales Price for Portable Gas Containers

Size of Container (gallons)	Percent of Total Containers	Average Unit Cost of Container (1998 $)	Estimated Unit Cost of Container which Meets Rule Specifications (1998 $)	Incremental Cost to Meet Rule Requirements
1 - 1.5	39%	$2.62	$9.00	$6.38
2 - 2.5	36%	$3.79	$12.00	$8.21
5 - 6	25%	$7.44	$18.00	$10.56

The annual gas can population turnover and the estimated sales prices for each container are used to calculate the incremental cost of the draft model rule on an annual basis. The total VOC reductions for 2007 and the annual incremental cost were used to calculate the cost of compliance in dollars per ton. Table II-5 presents the cost of compliance in 1998 dollars.

Table II-5
Cost of Compliance with Portable Gas Container Rule

Estimate of Containers Sold in OTR Annually	Incremental Cost ($/year)	VOC Reductions (tons/year)	Cost of Compliance ($/ton)
2,282,330	$18,452,882	40,895	450

D. AIM COATINGS RULE

1. Model Rule Summary

The OTC Model Rule for AIM Coatings (AIM OTC Model Rule) requires manufacturers to reformulate coatings to meet specified VOC content limits, which are specified in grams per liter. The VOC content limits contained in the AIM OTC Model Rule are based on the Suggested Control Measure (SCM) adopted by ARB, and the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) model rule for AIM Coatings.

All products manufactured for sale or use within an OTC State after January 1, 2005 would need to comply with the VOC content limits in the AIM OTC Model Rule. A provision allows products to be sold that are manufactured before the rule applicability date. Testing to demonstrate compliance will primarily be done in accordance with EPA Method 24, although alternative test methods may be allowed.

2. Analysis Methods

Emissions for 1996 were estimated using an emission factor of 6.7 lbs/capita/yr, applied to county-level populations. The emission factor of 6.7 lbs/capita/yr represents a combined value for architectural coatings, traffic markings, and two subcategories of industrial maintenance coatings, including high-performance maintenance and other special purpose coatings. These emission factor values were obtained from EPA guidance (EPA, 1991).

In 1985, the New York Department of Environmental Conservation performed an AIM survey in the New York Metropolitan area, and used the survey results to derive an emission factor of 3.1 lbs/capita. This VOC emission factor is lower than the national emission factor, in part, because of the high population density in New York City. This 3.1 lbs/capita VOC emission factor was used to estimate baseline and Federal rule emission rates for New York counties within the New York ozone nonattainment area. Ozone season daily emissions were estimated by dividing annual emission estimates by 365 days per year. The emission generating activity is estimated to occur 7 days per week during the ozone season. A seasonality factor of 1.3 is applied to this source category to reflect higher ozone season activity for coating applications. A 1.3 factor means that average daily emissions are multiplied by 1.3 to estimate ozone season daily emissions.

For 2005 and 2007, the National Rule is estimated to yield VOC reductions of 20 percent. This value is consistent with policy issued by EPA (Seitz, 1995b), which recommends that States claim a 20 percent emission reduction credit for this rule. For this analysis, a 20 percent control effectiveness was assumed, which seems justifiable given that water-borne coating technology is resulting in products with VOC contents well below the National Rule limits. Rule penetration and rule effectiveness values are both 100 percent for this source category, reflecting the compliance and distribution practices of this industry.

The equation for computing the VOC emission for AIM coatings after control by the National/Federal Rule is listed below:

Post-control emission factor = Pre-control emission factor [1-CE(RP)(RE)]
Post-control emission factor = 6.7 lbs/capita [1-(.2)(1.00)(1.00)]
= 5.36 lbs/capita

The AIM Coatings model rule is estimated to provide a 31 percent VOC emissions reduction from the National/Federal Rule. This reduction was computed using information from data provided by the Industry Insights Survey for the National Paints and Coatings Association (Industry Insights, 1993). This same data set was used in the regulatory negotiation process by EPA and stakeholders when the Federal architectural coatings rule was established. OTC model rule emission reductions were computed on a constant solids basis.

The credit for the OTC model rule affecting AIM coatings relative to the National/ Federal Rule was computed as shown below:

Post OTC model rule control factor = 5.36 lbs/capita [1-(0.31)(1.00)(1.00)]

= 3.7 lbs/capita

A survey of manufacturers in the OTR is presently being conducted to investigate the availability of AIM coatings that are compliant with the VOC limits of the AIM OTC Model Rule. Once final survey results are compiled and analyzed, this information may be used to refine the estimated AIM coatings rule benefits. Preliminary survey findings to date are summarized in Chapter V of this report.

3. Cost Estimates

A cost of $6,400 per ton of VOC reduced was estimated based on ARB's SCM cost analysis. This average cost-effectiveness was weighted by emission reductions across all the proposed limits. Details on the assumptions used for ARB's cost analysis are provided in the "Staff Report for the Proposed Suggested Control Measure for Architectural Coatings," (ARB, 2000a).

E. MOBILE EQUIPMENT REPAIR AND REFINISHING RULE

1. Model Rule Summary

The OTC has developed a model rule that addresses VOC emissions from mobile equipment repair and refinishing operations. The rule includes VOC limits for paints used in the industry that are consistent with the Federal limits for mobile equipment refinishing materials. The rule also establishes requirements for using improved transfer efficiency application equipment and enclosed spray gun cleaning, and requires minimal training.

In addition to requiring that refinishing materials meet the Federal VOC limits, the model rule proposes a number of pollution prevention initiatives. For example, the coating application requirements specify using improved transfer efficiency spray equipment such as high volume-low pressure (HVLP) equipment. Using higher transfer efficiency equipment would reduce paint use and consequently reduce painting-related emissions. Reduced "overspray" from painting operations would reduce the frequency of booth filter replacement and related disposal and replacement costs, making operations more economical for the facility owners.

Operators would be required to use spray gun cleaning equipment that minimizes solvent loss. While commercially available spray gun cleaners are desirable, the proposal would allow other containers for spray gun cleaning to be used, as long as the container is closed when not in use.

Operators would be required to complete minimum training in proper use of equipment and materials, and maintain a record of the training. The training requirement could be met through attending formalized training centers or through information provided by paint and equipment representatives during routine shop visits.

2. Analysis Methods

The 1996 emissions for mobile equipment repair and refinishing were estimated using a per capita emission factor of 2.3 pounds VOC per capita per year. This emission factor was obtained from 1991 EPA guidance (EPA, 1991). The National Rule promulgated in 1998 called for VOC limits that have been incorporated into the OTC model rule. Similar limits are already in place in some OTC States (e.g., PA Rule 129.75). EPA estimated a 37 percent reduction for the National Rule (Seitz, 1994). Because this rule affects manufacturers, a 100 percent rule-effectiveness is used, which assumes that instructions on how to apply the coatings are followed. In addition, rule penetration is 100 percent because the rule affects all sources within the category. Ozone season daily emissions were estimated by dividing annual emission estimates by 365, and assuming 5 days per week of operation. The 5 days per week assumption is applied by multiplying average daily emissions by 7/5.

The equation for computing the VOC emission factor for mobile equipment repair and refinishing after control by the National/Federal Rule is listed below:

Post-control emission factor = Pre-control emission factor [1-CE(RP)(RE)]
Post-control emission factor = 2.30 lbs/capita [1-(.37)(1.00)(1.00)]
= 1.45 lbs/capita

Incremental to the National Rule, the OTC model rule requires the use of high transfer-efficiency painting methods (e.g., high volume low pressure spray guns), and controls on emissions from equipment (e.g., spray gun) cleaning, housekeeping activities (e.g., use of sealed containers for clean-up rags), and operator training. An incremental control effectiveness of 38 percent was estimated for the OTC model rule relative to the National Rule. This estimate includes a 35 percent reduction from the use of high transfer-efficiency spray guns and another 3 percent from the use of enclosed spray gun cleaners.

The credit for the OTC model rule affecting mobile equipment refinishing and repair relative to the National Rule was computed as shown below:

Post OTC model rule control emission factor = 1.45 lbs/capita [1-(.38)(1.00)(1.00)]
= 0.90 lbs/capita

In addition, the State of Maryland had SIP rules in place by 1996 that affected all serious and severe nonattainment area counties, which contain limits and requirements comparable to the National Rule and the OTC model rule. As such, the per capita emission factor for these counties was adjusted for 1996, as well as for the 2005 and 2007 base cases. Therefore, no OTC model rule emission benefits were estimated for these Maryland counties. The State of Delaware had a rule for mobile equipment repair and refinishing in place in 1997 that affected all counties in that State. This Delaware rule contains VOC limits that are the same as those in the OTC model rule, but the operating requirements were different. Therefore, the additional requirements in the OTC model rule will yield VOC benefits.

3. Cost Estimates

A cost of $1,534 per ton of VOC reduced was estimated based on the use of HVLP spray guns and a gun cleaning system, as estimated for Pennsylvania for Rule 129.75.

F. SOLVENT CLEANING OPERATIONS RULE

1. Model Rule Summary

The Solvent Cleaning Operations draft model rule establishes hardware and operating requirements and alternative compliance options for vapor cleaning machines used to clean metal parts. These requirements are based on the Federal maximum achievable control technology (MACT) standard for chlorinated solvent vapor degreasers. The requirements implement higher levels of technology than required under most existing State requirements, based on EPA's Control Technique Guidance. The cold cleaner solvent volatility provisions are based on regulatory programs in place in several States, including Maryland and Illinois.

Vapor cleaning machines are generally used in manufacturing operations to clean soils, including grease, oil, waxes, and the like, from parts where the highest level of cleanliness is necessary. Such manufacturing operations include the electronics industry and high quality metal machining and finishing operations. Typically, these machines have used VOC and hazardous air pollutant (HAP) solvents, but as the MACT standard is implemented, there are indications that VOC/HAP solvents are being replaced with non-HAP VOCs. The proposed requirements would apply to operators of vapor cleaning machines with a solvent surface area greater than one square foot.

In contrast, cold cleaners are used less frequently in manufacturing operations. They are more typically used in automobile repair and maintenance facilities, and in industrial maintenance shops. It is estimated that in excess of 50 percent of cold cleaning units are in automotive maintenance facilities. These units are either small remote reservoir machines or small immersion cleaning machines. The machines are useful in removing heavy soils where extreme cleanliness is not required.

The cold cleaner provisions would primarily affect small business and solvent suppliers. Most of the cold cleaning machines are provided to users through contract with regional and national companies. The machine providers would be responsible for assuring that the cold cleaner solvent meets the volatility limit. In other cases, the users and solvent providers would have to assure that the solvent meets the required limit. All limits would apply only to cold cleaners containing greater than one liter of solvent.

Overall, the requirements would apply only to cold cleaners and vapor cleaning machines cleaning metal parts. Exemptions would be provided in situations where safety concerns result from using low volatility cold cleaning solvents.

2. Analysis Methods

Emissions for 1996 were estimated using per capita emission factors for the different solvent cleaning categories as follows:

Cold Cleaning

- Automotive Repair - 2.5 pounds per year per person (lbs/yr/person); and
- Manufacturing - 1.1 lbs/yr/person.

These emission factors were taken from 1991 EPA procedures guidance (EPA, 1991). Ozone season daily emissions were estimated by dividing annual emission estimates by 365, and assuming 5 operating days per week. The 5 days per week assumption is applied by multiplying average daily emissions by 7/5.

A MACT standard is in place that controls HAPs from this category. For this analysis, the VOC emission reductions due to the Federal standard are assumed to be minimal to negligible (e.g., most of the HAPs covered are not considered to be VOC).

The OTC model rule establishes hardware and operating requirements for specified vapor cleaning machines, as well as solvent volatility limits and operating practices for cold cleaners. An incremental control effectiveness of 66 percent was estimated for the OTC model rule relative to the base case. This value is based on: (1) a previous estimate made by the State of Maryland for the emission reduction benefits of their solvent cleaning rule (mentioned below) and claimed in their SIP; and (2) an assessment made by Pechan of the impacts that lower vapor pressure limits will have in reducing the use of petroleum distillate solvents (e.g., mineral spirits). Rule penetration and rule effectiveness values are both 100 percent for this source category, because there are a small number of firms that supply the affected solvents, so a high level of compliance is expected.

Comments received on the control effectiveness estimates above include concerns on the use of RP and RE values of 100 percent. The 66 percent control effectiveness reflects anticipated emission reductions from the cold cleaning portion of the source category which will be gained from the lower volatility requirements (i.e., the minimal additional emission benefits for vapor degreasers and from cold cleaning operating requirements were not factored in). Further, based on previous experience with this source category, exempt cold cleaners (containing less than 1 liter of solvent) are believed to contribute a negligible amount of the total emissions.

Another comment was on the incorporation of the effects of existing requirements (e.g., CTG) into the base case emission factors. As described in the following paragraphs, the effects of existing state rules were factored in to the base case emission factors shown in Table II-6. Further, since the CTG only included operating requirements for cold cleaners, the emission reductions attributable to it are thought to be small.

The equation for computing the VOC emission factor for solvent cleaning after control by the OTC model rule is listed below:

Post-control emission factor = Pre-control emission factor [1-CE(RP)(RE)]
Post-control emission factor = 3.6 lbs/capita [1-(0.66)(1.00)(1.00)]
= 1.2 lbs/capita

The credits for rules affecting solvent cleaning differed by geographic area according to local surveys that have been performed to quantify emissions, and when and where State regulations have already been implemented.

Pechan examined 1989 EPA solvent consumption data, which many States based their 1990 emission estimates on. These data showed that mineral spirits made up 56 percent of the VOC solvents (petroleum distillate solvents, such as mineral spirits, will be phased out

based on their vapor pressure of about 40 millimeters mercury). There will also be additional smaller emission reductions associated with the phase out of other high vapor pressure VOC solvents (e.g., alcohols, ketones) and with the operating requirements for both cold cleaning and vapor degreasing. These smaller reductions could net another 10 to 30 percent reductions based on the 1989 EPA solvent consumption data. Since it is not known what products solvent suppliers will use in the OTC to replace the popular petroleum distillate-based products, there is some uncertainty as to the upper end of the control effectiveness estimate. For example, aqueous solvents may still contain small amounts of VOC that can be emitted during drag out from the solvent tank. However, 66 percent appears to be a reasonable estimate for an overall control efficiency for the model rule.

In addition, the States of Maryland and Delaware had SIP rules in place by 1996 that apply to all serious and severe nonattainment area counties, and requires the same vapor pressure limits (i.e., 1 millimeter mercury) as the OTC model rule. The State of Delaware has a rule for solvent cleaning operations in place in 1993 that affects all Delaware counties. This rule is not specific to any category, but applies to all solvent degreasing equipment, and has no vapor pressure limit. For Maryland, the per capita emission factor for nonattainment area counties was adjusted by 66 percent for 1996, as well as for 2005 and 2007 base case. Therefore, no emission benefits were estimated for these Maryland areas.

3. Cost Estimates

A cost effectiveness of $1,400 per ton of VOC reduced was estimated based on the South Coast Air Quality Management District's (SCAQMD's) cost analysis for their solvent cleaning rule (Rule 1122) (SCAQMD, 1997). These costs correspond to the capital costs for aqueous cleaning technologies for batch-loaded cold cleaners (e.g., heated baths, dryers, rinse tanks, and skimmers). According to SCAQMD staff (Leibel, 1999), costs for the auto repair (service station) industry, which constitutes a large fraction of this source category, will be close to zero based on what has occurred to date in the South Coast of California.

G. SUMMARY

Table II-6 summarizes the VOC emission factors used in the VOC model rules analyses for all of the affected categories except portable fuel containers. Portable fuel container emission estimation methods are more complex, and are summarized earlier in this chapter. Table II-6 lists VOC emission factors for a baseline case (which is typical of 1996 emission rates in most areas), National/Federal Rule emission factors, and OTC model rule emission factors. This indicates areas within the OTC where baseline, and National/ Federal Rule emission factors are expected to differ from the norm.

The day-of-week and seasonality factors listed in Table II-6 are used to provide a best estimate of ozone season weekday emissions.

Table II-6
OTC VOC Model Rule Analysis Assumptions: Emission Factors, Percentage Reductions, Day-of-Week Factors, and Seasonality Factors

Model Rule	Baseline (1990) Emission Factor	National/ Federal Rule (EIIP) Emission Factor	Percent Reduction (EIIP from 1990 Baseline)	OTC Model Rule Emission Factor	Percent Reduction (OTC Model Rule from EIIP)	Day-of-Week Factor	Seasonality Factor
Mobile Equipment Repair & Refinishing	2.3	1.45 1.2 - DE only	37%	0.9	38%	7/5	1
AIM Coatings	6.7 3.1 - NYC only	5.36 3.1 - NYC only	20% N/A - NYC only	3.7 2.14 - NYC only	31%	7/7	1.3
Solvent Cleaning	3.6 1.44 - NJ only	3.6 1.44 - NJ only 1.2 - NYC only 2.16 - DE NC* 3.16 - DE K&S**	Various	1.2	66%	7/5	1
Consumer Products	7.84	7.06	20% (assumes 48.6% rule penetration)	6.06	14.2%	7/7	1

NOTES: VOC emission factors are in pounds per capita per year.
Unless otherwise noted, emission and other factors are for all OTC counties included in the analysis.
*Delaware New Castle County only.
**Delaware Kent and Sussex Counties only.

CHAPTER III
NO_x MODEL RULE ANALYSIS METHODS

A. MODEL RULE SUMMARY

The NO_x Model Rule affects NO_x emissions from industrial boiler, stationary combustion turbine, cement kiln, and internal combustion engine sources in the OTC. This model rule is intended to address the one-hour ozone standard NO_x emission shortfalls identified by EPA and to make progress towards reducing eight-hour ozone levels. The rule is intended to achieve NO_x reductions from stationary point sources that are not expected to be regulated by either the EPA NO_x SIP Call or Phase III of the OTC NO_x Memorandum of Understanding (MOU).

The model rule proposes to reduce NO_x emissions from many sources ranging in size from large to very small. These sources are numerous, and most emit high levels of NO_x on a per-hour or per-unit of energy basis. Affected sources include: (1) boilers that are used to heat institutional, commercial, and large residential building complexes, and for heat and power in industrial applications; (2) small to large internal combustion engines that can be used as stand-alone power generation units and at pipeline compressor stations; (3) turbines that are typically used as on-site backup electric power generators; and (4) cement kilns.

NO_x emission reductions are achieved by establishing NO_x emission rate limits or requirements for percentage NO_x reductions for source categories based on size (i.e., number of British thermal units [Btus] per hour heat input). Table III-1 summarizes the OTC NO_x Model Rule and provides the emission rates and size cut-offs.

B. ANALYSIS METHOD

1. Data Base And Sources Used In The Analysis

The point source emission inventory that serves as the starting point for Pechan's analysis is version 3.12 of EPA's 1996 National Emission Trends Inventory (NET96). This national inventory contains process specific emission estimates for all point sources in the United States. State data from the NET96 inventory were provided to the States for review and comment. Emission inventory updates were provided by Delaware, the District of Columbia, New Jersey, New York, Pennsylvania, and Rhode Island. These States supplied Pechan with new emission inventories that were used to replace the EPA data. In addition, Connecticut, Maryland, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, and Virginia provided additional information about their point source inventories that included updates to emissions, additional capacity information, identification of sources affected by the NO_x SIP Call or OTC MOU, and case-by-case reasonably available control technology (RACT) limits (where applicable). The data base

Table III-1
NO_x Model Rule Summary

Source Category	Applicability Threshold	Emission Rate Limit	Percent NO_x Reduction Required
Industrial Boilers	**MMBtu/hr heat input**	**lbs/MMBtu heat input**	
Smallest	5-50	None	Tune-up Only
Small	50-100	Gas-fired: 0.10 lbs Oil, Coal-fired: 0.30 lbs	50%
Large	100-250	Gas-fired: 0.10 lbs Oil, Coal-fired: 0.20 lbs	50%
Largest	>250*	Gas-fired: 0.17 lbs Oil, Coal-fired: 0.17 lbs	50%
Stationary Combustion Turbines**	**MMBtu/hr heat input**	**ppm dry volume corrected to 15% oxygen**	
Simple Cycle:		lbs/MWhr	
Gas-fired without oil back-up	>25	2.2 55 2.2 On Gas: 55	
Gas-fired with oil back-up	>25	3.0 On Oil: 75	
Oil-fired	>25	3.0 75	
Combined or Regenerative Cycle:			
Gas-fired without oil back-up	>25	1.3 42 1.3 On Gas: 42	
Gas-fired with oil back-up	>25	2.0 On Oil: 65	
Oil-fired	>25	2.0 65	
Stationary IC Engines		**g/bhp-hr**	
Spark-ignited Rich Burn	>200 hp	1.5	
Spark-ignited Lean Burn	>200-2000 hp ≥2000 hp	1.5 1.5	80% 90%
Compression Ignition Diesel Fuel	>200 hp	2.3	
Compression Ignition Dual-fuel	>200 hp	2.3	
Landfill Gas or Digester Gas	>200 hp	2.0	
Cement Kilns	**tons/hr**		
Long Dry	12	**Control Options:** Low NO_x burners installed and operating, or Mid-kiln firing utilized when operating, or 30% NO_x emission reduction achieved, or equivalent or greater NO_x removal efficiency.	
Long Wet	10		
Preheater 1	16		
Preheater 2	22		

NOTES: *Only for boilers not subject to EPA's NO_x SIP Call.
**Emergency generators and load shaving units would not be subject to these requirements unless the combined potential NO_x emissions of all emission units at a facility exceed the major source threshold for the specific nonattainment area.

was then modified by excluding the source types that are not subject to the regulation under the OTC draft model rule. The SCCs that were determined to be affected by the NO_x Model Rule are listed in Appendix B.

An evaluation of the updated emission inventory showed that several data records had missing emission factors and design capacities. These data elements are required for this analysis, since they are used to determine if and how a source is affected by the model rule. Missing emission factors were obtained by SCC from EPA's Factor Information Retrieval (FIRE) Data System (Version 6.23). Emission factors were set to the RACT emission limits for sources determined to be affected by State RACT requirements. Missing design capacities (applicability thresholds) were calculated using the emission factors and tpd NO_x emission estimates assuming 24-hour per day operation. The NO_x SIP Call affected sources were identified using the EPA NO_x SIP Call data base, information supplied by the States, and where necessary, calculated design capacities. This was necessary, since it is assumed that the model rule does not apply to units affected by the NO_x SIP Call.

2. Existing State Rules

State regulations affecting stationary source non-electricity generating unit (EGU) NO_x emissions were researched and summarized in Tables III-2 through III-9. State regulation summaries were prepared for Connecticut, Delaware, District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, and New York. The States of Maine, Rhode Island, Vermont, and Virginia were not examined for the purposes of this analysis. Pennsylvania regulations were examined but determined to be a case-by-case situation. The focus was on States that are in, or near, the three severe ozone nonattainment areas in the Northeast OTR.

In several cases, State rules are expressed in units that differ from those units used to express model rule emission limits in Table III-1. For these cases, conversion factors were applied as follows:

Gas Turbines - Natural Gas (lbs/MMBtu) * 250 = Gas Turbines - Natural Gas (ppm)
Gas Turbines - Oil (lbs/MMBtu) * 272 = Gas Turbines - Oil (ppm)

Note that Tables III-2 through III-9 are organized using a common format for each State to efficiently include the State-by-State differences in these regulations in the NO_x model rule analysis. In some instances, this organization may seem to over simplify the source categories and size limitations that differ from State-to-State. This structure matches the organization of the emission data bases being used in the analysis.

C. METHODS APPLIED TO ESTIMATE RULE BENEFITS

The 1996 NO_x emission estimates were projected to 2005 and 2007 using the expected NO_x SIP Call emission control levels, where applicable (e.g., 60 percent NO_x control for industrial boilers), and SIC code based growth factors (BEA, 1995). The emissions benefits of the model rule were then estimated by comparing the actual source emission limits with the limits imposed by adoption of the model rule. The least stringent of the emission limit, or the percentage reduction was used to estimate the rule benefits at each unit.

Table III-2
Connecticut NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
09		50	Gas Turbines - Jet Fuel	55.00	55.00	244.80	244.80	ppm
		24	Gas Turbines - Natural Gas	75.00	75.00	225.00	225.00	ppm
		23	Gas Turbines - Oil	55.00	55.00	244.80	244.80	ppm
		14	ICI Boilers - Coal/Cyclone	0.43	0.43	0.43	0.43	lbs/MMBtu
		12	ICI Boilers - Coal/FBC	0.29	0.29	0.29	0.29	lbs/MMBtu
		13	ICI Boilers - Coal/Stoker	0.38	0.38	0.38	0.38	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	0.38	0.38	0.38	0.38	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.38	0.38	0.38	0.38	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.38	0.38	0.38	0.38	lbs/MMBtu
		42	ICI Boilers - Coke	NL	NL	NL	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.20	0.20	0.20	0.20	lbs/MMBtu
		45	ICI Boilers - Liquid Waste	NL	NL	NL	NL	lbs/MMBtu
		43	ICI Boilers - LPG	0.20	0.20	0.20	0.20	lbs/MMBtu
		20	ICI Boilers - MSW/Stoker	0.20	0.20	0.20	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.20	0.20	0.20	0.20	lbs/MMBtu
		41	ICI Boilers - Process Gas	0.20	0.20	0.20	0.20	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.25	0.25	0.25	0.25	lbs/MMBtu
		18	ICI Boilers - Wood/Bark/Stoker	NL	NL	NL	NL	lbs/MMBtu
		22	Internal Combustion Engines - Gas-Rich Burn	2.50	2.50	2.50	2.50	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	2.50	2.50	2.50	2.50	g/bhp-hr
		21	Internal Combustion Engines - Oil	8.00	8.00	8.00	8.00	g/bhp-hr
		46	IC Engines - Gas, Diesel, LPG	8.00	8.00	8.00	8.00	g/bhp-hr

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit
The gas turbine regulations listed above apply to simple cycle turbines only. CT State regulations should be consulted for information about applicable emission limits for combined cycle.

Table III-3
District of Columbia NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
11		50	Gas Turbines - Jet Fuel	75.00	75.00	NL	NL	ppm
		23	Gas Turbines - Oil	75.00	75.00	NL	NL	ppm
		13	ICI Boilers - Coal/Stoker	0.43	0.43	NL	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.43	0.43	NL	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.43	0.43	NL	NL	lbs/MMBtu

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit

Table III-4
Delaware NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
10		50	Gas Turbines - Jet Fuel	88.00	88.00	88.00	88.00	ppm
		24	Gas Turbines - Natural Gas	42.00	42.00	42.00	42.00	ppm
		23	Gas Turbines - Oil	88.00	88.00	88.00	88.00	ppm
		13	ICI Boilers - Coal/Stoker	0.40	0.40	NL	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face dry bottom	0.38	0.38	NL	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.38	0.38	NL	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.25	0.25	NL	NL	lbs/MMBtu
		43	ICI Boilers - LPG	0.25	0.25	NL	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.25	0.25	NL	NL	lbs/MMBtu
		41	ICI Boilers - Process Gas	0.25	0.25	NL	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.25	0.25	NL	NL	lbs/MMBtu

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit

Table III-5
Massachusetts NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
25		50	Gas Turbines - Jet Fuel	100.00	100.00	100.00	NL	ppm
		24	Gas Turbines - Natural Gas	65.00	65.00	65.00	NL	ppm
		23	Gas Turbines - Oil	100.00	100.00	100.00	NL	ppm
		14	ICI Boilers - Coal/Cyclone	NL	NL	NL	NL	lbs/MMBtu
		13	Coal Stoker	0.33	0.33	0.43	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	NL	NL	NL	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.45	0.45	0.43	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.38	0.38	0.43	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.30	0.30	0.12	NL	lbs/MMBtu
		43	ICI Boilers - LPG	0.30	0.30	0.30	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.20	0.20	0.10	NL	lbs/MMBtu
		41	ICI Boilers - Process Gas	0.20	0.20	0.10	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.28	0.30	0.30	NL	lbs/MMBtu
		22	Internal Combustion Engines - Gas-Rich Burn	1.50	1.50	1.50	NL	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	3.00	3.00	3.00	NL	g/bhp-hr
		21	Internal Combustion Engines - Oil	9.00	9.00	9.00	NL	g/bhp-hr
		46	IC Engines - Gas, Diesel, LPG	9.00	9.00	9.00	NL	g/bhp-hr

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit

Table III-6
Maryland NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
24		14	ICI Boilers - Coal/Cyclone	0.70*	0.50	NL	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	0.70*	0.50	NL	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.70*	0.50	NL	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.70*	0.50	NL	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.70*	0.25	NL	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.70*	0.20	NL	NL	lbs/MMBtu
		41	ICI Boilers - Process Gas	0.70*	0.20	NL	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.70*	0.25	NL	NL	lbs/MMBtu

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit but subject to combustion optimization requirements
*Non EGUs limited to: 0.70 lbs/MMBtu during ozone season; and 0.99 during non-ozone season
Regulations apply to person who owns or operates an installation that causes emissions of NO_x and is located at premises that have total potential to emit:
> 25 tons in Nonattainment Area 0720 (Baltimore, MD) and 6161 (Philadelphia- Wilmington-Trenton, PA-NJ-DE-MD)
> 50 tons in Nonattainment Area 8842 (Washington, DC-MD-VA)
> 100 tons in Nonattainment Areas 3805 (Kent & Queen Anne's Co, MD) and remainder of State of Maryland

Table III-7
New Jersey NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
34		50	Gas Turbines - Jet Fuel	108.80	108.80	108.80	NL	ppm
		24	Gas Turbines - Natural Gas	50.00	50.00	50.00	NL	ppm
		23	Gas Turbines - Oil	108.80	108.80	108.80	NL	ppm
		14	ICI Boilers - Coal/Cyclone	0.55	0.55	0.55	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	1.00	1.00	1.00	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.45	0.45	0.43	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.38	0.38	0.38	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.28	0.28	0.12	NL	lbs/MMBtu
		43	ICI Boilers - LPG	0.20	0.20	NL	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.20	0.20	0.10	NL	lbs/MMBtu
		41	ICI Boilers - Process Gas	NL	NL	NL	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.28	0.28	0.30	NL	lbs/MMBtu
		22	Internal Combustion Engines - Gas-Rich Burn	1.50	1.50	1.50	NL	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	2.50	2.50	2.50	NL	g/bhp-hr
		21	Internal Combustion Engines - Oil	8.00	8.00	8.00	NL	g/bhp-hr
		46	IC Engines - Gas, Diesel, LPG	NL	NL	NL	NL	g/bhp-hr

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit

Table III-8
New York NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
36		50	Gas Turbines - Jet Fuel	100.00	100.00	100.00	100.00	ppm
		24	Gas Turbines - Natural Gas	50.00	50.00	50.00	50.00	ppm
		23	Gas Turbines - Oil	100.00	100.00	100.00	100.00	ppm
		14	ICI Boilers - Coal/Cyclone	0.60	NL	NL	NL	lbs/MMBtu
		12	ICI Boilers - Coal/FBC	0.50	0.50	NL	NL	lbs/MMBtu
		13	ICI Boilers - Coal/Stoker	0.30	0.30	NL	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	1.00	NL	NL	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.45	NL	NL	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.42	NL	NL	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.25	0.30	0.12	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.20	0.20	0.10	NL	lbs/MMBtu
		41	ICI Boilers - Process Gas	0.20	0.20	0.10	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.25	0.30	0.30	NL	lbs/MMBtu
		22	Internal Combustion Engines - Gas-Rich Burn	2.00	2.00	2.00	NL	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	3.00	3.00	3.00	NL	g/bhp-hr
		21	Internal Combustion Engines - Oil	9.00	9.00	9.00	NL	g/bhp-hr
	New York City	22	Internal Combustion Engines - Gas-Rich Burn	2.00	2.00	2.00	2.00	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	3.00	3.00	3.00	3.00	g/bhp-hr
		21	Internal Combustion Engines - Oil	9.00	9.00	9.00	9.00	g/bhp-hr

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit
The gas turbine regulations above apply to simple cycle turbines only. NY State regulations should be consulted for information about applicable emission limits for combined cycle.

Table III-9
New Hampshire NO_x RACT Regulations Summary

State ID	Nonattainment Area	Pod_nox	Pod Name	Emission Limits by Size				Units
				Size 1	Size 2	Size 3	Size 4	
33		50	Gas Turbines - Jet Fuel	75.00	75.00	75.00	75.00	ppm
		24	Gas Turbines - Natural Gas	55.00	55.00	55.00	55.00	ppm
		23	Gas Turbines - Oil	75.00	75.00	75.00	75.00	ppm
		14	ICI Boilers - Coal/Cyclone	0.92	0.92	NL	NL	lbs/MMBtu
		13	ICI Boilers - Coal/Stoker	0.30	0.30	0.30	NL	lbs/MMBtu
		11	ICI Boilers - Coal/Wall-face wet bottom	1.00	1.00	NL	NL	lbs/MMBtu
			ICI Boilers - Coal/Wall-face dry bottom	0.50	0.50	0.50	NL	lbs/MMBtu
			ICI Boilers - Coal-tangential-dry bottom	0.38	0.38	0.38	NL	lbs/MMBtu
		16	ICI Boilers - Distillate Oil	0.25	0.25	0.12	NL	lbs/MMBtu
		17	ICI Boilers - Natural Gas	0.10	0.10	0.10	NL	lbs/MMBtu
		15	ICI Boilers - Residual Oil	0.30	0.30	0.30	NL	lbs/MMBtu
		22	Internal Combustion Engines - Gas-Rich Burn	1.50	1.50	1.50	NL	g/bhp-hr
			Internal Combustion Engines - Gas-Lean Burn	2.50	2.50	2.50	NL	g/bhp-hr
		21	Internal Combustion Engines - Oil	8.00	8.00	8.00	NL	g/bhp-hr
		46	IC Engines - Gas, Diesel, LPG	8.00	8.00	8.00	NL	g/bhp-hr

NOTES: For boilers, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 50-100 MMBtu/hour, Size 4 = 5-50 MMBtu/hour
For turbines, Size 1 = $\geq$ 250 MMBtu/hour, Size 2 = 100-250 MMBtu/hour, Size 3 = 25-100 MMBtu/hour, Size 4 = 5-25 MMBtu/hour
For IC engines, Size 1 = $\geq$ 4,400 hp, Size 2 = 2,000-4,400 hp, Size 3 = 500-2,000 hp, Size 4 = 200-500 hp
NL = No Limit

1. Exception

Many aspects of the OTC model rule are already incorporated into the Delaware NO_x RACT rule. Delaware opted to apply the model rule to fuel switching sources, and limits the emission rate to 0.1 lbs NO_x/MMBtu for sources firing gaseous fuel and 0.2 lbs NO_x/MMBtu for sources firing distillate oil. This requirement does not apply to fuel burning equipment with a rated heat input capacity of less than 100 MMBtu/hr and any source that is equipped with low NO_x burner technology. Therefore, the Delaware rule applies only to three units (with design capacity of 165 MMBtu/hr) at Sun Company Inc. Because these three units switch to natural gas during the ozone season, the Delaware rule limits the emission rate to 0.1 lbs NO_x MMBtu for these three units.

2. Sample Calculation

The sample calculation below shows how emissions benefits were calculated for an example affected unit. The example shown is for a larger oil-fired boiler source in Coos County, New Hampshire. Benefits are estimated for both 2005 and 2007, assuming full implementation of the rule in 2005. Italics are used to indicate the variable names.

Inputs provided in 1996 Emission Inventory are as follows:

- *fipsst-fipscnty-plantid-pointid-stackid-segment* = 33-007-0001-012-912-01
- *SCC* = 10200401 - External Combustion Boiler; Industrial; Residual Oil; Grade 6 Oil
- *SIC* = 2611
- Design Capacity = 155 MMBtu/hr - "Large" (see Table III-1)
- 1996 Ozone Season Daily NO_x Emission = *nox_96* = 0.61 tpd
- New Hampshire RACT Limit = *ractlimit* = 0.3 lbs/MMBtu (for Size 2, ICI Boilers-Residual Oil in Table III-9)
- OTC Model Rule Limit = *mrlimit* = 0.2 lbs/MMBtu OR 50 percent NO_x reduced

Step 1 - Calculate 2005 and 2007 Emissions:

Emissions are grown from 1996 to 2005 and 2007 using Bureau of Economic Analysis (BEA) Activity Factors, which are based on State and 2-digit SIC codes.

- 1996 BEA Activity (*grow96*) = 290.5
- 2005 BEA Activity (*grow05*) = 326.4
- 2007 BEA Activity (*grow07*) = 333.8

2005 Ozone Season Daily NO_x (*nox_05*) =
nox_96 * (*grow05 / grow96*) = 0.61 * (326.4 / 290.5) = 0.685 tpd

2007 Ozone Season Daily NO_x *(nox_07)* =
*nox_96 * (grow07 / grow96)* = 0.61 * (333.8 / 290.5) = 0.701 tpd

Step 2 - Calculate Model Rule Benefit

The control efficiency applied is calculated from the model rule emission limit and the emission factor (or RACT limit).

Applied Control Efficiency (*nox_ce*) = 1 - (*mrlimit / ractlimit*) = 1 - (0.2 / 0.3) = 0.33 or 33%

(Because 33% is less than 50%, the emission rate limit of 0.2 lbs/MMBtu (a 33 percent reduction) is applied.)

2005 Model Rule Ozone Season Daily NO_x (*nox_05rule*) =
nox_05 *(1-*nox_ce*) = 0.685 *(1-0.33) = 0.457 tpd

2005 Model Rule Benefit (*nox_05diff*) =
nox_05 * *nox_ce* = 0.685 * 0.33 = 0.228 tpd

2007 Model Rule Ozone Season Daily NO_x (*nox_07rule*) =
nox_07 *(1-*nox_ce*) = 0.701 *(1-0.33) = 0.467 tpd

2007 Model Rule Benefit (*nox_07diff*) =
nox_07 * *nox_ce* = 0.701 * 0.33 = 0.234 tpd

D. CEMENT INDUSTRY ANALYSIS

As part of the model rule analysis, Pechan investigated whether there were cement kilns in the Northeast OTR that were not affected by the NO_x SIP Call, either because they were outside the NO_x SIP Call area, or within the SIP Call area, but below the size cutoffs established for NO_x SIP Call rule applicability. This analysis was performed by comparing a recent EPA-sponsored study of the cement industry with the information in the NET96 data base (EC/R, 2000a). Table III-10 summarizes the State-level information about cement kilns and clinker capacity from the EPA study. It was found that all cement kilns within the SIP Call area are affected by the NO_x SIP Call. There is one cement plant (in Maine) that is outside the NO_x SIP Call area, but inside the Northeast OTR. Therefore, the portion of the OTC NO_x model rule affecting NO_x emissions from cement kilns is expected to provide limited NO_x reductions within the OTC States.

Table III-10
United States Cement Company 1998 Clinker Capacities by State*
in the OTC States

State	Clinker (1000 tons per year)	Number of Facilities	Number of Kilns
Pennsylvania	6,809	10	21
New York	2,745	3	4
Maryland	1,719	3	7
Maine	392	1	1

There are no clinker producing plants in the following States:

District of Columbia	Connecticut
Massachusetts	Vermont
New Jersey	Delaware
Rhode Island	New Hampshire
Virginia (Northern Virginia portion)	

NOTE: *Includes gray and white plants.

SOURCE: EC/R, 2000a.

CHAPTER IV
EXPECTED 2005/2007 MODEL RULE EMISSION BENEFITS

This chapter describes the results of the emission benefit calculations for the OTC States. For the purposes of this report, the emission reduction benefits have been calculated and characterized as follows: (1) emission reduction benefits within the three identified nonattainment areas (Baltimore, Philadelphia, and New York); (2) emission reduction benefits from nonattainment areas plus nearby counties generally within 100 km of the nonattainment areas; and (3) emission reduction benefits for all counties located in the OTR (OTR-wide). Emission benefit calculations were performed as described in Chapters II and III.

A. SEVERE OZONE NONATTAINMENT AREA SUMMARIES

Table IV-1 summarizes the nonattainment area-level analysis of emission benefits by model rule for the Baltimore, Maryland area, Philadelphia-Wilmington-Trenton area, and New York-Northern New Jersey-Long Island, New York-Connecticut ozone nonattainment area. The emission reductions listed in this table are either for 2005, or 2007, depending on the area's attainment date. Attainment dates are 2005 for Baltimore and Philadelphia-Wilmington-Trenton, and 2007 for New York-Northern New Jersey-Long Island.

Expected emission reductions from the VOC model rules in the three severe ozone nonattainment areas range from 13 tpd in the Baltimore area to 59 tpd in Philadelphia-Wilmington-Trenton, to 120 tpd in New York-Northern New Jersey-Long Island. The two primary factors that affect the estimated VOC model rule emission reductions in Table IV-1 are the populations in the respective areas, and the extent to which some of the model rule affected source categories are already regulated by States beyond current Federal requirements.

The NO_x model rule-associated emission reductions shown in Table IV-1 range from 5 tpd in the Baltimore area to 6 tpd in Philadelphia-Wilmington-Trenton, to 22 tpd in New York-Northern New Jersey-Long Island. As expected, NO_x model rule reductions are greatest in the areas which have stationary NO_x sources in the size ranges to which the rule applies.

Table IV-2 provides county-level emission benefit estimates for the OTC model rules for the three severe ozone nonattainment areas. This table shows that for the Baltimore ozone nonattainment area, most of the NO_x model rule benefit is expected to occur in Baltimore City and Howard County. Negligible NO_x emission reductions are expected in the other Baltimore area nonattainment counties. The AIM coatings rule provides the most VOC reduction benefits in the Baltimore area (greater than that of the other four VOC rules combined). This occurs in part because mobile equipment refinishing and solvent cleaning operations rules have no estimated benefit in the Baltimore area.

Maryland rules already reduce VOC emissions to the limits contained in the OTC model rules.

For the Philadelphia-Wilmington-Trenton nonattainment area, the solvent cleaning and AIM coating rules have the most significant VOC emission reduction benefits. The NO_x model rules primarily affect industrial boiler and reciprocating internal combustion engine emissions in this area.

For the New York City nonattainment area, model rule emission benefits are fairly evenly spread throughout the nonattainment area. The only exception to this is for the solvent cleaning operations rule, which has no expected benefit in the New York counties because of the VOC emission limits already in-place in that area.

For industrial boilers in the three severe ozone nonattainment areas, Table IV-3 shows that the expected NO_x benefit is 6.4 tpd for units between 100 and 250 million Btu per hour, and 0.8 tpd for units that are between 50 and 100 million Btu per hour. Thus, more than 80 percent of the emission benefit of the industrial boiler rule in the severe nonattainment areas is expected to be from units in the size range of 100 to 250 million Btu.

Most of the benefit associated with the NO_x model rule affecting gas turbines is found in the New York-Northern New Jersey-Long Island nonattainment area. The severe ozone nonattainment area emission benefit of the internal combustion engine model rule is 16 tpd for engines 2,000 hp or above, and 3.4 tpd for engines between 200 and 2,000 hp. As with gas turbines, most of this emission benefit is expected in the New York-Northern New Jersey-Long Island ozone nonattainment area. No emission benefit from the gas turbine rule was found in the Baltimore area.

The model rule affecting cement kilns does not affect any sources in the three severe ozone nonattainment areas of the Northeast OTR.

Figure IV-1 illustrates the expected NO_x emission reductions in each of the three severe ozone nonattainment areas organized by the source categories affected by NO_x model rules. Cement kilns are not reflected in this figure because no emission reductions are expected *in these areas* from the model rule affecting that source category.

B. WITHIN 100 KM SUMMARIES

Emission reduction benefits were assessed for nonattainment areas plus nearby counties generally within 100 km of each of the nonattainment areas. EPA's Guidance for Implementation of the One-Hour Ozone and Pre-existing PM_{10} NAAQS (December, 1997) states that "an area in nonattainment of the one-hour NAAQS should be allowed to take credit for emissions reductions obtained from sources outside the designated nonattainment area for the post-1999 rate of progress requirement...the geographic area for substitution of VOC emission reductions remains at 100 km from the nonattainment area and the geographic area for substitution of NO_x reductions remains at 200 km from the nonattainment area." Figure IV-2 shows which counties within 100 km of each of the three nonattainment areas were used for the purposes of this analysis. The respective

county assignments are shown in Table IV-4. Table IV-5 lists the nonattainment area model rule benefits with the 100 km radius areas included.

For the Baltimore, MD ozone nonattainment area, the large additional VOC emission benefit from including counties within a 100 km radius occurs because this radius captures the additional benefits of the model rules in the Metropolitan Washington area.

The 100 km radius surrounding the Philadelphia-Wilmington-Trenton ozone nonattainment area adds 6 Maryland counties, 1 Delaware county, 10 Pennsylvania counties, and 2 northwest New Jersey counties, and provides an additional 35 VOC tpd and 1 NO_x tpd of emission reductions.

A 100 km radius around the New York City ozone nonattainment area includes parts of Northeast Pennsylvania, Northwest New Jersey, Southern New York State, and all of Connecticut and Rhode Island, and provides an additional 58 tpd VOC reduction and 6 tpd NO_x.

Figure IV-3 shows the expected county-level VOC emission benefits in tpd in the 100 km radius counties. These estimated VOC emission reductions are for the five VOC model rules combined. Including these counties in the analysis would gain an additional 6 tons NO_x and 51 tons VOC for the Baltimore nonattainment area, 7 tons NO_x and 94 tons VOC in Philadelphia-Wilmington-Trenton, and an additional 28 tons NO_x and 178 tons VOC in the New York area.

C. OTR-WIDE RESULTS

State summaries of OTC model rule emission benefits are presented in Table IV-6. The emission benefits listed for Virginia just include the Virginia counties in the Washington, DC area (Northern Virginia). Benefit estimates for all other States include the entire State.

Figure IV-4 shows the OTC VOC model rule expected 2005 emission reductions by State. The largest estimated VOC emission reductions are in the most populous States - Pennsylvania and New York. The height of the bars in Figure IV-4 for each State are proportional to population, with less-than-proportional reductions in State and sub-State areas that have regulations in-place that approach the stringency of the OTC model rules.

Figure IV-5 provides a similar display for the NO_x model rule. The biggest NO_x model rule-associated emission reductions are expected in New York, followed by those in New Jersey and Pennsylvania.

Table IV-7 shows the expected State-level emission benefits of the OTC NO_x model rules by source category. For industrial boilers, the States with the biggest emission benefits include Pennsylvania, New York, and Maine. Maine shows a significant emission benefit for large boilers because this State is not included in the NO_x SIP Call area. The vast majority of the emission benefits of this rule are expected for boilers larger than 100 million Btu.

The State-level gas turbine results indicate that the expected emission reductions of this model rule will be observed in, and around, the New York-Northern New Jersey-Long Island nonattainment area. The expected emission reduction associated with that rule in areas outside the New York and Philadelphia nonattainment areas is only expected to be 0.8 NO_x tpd.

Total NO_x emission reductions in 2005 for internal combustion engines larger than 2,000 hp for this rule amount to 23.5 tpd. New York and New Jersey account for 18.8 tpd.

D. SUMMARY

Figure IV-6 summarizes the expected VOC and NO_x emission reductions from the OTC model rules for the different geographic areas that have been examined in this analysis. The total emission reductions in the three severe ozone nonattainment areas for all of the model rules combined in 2005 are 180 tons VOC per day and 32 NO_x tpd. Expanding the analysis area to counties within 100 km of these three severe ozone nonattainment areas provides an additional 168 tpd in VOC emission benefits, and another 11 tpd in NO_x emission reductions. OTR-wide model rule benefits total 533 VOC tpd and 65 NO_x tpd in 2005.

E. VOC MODEL RULE BENEFIT SAMPLE CALCULATION

This section provides a sample calculation of the VOC model rule benefits for one of the VOC rules. This example is provided for Allegheny County, Pennsylvania, which is in the Pittsburgh-Beaver Valley, Pennsylvania ozone nonattainment area. The sample calculation shown is for the MERR rule. VOC emissions for this source category are estimated using a per capita emission factor. The equation for estimating baseline (1996) emissions is listed below:

Baseline VOC emissions (annual) = 1996 county population (lbs VOC per capita emission factor

Baseline VOC emissions (annual) = (1,292,741) (2.30 lbs VOC per capita
= 2,973,304 lbs/year
= 1,486 tons/year

The conversion from annual tons to ozone season daily tons for MERR is made by dividing annual emissions by the number of days per year (365), and then multiplying this product by 7/5, which is the ratio of the *total* number of days in a week (7) to the number of days during a week when MERR facilities are expected to be operating (5). The 7/5 ratio converts the average daily emissions to an ozone season weekday equivalent.

For Allegheny County, Pennsylvania, then, baseline ozone season weekday emissions are:

$$\text{Baseline VOC} = \left(1{,}486 \frac{\text{tons}}{\text{year}} \div 365 \frac{\text{days}}{\text{year}}\right) * \frac{7}{5} \frac{\text{days/week}}{\text{weekdays/week}} = 5.67 \text{ tpd}$$

For the 2005 analysis, MERR emissions in Allegheny County, Pennsylvania are based on the expected population in that year. This 2005 population is estimated by multiplying the 1996 population by the EGAS 4.0 model growth factor (1996 to 2005) for western

Pennsylvania. This growth factor is 1.0428. Multiplying this growth factor by the 1996 population for Allegheny County yields a population estimate of 1,348,329 for 2005.

In 2005, without any additional OTC rules, VOC emissions in Allegheny County are estimated using the national rule VOC emission factor of 1.45 lbs/capita.

National rule 2005 VOC (annual) = 2005 county population (lbs VOC per capita emission factor

National rule 2005 VOC (annual) = (1,348,329) ((1.45 lbs VOC per capita)
= 1,955,077 lbs/yr
= 978 tons/yr

The conversion from annual VOC tons to ozone season weekday tons is performed for 2005 using the same methods shown above for 1996.

$$\text{National rule 2005 VOC (tpd)} = \left(978\ \frac{\text{tons}}{\text{year}} \div \frac{365\ \text{days}}{\text{year}}\right) * \frac{7\ \text{days/week}}{5\ \text{weekdays/week}} = 3.73\ \text{tpd}$$

The Allegheny County, Pennsylvania VOC emissions with the OTC model rule applied are estimated for 2005 using an emission factor of 0.9 lbs VOC per capita.

Model rule 2005 VOC (annual) = (1,348,329) (0.9 lbs VOC per capita)
= 1,213,496 lbs/yr
= 607 tons/yr

$$\text{Model rule 2005 VOC (tpd)} = \left(607\ \frac{\text{tons}}{\text{year}} \div 365\ \frac{\text{days}}{\text{year}}\right) * \frac{7\ \text{days/week}}{5\ \text{weekdays/week}} = 2.31\ \text{tpd}$$

So, the Allegheny County, Pennsylvania VOC emission benefit for the MERR model rule is estimated as the national rule 2005 VOC ozone season daily emissions minus the model rule 2005 VOC ozone season daily emissions. This emission reduction is shown below:

National rule 2005 VOC (tpd) - Model rule 2005 VOC (tpd) = Model rule associated emission reduction (tpd)

3.73 tpd - 2.31 tpd = 1.41 tpd

Table IV-4
County Assignments for Analyzing Emission Reduction Benefits within 100 km of Nonattainment Areas

Baltimore

VA	MD	DC
Arlington	Calvert	
Fairfax	Charles	
Loudoun	Frederick	
Prince William	Montgomery	
Stafford	Prince Georges	
	St. Mary's	
	Washington	

Philadelphia-Wilmington-Trenton

MD	DE	PA	NJ
Caroline	Sussex	Adams	Atlantic
Dorchester		Berks	Cape May
Kent		Cumberland	
Queen Annes		Dauphin	
Talbot		Lancaster	
Wicomico		Lebanon	
		Lehigh	
		Northampton	
		Schuylkill	
		York	

New York-Northern New Jersey-Long Island

PA	NJ	NY	CT	RI
Carbon	Warren	Columbia	Hartford	Kent
Lackawanna		Delaware	Litchfield	Newport
Luzerne		Duchess	Middlesex	Providence
Monroe		Greene	New Haven	Washington
Pike		Orange	New London	
Wayne		Putnam	Tolland	
		Sullivan	Windham	
		Ulster		

CHAPTER V
AIM COATINGS MARKET SURVEY

This section presents results of an AIM coatings market survey for the OTR. Starting in December 2000, Pechan conducted a survey to investigate the availability of AIM coatings that are compliant with the VOC limits of the OTC Model Rule for AIM Coatings.

A. SURVEY INSTRUMENT AND METHODS

We focused information gathering efforts on eleven product categories for which new VOC limits were proposed in ARB's SCM. These coating categories include:

- Flat Coatings
- Non-Flat Coatings (except high gloss)
- Lacquers (including sanding sealers)
- Industrial Maintenance Coatings
- Multi-Color Coatings
- Primers, Sealers, and Undercoaters
- Quick Dry Enamels
- Quick Dry Primers, Sealers, and Undercoaters
- Stains
- Swimming Pool Repair and Maintenance Coatings
- Wood Waterproofing Sealers

These coating categories account for about 80 percent of the total emissions in California (ARB, 2000a), and in the rest of the nation. We concentrated survey efforts on manufacturers of flat, non-flat, and industrial maintenance coatings, which are the three largest categories. Major national manufacturers were also selected for the smaller categories.

1. How Did We Identify the Coating Manufacturers that Distribute these Products in the OTR?

Based on information received from ARB concerning their 1998 AIM survey, we identified the top 31 national manufacturers for the above categories (ARB, 1999d). Using sales data compiled by ARB and released to the OTC under a data confidentiality agreement, a prioritized list of companies was developed. Mr. Bob Nelson of the National Paint and Coatings Association (NPCA) also provided assistance in identifying regional (i.e., OTR) AIM coating manufacturers that were not included in ARB's survey. Once a target list of companies was developed, survey letters were sent to the appropriate contacts, requesting data concerning their AIM products. Table V-1 presents a list of companies contacted, and indicates which companies responded to the survey.

2. What Data Were Obtained from Survey Respondents?

Data elements requested for each product included: product name; VOC content (VOC actual and VOC regulatory); percent solids by weight; percent solids by volume; density; and performance information. Companies generally provided this information by sending material safety data sheets and/or product information sheets. Some companies requested that the necessary information be accessed via their company web site. In addition to the above data elements, Pechan also requested any available sales data for the OTR states, which were ensured to be kept confidential. Table V-2 shows examples of the data obtained from the survey respondents.

Once the product information was obtained, we categorized each product into one of the eleven AIM categories. This categorization was performed based on the product name as well as performance information. Manufacturers of multi-color coatings did not provide any product data for this AIM category.

a. VOC Actual and VOC Regulatory Content

Most companies supplied VOC content in pounds of VOC per gallon of coating, which we then converted to grams of VOC per liter of coating. This will enable comparison to the OTC AIM Model Rule limits, which are expressed in g/l. Both VOC actual content and VOC regulatory content were requested. The majority of the companies provided VOC regulatory content.

VOC actual content is the weight of all volatile materials less the weight of water and less the weight of exempt compounds per the entire volume of the coating (ARB, 1999d). VOC actual may also be referred to as the VOC of the material. VOC regulatory content, also known as VOC of the coating, is the VOC content limit or standard codified in architectural coating regulations. VOC regulatory content is the ratio of the weight of VOCs per a given volume of paint (e.g., gallon or liter) with water and exempt VOCs subtracted from both the numerator (weight) and denominator (volume). Formulas for both VOC actual and VOC regulatory are presented below.

$$VOC_{Actual} = \frac{(Total\ Weight\ of\ Volatiles - Weight\ of\ Water - Weight\ of\ Exempt\ VOCs)}{Total\ Weight\ of\ Coating}$$

$$VOC_{Regulatory} = \frac{(Total\ Weight\ of\ Volatiles - Weight\ of\ Water - Weight\ of\ Exempt\ VOCs)}{(Total\ Volume\ of\ Coating - Volume\ of\ Water - Volume\ of\ Exempt\ VOCs)}$$

Expressing VOC content on a regulatory basis provides an equivalent basis for comparing the polluting portion of solvent-borne and water-borne coatings. In addition, VOC content limits codified in AIM regulations are commonly expressed as VOC regulatory. As such, to compare the VOC content of the survey product data with the limits required by the model rule, the VOC content should be on a VOC regulatory basis.

Eighteen of the 31 AIM coating manufacturers contacted provided Pechan with the data requested. The product information for each company was entered into a data base to enable further analysis. None of the companies contacted were able to provide sales data for the OTR States.

B. FINDINGS

1. Are Products Available that Meet the Limits?

A listing of the National Rule and the OTC Model Rule VOC limits by AIM category is provided in Table V-3. Based on the initial survey data collected, individual products are available that meet OTC AIM Model Rule limits. Ideally, one would use data on the volume of coatings sold, in conjunction with VOC content data, to estimate potential emission reductions for each AIM category. Because we did not receive sales data, a more qualitative analysis was performed.

Table V-4 provides a summary of the number of compliant and non-compliant products by AIM category. We compared the product's VOC regulatory content with the VOC limits of the National Rule and the OTC AIM Model Rule. When averaged across all categories, the percentage of products compliant with the OTC AIM Model Rule is 39 percent.

Table V-5 presents a summary of the average VOC content, expressed on a regulatory basis, as well as the range of VOC content among products included in each AIM category. Note that there are some coating categories that include no-VOC products, as indicated by ranges starting with zero.

2. How do OTC AIM Survey Results Compare to California Results?

Table V-6 presents the percent compliant products by category in the OTR according to the OTC survey, for both the National AIM Rule and the OTC AIM Model Rule. These compliance percentages are compared to product data for California according to ARB's 1998 survey. Compliance is determined by comparing reported VOC regulatory content per product to category-specific VOC emission limits required by each rule. It should be noted that some products may comply with the National AIM Rule through alternative compliance options.

The percentage of compliant products varies per category, but the results show that compliant products are present in the OTC, to an extent comparable to that in California. In some cases the product data in the OTR States show a greater degree of compliance than the 1998 California product data (e.g., non-flat, industrial maintenance). Possibly, this is a result of new compliant product formulations being recently introduced. For some categories the percent of compliant products is greater in California. This may be a result of AIM coating rules already in place in California (i.e., SCAQMD Rule 1113) prior to proposal of ARB's revised SCM.

Table V-1
List of AIM Survey Respondents

Company Name	Responded to Survey?
ACE Hardware Corporation	No
AMERON Performance Coatings and Finishes Group	Yes
Amteco, Inc	No
Behr Process Corporation	Yes
Benjamin Moore & Co.	Yes
Bruning Paints	No
Cabot Stains	Yes
California Products Corporation	Yes
Carboline Company	Yes
Deft, Inc	Yes
Duron Paint & Wallcoverings	Yes
Fine Paints of Europe	Yes
Gaco Western, Inc.	Yes
ICI Paints N.A.	Yes
INSL-X Products Corporation	No
International Paints, Inc.	No
Lord Corporation	No
M.A.Bruder and Sons, Inc.	Yes
Masterchem Industries, Inc	Yes
Multicolor Specialties, Inc.	No
PPG Industries	Yes
Rust-Oleum	Yes
Sherwin-Williams Co.	Yes
Spraylet Corporation	No
Textured Coatings of America	Yes
The Flood Company	No
The Valspar Corporation	No
TNEMEC CO. Inc.	Yes
TruServ Manufacturing	No
United Gilsonite Laboratories	No
W. Zinsser & Co.	No
Yenkin-Majestic Paint Corporation	No

Table V-2
Example of Data Requested

Company Name	Product Name	Coating Name	Coating Category	Regulatory VOC Limit	(R) Units	Weight/gal	% Volume Solids	% Weight Solids	Performance Information
Sherwin-Williams Co.	A-100 Exterior Latex	Flat Coatings	1	149	g/l	10.9	31	48	Fade resistant, chalk resistant, blister resistant
Sherwin-Williams Co.	LowTemp 35 Exterior Latex Satin Finish	Non-flat Coatings (except high gloss)	2	102	g/l	10.3	35	47	Recommended for use on primed metal down to a surface and air temperature of 35 degrees Fahrenheit
California Products Corporation	Wilbur & Williams Lacrylic 7110 Clear Solvent Finish	Lacquers (including sanding sealers)	3	680	g/l	7	12.1	17.7	non-yellowing, water, alkali, weak acids, and detergents resistant, abrasion resistant, prevents oxidation and discoloration
Sherwin-Williams Co.	Epo-Plex Multi-Mil Water Based Epoxy	Industrial Maintenance Coatings	4	240	g/l	10.6	41	55	Moisture resistant, abrasion, chemical and impact resistant
Rust-Oleum	6710 Polyurethane Clear Sealer	Sealers	6	574	g/l	8	34	40	improves finishes resistance to hydraulic fluids, solvents, and chemical staining
Sherwin-Williams Co.	A-100 Exterior Oil Wood Primer	Primers and Undercoaters	6	325	g/l	11.6	58	76	Resistance to peeling and blistering, resistance to fading and chalking outstanding durability
ICI Paints N.A.	ULTRA-HIDE Latex Low Lustre Interior Wall & Trim Enamel	Quick-Dry Enamels	7	163	g/l	10.9	40	54	Quick dry, block resistant, washable, non-yellowing, low odor, low VOC, adhesion and moisture resistant
Benjamin Moore & Co.	Fresh Start®® Penetrating Alkyd Primer 100	Quick-Dry Primers, Sealers and Undercoaters	8	350	g/l	13.0	66		Fast drying, mildew resistant
Sherwin-Williams Co.	Woodscapes Ext. Polyurethane Semi-Transparent Stain	Stains	9	473	g/l	8.5	8	11	Mildew resistant
California Products Corporation	Wilbur & Williams RUBBERCOAT Chlorinated Rubber Swimming Pool Paint	Swimming Pool Repair and Maintenance Coatings	10	599	g/l	11.2	38	68	Durable, continuous film minimizes seepage losses
Textured Coatings of America	Tex-Cote RainStopper 120	Wood Waterproofing Sealers	11	600	g/l	6.79	10.23	11.83	silane treatment to repel water and salt for masonry, concrete and limestone

Table V-3
Summary of the National Rule and Selected OTC Model Rule
VOC Limits by AIM Category

Coating Name	National Rule VOC Limit (g/l)	OTC Model Rule VOC Limit (g/l)
Flat Coatings	250	100
Non-flat Coatings (except high gloss)	380	150
Lacquers (including sanding sealers)	680	550
Industrial Maintenance Coatings	450	250[1]
Multi-Color Coatings	580	250
Sealers	400	200
Primers and Undercoaters	350	200
Quick-Dry Enamels	450	250
Quick-Dry Primers, Sealers and Undercoaters	450	200
Stains	550	250
Swimming Pool Repair and Maintenance Coatings	_[2]	340
Wood Waterproofing Sealers	600	250

NOTES: [1]OTC model rule has an implementation option of 340 g/l for specialty industrial maintenance coatings.
[2]The National AIM Rule does not specify a VOC content limit for this category.

Table V-4
Summary of Number of Compliant and Non-Compliant Products by AIM Category

Coating Name	# of Products Compliant with National Rule	# of Products Non-Compliant with National Rule[1]	# of Products Compliant with Model Rule	# of Products Non-Compliant with Model Rule	Total # of Products
Flat Coatings	108	12	45	75	120
Non-Flat Coatings (except high gloss)	196	14	88	122	210
Lacquers (including sanding sealers)	12	0	10	2	12
Industrial Maintenance Coatings (250 g/l)	270	19	131	158	289
Industrial Maintenance Coatings (340 g/l)	Not applicable	Not applicable	200	89	289
Multi-Color Coatings	0	0	0	0	0
Sealers	21	8	14	15	29
Primers and Undercoaters	180	52	87	145	232
Quick-Dry Enamels	22	3	12	13	25
Quick-Dry Primers, Sealers, Undercoaters	57	5	14	48	62
Stains	76	3	22	57	79
Swimming Pool Repair and Maintenance Coatings	0	0	0	1	1
Wood Waterproofing Sealers	20	0	1	19	20
% Totals	**89%**	**11%**	**39%[2]**	**61%[2]**	**1,079**

NOTES: [1]Compliance as defined by meeting emission limit; some products comply with National AIM Rule through alternative compliance options.
[2]Total compliance percentages calculated by comparing all industrial maintenance coatings to 250 g/l limit.

Table V-5
VOC Content by AIM Category

Coating Name	Average of VOC Content (g/l)	Range of VOC Content (g/l)[1]
Flat Coatings	144	0 - 440
Non-Flat Coatings (except high gloss)	208	0 - 448
Lacquers (including sanding sealers)	522	285 - 680
Industrial Maintenance Coatings	263	0 - 635
Multi-Color Coatings	0	0
Sealers	265	0 - 680
Primers and Undercoaters	265	0 - 820
Quick-Dry Enamels	333	151 - 541
Quick-Dry Primers, Sealers, Undercoaters	321	0 - 508
Stains	359	102 - 690
Swimming Pool Repair and Maintenance Coatings	599	599
Wood Waterproofing Sealers	377	0 - 600

NOTE: [1]For categories with a range starting with 0, this reflects the availability of no-VOC products within a category.

Table V-6
Percent Compliant AIM Products for OTC Compared to 1998 ARB Survey Data

Coating Name	National AIM Rule[1]		OTC AIM Model Rule	
	OTC States	California	OTC States	California
	% Compliant	% Compliant	% Compliant	% Compliant
Flat Coatings	90%	96%	38%	44%
Non-Flat Coatings (except high gloss)	93%	97%	42%	40%
Lacquers (including sanding sealers)	100%	86%	83%	33%
Industrial Maintenance Coatings (250 g/l)	93%	83%	45%	37%
Industrial Maintenance Coatings (340 g/l)	Not applicable	Not applicable	69%	41%
Multi-Color Coatings	N/A[2]	100%	N/A[2]	50%
Sealers[3]	72%	64%	48%	40%
Primers and Undercoaters, Sealers[4]	78%	80%	38%	50%
Quick-Dry Enamels	88%	87%	48%	1%
Quick-Dry Primers, Sealers, Undercoaters	92%	62%	23%	14%
Stains	96%	87%	28%	31%
Swimming Pool Repair and Maintenance	Not applicable	100%	0%	0%
Wood Waterproofing Sealers	100%	80%	5%	80%

NOTES: [1]Compliance as defined by meeting emission limit; some products comply with National AIM Rule through alternative compliance options.
[2]N/A = not available.
[3]California's compliance percentages do not account for all sealers included in CARB's survey, since some sealers were reported under the primers, undercoaters, and sealers category.
[4]For CARB's 1998 survey, manufacturers included sealers in the primers, undercoaters, and sealers category, so product information for sealers is included in the CARB's compliance percentages.

Figure IV-1
Nonattainment Area NOx Model Rule Benefits by Source Type and Size

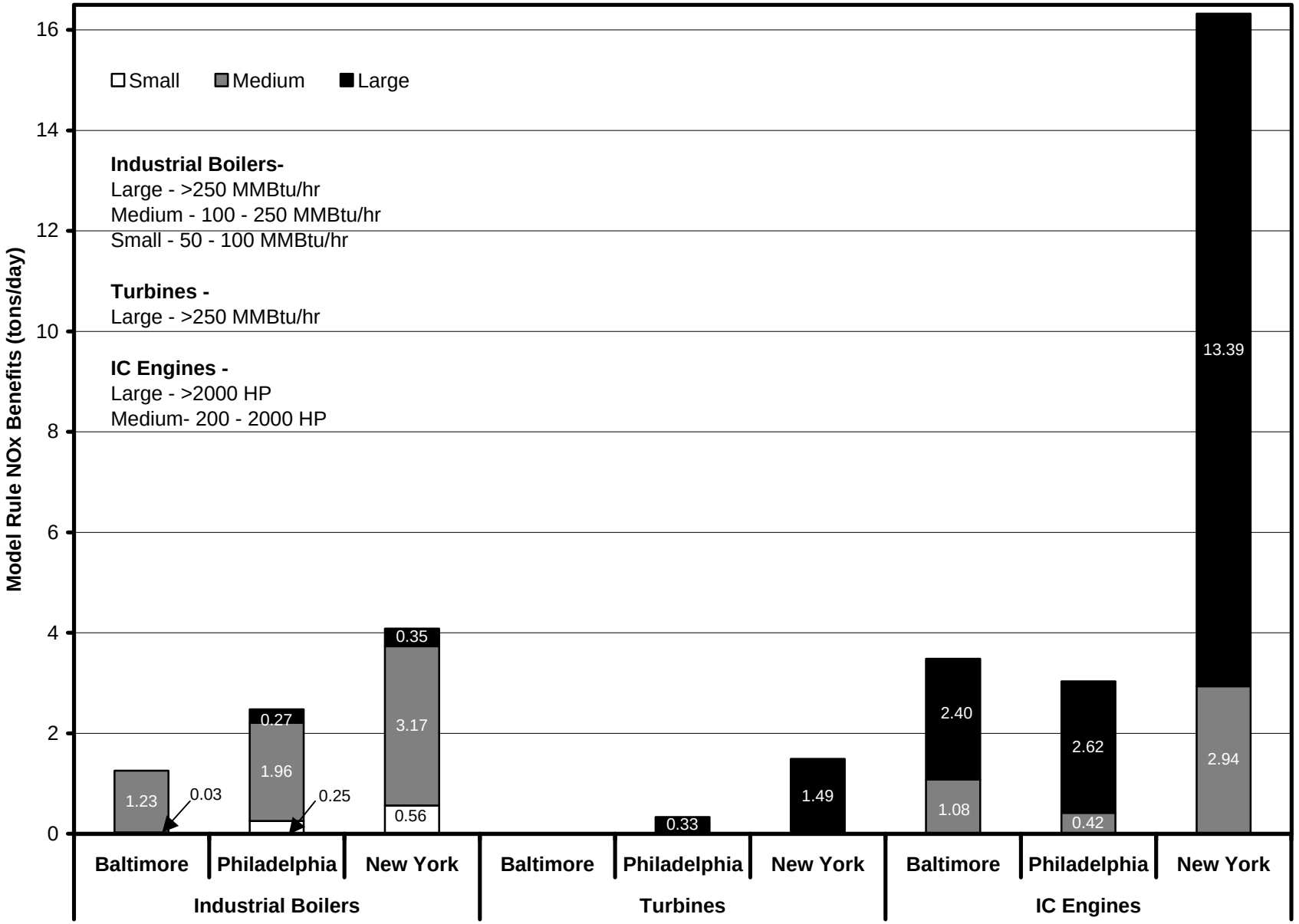


Figure IV-2
OTC Severe Ozone Nonattainment Areas and Nearby Counties Within 100 km

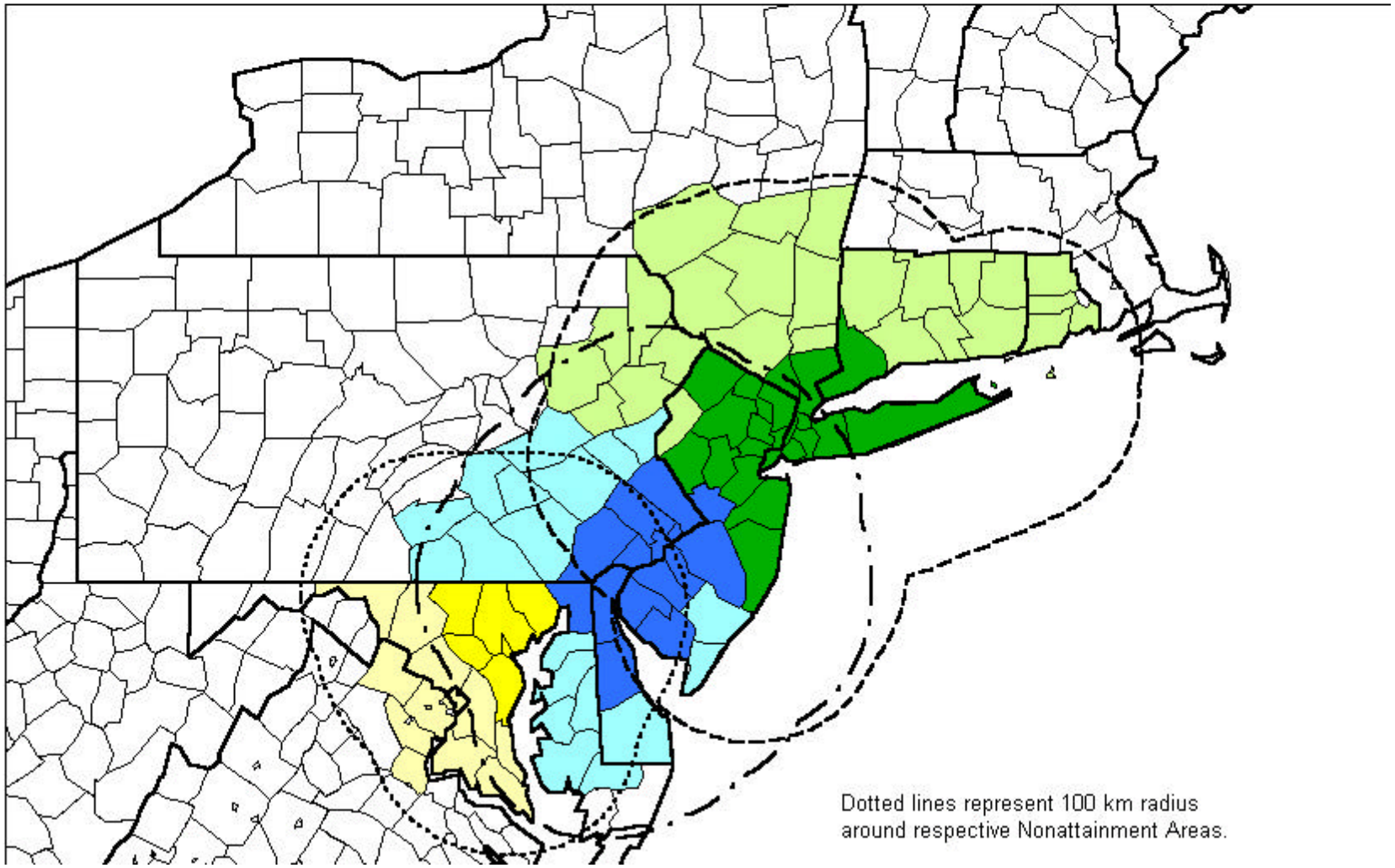
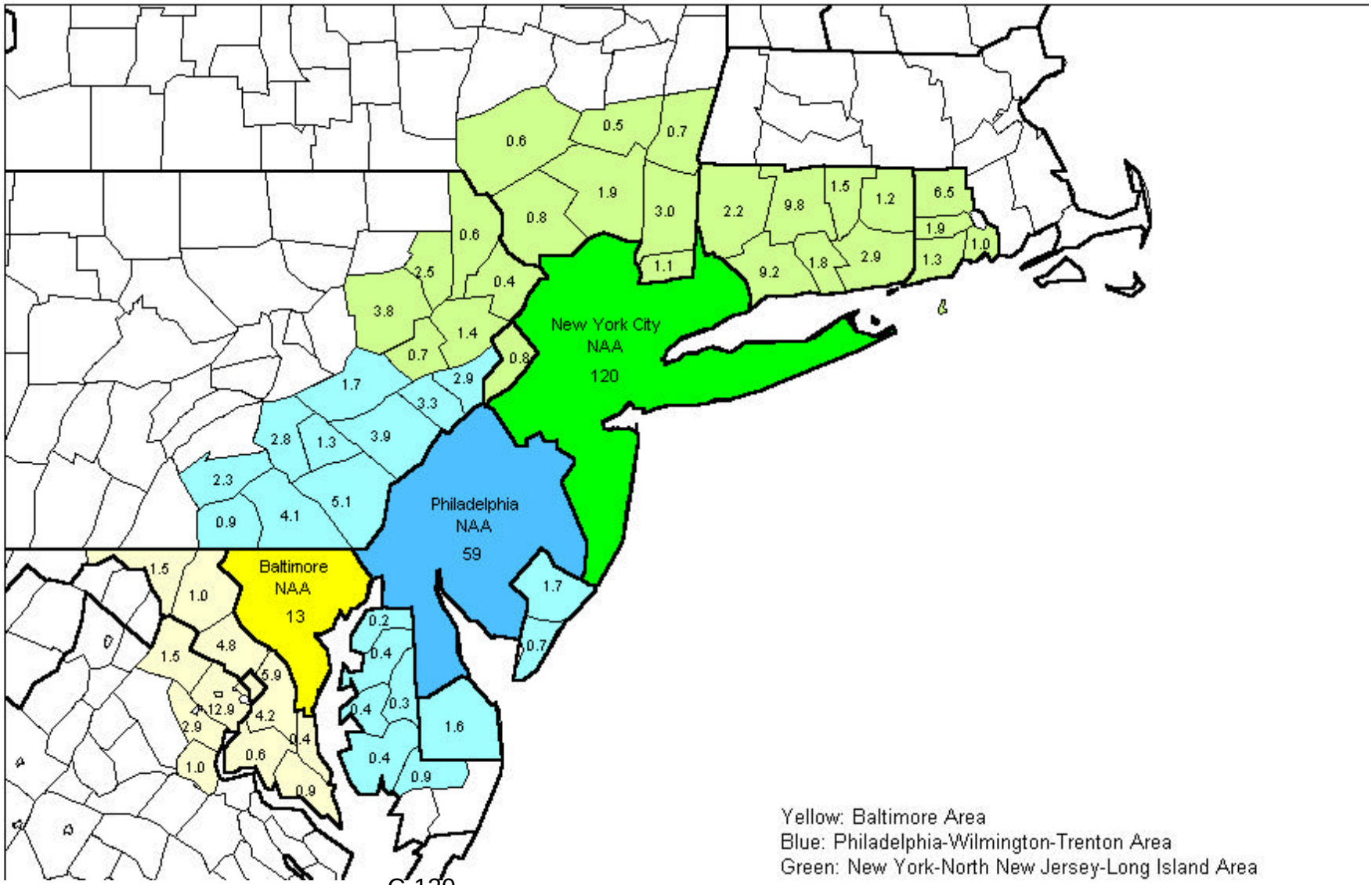


Figure IV-3
OTC Severe Ozone Nonattainment Areas and
Expected VOC (tons per day) Model Rule-Associated Reductions



Yellow: Baltimore Area
Blue: Philadelphia-Wilmington-Trenton Area
Green: New York-North New Jersey-Long Island Area

Figure IV-4
OTC VOC Model Rule Benefits by State within the OTR for 2005
(in tons per day)

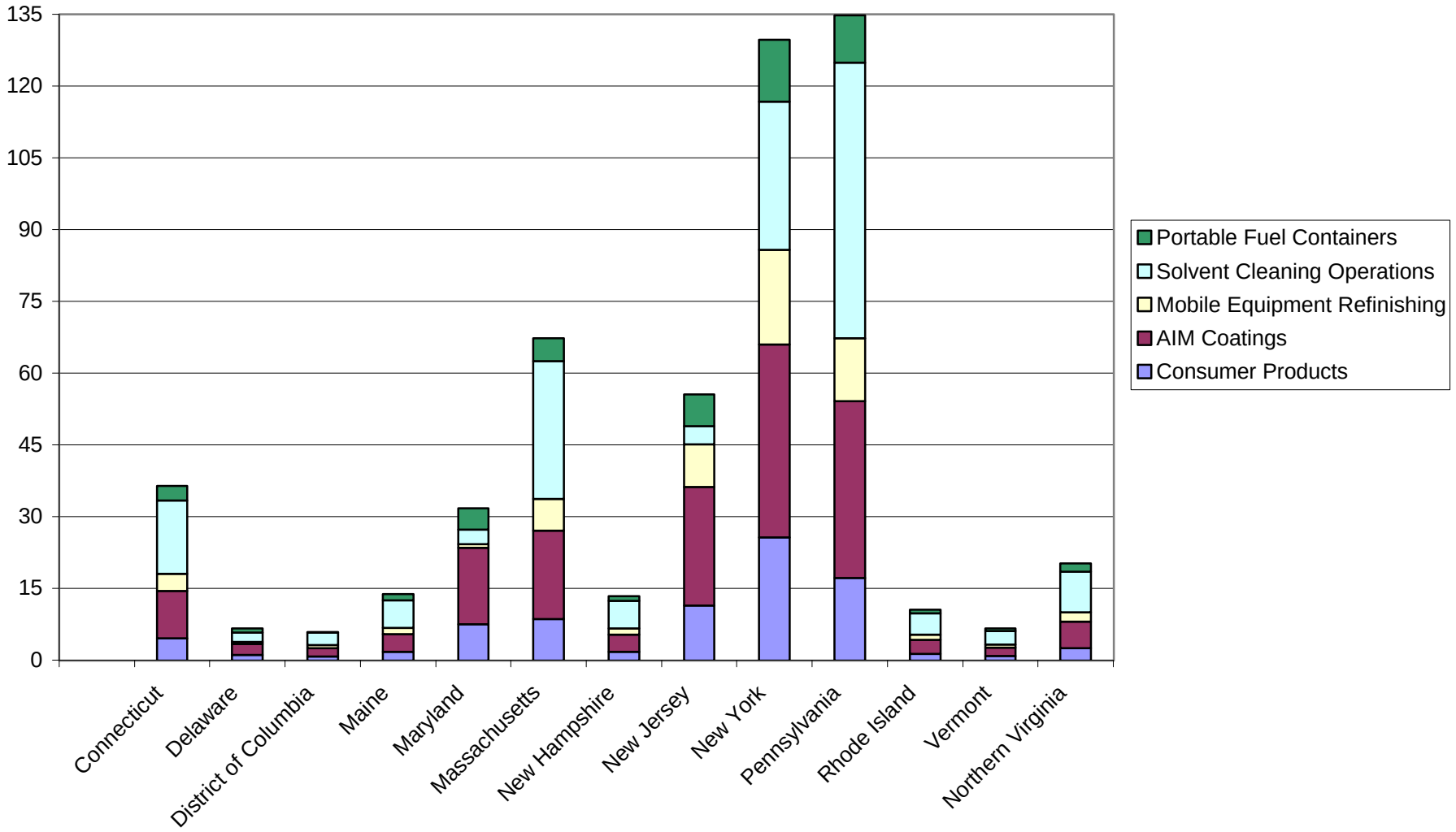


Figure IV-5
OTC NOx Model Rule Benefits by State within the OTR for 2005
(in tons per day)

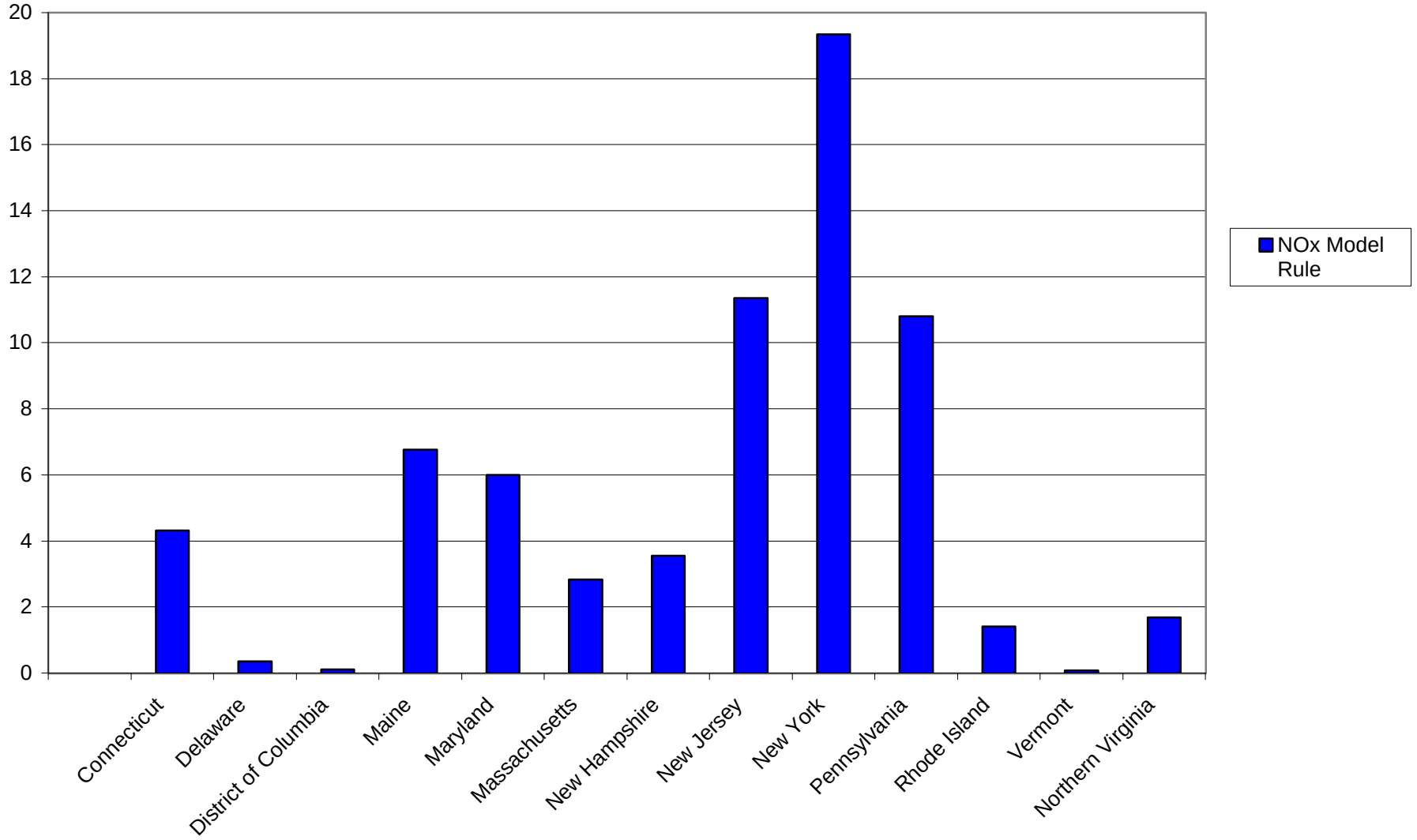
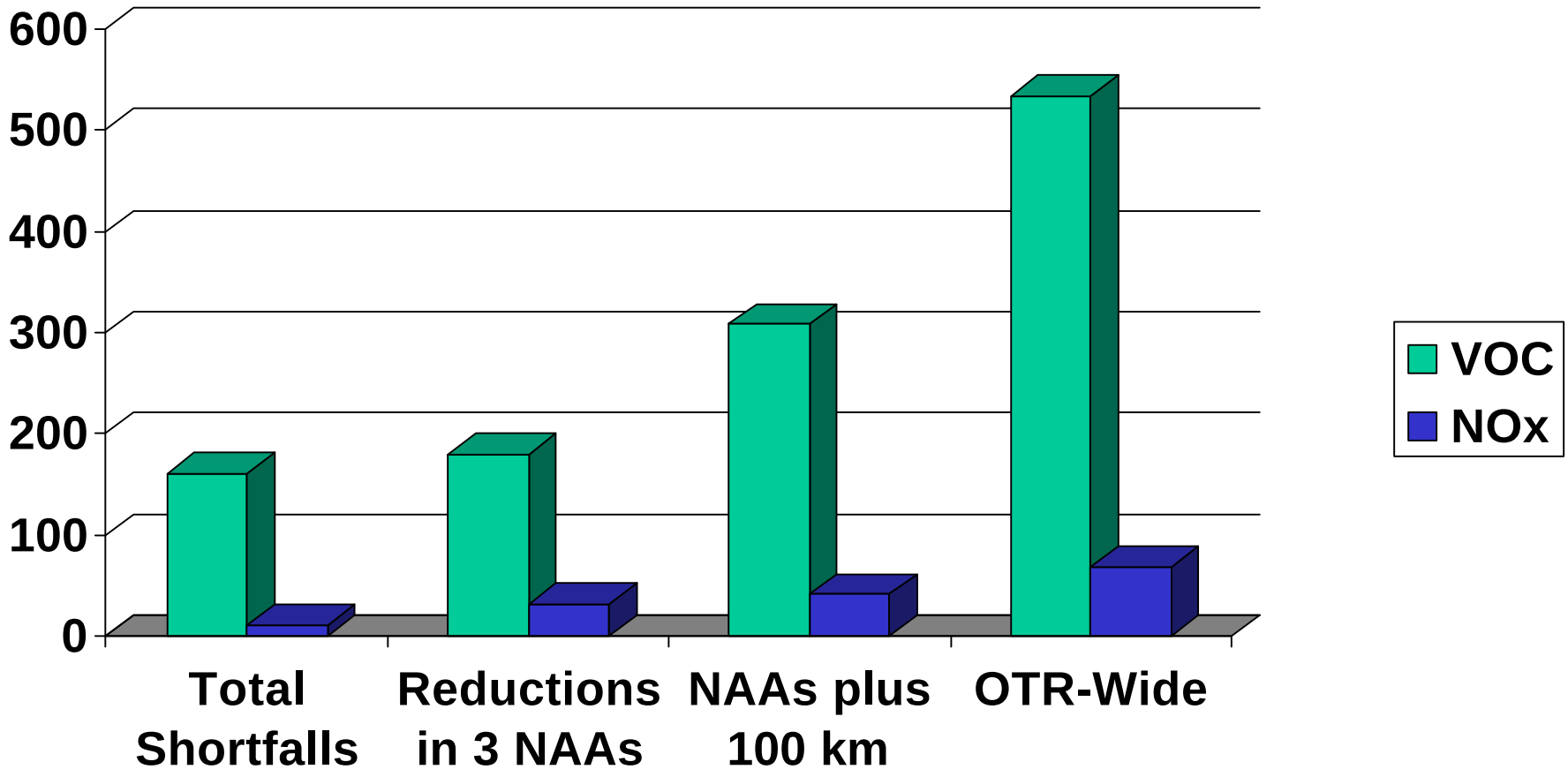


Figure IV-6
Estimated Reductions from Six OTC Model Rules in 2005
(in tons per day)



Documentation for Increased Open Burning Rule Effectiveness in Northern Virginia

NORTHERN VIRGINIA OPEN BURNING RULE EFFECTIVENESS EVALUATION

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CONTENTS

TABLES

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CHAPTER I. INTRODUCTION

This report presents the results of a rule effectiveness survey for open burning regulations in the Northern Virginia Control Area. The open burning categories addressed include: 1) residential (household) municipal solid waste (MSW) burning; 2) residential yard waste burning; and 3) land clearing debris burning. Residential MSW burning is the open burning of nonhazardous refuse produced by households, and includes paper, plastics, metals, wood, glass, rubber, leather, textiles, and food wastes. Residential yard waste burning is the open burning of leaves or brush trimmings from trees and shrubs, taking place at residences where the waste is generated. Land clearing debris is waste consisting of trees, shrubs, and brush resulting from the clearing of land for the construction of new buildings and highways.

The Northern Virginia Control Area is comprised of Arlington, Fairfax, Loudoun, Prince William, and Stafford counties, and the independent cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park. The purpose of the survey was to determine the level of compliance with open burning rules. This information will assist in developing rule effectiveness values to apply to ozone season open burning emission estimates for the Virginia portion of the Washington DC-MD-VA Ozone Nonattainment Area.

Pechan reviewed the existing open burning regulations by county and identified the appropriate respondents. Pechan contacted a sample of the identified respondents and performed a survey using a questionnaire based on EPA rule effectiveness guidance (EPA, 1992), but adapted for the open burning source category. Pechan completed a total of 22 surveys. Pechan performed a similar survey for the Mid-Atlantic Northeast Visibility Union (MANE-VU) region, (MANE-VU, 2003), and developed a region-wide estimate of rule effectiveness.

CHAPTER II. SUMMARY OF OPEN BURNING RESTRICTIONS

Open burning restrictions are in place in Virginia that all municipalities must adhere to, as codified in Virginia Code (VAC, 1997). Counties and jurisdictions may adopt more stringent regulations if deemed necessary by local officials. Table 1 lists a summary of provisions of open burning regulations for the state of Virginia, as well as for the five Northern Virginia counties. In addition to rules prohibiting burning during the summer ozone season, the Virginia Department of Forestry has established a brush burning ban before 4:00 PM during the second half of February, and March and April, for burns conducted close to woodland, brushland or fields containing dry grass or other flammable material.

A. RESIDENTIAL OPEN BURNING

Virginia State law prohibits residential open burning, but does provide exceptions, depending on the availability of MSW and yard waste collection services. The counties of Arlington, Fairfax, Prince William and Stafford all prohibit the open burning of MSW or household waste. Loudoun County prohibits household burning in the town of Leesburg, but remaining areas of the county follow the statewide rules and exemptions (i.e., residents can burn trash if no regularly scheduled curbside public or private collection service is available). However, Loudoun County does prohibit MSW burning during the months of June, July, and August.

Arlington County technically permits burning of yard waste, though an $85 fee is required. The county of Fairfax prohibits yard waste burning, but provides for emergency exemptions due to excess waste caused from natural disasters. Prince William and Loudoun County allow yard waste burning all year except for the months of June, July, and August. Stafford County follows the statewide rules and exemptions (i.e., residents can burn yard waste if no regularly scheduled curbside public or private collection service is available). A summer season ban on yard waste burning is not in effect in Stafford County.

B. LAND CLEARING DEBRIS BURNING

Open burning for the disposal of land clearing debris and clean burning construction waste is permitted. Open burning of this type is prohibited, though, in the Northern Virginia Area during June, July, and August. All counties, except for Stafford County, have explicit provisions that prohibit land clearing debris burning during this time period. Most counties do provide some exemptions and allow for case-by-case permits to be issued if needed.

Table 1. State of Virginia and Northern Virginia County Open Burning Regulations

Spatial Coverage	Open Burning Category	Provisions of Regulation
Statewide	Municipal (household) Solid Waste (MSW)	Open burning is permitted for the disposal of household refuse by homeowners or tenants, provided that no regularly scheduled curbside public or private collection service for household waste is available.
	Yard Waste	In urban areas, open burning is permitted for the disposal of leaves and tree, yard and garden trimmings located on the premises of private property, provided that no regularly scheduled curbside public or private collection service for yard waste is available. In non-urban areas, open burning is permitted for the disposal of leaves and tree, yard and garden trimmings located on the premises of private property, regardless of the availability of yard waste collection service.
	Land Clearing Debris	Open burning is permitted for disposal of clean burning construction waste, debris waste, and demolition waste resulting from property maintenance, construction activities or from clearing operations. Open burning is prohibited in the Northern Virginia VOC Emissions Control Area during June, July, and August. Permit required from designated local official.
	All Open Burning	4:00 PM Burning Law: From February 15 through April 30 of each year, no burning before 4:00 PM is permitted, if the fire is in, or within 300 feet of, woodland, brushland or fields containing dry grass or other flammable material. Prior to February 1, prescribed burning managers may apply for exemptions to this rule.
Arlington County	MSW	Prohibited
	Yard Waste	A permit ($85) is required for bonfires or other controlled burning approved by the code official. This permit requirement does not apply to recreational fires used for the cooking of food for human consumption.
	Land Clearing Debris	A permit ($85) is required for bonfires or other controlled burning approved by the code official. This permit requirement does not apply to recreational fires used for the cooking of food for human consumption.
Fairfax County	MSW	Prohibited
	Yard Waste	Prohibited except: Where alternate means of disposal are not economical or practical, and when it is in the best interests of the citizens of Fairfax County, the Director with concurrence of the State Air Pollution Control Board, the Chief Fire Marshal, and the State Forester, may permit open burning to dispose of debris caused by floods, tornadoes, hurricanes or other natural disasters under such conditions as may be prescribed by the State Air Pollution Control Board.

Table 1 (continued)

Spatial Coverage	Open Burning Category	Provisions of Regulation
Fairfax County (continued)	Land Clearing Debris	Prohibited except: Fires may be set in the course of agricultural operations in growing crops or raising fowl or animals, provided no nuisance is created and the agricultural operation meets the requirements established by the Director. The Director, and the Chief Fire Marshal, in concurrence, may approve the use of controlled burning equipment such as the Air Curtain Destructor or Pit Incinerator for the destruction and reduction of land clearing wastes for a period of up to one (1) year for each installation.
Loudoun County	MSW	No specific provisions listed for household waste burning; therefore VA State regulations would apply (see Statewide MSW regulations above). The Town of Leesburg: No open burning allowed. All other areas in county: Open burning prohibited June 1 through August 31.
	Yard Waste	The homeowner is allowed to burn brush and leaves in areas where trash service is not provided. The owner must call in control burns to Loudoun County ECC (703-777-0637), prior to starting and when finished, and the burn must be at least 50 feet from any structure. Farmers are allowed to burn brush on top of ground and in a fence-row. The Town of Leesburg: No open burning allowed. All other areas in county: Open burning prohibited June 1 through August 31.
	Land Clearing Debris	Developers, contractors and land clearing operations must get approval from the Loudoun County Fire Marshal's office before burning is allowed. Burning must be at least 1000 feet from any structure. In most cases this will require an Air Curtain and Pit meeting D.E.Q. requirements and a permit from the Loudoun County Fire Marshal's office. The Town of Leesburg: No open burning allowed. All other areas in county: Open burning prohibited June 1 through August 31.

Table 1 (continued)

Spatial Coverage	Open Burning Category	Provisions of Regulation
Prince William County	MSW	Prohibited
	Yard Waste	Burning is prohibited except by permit. Burning that is permissible by permit includes agricultural burning, use of an air curtain destructor, and bonfires. Burning prohibited during the months of June, July, or August. Burning shall be conducted as to maintain 1,000 feet clearance from any occupied building. All open burning shall be constantly attended until the fire is extinguished. Fire extinguishing equipment shall be available for immediate use (i.e., loader, etc.). Prior to the ignition and upon completion of any burning, notification to Prince William County Fire & Rescue Communications Center, 792-6810, must be made. The location and permit number must be given at that time.
	Land Clearing Debris	Burning is prohibited except by permit. Burning that is permissible by permit includes agricultural burning, use of an air curtain destructor, and bonfires. Burning prohibited during the months of June, July, or August. Burning shall be conducted as to maintain 1,000 feet clearance from any occupied building. All open burning shall be constantly attended until the fire is extinguished. Fire extinguishing equipment shall be available for immediate use (i.e., loader, etc.). Prior to the ignition and upon completion of any burning, notification to Prince William County Fire & Rescue Communications Center, 792-6810, must be made. The location and permit number must be given at that time. The material to be burned shall consist of brush, stumps, and similar land clearing refuse generated at the site, and shall not include demolition material or any materials brought in from other areas.

Table 1 (continued)

Spatial Coverage	Open Burning Category	Provisions of Regulation
Stafford County	MSW	Prohibited at all times.
	Yard Waste	The burning of wood, brush, grass trimmings or leaves is permitted in all areas of the county provided the following conditions are complied with: (1) The fire shall be a minimum of fifty (50) feet from any structure and shall not occur within three hundred (300) feet of any regularly occupied structure without the written permission of the owner or occupant of the structure; and (2) The fire must be constantly attended by a competent person; and (3) The burning shall be conducted in a fashion as to minimize any nuisance to neighbors.
	Land Clearing Debris	Prohibited in areas of the county designated as R-1, R-2, R-3, R-4, PD-1, and PD-2 on the county's zoning maps. Permitted in all other areas of the county, provided the following conditions are complied with: (1) An open pit incinerator or air curtain device shall be utilized when open burning is conducted within agricultural or business zoning areas within close proximity to residential zoning districts of the county. (2) All open burning shall be conducted at least fifty (50) feet from any structure and five hundred (500) feet from any occupied building other than a building located on the property on which the burning is conducted. (3) Material to be burned shall be limited to brush, stumps and other vegetative matter generated at the site. All pulpwood, saw logs and firewood shall be removed to minimize the amount of material that is burned. (4) Demolition or construction debris shall not be burned and fires shall not be fed between Friday, 12:00 noon and Monday, 7:00 a.m. (5) Open burning shall be constantly attended by a competent person, eighteen (18) years or older, until the fire is extinguished. A permit, obtained from the fire marshal's office, shall be required for open burning at commercial land clearing operations as defined above. A fee as set by the board of supervisors shall be paid prior to issuance. A separate permit shall be required from each burn location and shall expire ninety (90) days from the date of issuance. Permits will be nontransferable. Applications for open burning shall be submitted in writing at least ten (10) days before the fire is set and shall be in such form and contain such information as required by the fire marshal.

CHAPTER III. SURVEY OF LOCAL AND COUNTY OFFICIALS

A. RESPONDENTS

Pechan developed a list of potential respondents that included county and local fire marshals and other officials in the 5-county Northern Virginia Control Area. Pechan requested listings of local fire departments from the county contacts, and also found on-line listings from the Virginia Fire Chief's Association (VFCA, 2003). Based on the MANE-VU open burning study, Pechan believed these local officials may be more cognizant of open burning activity and violations in their jurisdictions than county officials. However, in conducting the survey, local officials often referred Pechan back to the county fire chief or marshal, indicating that the county officials were responsible for tracking and enforcing open burning regulations.

B. QUESTIONNAIRE

Pechan used the survey instrument developed for the MANE-VU open burning rule effectiveness (RE) study as the basis for this questionnaire. The survey was largely based on an RE survey recommended by EPA guidance, with some modifications to account for the fact that open burning regulations affect residential and commercial sectors, as opposed to industrial sources. Pechan did make some additional revisions to the MANE-VU instrument for this study, since some reviewers and stakeholders believed the MANE-VU survey deducted too many points based on the nature of public education efforts. The final questionnaire used is included as Appendix A. The questions are organized to address residential municipal (i.e., household) solid waste, residential yard waste, and land clearing debris burning separately. Responses to the questions are assigned specific point values that add up to a maximum of 100 points, which can then be considered equivalent to a percentage rule effectiveness value. For example, a survey for a county or jurisdiction that scored 88 total points for the yard waste category would result in an estimate of 88 percent rule effectiveness for the yard waste rule in effect in that area.

The questionnaire asked respondents to complete the questions for the 2003 ozone season, i.e., May 1 through September 15, 2003. The rule effectiveness survey should not apply for those counties or towns where rules prohibiting open burning for a specific category are not in effect for this time period, although some respondents answered the questions for alternate time periods (see Chapter IV).

C. SURVEY PROCEDURES

Using the potential list of respondents, Pechan contacted respondents initially by telephone to request participation in the rule effectiveness survey. If the respondent agreed to complete the questionnaire, Pechan then asked how the respondent would like to fill out the survey (i.e., over the phone, via facsimile, or via email). Depending on the preference, Pechan either completed the survey over the phone, faxed the survey to the respondent, or emailed the survey to the respondent. Pechan developed a form so that respondents who received an electronic survey could easily fill out the survey by checking the appropriate box associated with their response.

CHAPTER IV. RESULTS AND RECOMMENDATIONS

The results (i.e., rule effectiveness score) for each respondent and their county/city affiliation are presented in Table 2. The key identifier field provides a unique code for each response, and can be used to look up the details of the survey respondent and responses to each question. Although completed surveys and associated responses are not presented in this report, Pechan will provide all results, as well as the record of contacts, to Fairfax County. Pechan completed 22 rule effectiveness surveys. In analyzing the results, Pechan omitted results for 2 respondents since these respondents indicated "don't know" for several questions.

For the MANE-VU study, an estimate of the number of households violating the rule were used to determine a rule effectiveness value that was used as a regional default (96.8 percent). In addition, an estimate of the number of households that were conducting open burning would need to be available for the Northern Virginia region to use a value like this directly. However, Pechan was not charged to perform an "activity" survey for the 5-county Virginia region, since activity is believed to be minimal. Pechan asked a similar question in the rule effectiveness survey (see Questions I.4.b and II.4.b), in case this information could be used at a later date. However, many respondents did not (or could not) provide an answer. As such, the remaining questions and associated responses were used to estimate rule effectiveness.

Pechan analyzed results for each of the three categories of waste burning, and for all categories combined, for the entire 5-county region. Descriptive statistics of the rule effectiveness results for these categories are presented in Table 3. Pechan analyzed the best estimator of central tendency from the rule effectiveness values for each category. All sets of responses show some negative skewness of the data (the mean is the lowest value of central tendency compared to the median and the mode). As such, Pechan recommends using the median value (indicated in bold in Table 3) as the best estimator of central tendency. Rule effectiveness values were estimated to be: 1) 91.5 percent for MSW rules; 2) 91 percent for yard waste rules; 3) 93 percent for land clearing debris burning; and 4) 90.3 percent for all open burning categories combined. These values would need to be applied accordingly to the emission estimates, depending on whether the emissions represent specific open burning categories or all categories combined.

Pechan also examined the results by county or city. Table 4 summarizes the responses, and presents the estimated rule effectiveness value for each county or independent city (either the mean value or the median value where skewness was a factor, indicated in bold). If desired, these values could be applied individually to emission estimates for these specific counties (or cities if the inventory is developed at this resolution), but Pechan believes the region-wide rule effectiveness value for open burning categories would be sufficiently representative for all areas.

All of the Northern Virginia counties and independent cities are primarily classified as "urban," according to the U.S. Census 2000. Of all Northern Virginia counties/cities, Stafford County has the lowest percentage of households classified as urban or suburban (73 percent urban/suburban households). As such, Pechan does not recommend analyzing the results based on urban/suburban versus rural counties/jurisdictions, similar to what was done for MANE-VU.

In conducting the survey, several respondents indicated that an open burning rule was in effect for June, July, and August, and did not include the month of May and the first half of September. Therefore, their responses were provided for that time period only (Key Identifiers 18, 22). In addition, one respondent from Stafford County (Key Identifier 1) answered the questions for yard waste and land clearing debris burning for short time periods during the 2002 ozone season when a county ban was instituted due to poor air quality episodes. Based on Stafford County's interpretation of the state-wide rule, they currently are not enforcing rules that limit yard waste burning during June, July and August.

Table 2. Rule Effectiveness Results by Respondent and Open Burning Category

Key Identifier	County	Jurisdictions Served	Entire County or Larger Jurisdiction?	Part I - MSW RE	Part II - Yard Waste RE	Part III - Land Clearing RE	All Categories
1	Stafford	Stafford County	y	98	92	82	90.7
2	Alexandria City	City of Alexandria	n	96	96	96	96
3	Prince William	Quantico Marine Corps Base	n	98	98	98	98
4	Fairfax	Fairfax County	y	92	82	0	87
5	Fairfax	Fairfax County	y	98	98	98	98
6	Loudon	Loudon County and 7 incorporated towns within county	y	86	86	98	90
8	Prince William	9 counties--in northern VA, Loudoun, Prince William, Fairfax, and Stafford	y	94	94	94	94
9	Fairfax	Fort Belvoir	n	96	96	94	95.3
10	Arlington	Arlington County and Falls Church.	y	89	89	91	89.7
11	Fairfax	Fairfax County, Town of Vienna, Town of Herndon	y	92	92	92	92
12	Prince William	Prince William County; Towns of Dumfries, Occaquan, and Quantico	y	91	91	96	92.7
13	Arlington County	Arlington County and City of Falls Church	y	94	94	94	94
14	Arlington County	Ft. Myer	n	90	90	0	90
15	Manassas Park City	Manassas Park	n	75	75	90	80
16	Fairfax County	Fairfax County, Fairfax City, Falls Church City, and all incorporated towns in Fairfax County	y	94	94	90	92.7
18	Prince William	Prince William	y	84	84	92	86.7
19	Loudoun	Philomont	n	83	83	92	86
20	Fairfax	Fairfax County	y	86	86	0	86
21	Loudoun	Lovettsville	n	71	71	66	69.3
22	Stafford	Stafford, Fauquier (Mutual Aid)	y	79	0	0	79

Table 3. Descriptive Statistics for Rule Effectiveness Values by Open Burning Category

MSW	
Mean	89.3
Standard Error	1.729161647
Median	**91.5**
Mode	98
Standard Deviation	7.733045972
Sample Variance	59.8
Kurtosis	0.311490988
Skewness	-0.971604975
Range	27
Minimum	71
Maximum	98
Sum	1786
Count	20
Confidence Level (95.0%)	3.619178045

Yard	
Mean	89
Standard Error	1.71508614
Median	**91**
Mode	94
Standard Deviation	7.475887164
Sample Variance	55.88888889
Kurtosis	0.597304839
Skewness	-1.000433137
Range	27
Minimum	71
Maximum	98
Sum	1691
Count	19
Confidence Level (95.0%)	3.603265061

Land Clearing	
Mean	91.4375
Standard Error	1.970551425
Median	**93**
Mode	98
Standard Deviation	7.882205698
Sample Variance	62.12916667
Kurtosis	7.472717859
Skewness	-2.523140943
Range	32
Minimum	66
Maximum	98
Sum	1463
Count	16
Confidence Level (95.0%)	4.20013352

All Categories	
Mean	89.35
Standard Error	1.568601828
Median	**90.33333333**
Mode	98
Standard Deviation	7.015000636
Sample Variance	49.21023392
Kurtosis	2.297160897
Skewness	-1.347664053
Range	28.66666667
Minimum	69.33333333
Maximum	98
Sum	1787
Count	20
Confidence Level (95.0%)	3.283122379

Table 4. Rule Effectiveness Results by County and Open Burning Category

Key Identifier	County/ Jurisdictions Served	Entire County or Larger Jurisdiction?		Part I - MSW RE	Part II - Yard Waste RE	Part III - Land Clearing RE	All Categories
	Alexandria City						
2	City of Alexandria	n		96	96	96	96
			value	**96**	**96**	**96**	**96**
	Arlington						
10	Arlington County and Falls Church	y		89	89	91	89.7
13	Arlington County and City of Falls Church	y		94	94	94	94
14	Ft. Myer	n		90	90	0	90
			mean	91	91	92.5	91.2
			median	**90**	**90**	**92.5**	**90**
	Fairfax						
4	Fairfax County	y		92	82	0	87
5	Fairfax County	y		98	98	98	98
9	Fort Belvoir	n		96	96	94	95.3
11	Fairfax County, Town of Vienna, Town of Herndon	y		92	92	92	92
20	Fairfax County	y		86	86	0	86
16	Fairfax County, Fairfax City, Falls Church City, and all incorporated towns in Fairfax County	y		94	94	90	92.7
			mean	**93**	**91.3**	**93.5**	**91.8**
			median	93	93	93	92.3
	Manassas Park City						
15	Manassas Park	n		75	75	90	80
			value	75	75	90	80
	Loudoun						
6	Loudoun County and 7 incorporated towns within county	y		86	86	98	90
19	Philomont	n		83	83	92	86
21	Lovettsville	n		71	71	66	69.3
			mean	80	80	85.3	81.8
			median	**83**	**83**	**92**	**86**
	Prince William						
12	Prince William County; Towns of Dumfries, Occaquan, and Quantico	y		91	91	96	92.7
18	Prince William	y		84	84	92	86.7
3	Quantico Marine Corps Base	n		98	98	98	98
			mean	**91**	**91**	**95**	**92**
			median	91	91	96	92.7
	Stafford						
1	Stafford County	y		98	92	82	90.7
22	Stafford, Fauquier (Mutual Aid)	y		79	0	0	79
			mean/value	**88.5**	**92**	**82**	**90.7**

CHAPTER V. REFERENCES

EPA, 1992: *Guidelines for Estimating And Applying Rule Effectiveness for Ozone/CO State Implementation Plan Base Year Inventories*, U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, RTP, NC 27711. November 1992.

MANE-VU, 2003: *Open Burning in Residential Areas, Emissions Inventory Development Report,* prepared by E.H. Pechan & Associates, Inc. under contract to the Mid-Atlantic Regional Air Management Association for the Mid-Atlantic/Northeast Visibility Union, January 31, 2003.

VAC, 1997: 9 VAC 5 Chapter 40: Existing Stationary Sources; Part Ii: Emission Standards; Article 40: Emission Standards For Open Burning (Rule 4-40), Amended July 1, 1997.

VFCA, 2003: Virginia Fire Chief's Association Online Directory http://www.sfcav.org/vadepts.htm, accessed October 2003

APPENDIX A - RULE EFFECTIVENESS EVALUATION FORM - OPEN BURNING RULES

RULE EFFECTIVENESS EVALUATION FORM - OPEN BURNING RULES

INTRODUCTION: We are writing on behalf of the State of Virginia and the Metropolitan Washington Council of Governments. The purpose of this survey is to ask you a few questions concerning compliance with open burning rules for your jurisdiction. This information will assist in claiming emission reductions for the Virginia portion of the Washington DC-MD-VA Ozone Nonattainment Area. If you have any questions regarding this survey, please call PJ Disclafani at (919) 493-3144 extension 185.

Q1. Please provide:

Name/Title _____

Phone Number _____

County _____

Q2. What specific jurisdiction(s) do you serve? _____

Q3. During the 2003 ozone season, i.e., May 1 through September 15, 2003, did you have a rule in place prohibiting open burning for residential municipal solid waste? (Click in the box next to "Yes" or "No.") Yes ☐ *No* ☐

If Yes, continue to Part I, Question 1; if No, go to Part I, Question 5.

Part I. Residential Municipal Solid Waste Burning

All questions are to be answered for the 2003 Ozone Season, May 1 through September 15, 2003.

1. *For the 2003 ozone season, what has been the nature of educating the public on requirements of the rule? (Please click in the boxes next to ALL statements that apply.)*

- ☐ Inform public on state/regional agency website
- ☐ Educational opportunities for general public or municipalities
- ☐ Publicize a telephone number to handle or respond to complaints
- ☐ General notices in newspapers
- ☐ Mailings on compliance requirements
- ☐ None
- ☐ Don't know

For Questions 2 through 4a, please click in the box that indicates the most appropriate response from the choices provided after each question. Question 4b is not multiple choice. Please answer if you are able to estimate this value for your specific jurisdiction.

2. *For the 2003 ozone season, have inspections been made by your department on households for which citizens have placed complaints?*

- ☐ Not applicable since no complaints have been received
- ☐ Yes, in 100 percent of the cases
- ☐ Yes, in 50 to 99 percent of the cases
- ☐ Yes, in less than 50 percent of the cases
- ☐ Never
- ☐ Don't know

3. *For the 2003 ozone season, has enforcement action been taken against households found to be out of compliance?*

- ☐ Not applicable since no households have been found to be out of compliance
- ☐ Yes, for all noncomplying households
- ☐ Yes, in 50 to 99 percent of the cases
- ☐ Yes, in less than 50 percent of the cases
- ☐ Never
- ☐ Don't know

4a. *For the 2003 ozone season, what is the percentage of households in your jurisdiction that violated an open burning rule for household waste burning?*

- ☐ Less than 1 percent
- ☐ 1-10 percent
- ☐ 10-20 percent
- ☐ 20-50 percent
- ☐ 50-80 percent
- ☐ Greater than 80 percent
- ☐ Don't know

4b. *For the 2003 ozone season, what is your estimate of the number of households in your jurisdiction that violated an open burning rule for household waste burning?* _____

5. *During the 2003 ozone season, i.e., May 1 through September 15, 2003, did you have a rule in place prohibiting open burning for yard (brush and leaf) waste? (Click in the box next to "Yes" or "No.")*
Yes☐ *No*☐

If Yes, continue to Part II, Question A; if No, go Part II, Question 5.

Part II. Residential Yard Waste (Brush and Leaf) Burning

A. Do the responses provided under Part I for residential municipal solid waste burning also apply for residential yard waste burning? (Click in the box next to "Yes" or "No.") Yes☐ No☐

If Yes, skip to Part II, Question 5; if No, please respond to the all of the following Part II questions.

All questions are to be answered for the 2003 Ozone Season, or May 1 through September 15, 2003.

1. *For the 2003 ozone season, what has been the nature of educating the public on requirements of the rule? (Please click in the boxes next to ALL statements that apply.)*

☐ Inform public on state/regional agency website
☐ Educational opportunities for general public or municipalities
☐ Publicize a telephone number to handle or respond to complaints
☐ General notices in newspapers
☐ Mailings on compliance requirements
☐ None
☐ Don't know

For Questions 2 through 4a, please click in the box that indicates the most appropriate response from the choices provided after each question. Question 4b is not multiple choice. Please answer if you are able to estimate this value for your specific jurisdiction.

2. *For the 2003 ozone season, have inspections been made by your department on households for which citizens have placed complaints?*

☐ Not applicable since no complaints have been received
☐ Yes, in 100 percent of the cases
☐ Yes, in 50 to 99 percent of the cases
☐ Yes, in less than 50 percent of the cases
☐ Never
☐ Don't know

3. *For the 2003 ozone season, has enforcement action been taken against households found to be out of compliance?*

☐ Not applicable since no households have been found to be out of compliance
☐ Yes, for all noncomplying households
☐ Yes, in 50 to 99 percent of the cases
☐ Yes, in less than 50 percent of the cases
☐ Never
☐ Don't know

4a. *For the 2003 ozone season, what is the percentage of households in your jurisdiction that violated an open burning rule for yard waste burning?*

- ☐ Less than 1 percent
- ☐ 1-10 percent
- ☐ 10-20 percent
- ☐ 20-50 percent
- ☐ 50-80 percent
- ☐ Greater than 80 percent
- ☐ Don't know

4b. *For the 2003 ozone season, what is your estimate of the number of households in your jurisdiction that violated an open burning rule for yard waste burning?* _____

5. *During the 2003 ozone season, i.e., May 1 through September 15, 2003, did you have a rule in place prohibiting open burning for land clearing debris? (Click in the box next to the "Yes" or "No.")*
Yes☐ *No*☐

If Yes, continue to Part III; if No, the survey is complete. Instructions for returning the completed survey are at the bottom of page 5.

Part III. Land Clearing Debris Burning

All questions are to be answered for the 2003 Ozone Season, or May 1 through September 15, 2003.

1. *For the 2003 ozone season, what has been the nature of educating the public on requirements of the rule? (Please click in the boxes next to ALL statements that apply.)*

- ☐ Inform public on state/regional agency website
- ☐ Educational opportunities for general public or municipalities
- ☐ Publicize a telephone number to handle or respond to complaints
- ☐ General notices in newspapers
- ☐ Mailings on compliance requirements
- ☐ None
- ☐ Don't know

For Questions 2 through 4, please click in the box that indicates the most appropriate response from the choices provided after each question.

2. *For the 2003 ozone season, have inspections been made by your department on land clearing operations for which citizens have placed complaints?*

- ☐ Not applicable since no complaints have been received
- ☐ Yes, in 100 percent of the cases
- ☐ Yes, in 50 to 99 percent of the cases
- ☐ Yes, in less than 50 percent of the cases
- ☐ Never
- ☐ Don't know

3. *For the 2003 ozone season, has formal documented enforcement action been taken against land clearing operations found to be out of compliance?*

- ☐ Not applicable since no land clearing operations have been found to be out of compliance
- ☐ Yes, for all noncomplying land clearing operations
- ☐ Yes, in 50 to 99 percent of the cases
- ☐ Yes, in less than 50 percent of the cases
- ☐ Never
- ☐ Don't know

4. *For the 2003 ozone season, what is the percentage of land clearing operations in your jurisdiction that violated an open burning rule?*

- ☐ Less than 1 percent
- ☐ 1-10 percent
- ☐ 10-20 percent
- ☐ 20-50 percent
- ☐ 50-80 percent
- ☐ Greater than 80 percent
- ☐ Don't know

Thank you for taking the time to complete this survey! If you filled out the survey on your computer, please *save* the document and return it by email to pj.disclafani@pechan.com. If you filled out the survey by hand, please fax the completed forms to (919) 493-3182, Attn: PJ Disclafani.