Appendix A: Development of a 2002 National Prescribed Fire Inventory

This Appendix contains a memorandum from EC/R entitled: "**Development of a 2002 National Prescribed Fire Inventory"**

The table of contents, table numbers and figure numbers reflect numbering of the original Microsoft® Word® version of the memorandum. This memorandum contains one appendix (Appendix A).

Development of a 2002 National Prescribed Fire Inventory

DRAFT

Prepared for:

Mr. Tom Pace
Emission Factor and Inventory Group, D205-01
Emissions, Monitoring and Analysis Division
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Prepared by:

Katherine Boyer, William Battye,
Steve Fudge, and Robin Barrows

EC/R Incorporated
6330 Quadrangle Drive, Suite 325
Chapel Hill, NC 27517

Telephone: (919) 484-0222
Fax: (919) 484-0122

September 26, 2005

Table of Contents

List of Tables

List of Figures

Background

The 2002 emissions inventory is an important time period because the EPA anticipates that many important analyses for $PM_{2.5}$, Regional Haze, and PM_{coarse} programs will be based on this time frame. A 2002 National Emissions Inventory for Wildfires is currently underway that will result in a nationally consistent method of producing emission inventories for wildfire incidents reported in varying degrees of resolution in terms of start and end dates, location, and fuel.

The purpose of this effort is to support the development of a prescribed fire emissions inventory for 2002. This project will coordinate with work being funded by the RPO's to develop a 2002 National Emissions Inventory for Wildfires. Together, these two inventory products will provide a wildland fire emissions inventory that will be superior to previous Emission Inventory efforts.

This report documents our methodology for developing a National 2002 Prescribed Fire Inventory, including activity data collection and processing, fuel consumption development, emissions calculations, and inventory format.

Activity Data Gathering

The methods of prescribed fire data collection are similar to those implemented for the 2002 Wildfire Inventory.[1] We accepted all available prescribed fire activity data, without regard to fire size, location, or resolution. We obtained the final prescribed fire activity data sets from the RPOs that have already developed prescribed fire inventories for 2002, including the MWRPO, CENRAP, VISTAS, and WRAP. MWRPO, VISTAS, and WRAP inventories were obtained in the course of the 2002 National Wildfire Inventory project. The CENRAP inventory was obtained in the course of a previous inventory effort to develop a wildland fire inventory for the MWRPO. A revised CENRAP inventory was downloaded on August 24, 2005 from the CENRAP ftp site.

The VISTAS prescribed fire emissions inventory was developed as an area source inventory and submitted in NIF 3.0 area source format. However, prescribed fire incidents that were sufficiently resolved for a point source inventory (i.e., start date and lat/lon fire location) were available for all States except Virginia. These incidents have been included in this inventory effort. The entire VISTAS area source inventory is also available on EC/R's Clean Air Info FTP site.

CENRAP, VISTAS, and MWRPO databases included both prescribed (SCC 2810015000 and SCC 2610000500) and agricultural burning (2801500000) activity data. For the purposes of this emissions inventory, agricultural burning was excluded.[2]

---

[1] *Strawman Document For The 2002 Inter-Rpo National Wildfire Emission Inventory Fuel Consumption Comparison*. Technical Memorandum to Peter Lahm, USDA – Forest Service, Washington Office; Chair; Inter-RPO NationalWildfire EI Steering Committee. June 16, 2005. **Final Documentation is in final review, prepared by Air Sciences.**

[2] Available ftp.cleanairinfo.com.

For the MANE-VU States, we downloaded the 2002 Forest Service, NPS, BIA, and FWS federal prescribed incident data from the National Fire and Aviation Management Web Applications (FAMWeb) online database.[3] However, a query of the data did not result in any fire incidents on Federal land for the entire MANE-VU region. This finding was inconsistent with documentation from a previous MANE-VU 2002 area source inventory, which indicated a total of 424 acres burned by the USFS, 9 acres burned by the NPS, 4,796 acres burned by the FWS, and 556 acres burned by the BIA[4]. Due to time and resource restrictions, we were unable to contact individual Federal forests and parks to obtain fire data. However, we have included as part of our deliverable the MANE-VU area source NIF files for prescribed fires.[4]

We also requested data from MANE-VU States through Megan Schuster, a MANE-VU representative. We received data from New York, Massachusetts, Maryland, and New Hampshire. However, these data, except for New York, were not sufficiently resolved to include in the draft point source inventory. New York submitted data in hard copy only, and limited resources prevented us from manually entering that data into the electronic database for inclusion in this draft database.

Table 1 summarizes the status of the activity data collection effort.

[3] Available: http://famweb.nwcg.gov/

[4] Summary of approaches available for wildfires, prescribed burning, slash burning, and agricultural field burning. DRAFT Technical Memorandum. Prepared For MARAMA by E.H. Pechan & Associates, Inc. June 24, 2004.

Table 1. 2002 Prescribed Fire Activity Data

State	Data Received	Date Resolution	Fuel Resolution	Location Resolution	Final Inventory Resolution
		MANE-VU			
Connecticut	None				Area
Delaware	None				Area
Massachusetts	No usable data (incidents only, no acres)				Area
Maryland	State Agency	Monthly totals	Basic description	Region and County	Area
Maine	None				Area
New Hampshire	Summary acres by State Forest	Annual	None	None	Area
New Jersey	None				Area
New York	Paper copy from State Agency	Incident dates	None	County centroid	Area
Pennsylvania	None				Area
Rhode Island	None				Area
Vermont	None				Area
		CENRAP[5]			
Arkansas	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Iowa	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Kansas	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Louisiana	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Minnesota	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Missouri	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Nebraska	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Oklahoma	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point
Texas	Included in previous inventory	Incident dates	Descriptive/SAF/NVCS	Lat/lon and/or county	Point

[5] In the CENRAP documentation, Arkansas, Minnesota, and eastern Oklahoma are reported as the only States providing point-source State incident data. Spatial allocation factors were used to distribute emissions at the sub-county level (i.e., by 12 km X 12 km grid cell) for other State data. All Federal lands reported point-source incidents. All States are represented in the point source emissions inventory.

MWRPO					
Illinois	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Indiana	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Michigan	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Ohio	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Wisconsin	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
VISTAS					
Alabama	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Florida	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Georgia	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Kentucky	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Mississippi	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
North Carolina	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
South Carolina	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Tennessee	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
Virginia	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Area
West Virginia	Included in previous inventory	Incident dates	Descriptive/NFDRS	Lat/lon and/or county	Point
WRAP					
Alaska	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Arizona	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
California	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Colorado	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Idaho	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Montana	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
North Dakota	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
New Mexico	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Nevada	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Oregon	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
South Dakota	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Utah	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Washington	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point
Wyoming	Included in previous inventory	Incident dates	NFDRS	Lat/lon and/or county	Point

Data Processing and Gap-filling Methodology

Required data elements included fire size, start date, and location in county centroid, lat/lon, UTM, or legal description. Fire incidents that did not meet these requirements were not processed for this draft inventory. We compiled the centralized activity data we received with the required data elements into an incident database in the Microsoft Visual Fox Pro environment, and preserved the format of each RPO's database in order to maintain continuity with previous inventory efforts, including location and fuel information.

Minimal processing was required for the WRAP and MWRPO prescribed fire activity data, as those activity databases were already formatted for conversion to the NIF 3.0 format used in the 2002 Wildfire Emissions Inventory. However, some processing and gap-filling was needed for the VISTAS and CENRAP activity databases, specifically in the areas of processing multi-day fires and assigning NFDRS fuel codes.

The VISTAS activity database included quality-assured county centroid or latitude/longitude locations for each prescribed fire. Fires assigned a county centroid location were denoted as such. The database included a fire start date and fire end date field; however, in all cases the end date field was unpopulated. We therefore assumed that each fire lasted only one day. Fuel codes for the VISTAS database were either provided as an NFDRS code or material burned.[6]

Information from the CENRAP point source emissions inventory was converted from NIF 3.0 to a temporally and spatially resolved activity database. The database was then evaluated for lat/lon location, multi-day fires, and gaps in fuel information. Locations were determined as either incident location or county centroid by comparing the county FIPS and lat/lon from the activity database with a county centroid database obtained from the Census Bureau. Fire incidents with lat/lons matching the centroid database were designated as county centroid incidents.

Multi-day fires in the CENRAP database were linearly allocated into daily events. For example, if the start date of a 100-acre fire was reported as June 1, 2002 and the end date June 4, 2002, the acreage was divided evenly into four 24-hour fire days, with 25 acres burned on each day. Figure 1 presents this process.

[6] Draft Report: Development of the Draft 2002 VISTAS Emission Inventory for Regional Haze Modeling. Prepared for VISTAS by MACTEC. February 10, 2004.

Figure 1. Multi-Day Fire Processing

Unique Identifier	Start Date	End Date	Acres Burned
CE00001	6/1/2002	6/4/2002	100

Unique Identifier	Start Date	End Date	Acres Burned	Daily Fire Date
CE00001	6/1/2002	6/4/2002	25	6/1/2002
CE00001	6/1/2002	6/4/2002	25	6/2/2002
CE00001	6/1/2002	6/4/2002	25	6/3/2002
CE00001	6/1/2002	6/4/2002	25	6/4/2002

If an NFDRS fuel code was not included in the prescribed burn record, we overlayed the fire location on the NFDRS national fuelbed GIS map and assigned a fuel code. Fire locations that were provided as a county centroid or fell over a barren, agriculture, or water code on the NFDRS map were assigned a regional default. These defaults were developed by ascertaining the most common fuel type burned in the region. Table 2 gives the default NFDRS code used for each burn type by region.

Table 2. Development of Regional Default Fuel Codes

Burn Type	Most Common NFDRS Code	Number of Prescribed Fires	Total Acres Burned
	VISTAS		
BROADCAST	C	707	54,575.85
NATURAL	D	25767	2,099,997
PILED	R	8207	48,833.93
	CENRAP		
NATURAL	P	3490	306,434.62

Pre-burn Fuel Loading and Fuel Consumption

Pre-burn loading and fuel consumption was developed similarly to the National 2002 Wildfire Inventory effort. For that effort, the Fire Emission Production Simulator (FEPS) fuel model was used to develop draft region-specific fuel consumption values for six default fuel moisture regimes included in FEPS using the NFDRS fuel classes as a key. These values were used in the absence of actual observed fuel consumption. State-wide defaults were used in the absence of any fire location data.

Calculating fuel consumption for the prescribed fire inventory required a slightly different approach in order to account for differences between piled and broadcast burns. We used the

following hierarchy in producing fuel consumption for the draft inventory:

1. Actual observed fuel consumption
2. FEPS consumption produced from default piled or broadcast fuel loadings by NFDRS category using the "moderate" default fuel moisture category supplied in FEPS
3. FEPS consumption produced from fuel loadings developed in the National Wildfire Inventory effort (i.e., "natural fuels") using the "moderate" default fuel moisture category supplied in FEPS

Fuel consumption was reported for a portion of the incidents in WRAP and VISTAS incident databases. We contacted representatives from these RPOs to verify if the reported consumption data were actual observed values. VISTAS representatives verified that fuel consumption reported by specific agencies should be treated as actual observed for those fires. The WRAP incident data included a flag for actual observed consumption, which was carried over into the final incident database. However, there did not appear to be any instances of actual observed pre-burn fuel loading in the incident databases for these burns. For documentation purposes, we assumed that pre-burn fuel loading equaled actual observed fuel consumption.

In the NFDRS, pre-burn fuel loading is divided into fuel bed classes (e.g., litter, herbaceous, woody, duff, and crown fuel beds). However, FEPS only allows for one input number for piled and broadcast burns pre-burn loadings. In order to develop default fuel consumption values for piled and broadcast burns in FEPS, we used a summed total of pre-burn fuel loadings from all fuel bed classes by NFDRS category.[7] Following WRAP documentation, only litter, woody, and herbaceous fuels were used to develop piled and broadcast burn fuel consumption.[8] Duff and crown were excluded.

The WRAP incident database included fuel classes A, B, C, E, F, G, H, I, J, K, L, N, R, T, and U for broadcast burns, and B, C, F, G, H, J, and T for piled burns. The VISTAS incident database included fuel classes C, D, J, L, O, P and R for broadcast burns, and B, C, D, L, O, P, and R for piled burns. Although the WRAP did not observe prescribed burns for classes D and P, these classes are described as common fuel types in the Southeast.

Some VISTAS prescribed incidents denoted the burn type as either "piled" or "broadcast" with no other fuel information. For these fires, we overlayed the fire locations with the NFDRS fuel map in a GIS environment, and used the corresponding NFDRS fuel class.

Emissions Calculations

We calculated emissions for 2002 prescribed fires similarly to the 2002 Wildfire Inventory. The emissions inventory includes estimates for 11 pollutants, as in the 2002 National Wildfire Inventory. For this effort, we included HAP emission estimates as well using emission factors provided to us by Tom Pace.

[7] [7] We solicited expert advice from Pete Lahm and Bill Barnard (MACTEC) regarding whether this approach is appropriate for the WRAP and VISTAS, but received no response.

[8] *2002 Fire Emission Inventory for the WRAP Region – Phase II*. Prepared for the Western Governor's Association/Western Regional Air Partnership by Air Sciences. July 22, 2005.

FEPS was used to estimate emissions for pile and broadcast burns in the WRAP and VISTAS for each appropriate fuel class. Emission factors developed in FEPS for the wildfire inventory effort were applied to prescribed fires in MANE-VU, CENRAP, and MWRPO.[9] In creating default fuel consumption for this draft inventory, we ran FEPS for a 2-day, 100-acre fire. All 100 acres were burned on the first day, but the end date was specified as day 2 in order to capture long term (i.e., next-day) smoldering emissions. For this draft, we only ran FEPS using the "moderate" fuel moisture class.

FEPS produces hourly emissions for CO, CH_4, and $PM_{2.5}$, and fuel consumption for flaming, short term (i.e., 2 hrs) and long term smoldering. The model incorporates a decay rate for each phase that is applied to each hour of the burn, and extends into the next calendar day for each phase. We incorporated these calculations in the inventory by summing hourly consumption and emissions into a daily total, and emission factors were back-calculated by dividing the number of acres by the daily emissions.

PM_{10}, NO_X, and SO_2 were estimated using emission factors from FOFEM. VOC and NH_3 were estimated based on numerical relationships with CO emissions, and EC and OC were estimated as percentages of $PM_{2.5}$. The coarse component of PM_{10} (PMC) were calculated as the difference between the PM_{10} and $PM_{2.5}$ emission factors. These relationships were developed using various resource documents, including U.S. EPA's report "Development of Emissions Inventory Methods for Wildland Fire" (EC/R, 2001), emission factor methods employed by RPOs, and updates and recommendations from the 2004 National Fire Workshop in New Orleans. Table 3 presents the numerical relationships for these pollutant emission factors.

Table 3. Numerical Relationships for Pollutant Emission Factors

Pollutant	Numerical Relationship
NH_3	0.016 x CO
VOC	Forest Fuels: 0.23 x CO
	Grasslands: 0.15 x CO
OC	0.47 x $PM_{2.5}$
EC	0.061 x $PM_{2.5}$
PM_{10}[10]	1.18 x $PM_{2.5}$
NO_X[10]	6.54-(0.011 x CO)
SO_2[10]	1.96
TSP[11]	1.43 x PM_{10}

Tables 4 and presents region-specific fuel consumption and emission factors by fuel class. The fuel consumption table is set up to show daily flaming, short-term smoldering, and long-term smoldering consumption for both days of the 2-day burn. In most cases of piled and broadcast burns, long-term smoldering is absent due to the absence of duff in the pre-burn loading inputs (as described in earlier sections).

[9]Correspondence with a developer of the FEPS model has indicated that FEPS treats prescribed fires of natural fuels the same as wildfires

[10] Pollutant emission factor constants and coefficients taken from FOFEM. PM2.5 and CO emission factors calculated in FEPS.

[11] NWCG Smoke Management Handbook, 2001

Inventory Format

The draft emissions inventory was formatted using EPA's National Inventory Format version 3 (NIF 3.0). NIF 3.0 is the format most widely used by State and local agencies to transfer data to the EPA's National Emission Inventory (NEI). Fires were formatted consistent with the 2002 National Wildfire Inventory effort. Field definitions are included in Appendix A, excerpted directly from the WRAP 2002 Phase II Emissions Inventory Documentation.[8]

The draft inventory is available on EC/R's Clean Air Info FTP site.[2]

Table 4. Fuel Consumption by Region and NFDRS Class

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
CENRAP--Natural Burn Type						
A	1	1.1	0.0232	0.019	0	0.0422
A	2	0	0	0	0	
C	1	11.1	0.7055	0.5769	1.1128	2.3951
C	2	0	0	0.4583	0.4583	
D	1	10.1	0.8052	0.6584	0.8568	2.3204
D	2	0	0	0.3529	0.3529	
E	1	3.5	0.2911	0.2381	0	0.5292
E	2	0	0	0	0	
F	1	15	3.1706	2.5927	0	5.7633
F	2	0	0	0	0	
G	1	26.1	3.838	3.1385	0.4352	7.4117
G	2	0	0	0.1792	0.1792	
H	1	21.2	1.4274	1.1672	1.2046	3.7993
H	2	0	0	0.4961	0.4961	
K	1	10.6	0.6097	0.4985	1.0992	2.2074
K	2	0	0	0.4527	0.4527	
L	1	0.8	0.0135	0.011	0	0.0245
L	2	0	0	0	0	
O	1	67.2	7.6163	6.2281	4.4872	18.3316
O	2	0	0	1.848	1.848	
P	1	10.2	0.1842	0.1506	1.3552	1.69
P	2	0	0	0.5581	0.5581	
Q	1	25.8	0.7451	0.6093	1.7316	3.086
Q	2	0	0	0.7131	0.7131	
R	1	3.5	0.2911	0.2381	0	0.5292
R	2	0	0	0	0	
S	1	106.5	6.6203	5.4136	15.0577	27.0917
S	2	0	0	6.2013	6.2013	
T	1	2.3	0.1388	0.1135	0	0.2522
T	2	0	0	0	0	
U	1	19.5	1.1005	0.8999	1.5058	3.5063
U	2	0	0	0.6201	0.6201	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
MWRPO--Natural Burn Type						
A	1	0.95	0.0202	0.0165	0	0.0367
A	2	0	0	0	0	
C	1	6.123	0.3205	0.2621	0.4849	1.0674
C	2	0	0	0.1997	0.1997	
D	1	12.39	1.5297	1.2509	0	2.7806
D	2	0	0	0	0	
E	1	2.6	0.1671	0.1366	0.1958	0.4995
E	2	0	0	0.0806	0.0806	
G	1	66.09	4.7178	3.8579	4.2613	12.837
G	2	0	0	1.755	1.755	
H	1	34.6325	1.0419	0.852	1.566	3.4598
H	2	0	0	0.6449	0.6449	
I	1	109.23	17.8615	14.6058	5.1196	37.5869
I	2	0	0	2.1084	2.1084	
J	1	85.25	12.4965	10.2187	5.1196	27.8348
J	2	0	0	2.1084	2.1084	
K	1	44.28	5.2218	4.27	2.5598	12.0517
K	2	0	0	1.0542	1.0542	
L	1	2.612	0.1872	0.1531	0	0.3402
L	2	0	0	0	0	
N	1	4.83	1.5332	1.2537	5.1196	7.9066
N	2	0	0	2.1084	2.1084	
O	1	64.86	4.0651	3.3241	8.2817	15.671
O	2	0	0	3.4107	3.4107	
Pe	1	28.31	1.1944	0.9767	4.2613	6.4323
Pe	2	0	0	1.755	1.755	
Q	1	6.123	0.3019	0.2469	0.4818	1.0306
Q	2	0	0	0.1984	0.1984	
R	1	2.6	0.1062	0.0868	0.1958	0.3888
R	2	0	0	0.0806	0.0806	
T	1	2.196	0.1928	0.1577	0	0.3505
T	2	0	0	0	0	
U	1	6.123	0.3019	0.2469	0.4818	1.0306
U	2	0	0	0.1984	0.1984	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
VISTAS--Broadcast Burn Type						
A	1	0.5	0.0076	0.0063	0	0.0139
A	2	0	0	0	0	
B	1	22.5	7.385	6.0389	0	13.4239
B	2	0	0	0	0	
C	1	4.24	0.5318	0.4349	0	0.9666
C	2	0	0	0	0	
D	1	8.06	1.5123	1.2366	0	2.7489
D	2	0	0	0	0	
E	1	4.56	0.5536	0.4527	0	1.0063
E	2	0	0	0	0	
F	1	15	4.1135	3.3637	0	7.4771
F	2	0	0	0	0	
G	1	22.5	1.9808	1.6198	0	3.6006
G	2	0	0	0	0	
H	1	7.5	1.3244	1.083	0	2.4074
H	2	0	0	0	0	
I	1	46	17.6901	14.4657	0	32.1558
I	2	0	0	0	0	
J	1	25.5	8.729	7.1379	0	15.8669
J	2	0	0	0	0	
K	1	9.5	1.9808	1.6198	0	3.6006
K	2	0	0	0	0	
L	1	0.75	0.0194	0.0158	0	0.0352
L	2	0	0	0	0	
N	1	5	0.6445	0.527	0	1.1715
N	2	0	0	0	0	
O	1	20	6.2728	5.1294	0	11.4022
O	2	0	0	0	0	
P	1	4.81	0.5984	0.4893	0	1.0877
P	2	0	0	0	0	
R	1	3.81	0.5536	0.4527	0	1.0063
R	2	0	0	0	0	
S	1	3	0.4281	0.3501	0	0.7781
S	2	0	0	0	0	
T	1	4.5	0.5318	0.4349	0	0.9666
T	2	0	0	0	0	
U	1	5	0.6445	0.527	0	1.1715
U	2	0	0	0	0	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
VISTAS--Natural Burn Type						
A	1	0.5	0.0039	0.0032	0	0.0072
A	2	0	0	0	0	
B	1	77.5	11.8877	9.7209	8.2817	29.8902
B	2	0	0	3.4107	3.4107	
C	1	7.5	0.5135	0.4199	0.4969	1.4303
C	2	0	0	0.2046	0.2046	
D	1	10.85	1.3574	1.11	0.4216	2.889
D	2	0	0	0.1736	0.1736	
E	1	7.35	0.5061	0.4139	0.4216	1.3416
E	2	0	0	0.1736	0.1736	
F	1	15	3.1706	2.5927	0	5.7633
F	2	0	0	0	0	
G	1	22.5	3.5765	2.9246	0	6.501
G	2	0	0	0	0	
H	1	7.5	0.592	0.4841	0	1.0762
H	2	0	0	0	0	
I	1	46	9.5658	7.8222	0	17.3881
I	2	0	0	0	0	
J	1	25.5	4.1849	3.4221	0	7.607
J	2	0	0	0	0	
K	1	9.5	0.804	0.6575	0	1.4615
K	2	0	0	0	0	
L	1	0.75	0.0102	0.0083	0	0.0185
L	2	0	0	0	0	
N	1	5	0.3912	0.3199	0	0.7111
N	2	0	0	0	0	
O	1	75	9.9884	8.1678	8.2817	26.4379
O	2	0	0	3.4107	3.4107	
P	1	7.6	0.532	0.435	0.4216	1.3886
P	2	0	0	0.1736	0.1736	
Q	1	12	1.779	1.4547	0	3.2337
Q	2	0	0	0	0	
R	1	6.6	0.4079	0.3335	0.4216	1.1631
R	2	0	0	0.1736	0.1736	
S	1	3	0.1262	0.1032	0	0.2294
S	2	0	0	0	0	
T	1	4.5	0.3936	0.3219	0	0.7155
T	2	0	0	0	0	
U	1	5	0.9663	0.7902	0	1.7565
U	2	0	0	0	0	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
VISTAS--Piled Burn Type						
A	1	0.5	0.0099	0.0081	0	0.018
A	2	0	0	0	0	
B	1	22.5	8.7886	7.1866	0	15.9752
B	2	0	0	0	0	
C	1	4.24	0.6744	0.5515	0	1.2258
C	2	0	0	0	0	
D	1	8.06	1.8867	1.5428	0	3.4295
D	2	0	0	0	0	
E	1	4.56	0.7017	0.5738	0	1.2755
E	2	0	0	0	0	
F	1	15	5.0001	4.0887	0	9.0889
F	2	0	0	0	0	
G	1	22.5	8.7886	7.1866	0	15.9752
G	2	0	0	0	0	
H	1	7.5	1.6566	1.3546	0	3.0112
H	2	0	0	0	0	
I	1	46	20.3704	16.6574	0	37.0278
I	2	0	0	0	0	
J	1	25.5	10.3188	8.4379	0	18.7567
J	2	0	0	0	0	
K	1	9.5	2.4569	2.0091	0	4.466
K	2	0	0	0	0	
L	1	0.75	0.025	0.0205	0	0.0455
L	2	0	0	0	0	
O	1	20	7.5123	6.143	0	13.6553
O	2	0	0	0	0	
P	1	4.81	0.7577	0.6196	0	1.3773
P	2	0	0	0	0	
Q	1	12	3.5662	2.9162	0	6.4823
Q	2	0	0	0	0	
R	1	3.81	0.7017	0.5738	0	1.2755
R	2	0	0	0	0	
T	1	4.5	0.6744	0.5515	0	1.2258
T	2	0	0	0	0	
U	1	5	0.8153	0.6667	0	1.4821
U	2	0	0	0	0	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
WRAP--Broadcast Burn Type						
A	1	0.5	0.0076	0.0063	0	0.0139
A	2	0	0	0	0	
B	1	19.5	6.0521	4.9489	0	11.001
B	2	0	0	0	0	
C	1	2.7	0.2049	0.1675	0	0.3724
C	2	0	0	0	0	
E	1	3.25	0.2991	0.2446	0	0.5438
E	2	0	0	0	0	
F	1	15	4.1135	3.3637	0	7.4771
F	2	0	0	0	0	
G	1	22.5	1.9808	1.6198	0	3.6006
G	2	0	0	0	0	
H	1	7.5	1.3244	1.083	0	2.4074
H	2	0	0	0	0	
I	1	46	17.6901	14.4657	0	32.1558
I	2	0	0	0	0	
J	1	25.5	8.729	7.1379	0	15.8669
J	2	0	0	0	0	
K	1	9.5	1.9808	1.6198	0	3.6006
K	2	0	0	0	0	
L	1	0.75	0.0194	0.0158	0	0.0352
L	2	0	0	0	0	
N	1	5	0.6445	0.527	0	1.1715
N	2	0	0	0	0	
R	1	2.5	0.177	0.1447	0	0.3217
R	2	0	0	0	0	
S	1	3	0.4281	0.3501	0	0.7781
S	2	0	0	0	0	
T	1	4.5	0.5318	0.4349	0	0.9666
T	2	0	0	0	0	
U	1	5	0.6445	0.527	0	1.1715
U	2	0	0	0	0	

NFDRS	Burn Day	Preburn Load tons/acre	Flaming tons/acre	Short Term Smoldering tons/acre	Long Term Smoldering tons/acre	Total tons/acre
WRAP--Piled Burn Type						
A	1	0.5	0.0099	0.0081	0	0.018
A	2	0	0	0	0	
B	1	19.5	7.2577	5.9348	0	13.1926
B	2	0	0	0	0	
C	1	2.7	0.2621	0.2143	0	0.4764
C	2	0	0	0	0	
F	1	15	5.0001	4.0887	0	9.0889
F	2	0	0	0	0	
G	1	22.5	8.7886	7.1866	0	15.9752
G	2	0	0	0	0	
H	1	7.5	1.6566	1.3546	0	3.0112
H	2	0	0	0	0	
I	1	46	20.3704	16.6574	0	37.0278
I	2	0	0	0	0	
J	1	25.5	10.3188	8.4379	0	18.7567
J	2	0	0	0	0	
K	1	9.5	2.4569	2.0091	0	4.466
K	2	0	0	0	0	
L	1	0.75	0.025	0.0205	0	0.0455
L	2	0	0	0	0	
Q	1	12	3.5662	2.9162	0	6.4823
Q	2	0	0	0	0	
R	1	2.5	0.2267	0.1854	0	0.412
R	2	0	0	0	0	
T	1	4.5	0.6744	0.5515	0	1.2258
T	2	0	0	0	0	
U	1	5	0.8153	0.6667	0	1.4821
U	2	0	0	0	0	

Table 5 (see Excel File)

APPENDIX A

2002 National Prescribed Fire NIF 3.0 Field Definitions

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	2002 Prescribed NIF Fire Field	Example Value	Comment
strRecordType	Record Type	TR	TR for every record
strStateCountyFIPS	FIPS	02050	No two entries in this record will have the same FIPS code
strOrganizationName	Org Name	EPA	
strTransactionType	Transaction Type	00	"00" means "Original"
intInventoryYear	Inventory Year	2002	
strInventoryTypeCode	Inventory Type	CRIT	"CRIT" = Criteria
lngTransactionCreationDate	Transaction Creation Date	20050901	Date of report generation All records get a submission number of 1 unless data gets
intIncrementalSubmissionNumber	Incremental Submission Number	1	submitted for a county more than once
sngReliabilityIndicator	(Blank)		
strTransactionComments	Comments on Inventory	no comment	Any comments on inventory. Can be entered when creating record
strContactPersonName	Client Name	Tom Pace	Contact name
strContactPhoneNumber strTelephoneNumberTypeName	Client Phone NumberClient Phone Type	(919) 541-5634 Office	Contact phone number Contact phone number type
strElectronicAddressText	Client E Address	pace.tom@epa.gov	Contact E address
strElectronicAddressTypeName	Type of E Address	Email	Contact E address type FIRE is not a valid NIF code.
strSourceType strAffiliationType	Source Type Affiliation Type	FIRE Report Certifier	Submitted as such to make implicit that this is a new format According to NIF doc. is always Report Certifier
sngFormatVersion strTribalCode	NIF Format version Tribal Code	3 000	NIF version 3.0 WRAP does not report tribal code but required data field in NIF format "000" = "not used"

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
Table A-1. NIF 3.0 Field Definitions			
strRecordType	Record Type	SI	SI for every record
strStateCountyFIPs	FIPS	02110	
strStateFacilityIdentifier	Fire ID	WR00001	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters.
strFacilityRegistryIdentifier	(Blank)		
strFacilityCategory	(Blank)		
strORISFacilityCode	(Blank)		
strSICPrimary	(Blank)		
strNAICSPrimary	NAICS	NA	Mandatory NIF field. Will be flagged by QC checker.
strFacilityName	Fire Name	GYPSUM CREEK	
strSiteDescription	Fire Type	prescribed	Prescribed.
strLocationAddress	Address	NA	Mandatory NIF field.
strCity	City	NA	Mandatory NIF field.
strState	State	AK	
strZipCode	ZipCode	NA Mandatory NIF field. Will be flagged by QC checker	
strCountry	Country	US	
strNTISiteID	(Blank)		
strDun&BradstreetNumber	(Blank)		
strTRIID	(Blank)		
strSubmittalFlag	Submittal Flag	A	"A" = "ADD" other options are delete or revise etc.
strTribalCode	Tribal Code	000	WRAP does not report tribal code but required data field in NIF format "000" = "not used"

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
strRecordType	Record Type	EU	EU for every record
strStateCountyFIPs	FIPS	02110	
strStateFacilityIdentifier strEmissionUnitID	Fire IDEU ID (F or S)	WR00001 F	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters. Either F or S indicating a flaming or a smoldering fire day No two entries may have the same Fire ID and EU ID
strORISBoilerID	(Blank)		
strSICUnitLevel	(Blank)		
strNAICSUnitLevel	(Blank)		
strBlankField	(Blank)		
sngDesignCapacity	Area Burned	10	
strDesignCapacityUnitNumerator	Area Burned Unit	ACRE	
strDesignCapacityUnitDenominator	(Blank)		
sngMaxNameplateCapacity	(Blank)		
strEmissionUnitDescription	(Blank)		
strSubmittalFlag	Submittal Flag	A	"A" = "ADD" other options are delete or revise, etc.
strTribalCode	Tribal Code	000	WRAP does not report tribal code but required data field in NIF format "000" = "not used"

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field Example Value	Comment
strRecordType	Record Type EP	EP for every record
strStateCountyFIPS	FIPS 02110	
strStateFacilityIdentifier	Fire ID WR00001	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters.
strEmissionUnitID	EU ID (F or S) F	Either F or S indicating a flaming or a smoldering fire day
strEmissionReleasePointID	Release Point ID F H1 fire days).	Used to relate the entries in the "EP" record to entries in the "ER" record. A single entry in the ER record exists for every EP record. One for every hour of every fire day (both smolder and flaming
strProcessID	Hour ID H1 EU and Hour ID.	Hourly designation. No two records may have the same Fire,
strSCC	SCC	2810001000
strProcessMACTCode	(Blank)	
strEmissionProcessDescription	NFDRS	A
intWinterThroughputPCT	(Blank)	
intSpringThroughputPCT	(Blank)	
intSummerThroughputPCT	(Blank)	
intFallThroughputPCT	(Blank)	
intAnnualAvgDaysPerWeek	(Blank)	
intAnnualAvgWeeksPerYear	(Blank)	
intAnnualAvgHoursPerDay	(Blank)	
IntAnnualAvgHoursPerYear	(Blank)	
sngHeatContent	Fuel Loading 0.50	
sngSulfurContent	(Blank)	
sngAshContent	(Blank)	
strProcessMACTComplianceStatus	(Blank)	
strSubmittalFlag	Submittal Flag A	"A" = "ADD" other options are delete or revise etc.
strTribalCode	Tribal Code 000	WRAP does not report tribal code but required data field in NIF format "000" = "not used"

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
strRecordType	ER	ER	ER for every record
strStateCountyFIPsstrStateFacilityIdentifier	FIPS Fire ID	02110 WR000001	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters.
strBlankField	(Blank)		
			Used to relate the entries in the "EP" record to entries in the "ER" record. A single entry in the ER record exists for every EP record. One for every hour of every fire day (both smolder and flaming fire days).
strEmissionReleasePointID	ER ID	F H1	
strEmissionReleasePointType	ER Point Type	05	
strBlankField2	(Blank)		

sngStackHeight plume top 0.023040

sngStackDiameter	plume bottom	0.000000	
sngStackFencelineDistance	percent first layer	0.469300	
sngExitGasTemperature	(Blank)		
sngExitGasVelocity	(Blank)		
sngExitGasFlowRate	(Blank)		
dblXCoordinate	X Position	-134.977493	

dblYCoordinate Y Position 58.909443 strBlankField2 (Blank)

intUTMZone	(Blank)		Not required for LATLON
strXYCoordinateType	Coordinate Type	LATLON	
IngHorizontalAreaFugitive	(Blank)		
IngReleaseHeightFugitive	(Blank)		
strFugitiveDimensionsUnit	(Blank)		

strEmissionsReleasePtDescription	ER record Description	Hour1	
strSubmittalFlag	Submittal Flag	A	"A" = "ADD" other options are delete or revise etc.
strHorizontalCollectionMethodCode	Collection Method	027	"027" = "The information is not known"
strHorizontalAccuracyMeasure	Horizontal Accuracy	0 NA	No accuracy data available Mandatory field. NA will be flagged by QC checker.
strHorizontalReferenceDatumCode	Horizontal Reference		
strReferencePointCode	Reference Point	108	"108" = point not included in Code Tables
strSourceMapScaleNumber	(Blank)		
strCoordinateDataSourceCode	(Blank)		
strTribalCode	Tribal Code	000	WRAP does not report tribal code but required data field in NIF format "000" = "not used"

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
strRecordType	Record Type	PE	PE for every record

strStateCountyFIPsstrStateFacilityIdentifier		WR00001		Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters. Either F or S indicating a flaming or a smoldering fire day Hourly designation. No two records may have the same Fire, EU and Hour ID.
strEmissionUnitID strProcessID	FIPS Fire IDEU ID (F or S) Hour ID		02110 F H1	
IngStartDate	Start Date		20020424	Since fire records are daily, StartDate=EndDate and there are the same # of records in the this table as there are in the ER and EP records. Taken From DateSlash Field of GISOUT
IngEndDate	End Date		20020424	
strBlankField	(Blank)			
intStartTime	Start Time		0000	
intEndTime	End Time		0059	
sngActualThroughput	Area Burned/Hour	0.0570		Acres Burned times temporal burn factor
strThroughputUnitNumerator	Area Unit	ACRE		
intMaterial	Material Burned	936		Many options are available such as wood & wood/bark. "936" is vegetation which is what LADCO was reporting
strMaterialIO	Material Input/Output	I		
intPeriodDaysPerWeek	(Blank)			
intPeriodWeeksPerPeriod	(Blank)			
intPeriodHoursPerDays	(Blank)			
intPeriodHoursPerPeriod	(Blank)			
strSubmittalFlag	"A" = "ADD" other options are Submittal Flag A delete or revise etc.			
strTribalCode	WRAP does not report tribal code but required data field in NIF Tribal Code 000 format "000" = "not used"			

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
strRecordType	Record Type	CE	CE for every record
strStateCountyFIPs	FIPS	02110	
strStateFacilityIdentifier	Fire ID	WR00001	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters.
strEmissionUnitID	EU ID (F or S)	F	Either F or S indicating a flaming or a smoldering fire day
strProcessID	Hour ID	H1	Hourly designation. No two records may have the same Fire, EU and Hour ID.
			Some pollutants like EC OC and

strPollutantCode	Pollutant Code	PM10-PRI	CH4 aren't in the table POLLUTANT_CODES but are in the POLLUTANT_CATEGORIES both of which are NIF standard code tables
strBlankField	(Blank)		
sngPrimaryPCTControlEfficiency	(Blank)		
sngPCTCaptureEfficiency	(Blank)		
sngTotalCaptureControlEfficiency	(Blank)		

strPrimaryDeviceTypeCode	Primary Device Type Code	000	Mandatory Field "000" = "uncontrolled"
strSecondaryDeviceTypeCode	(Blank)		
strBlankField2	(Blank)		
strControlSystemDescription	(Blank)		
strThirdControlDeviceTypeCode	(Blank)		
strFourthControlDeviceTypeCode	(Blank)		
strSubmittalFlag	Submittal Flag	A	"A" = "ADD" other options are delete or revise etc.

WRAP does not report tribal code but required data field in NIF
strTribalCode Tribal Code 000 format "000" = "not used"

Table A-1. NIF 3.0 Field Definitions

EPA NIF Field	WRAP NIF Fire Field	Example Value	Comment
strRecordType	Record Type	EM	EM for every record
strStateCountyFIPs	FIPS	02110	
strStateFacilityIdentifier strEmissionUnitID strProcessID	Fire ID EU ID (F or S) Hour ID	WR00001 F H1	Fire ID must be unique for every flaming fire day. Every corresponding smoldering day has the same fire ID. Must be less than 15 characters. Either F or S indicating a flaming or a smoldering fire day Hourly designation. No two records may have the same Fire, EU and Hour ID.

strPollutantCode	Pollutant Code	PM10-PRI	Some pollutants like EC OC and CH4 aren't in the table POLLUTANT_CODES but are in the POLLUTANT_CATEGORIES both of which are NIF standard code tables
strBlankField	(Blank)		
strEmissionReleasePointID	ER ID	F H01	
lngStartDate	Start Date	20020424	
lngEndDate	End Date	20020424	
intStartTime	Start Time	0000	
intEndTime	End Time	0059	

strBlankField2 (Blank)

dblEmissionNumericValue	Hourly Emissions	0.0004014
strEmissionUnitNumerator	Unit	TON
strEmissionType	Emission Type	30
sngEMReliabilityIndicator	(Blank)	
sngFactorNumericValue	Emission Factor	28.10

strFactorUnitNumerator	Emission Factor Numerator	LB	
strFactorUnitDenominator	Emission Factor Denominator	TON	
intMaterial	Material Burned	936	Many options are available such as wood & wood/bark. "936" is vegetation which is what LADCO was reporting

strMaterialIO	Material Input/Output	I
strBlankField3	(Blank)	
strEmissionCalculationMethodCode	(Blank)	
strEFReliabilityIndicator	(Blank)	
sngRuleEffectiveness	(Blank)	
strRuleEffectivenessMethod	(Blank)	
strBlankField4	(Blank)	
strHAPEmissionsPerformanceLevel	(Blank)	
strControlStatus	(Blank)	
strEmissionDataLevel	(Blank)	

strSubmittalFlag	Submittal Flag	A	"A" = "ADD" other options are delete or revise etc.
strTribalCode	Tribal Code	000	WRAP does not report tribal code but required data field in NIF format "000" = "not used"

Appendix B: Summary of Surrogate Assignments to Emission Sources

The data included in Tables B-1 and B-2 are available in Excel format, which includes the data with State-sector or Province-sector detail. These data are in the Microsoft® Excel® called "Appendix_B_06nov2007.xls" provided electronically at the "Documentation" link on http://www.epa.gov/ttn/chief/emch/index.html#2002.

Table B-1: Continental US, 2002 emissions by Sector and spatial surrogate type. Surrogate ID = "0" shows emissions for sources that use SMOKE's area-to-point approach for some sectors.

Sector	Surg ID	Surrogate Description	[tons/yr] VOC	[tons/yr] NOX	[tons/yr] CO	[tons/yr] SO2	[tons/yr] NH3	[tons/yr] PM10	[tons/yr] PM2.5
afdust	130	Rural Population	0	0	0	0	0	4,138,772	835,152
	140	Housing Change and Population	0	0	0	0	0	850,034	197,572
	240	Total Road Miles	0	0	0	0	0	949,270	121,977
	310	Total Agriculture	0	0	0	0	0	2,326,088	556,565
	330	Strip Mines/Quarries	0	0	0	0	0	594,817	119,003
	400	Rural Land Area	0	0	0	0	0	11	3
ag	310	Total Agriculture	0	0	0	0	3,251,987	0	0
alm	0	Area-to-point approach	48,608	89,929	508,270	7,765	1	23,986	17,412
	260	Total Railroad Miles	5,721	126,339	13,914	7,542	38	3,453	3,300
	270	Class 1 Railroad Miles	43,482	964,121	105,970	65,302	327	26,316	25,193
	280	Class 2 and 3 Railroad Miles	1,244	27,468	3,025	2,410	12	751	722
	700	Airport Areas	0	0	0	0	0	0.0020	0.0019
	720	Military Airports	0	0	0	0	0	0.0012	0.0011
	800	Marine Ports	13,885	652,139	114,196	109,261	156	23,955	22,847
	810	Navigable Waterway Activity	10,736	399,847	61,097	120,032	370	18,578	17,246
nonpt	0	Area-to-point approach	23,374	300	1,047	14	0	2	2
	100	Population	1,095,750	0	0	0	58	0	0
	140	Housing Change and Population	249,875	30,659	1,067,037	376	111	143,795	115,857
	150	Residential Heating - Natural Gas	13,909	239,694	104,536	1,384	811	1,558	1,288
	165	0.5 Residential Heating - Wood plus 0.5 Low Intensity Residential	836,631	31,970	2,424,155	4,472	6,157	327,179	324,104
	170	Residential Heating - Distillate Oil	2,181	65,702	17,087	144,211	793	7,754	6,727
	180	Residential Heating - Coal	3,963	2,766	102,298	20,356	3	3,837	2,648
	190	Residential Heating - LP Gas	1,341	31,864	8,166	621	197	182	146
	240	Total Road Miles	70,359	326	10,222	0	0	1,081	1,011
	250	Urban Primary plus Rural Primary	102,505	0	0	0	0	0	0
	260	Total Railroad Miles	849	0	0	0	0	0	0
	300	Low Intensity Residential	782,828	31,349	986,181	4,831	7,311	229,750	210,912
	310	Total Agriculture	346,657	64,240	2,000,516	19,206	23,276	267,943	224,551
	312	Orchards/Vineyards	1,100	831	18,247	2,323	0	727	647
	320	Forest Land	12	2	67	0	0	12	11
	330	Strip Mines/Quarries	61	2,336	80	12	0	5,347	979
	400	Rural Land Area	2,146	709	16,840	127	0	2,662	2,525
	500	Commercial Land	40,217	3,380	28,463	251	15,765	88,625	79,131
	505	Industrial Land	145,704	475,426	271,035	736,529	61,721	227,666	97,152
	510	Commercial plus Industrial	897,406	3,457	3,500	475	1	270	206

Sector	Surg ID	Surrogate Description	[tons/yr] VOC	[tons/yr] NOX	[tons/yr] CO	[tons/yr] SO2	[tons/yr] NH3	[tons/yr] PM10	[tons/yr] PM2.5
nonpt (con't.)	515	Commercial plus Institutional Land	82,466	226,959	189,950	269,057	4,310	52,009	22,193
	520	Commercial plus Industrial plus Institutional	61,428	15	0	0	0	138	129
	525	Golf Courses plus Institutional plus Industrial plus Commercial	5,569	0	0	0	0	0	0
	527	Single Family Residential	174,372	0	0	0	0	0	0
	530	Residential - High Density	876	687	2,484	548	0	1,030	585
	535	Residential + Commercial + Industrial + Institutional + Government	495,121	553	19,877	4	0	2,926	2,706
	540	Retail Trade (COM1)	22,395	0	0	0	0	0	0
	545	Personal Repair (COM3)	187,981	0	0	0	0	2	0
	555	Professional/Technical (COM4) plus General Government (GOV1)	4,944	0	0	0	0	0	0
	560	Hospital (COM6)	96	1	0	0	0	0	0
	575	Light and High Tech Industrial (IND2 + IND5)	59,995	5	4	0	0	0	0
	580	Food, Drug, Chemical Industrial (IND3)	131,630	444	602	369	61	359	334
	585	Metals and Minerals Industrial (IND4)	456,213	287,733	244,469	274	5	409	331
	590	Heavy Industrial (IND1)	322,907	4,272	2,393	1,291	22	8,207	4,018
	595	Light Industrial (IND2)	205,621	1	0	0	0	755	682
	596	Industrial plus Institutional plus Hospitals	1,498	20,945	7,431	43,533	2,836	2,441	1,618
	600	Gas Stations	706,612	0	0	0	0	0	0
	650	Refineries and Tank Farms	179,097	0	0	0	0	0	0
	800	Marine Ports	38,846	4,941	0	0	0	387	387
	870	Wastewater Treatment Facilities	113,129	6	14	0	12,102	0	0
	880	Drycleaners	62,250	34	19	0	0	1	1
nonptfire	320	Forest Land	136,301	12,945	681,659	5,720	5,763	36,228	30,700
nonroad	0	Area-to-point approach	1,341	11,301	13,874	1,062	7	812	782
	100	Population	6,852	44,996	34,627	5,212	32	5,127	4,924
	140	Housing Change and Population	141,298	803,061	1,055,624	84,880	522	74,139	71,373
	260	Total Railroad Miles	747	2,892	8,147	309	2	417	405
	300	Low Intensity Residential	278,233	25,983	3,480,368	1,021	112	4,512	4,151
	310	Total Agriculture	79,916	560,797	594,366	56,669	320	65,729	63,582
	350	Water	1,026,694	101,369	2,863,968	7,335	250	20,688	18,651
	400	Rural Land Area	506,559	29,108	1,368,055	2,339	109	14,398	13,269
	505	Industrial Land	84,088	329,799	1,346,733	8,892	66	7,811	7,568
	510	Commercial plus Industrial	198,112	149,185	3,849,233	10,940	177	12,386	11,800
	520	Commercial plus Industrial plus Institutional	153,668	23,514	863,325	1,965	44	7,763	7,217
	525	Golf Courses plus Institutional plus Industrial plus Commercial	319,098	56,449	5,055,910	2,988	186	9,632	8,934
	535	Residential + Commercial + Industrial + Institutional + Government	48,592	5,207	331,723	185	0	1,379	1,067
	850	Golf Courses	13,143	3,600	425,002	141	13	134	123
	860	Mines	777	3,499	3,074	353	2	511	495
	890	Commercial Timber	14,504	25,395	92,020	2,991	19	2,437	2,315
onroad	120	Urban Population	523,450	497,590	4,330,492	18,167	23,916	13,929	9,682
	130	Rural Population	264,478	364,912	3,144,685	13,439	14,357	9,943	7,219
	200	Urban Primary Road Miles	2,164,464	3,402,353	26,635,330	100,208	139,993	84,604	60,373
	210	Rural Primary Road Miles	1,154,400	2,488,813	16,874,154	74,451	70,498	64,955	49,307
	220	Urban Secondary Road Miles	263,021	343,284	2,871,806	10,893	14,835	8,610	5,944
	230	Rural Secondary Road Miles	478,176	689,757	5,954,392	25,221	27,109	18,646	13,479

Table B-2: Canadian 2000 and Mexican 1999 emissions *within modeling domain*, emissions by country, Sector and spatial surrogate type.

Country	Sector	Surg ID	Surg Desc	[tons/yr] VOC	[tons/yr] NOX	[tons/yr] CO	[tons/yr] SO2	[tons/yr] NH3	[tons/yr] PM10	[tons/yr] PM2.5
Canada	othar	100	Total population	21,823	33,724	135,871	119	37	13,684	3,308
		901	Total dwelling	279,816	53,197	907,104	16,337	1,691	129,501	127,665
		902	Agricultural and related service industries	8,480	0	0	0	563,358	271,145	13,567
		904	Logging and forestry industries	3,799	140	18,228	23	59	17,001	5,748
		905	Mining (including milling), quarrying and oil well industries	701,620	204,462	19,377	127,261	1	3,923	1,100
		906	Manufacturing industries	375,102	36,692	56,306	13,777	1,259	22,174	14,841
		907	Construction industries	305,788	416,673	2,549,353	17,997	629	227,030	51,947
		908	Transportation and storage industries	0	0	0	0	55	0	0
		909	Communication and other utility industries	148	16,834	1,650	4,010	388	603	424
		910	Wholesale trade industries	12,817	0	0	0	0	0	0
		911	Retail trade industries	70,585	0	0	0	0	0	0
		919	Other service industries	781	0	0	0	0	0	0
		920	Combination of Wholesale trade and Retail trade industries	1,351	30,092	7,640	15,141	313	3,215	2,885
		922	Combination of Forestry and Manufacturing industries	283	1,371	7,430	19	66	9,844	8,313
		924	Combination of Communication industries and Total Dwelling	8,658	0	0	0	0	498	129
		925	Combination of Construction industries and Total Dwelling	0	0	0	0	0	16,116	326
		926	Combination of Government industries and Total Dwelling	4,256	0	8,825	0	1	4,346	3,952
		928	Marine corridors.	8,760	84,836	9,748	25,288	281	4,356	4,128
		929	Flight corridors, heavy jets	4,695	25,049	23,641	1,537	9	563	427
		931	Minor airport location 50km buffer	4,517	33,363	30,093	2,010	12	711	538
		932	Rail corridors.	5,434	109,068	20,792	4,369	10	2,706	2,421
		933	Forest fires.	60,315	14,615	486,804	60	1,579	52,890	44,172
		934	Light Duty Gasoline Vehicles (LDGV)	0	0	0	0	0	5,111	1,766
		941	Paved Roads	0	0	0	0	0	133,363	31,904
		942	Unpaved Roads	0	0	0	0	0	543,882	80,939
	othon	100	Total population	4,573	13,776	65,653	372	234	415	383
		934	Light Duty Gasoline Vehicles (LDGV)	221,917	193,391	3,193,668	8,838	11,106	1,067	1,014
		935	Light Duty Gasoline Trucks (LDGT)	146,634	118,995	2,271,283	6,231	5,874	1,182	995
		936	Heavy Duty Gasoline Vehicles (HDGV)	8,681	15,579	137,680	418	104	252	193
		937	Motorcycles (MC)	1,234	831	8,383	19	6	13	9
		938	Light Duty Diesel Vehicles (LDDV)	17,082	329,622	87,133	6,127	591	11,172	10,312
		939	Light Duty Diesel Trucks (LDDT)	3,454	7,209	6,157	557	32	893	824
		940	Heavy Duty Diesel Vehicles (HDDV)	7,405	195,161	40,807	3,814	385	4,700	4,342
Canada Total				**2,290,011**	**1,934,679**	**10,093,626**	**254,323**	**588,082**	**1,482,356**	**418,573**
Mexico	othar	100	Total population	586,842	249,045	644,733	101,047	486,484	143,816	92,861
	othon	100	Total population	183,429	147,419	1,455,121	8,270	2,547	6,955	6,372
Mexico Total				**770,270**	**396,464**	**2,099,854**	**109,316**	**489,031**	**150,772**	**99,233**

Appendix C: Summary of Speciation Profile Assignments to U.S. Emission Sources

The data included in Tables C-1 and C-2 are available in Excel format, which includes the data with State-sector detail. These data are in the Microsoft® Excel® file called "Appendix_C_08nov2007.xls" provided electronically at the "Documentation" link on http://www.epa.gov/ttn/chief/emch/index.html#2002 . The data for the "avefire" sector are also available in the MS Excel file.

Table C-1: Continental U.S. VOC 2002 emissions in tons/year by speciation profile and sector. Model performance case (2002ac), using year-specific fires

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
1313	Industry Average (circa 1990) Gasoline Exhaust						0.1	3,158,316		3,158,316
1101	Light Duty Gasoline Vehicles - 46 Car Study				2,156,033		2			2,156,035
0307	Miscellaneous Burning - Forest Fires		12	136,301			0.03		1,688,980	1,825,294
1305	Industry Average (circa 1990) Gasoline Composite (Hot Soak + Diurnal) Evaporative				276,432		0.2	1,499,067		1,775,499
4641	Fireplace wood combustion - oak wood		1,467,378							1,467,378
8737	Composite Profile - Non-xygenated Gasoline Headspace Vapor		933,818			0.003	55,203			989,021
3144	Consumer Products Composite: Solvents And Coating Related Products		816,810				202			817,012
1207	Well Heads (Water Flood) Composite		419,646							419,646
4674	Diesel exhaust - medium duty trucks	50,665			139,284		513	190,607		381,070
8745	Composite Profile - Degreasing: Cold Cleaning (Batch, Conveyor, Spray Gun)		330,125				11,141			341,267
8744	Composite Profile - Architectural Coatings: Solvent Borne and water borne		313,677							313,677
8734	Composite Profile - Non-oxygenated Gasoline		295,259							295,259
0000	Over All Average		43,634			6	238,310			281,950
3142	Consumer Products Composite: Adhesives And Sealants		214,469				130			214,599
3001	Pesticides		211,433							211,433
1191	Graphic Arts - (Printing)		187,306				2,695			190,001
1007	Mineral Products - Asphaltic Concrete		176,298				3,623			179,921
2405	Wood Furniture Coating		132,121				45,186			177,307
0121	Open Burning Dump - Landscape/Pruning		177,035				121			177,156
8520	Consumer and Commercial Products: Automotive Aftermarket Products: All Automotive Aftermarket Products		174,457							174,457
3146	Consumer Products Composite: Household Products		165,773							165,773
3138	Aerosol Coatings: Coatings (Unspecified)		161,253							161,253
1186	Heavy Duty Gasoline Trucks				156,447		284			156,731
3147	Consumer Products Composite: Personal Care Products		153,986							153,986
2462	Composite of 3 Fugitive Emission Profiles from Chemical Mfg. Facilities		106,158				46,137			152,295

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
8746	Composite Profile - Straw Burning		148,529							148,529
2402	Auto Refinishing		108,752				27,176			135,927
3003	Wastewater Treatment Plants		119,797				7,792			127,588
3139	Architectural Coatings: Solvent Borne		93,150				57			93,207
3149	Aerosol Coatings: Overall Composite		92,535							92,535
1185	Coal-Fired Boiler - Industrial		7,976			29,229	51,220			88,424
2485	Composite of 21 Fugitive Emission Profiles from Petroleum Industry Facilities - 1993		14,371				67,558			81,929
3140	Architectural Coatings: Water Borne		80,651				3			80,654
2408	Can Coating		62,667				12,421			75,088
2489	Composite of 15 Fugitive Emission Profiles from Petroleum Storage Facilities - 1993		3,299			4	70,053			73,357
2406	Metal Furniture Coating		41,206				22,196			63,402
0296	Fixed Roof Tank - Crude Oil Production					2	62,582			62,585
3127	Aerosol Coatings: Metallic Pigmented Coatings		61,678							61,678
3145	Consumer Products Composite: Pesticides/FIFRA-Regulated Products		58,587							58,587
0003	External Combustion Boiler - Natural Gas		16,726			4,101	34,891			55,717
3161	Diesel Exhaust - Farm equipment		575		54,531					55,106
1188	Fermentation Processes		24,457				29,494			53,951
2572	Aircraft - Atlanta - August 27, 1990	48,390	85				4,869			53,344
2546	Automotive Painting - Downwind Ground Based Compositions					7	42,401			42,408
0203	Solid Waste - Animal Waste Decomposition		42,192							42,192
1008	Rubber and Miscellaneous Plastics Products - Fabricated Rubber Products - Styrene/Butadiene, Rubber		20,487				20,787			41,275
4662	Industrial surface coating operations - oil based						40,905			40,905
3135	Aerosol Coatings: Ground/Traffic/Marking Coatings		36,734							36,734
1001	Internal Combustion Engine - Natural Gas		2,838			301	33,492			36,632
2411	Appliances Coating		31,905				3,789			35,694
3131	Aerosol Coatings: Auto Body Primers		30,357				4,581			34,938
2422	Commercial/Industrial Dry Cleaners		31,750							31,750
0051	Flares - Natural Gas		18,890				12,464			31,355
3002	Landfills		26,600				4,193			30,793
1086	Printing/Flexographic		17,280				12,951			30,231
0007	Natural Gas Turbine					4,425	25,720			30,145
2552	Offset Printing - Plant B, Average of all rooms		23,481				4,195			27,675
1189	Pulp and Paper Industry - Plywood Veneer Dryer						27,390			27,390
2487	Composite of 7 Emission Profiles from Crude Oil Storage Tanks - 1993		14,426				12,231			26,656
2480	Industrial Cluster, Ship Channel, Downwind Sample - 1993	24,349								24,349
0305	Fixed Roof Tank - Crude Oil Marine Terminal		22,256				4			22,260
4421	Wheat Straw Burning		22,252							22,252
1012	Oil and Gas Production - Fugitives - Valves and Fittings - Gas Service						21,757			21,757
2415	Marine Paints		18,222				2,463			20,685

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
1084	Residential Wood Combustion (C-1 - C-6)		4,629			197	15,789			20,616
4730	External Combustion - Pulp and Paper Mills Kraft Precess Recovery Boiler						20,433			20,433
1005	Plastics Production - Polyester Resins						19,781			19,781
0282	Surface Coating Primer - Naptha		17,258				631			17,889
0122	Bar Screen Waste Incinerator		13,642			109	3,964			17,714
3137	Aerosol Coatings: Vinyl/Fabric/Leather/Polycarb Coatings		11,964				4,251			16,215
2425	Surface Coatings - General						15,807			15,807
0195	Residential Fuel - Natural Gas		15,250							15,250
1187	Citrus Coating						15,035			15,035
2409	Coil Coating		11,720				2,479			14,199
0085	Perchloroethylene - Dry Cleaning		13,016				1,053			14,068
1036	Secondary Aluminum - Pouring and Casting						13,495			13,495
4553	Meat charbroiling		13,455				4			13,459
1011	Oil and Gas Production - Fugitives - Valves and Fittings - Liquid Service						12,424			12,424
2545	Graphic Arts - Rotogravure		446				11,622			12,068
0274	Automobile Tire Production						11,250			11,250
2407	Paper, Foil, Film Coating						10,886			10,886
0316	Pipe/Valve Flanges						10,615			10,615
1010	Oil and Gas Production - Fugitives - Unclassified						10,595			10,595
2414	Aircraft Coating		10,436				42			10,478
0079	Chemical Manufacturing - Flares					2	10,207			10,209
1016	Surface Coating Operations - Thinning Solvents - Composite						10,182			10,182
1088	Surface Coating Operations - Adhesive Application						9,602			9,602
0332	Printing Press - Lithography Inking and Drying						9,282			9,282
1089	Secondary Metal Production - Gray Iron Foundries - Pouring/Casting						9,258			9,258
4661	Industrial surface coating operations - water based						8,971			8,971
0002	External Combustion Boiler - Distillate Oil		6,746			589	681			8,015
4547	Gasoline Headspace Vapor - Circle K Diesel - adjusted for oxygenates		7,908							7,908
2466	Industrial Point Source, Fabricated Metal Products - 1993		64				7,598			7,662
2488	Composite of 9 Emission Profiles from Distillate Oil Storage Tanks. - 1993		7,122							7,122
0001	External Combustion Boiler - Residual Oil		602			2,104	2,599			5,305
0297	Fixed Roof Tank - Crude Oil Refinery					0.1	5,203			5,203
1094	Paint Manufacture - Blending Kettle						4,524			4,524
2416	Rail Equipment Coating		4,522							4,522
2547	Polyethylene Plant: Kawasaki City						4,334			4,334
4420	Rice Straw Burning		4,323							4,323
0009	Reciprocating Distillate Oil Engine		1,255			676	2,260			4,190
1064	Olefins Production - Ethylene - Compressor Lube Oil Vent						4,085			4,085

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
1024	Terephthalic Acid/Dimethyl Terephthalate Distillation and Recovery Vent						4,077			4,077
0004	External Combustion Boiler - Refinery Gas		18			49	3,616			3,683
0029	Refinery Fluid Catalytic Cracker						3,659			3,659
1002	Chemical Manufacturing - Carbon Black Production						3,526			3,526
1056	Ethylene Oxide - Oxygen Oxidation Process Reactor - CO2 Purge Vent						3,375			3,375
0011	By Product Coke Oven Stack Gas						3,065			3,065
0227	Surface Coating Solvent - Isopropyl Alcohol						2,927			2,927
0026	Asphaltic Concrete - In Place Road Asphalt		2,829				33			2,862
0014	Open Hearth Furnace With Oxygen Lance						2,581			2,581
0025	Asphaltic Concrete - Natural Gas Rotary Dryer						2,396			2,396
6002	Surface Coating Operations (Industrial)						2,369			2,369
4642	Fireplace wood combustion - pine wood		1,094				1,247			2,341
0016	Basic Oxygen Furnace						2,319			2,319
0271	Degreasing - Trichloroethylene						2,245			2,245
2544	Graphic Arts - Letterpress		53				2,180			2,233
0333	Lithography - Inking and Drying-Direct Fired Dryer						2,180			2,180
2456	Composite of 5 Emission Profiles from Miscellaneous Industrial Plants						2,136			2,136
3141	Thinning Solvent/Mineral Spirits						2,130			2,130
2440	Varnishes - 1996						1,952			1,952
4652	Cooking potatoes - Deep frying in hydrogenated oil		1,843				59			1,902
1178	Coal-Fired Boiler - Electric Generation		1,264			3	633			1,900
1004	Plastics Production - Polystyrene						1,885			1,885
0100	Fixed Roof Tank - Commercial Jet Fuel (Jet A)		275				1,589			1,865
0090	Degreasing - Toluene						1,846			1,846
1092	Synthetic Organic Fiber Production - Nylon Batch Production Process		1,187				514			1,700
1192	Degreasing						1,557			1,557
0068	Manufacturing - Plastics - Polypropylene						1,486			1,486
1110	Adipic Acid						1,452			1,452
1098	Aircraft Landing/Takeoff (LTO) - Commercial		464			14	954			1,432
3150	Gasoline Exhaust: Non-Catalyst- Stabilized	272				1	1,080			1,352
0008	Reciprocating Diesel Engine					364	975			1,338
1045	Organic Acids Production - Acetic Anhydride - Distillation Column Vent						1,334			1,334
0013	Iron Sintering						1,220			1,220
0321	Pump Seals - Composite						1,150			1,150
1219	Composite - CTM-56 Engine Burning JP-5 Fuel Across All Powers						1,073			1,073
2420	Degreasing, All Processes/All Industries					0.005	1,059			1,059
0273	Automotive Tires - Tuber Adhesive White Sidewall						1,001			1,001
0226	Surface Coating Solvent - Ethyl Alcohol						994			994
1095	Textile Products - General Fabric Operations - Dyeing and Curing						953			953
0272	Automotive Tires - Tuber Adhesive						933			933
0304	Printing Press - Flexographic, N-Propyl Alcohol						916			916

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
1202	Primary Aluminum Production						913			913
4651	Cooking vegetables - Stir frying in canola oil		908							908
0005	External Combustion Boiler - Coke Oven Gas					100	617			717
0221	Paint Solvent - Methyl Ethyl Ketone						709			709
1137	Ethyl Mercaptan						691			691
1193	Dry cleaning						639			639
0225	Surface Coating - Primer - Mineral Spirits						621			621
2550	Offset Printing - Plant A, Press/Plate Making Rooms, Average of Six Sites						577			577
1009	Plastics Production - Acrylonitrile-Butadiene-Styrene Resin						562			562
1070	Alcohols Production - Methanol - Purge Gas Vent						562			562
0087	Degreasing - 1,1,1-Trichloroethane						530			530
0291	Surface Coating Solvent - Methyl Alcohol						526			526
1059	Methyl Methacrylate (MMA) - Hydrolysis Reactor, MMA and Light Ends Distillation Unit						522			522
1096	Textile Products - General Fabric Operations - Tenter Frame						520			520
3134	Aerosol Coatings: Exact Match Automotive Coatings						513			513
0076	General Pesticides						505			505
0223	Surface Coating - Varnish/Shellac Solvent - Xylene						504			504
0024	Asphalt Roofing Tar Kettle						494			494
0219	Surface Coating Paint Solvent - Acetone						422			422
0078	Ethylene Dichloride - Direct Chlorination						395			395
1062	Benzene						392			392
1044	Organic Acids Production - Formic Acid						385			385
1032	Aldehydes Production - Acrolein - Distillation System						363			363
0230	Fixed Roof Tank - Hexane						353			353
2443	Geogenic Natural Gas from Los Angeles, 1972/1973					95	256			351
1082	Tank Truck Cleaning - Low Vapor Pressure, Low Viscosity Cargo (Phenol)						334			334
0275	Degreasing - Dichloromethane						323			323
1006	Phthalic Anhydride - O-Xylene Oxidation - Main Process Stream						321			321
1050	Cyclohexanone/Cyclohexanol - Phenol Hydrogenation Process - Distillation Vent						314			314
1091	Plastics Production - Polyvinyl Chlorides and Copolymers						303			303
1174	p-Xylene						291			291
0202	Solid Waste Landfill Site - Class II						287			287
1020	Surface Coating Operations - Coating Application - Adhesives						286			286
1027	Ketone Production - Methyl Ethyl Ketone (MEK)						283			283
0220	Paint Solvent - Ethyl Acetate						279			279
1066	Styrene - General						278			278
0299	Fixed Roof Tank - Cyclohexane						261			261

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
0066	Varnish Manufacturing - Bodying Oil						232			232
2421	Coin-op Drycleaners/All Solvents		227							227
1078	Railcar Cleaning - Low Vapor Pressure, High Viscosity Cargo (Ethylene Glycol)						214			214
1136	Ethyl Ether						209			209
1040	Fluorocarbons/Chlorofluorocarbons - General						197			197
1109	Acrylonitrile						179			179
1093	Fluorocarbon Manufacturing - CF 23/22						173			173
1030	Aldehydes Production - Formaldehyde - Absorber Vent						164			164
1149	Methanol						158			158
1196	Drycleaning - Composite						152			152
1173	Propylene Oxide						134			134
1043	Acrylic Acid - Quench Absorber						122			122
1042	Fluorocarbons/Chlorofluorocarbons - Fugitive Emissions - General						116			116
1052	Vinyl Acetate - CO2 Purge Vent						115			115
0089	Degreasing - 1,1,2-Trichloroethane						107			107
1034	Chloroprene - Butadiene Dryer						96			96
0289	Surface Coating Solvent - Butyl Alcohol						96			96
1031	Surface Coating Operations - Thinning Solvent - Ethylene Oxide						93			93
1194	Autobody Repair		2				85			87
1054	Vinyl Acetate - Refining Column Vent						87			87
0277	Degreasing - Trichlorotrifluoroethane (Freon 113)						85			85
1060	Methyl Methacrylate (MMA) - Acid Distillation and MMA Purification						83			83
1120	Acetylene						77			77
1057	Ethylene Oxide - Oxygen Oxidation Process Reactor - Argon Purge Vent						74			74
0012	Blast Furnace Ore Charging and Agglomerate Charging						69			69
2543	Graphic Arts - Lithography		38				27			66
1075	Chlorobenzene - Vacuum System Vent						58			58
0288	Surface Coating Solvent - Butyl Acetate						57			57
0088	Degreasing - Trichlorofluoromethane (Freon 11)						56			56
1123	Cumene						55			55
1125	Cyclohexanone						45			45
1038	Organohalogens Production - Ethylene Dichloride - Ethylene Dichloride Via Oxychlorination						41			41
0290	Surface Coating Solvent - Cellosolve						40			40
0072	Printing Ink - Cooking						39			39
1023	Terephthalic Acid/Dimethyl Terephthalate Crystallization, Separation and Drying Vent						37			37
1048	Cumene Production - Cumene Distillation System Vent						34			34
1158	Methyl T-Butyl Ether						32			32

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
1218	Composite - TF-39 Engine Burning JP-5 Fuel Across All Powers						29			29
1165	o-Xylene						26			26
1022	Printing/Publishing - Ink Thinning Solvents - Methyl Isobutyl Ketone						24			24
1049	Cyclohexane - General						24			24
1058	Ethylene Oxide - Stripper Purge Vent						23			23
1105	Acetic Acid						22			22
1135	Ethyl Benzene						19			19
1053	Vinyl Acetate - Inhibitor Mix Tank Discharge						19			19
1195	Degreasing - Composite						18			18
1134	Ethyl Acrylate						18			18
1106	Acetic Anhydride						18			18
1200	Cyclopentane						18			18
1051	Vinyl Acetate - Inert Gas Purge Vent						17			17
0301	Fixed Roof Tank - Heptane						17			17
1072	Chlorobenzene - Tail Gas Scrubber						14			14
0292	Surface Coating Solvent - Dimethylformamide						14			14
1047	Esters Production - Butyl Acrylate						14			14
1028	Acetone - Light Ends Distillation Vent						13			13
0217	Coke Oven Blast Furnace Gas						13			13
1114	Butyl Acrylate						12			12
1081	Tank Truck Cleaning - Medium Vapor Pressure, Medium Viscosity Cargo (Methyl Methacrylate)						12			12
1132	Ethanolamines						11			11
1076	Chlorobenzene - Dichlorobenzene Crystallization						11			11
1176	Toluene Diisocyanate						10			10
1071	Alcohols Production - Methanol - Distillation Vent						9			9
1216	Composite of 6 Engines Burning JP-4 Fuel Across All Powers						9			9
1139	Ethyleneamines						9			9
1065	Propylene Oxide - Chlorohydronation Process - General						9			9
1119	Carbon Tetrachloride						8			8
0222	Surface Coating - Enamel Cellosolve Acetate						8			8
1147	Isobutyl Alcohol						8			8
1150	Methyl Acetate						7			7
1160	Nitrobenzene						6			6
0228	Surface Coating Solvent - Isopropyl Acetate						6			6
1122	Cresol						5			5
1118	Carbitol						5			5
1079	Rail Car Cleaning - Low Vapor Pressure, Medium Viscosity Cargo (O-Dichlorobenzene)						5			5
1073	Chlorobenzene - Benzene Drying Distillation						5			5
1199	Isopentane						4			4
4429	Aromatic 150						4			4
1131	Epichlorohydrin						4			4
1198	Pentane						4			4

Spec Prf	Profile Description	alm	nonpt	nonptfire	nonroad	ptipm	ptnonipm	onroad	ptfire	Grand Total
0229	Surface Coating Solvent - Lactol Spirits						4			4
1067	Styrene - Benzene Recycle						4			4
1061	Nitrobenzene - Reactor and Separator Vent - Washer and Neutralizer Vent						4			4
1108	Acrylic Acid						4			4
1074	Monochlorobenzene						4			4
1175	Tert- Butyl Alcohol						3			3
1029	Acetone - Acetone Finishing Column						3			3
1083	Tank Truck Cleaning - Low Vapor Pressure, High Viscosity Cargo (Propylene Glycol)						3			3
1025	Terephthalic Acid/Dimethyl Terephthalate Product Transfer Vent						3			3
1159	m-Xylene						3			3
1197	Isooctane						2			2
1124	Cyclohexanol						2			2
1104	Acetaldehyde						2			2
1148	Isoprene						2			2
1121	Chloroform						2			2
1162	n-Butraldehyde						2			2
1126	Cyclopentene						2			2
1164	n-Dodecane						2			2
1111	Aniline						1			1
1069	Organic Chemical Storage - N-Propyl Acetate						1			1
1171	Propionaldehyde						1			1
1140	Formaldehyde						1			1
1128	Diisopropyl Benzene						1			1
1033	Aldehydes Production - Acrolein - Reactor Blowoff Gas						1			1
1116	Butyl Cellosolve						1			1
1127	Diethylene Glycol						1			1
1103	1-Pentene						1			1
1146	Isobutyl Acrylate						1			1
1152	Methyl Carbitol						1			1
1141	Formic Acid						1			1
1142	Furfural						1			1
1129	Dipropylene Glycol						0.5			0.5
1077	Chlorobenzene - Dichlorobenzene Crystal Handling / Loading						0.3			0.3
1151	Methyl Acrylate						0.2			0.2
1163	n-Decane						0.1			0.1
1026	Surface Coating Operations - Thinning Solvent - Hexylene Glycol						0.1			0.1
1172	Propionic Acid						0.1			0.1
1138	Ethylene Dibromide						0.05			0.05
1055	Organic Chemical Storage - Methylamyl Ketone						0.04			0.04
8075	Solvent Utilization:Carbon Disulfide						0.02			0.02
1087	Organic Chemical Storage - i-Butyl, i-Butyrate						0.01			0.01
1130	Dodecene						0.01			0.01
1112	Benzyl Chloride						0.01			0.01
1115	Butyl Carbitol						0.004			0.004

Table C-2: Continental U.S. PM2.5 2002 emissions in tons/year by speciation profile and sector. Model performance case (2002ac), using year-specific fires

Spec Prf	Profile Description	afdust	alm	nonpt	nonptfire	nonroad	onroad	ptfire	ptipm	ptnonipm	Grand Total
92001	Agricultural Soil	758,396									758,396
92020	Construction Dust	536,990								3,294	540,284
92090	Wildfires							458,792			458,792
92015	Charbroiling			448,143						7,959	456,102
92072	Residual Oil Combustion		53,307	336,737					17,097	5,838	412,979
92025	Distillate Oil Combustion			61,583	1,220				228,906	2,891	294,599
92049	Noncatalyst Gasoline Exhaust		14,298			161,714			6,505	20,013	202,531
92035	HDDV Exhaust	34,672	18,218	18,073		1,265	28,819		58,510	2,209	161,767
92053	Paved Road Dust	153,454								715	154,169
92088	Unpaved Road Dust	134,229								6,632	140,861
92059	Prescribed Burning			3				132,135		15	132,154
92073	Sand & Gravel	106,555		1,865						10,040	118,460
92091	Wood Fired Boiler			14,559					82,717	2,272	99,548
92042	LDDV Exhaust						89,177				89,177
92048	Natural Gas Combustion			12,126					40,118	18,953	71,197
92000	Agricultural Burning		17	62,309						1,177	63,504
92023	Dairy Soil	57,889		2,179						68	60,136
92063	Residential Natural Gas Combustion			5,404		53,614					59,018
92084	SubBituminousCombustion			30,493					5,415	8,491	44,399
92082	Solid Waste Combustion			28,584					11,585	3,176	43,345
92014	Cement Production								33,714	9,399	43,113
92092	Wood Product Drying			1,935						36,630	38,565
92080	Slash Burning				29,481			8,006			37,487
92006	Asphalt Roofing			25,139						1,751	26,890
92038	Industrial Soil	5,988		960						14,665	21,613
92085	Surface Coating			1,527						18,834	20,361
92071	Residential Wood Combustion: Synthetic			19,479							19,479
92057	PMSO2ControlledLigniteCombustion								16,343	66	16,409
92009	Brake Lining Dust					0.1	15,770				15,770
92074	Sandblast									15,170	15,170
92044	Lime Kiln									13,803	13,803
92037	Ind Manuf			597					207	11,883	12,687
92052	Overall Average/Default			2,058					244	9,795	12,097
92022	Crustal Material									10,707	10,707
92031	Food & Ag			405						9,210	9,616
92039	Inorganic Chemical Manufacture			11						9,562	9,573
92003	Ammonium Nitrate Production									8,936	8,936
92046	Meat Frying			8,149							8,149
92016	Charcoal Manufacturing									7,609	7,609
92087	Tire Dust						6,866				6,866
92045	Limestone Dust								5	6,560	6,565
92061	Pulp & Paper									6,481	6,481
92034	Gypsum Manufacture									6,471	6,471
92017	Chem Manuf			482						5,967	6,449
92030	Food & Ag			3,265					0.4	2,391	5,657

Spec Prf	Profile Description	afdust	alm	nonpt	nonptfire	nonroad	onroad	ptfire	ptipm	ptnonipm	Grand Total
92047	Mineral Products			2,975					601	1,833	5,408
92029	Fly Ash									5,261	5,261
92093	Wood Product Sanding									5,248	5,248
92077	Secondary Copper									5,226	5,226
92005	Asphalt Manufacturing									5,131	5,131
92002	Aluminum Production								31	3,927	3,958
92055	Phosphate Manuf									3,648	3,648
92019	Coke Calciner									3,356	3,356
92026	Electric Arc Furnace									3,157	3,157
92062	Residential Coal Combustion			3,091							3,091
92041	Kraft Recovery Furnace									2,955	2,955
92081	Sludge Combustion									2,833	2,833
92028	Fiberglass Manufacture									2,817	2,817
92033	Glass Furnace									2,790	2,790
92054	Petroleum Ind			1,743						951	2,694
92036	Heat Treating			179						2,489	2,668
92043	Lead Production									2,492	2,492
92050	Onroad Gasoline Exhaust						2,277			12	2,289
92094	Wood Product Sawing									2,034	2,034
92060	Process Gas Combustion			140						1,763	1,904
92076	Secondary Aluminum									1,582	1,582
92089	Urea Fertilizer									1,474	1,474
92068	Residential Wood Combustion: HardSoft			1,434							1,434
92058	Potato Dee									1,265	1,265
92051	Open Hearth Furnace									1,093	1,093
92013	Catalytic Cracking									990	990
92027	Ferromanganese Furnace									962	962
92078	Secondary Lead									904	904
92083	Steel Desulfurization									860	860
92040	Inorganic Fertilizer									626	626
92012	Cast Iron Cupola									605	605
92079	Sintering Furnace									578	578
92075	Sea Salt									534	534
92007	Auto Body Shredding									532	532
92010	Brick Grinding and Screening									494	494
92021	Copper Production									443	443
92004	Ammonium Sulfate Production									224	224
92086	Tire Burning									148	148
92056	PMControlledLigniteCombustion									109	109
92095	BituminousCoalCombustion			97							97
92011	Calcium Carbide Furnace									33	33
92008	Boric Acid Manufacturing									3	3

Appendix D: State-Sector Emissions Summaries for 2002 Base and Future-year Base Cases: 2009, 2014, 2020 and 2030

The following tables contain the state-sector emission summaries for the 2002 base case and future-year base cases. Table D-1a contains data for VOC, NOX and CO, and Table D-1b contains data for SO2, NH3, PM10, and PM2.5.

Table D-1a: Continental US, VOC, NOx, and CO emissions by Sector for 2002, and projection years 2009, 2014, 2020, and 2030.

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Alabama	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,383	2,831	2,916	3,065	3,379	36,047	32,548	32,194	32,815	35,753	10,328	11,057	11,603	12,303	13,561
	avefire	8,951	8,951	8,951	8,951	8,951	3,814	3,814	3,814	3,814	3,814	175,140	175,140	175,140	175,140	175,140
	nonpt	213,956	205,838	197,006	193,002	193,002	32,024	31,978	31,945	31,906	31,906	188,564	184,082	180,879	177,034	177,034
	nonroad	55,574	46,218	40,250	36,029	36,955	29,396	25,392	20,092	15,494	13,611	378,753	253,823	237,277	242,916	267,149
	onroad	104,783	67,451	53,305	43,750	39,517	153,968	91,435	57,113	37,772	28,545	1,237,459	733,435	637,881	615,780	640,439
	ptipm	1,394	1,335	1,423	1,462	1,462	161,767	71,365	47,854	39,998	39,998	10,879	13,708	15,854	15,825	15,825
	ptnonipm	47,722	38,365	38,365	38,365	38,365	80,901	68,040	68,040	68,040	68,040	174,483	174,092	174,092	174,092	174,092
Alabama Total		434,763	370,990	342,216	324,624	321,631	497,917	324,573	261,053	229,839	221,667	2,175,607	1,545,339	1,432,727	1,413,091	1,463,241
Arizona	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,482	3,599	3,818	4,102	4,374	30,813	26,449	26,197	26,459	26,959	20,495	21,458	23,081	24,938	27,011
	avefire	21,385	21,385	21,385	21,385	21,385	10,532	10,532	10,532	10,532	10,532	440,419	440,419	440,419	440,419	440,419
	nonpt	80,463	76,919	71,758	71,115	71,115	8,637	8,618	8,605	8,589	8,589	44,127	42,569	41,456	40,120	40,120
	nonroad	53,546	41,848	37,833	35,883	38,007	38,699	32,525	25,480	18,219	14,796	440,675	337,232	321,243	336,841	376,783
	onroad	85,187	65,051	54,052	46,416	46,068	159,756	104,428	66,634	43,914	37,539	836,126	621,952	567,416	580,651	693,201
	ptipm	626	947	950	992	992	85,967	74,862	50,463	50,569	50,569	8,185	19,127	19,204	18,769	18,769
	ptnonipm	4,611	4,164	4,164	4,164	4,164	11,439	11,439	11,439	11,439	11,439	8,259	8,259	8,259	8,259	8,259
Arizona Total		249,300	213,913	193,959	184,056	186,105	345,843	268,853	199,350	169,721	160,422	1,798,285	1,491,014	1,421,078	1,449,996	1,604,562
Arkansas	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,295	2,357	2,380	2,418	2,514	39,743	34,685	33,722	33,539	35,309	14,371	14,980	15,847	16,829	18,376

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
	avefire	5,821	5,821	5,821	5,821	5,821	2,654	2,654	2,654	2,654	2,654	123,699	123,699	123,699	123,699	123,699
	nonpt	99,381	96,818	92,455	91,751	91,751	21,453	21,436	21,424	21,410	21,410	174,777	173,439	172,484	171,336	171,336
	nonroad	35,683	31,954	27,582	23,439	23,324	28,527	24,467	19,384	14,231	10,579	231,619	162,754	151,555	152,274	163,858
	onroad	56,465	36,323	29,742	24,814	23,579	83,722	50,832	32,840	22,581	18,207	735,366	426,247	372,017	360,469	396,136
	ptipm	520	690	790	799	799	42,218	24,262	26,839	26,271	26,271	4,182	9,082	12,018	10,968	10,968
	ptnonipm	32,044	27,717	27,717	27,717	27,717	27,605	27,370	27,370	27,370	27,370	51,502	51,437	51,437	51,437	51,437
Arkansas Total		232,209	201,682	186,488	176,760	175,506	245,923	185,706	164,233	148,055	141,799	1,335,515	961,639	899,055	887,013	935,810

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
California	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	19,726	20,089	20,729	21,681	23,104	175,373	161,455	155,977	154,530	164,113	108,995	112,003	117,785	124,485	133,684
	avefire	54,619	54,619	54,619	54,619	54,619	24,563	24,563	24,563	24,563	24,563	1,157,187	1,157,187	1,157,187	1,157,187	1,157,187
	nonpt	461,331	450,831	449,537	451,112	451,112	121,882	121,674	121,525	121,347	121,347	458,977	447,100	438,618	428,438	428,438
	nonroad	148,269	127,633	114,489	108,594	128,506	240,256	193,950	153,910	110,789	84,400	1,058,968	1,028,012	1,040,768	1,101,374	1,313,702
	onroad	343,693	202,321	149,537	114,486	87,676	643,919	492,500	346,901	231,335	160,727	3,434,055	1,942,479	1,360,507	935,177	654,302
	ptipm	1,288	1,076	1,372	1,800	1,800	13,071	13,111	15,031	16,691	16,691	23,900	53,864	65,409	82,171	82,171
	ptnonipm	54,610	46,571	46,767	47,121	47,121	91,967	91,434	91,261	92,143	92,143	97,092	97,332	98,997	100,789	100,789
California Total		1,083,536	903,139	837,050	799,413	793,938	1,311,031	1,098,687	909,168	751,398	663,984	6,339,176	4,837,976	4,279,271	3,929,619	3,870,272
Colorado	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,366	1,453	1,499	1,557	1,608	19,208	16,132	15,818	15,869	16,103	10,641	11,608	12,543	13,661	14,931
	avefire	13,610	13,610	13,610	13,610	13,610	6,271	6,271	6,271	6,271	6,271	288,013	288,013	288,013	288,013	288,013
	nonpt	87,037	85,653	83,973	84,311	84,311	11,464	11,412	11,375	11,331	11,331	85,393	82,106	79,758	76,940	76,940
	nonroad	42,009	33,318	30,177	27,864	29,057	35,398	30,263	24,069	17,609	13,876	389,240	263,050	250,944	261,675	291,702
	onroad	84,387	61,463	53,663	46,984	46,833	127,564	83,534	55,858	40,184	36,093	1,103,120	709,657	659,782	681,244	822,227
	ptipm	973	731	769	838	838	79,167	64,412	60,593	61,605	61,605	7,578	11,267	12,124	11,529	11,529
	ptnonipm	90,768	37,097	35,068	34,442	34,442	39,499	38,342	38,342	38,342	38,342	28,063	27,533	27,533	27,533	27,533
Colorado Total		320,150	233,324	218,759	209,606	210,698	318,571	250,366	212,326	191,211	183,620	1,912,049	1,393,233	1,330,698	1,360,595	1,532,875
Connecticut	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	845	876	956	1,061	1,169	3,945	3,834	3,868	4,003	4,140	12,149	12,666	13,976	15,652	17,271
	avefire	31	31	31	31	31	14	14	14	14	14	667	667	667	667	667
	nonpt	105,580	100,907	99,011	96,848	96,848	12,554	12,498	12,459	12,411	12,411	69,769	65,429	62,328	58,604	58,604
	nonroad	32,327	23,609	20,404	19,242	20,383	17,897	14,869	11,646	9,285	8,635	258,776	188,681	175,215	181,777	203,437
	onroad	47,757	30,899	24,426	18,176	15,441	66,813	38,434	23,218	13,530	8,997	641,901	369,126	315,324	293,072	307,897
	ptipm	305	109	134	181	181	6,161	3,391	4,095	5,447	5,447	1,920	8,434	8,853	8,932	8,932
	ptnonipm	4,602	4,182	4,182	4,182	4,182	6,706	6,571	6,571	6,571	6,571	2,133	2,131	2,131	2,131	2,131
Connecticut Total		191,447	160,613	149,143	139,721	138,234	114,091	79,613	61,871	51,261	46,215	987,315	647,133	578,494	560,836	598,940

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Delaware	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	483	531	557	599	695	10,429	10,912	11,292	12,258	15,326	2,890	3,012	3,160	3,382	3,884
	avefire	64	64	64	64	64	23	23	23	23	23	1,332	1,332	1,332	1,332	1,332
	nonpt	15,468	14,558	14,210	13,919	13,919	3,259	3,251	3,246	3,239	3,239	11,640	11,085	10,688	10,211	10,211
	nonroad	8,677	6,386	5,514	5,153	5,408	5,308	4,559	3,692	2,882	2,500	65,811	48,862	45,738	47,229	52,261
	onroad	11,382	7,514	5,695	4,639	4,191	21,679	12,180	7,214	4,404	3,535	155,366	89,775	78,499	76,475	81,702
	ptipm	91	122	151	152	152	9,533	9,675	9,380	8,327	8,327	866	1,710	2,124	1,938	1,938
	ptnonipm	4,659	4,193	4,193	4,193	4,193	7,308	4,682	4,682	4,682	4,682	8,853	8,733	8,733	8,733	8,733
Delaware Total		40,823	33,368	30,383	28,719	28,621	57,538	45,281	39,529	35,813	37,631	246,758	164,509	150,274	149,301	160,062
District of Columbia	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	22	30	31	32	33	571	560	535	527	508	79	95	102	111	128
	avefire	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1
	nonpt	4,118	3,917	3,882	3,882	3,882	1,740	1,739	1,738	1,738	1,738	1,819	1,756	1,711	1,658	1,658
	nonroad	1,918	1,412	1,235	1,203	1,290	3,060	2,536	1,921	1,244	919	18,061	15,551	14,178	14,543	16,130
	onroad	5,423	3,621	2,719	2,215	1,984	8,772	4,772	2,703	1,536	1,235	65,418	39,318	33,810	33,048	35,654
	ptipm	4	0	0	0	0	710	3	6	6	6	50	3	6	6	6
	ptnonipm	69	69	69	69	69	418	418	418	418	418	247	247	247	247	247
District of Columbia Total		11,554	9,048	7,935	7,400	7,257	15,271	10,027	7,321	5,468	4,824	85,676	56,971	50,055	49,614	53,824
Florida	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,053	3,190	3,387	3,652	4,052	55,127	52,369	51,374	52,172	57,895	43,166	44,681	47,476	50,664	54,692
	avefire	56,159	56,159	56,159	56,159	56,159	25,600	25,600	25,600	25,600	25,600	1,193,147	1,193,147	1,193,147	1,193,147	1,193,147
	nonpt	459,700	455,329	434,205	432,980	432,980	29,533	29,492	29,463	29,428	29,428	202,108	198,701	196,267	193,346	193,346
	nonroad	239,540	176,943	159,802	153,184	162,071	117,138	104,404	89,130	69,322	60,662	1,762,587	1,222,617	1,063,733	1,110,608	1,237,135
	onroad	362,851	225,931	179,866	150,140	147,070	448,520	274,295	178,863	125,477	102,919	3,797,717	2,105,543	1,867,949	1,870,423	2,054,738
	ptipm	2,236	1,869	2,143	2,522	2,522	272,057	80,931	56,740	61,118	61,118	52,142	64,310	75,293	75,276	75,276
	ptnonipm	37,204	34,201	34,201	34,201	34,201	54,078	54,030	54,030	54,030	54,030	86,821	86,821	86,821	86,821	86,821
Florida Total		1,160,742	953,622	869,762	832,839	839,056	1,002,054	621,122	485,199	417,147	391,651	7,137,689	4,915,820	4,530,685	4,580,285	4,895,156

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Georgia	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,776	1,976	2,034	2,120	2,239	39,986	35,539	35,200	35,767	37,633	11,058	11,973	12,968	14,244	15,948
	avefire	21,834	21,834	21,834	21,834	21,834	7,955	7,955	7,955	7,955	7,955	350,924	350,924	350,924	350,924	350,924
	nonpt	248,214	242,922	235,296	234,053	234,053	38,919	38,853	38,806	38,750	38,750	194,402	189,012	185,162	180,543	180,543
	nonroad	81,856	63,348	56,758	52,569	55,247	57,979	48,390	38,051	27,695	22,875	730,260	519,187	466,525	485,869	542,255
	onroad	185,962	123,053	101,749	84,255	79,932	307,544	185,968	116,118	75,433	57,840	2,245,133	1,362,639	1,218,661	1,207,141	1,346,768
	ptipm	1,182	1,316	1,363	1,426	1,426	146,351	84,937	59,755	60,722	60,722	9,371	13,152	15,058	14,990	14,990
	ptnonipm	33,735	27,728	27,728	27,728	27,728	51,170	42,554	42,554	42,554	42,554	131,306	130,600	130,600	130,600	130,600
Georgia Total		574,559	482,177	446,762	423,986	422,461	649,905	444,198	338,439	288,877	268,330	3,672,454	2,577,487	2,379,898	2,384,311	2,582,027
Idaho	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	713	722	749	782	815	8,297	7,008	6,857	6,777	6,778	10,893	11,307	12,190	13,265	14,386
	avefire	29,989	29,989	29,989	29,989	29,989	14,024	14,024	14,024	14,024	14,024	630,971	630,971	630,971	630,971	630,971
	nonpt	141,328	139,434	137,490	136,421	136,421	30,317	30,305	30,296	30,285	30,285	95,417	94,196	93,323	92,276	92,276
	nonroad	23,153	21,173	18,319	15,135	14,525	15,611	13,849	11,345	8,507	6,374	137,661	96,798	91,736	91,464	97,589
	onroad	27,934	19,329	16,912	14,608	13,944	44,628	28,237	18,306	12,480	10,483	389,120	237,761	215,805	213,957	246,310
	ptipm	0	14	22	26	26	19	94	270	367	367	4	549	612	646	646
	ptnonipm	2,113	1,725	1,725	1,725	1,725	11,467	11,467	11,467	11,467	11,467	23,977	23,977	23,977	23,977	23,977
Idaho Total		225,230	212,386	205,206	198,686	197,444	124,363	104,983	92,565	83,906	79,777	1,288,044	1,095,559	1,068,615	1,066,556	1,106,156
Illinois	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	4,205	4,211	4,185	4,183	4,320	120,834	104,171	99,880	98,522	102,737	16,365	17,898	18,787	20,165	23,326
	avefire	156	156	156	156	156	71	71	71	71	71	3,323	3,323	3,323	3,323	3,323
	nonpt	278,553	274,561	269,109	268,977	268,977	47,645	47,588	47,548	47,500	47,500	99,568	93,967	89,967	85,166	85,166
	nonroad	99,398	77,488	67,523	61,819	64,816	115,426	94,695	72,953	51,566	39,673	830,513	656,876	599,591	609,879	674,750
	onroad	164,697	108,448	87,212	72,527	68,277	297,056	182,060	111,020	69,518	51,760	2,090,188	1,272,670	1,121,004	1,106,338	1,226,854
	ptipm	1,536	2,381	2,560	2,657	2,657	179,125	83,848	89,782	71,620	71,620	14,627	15,791	17,649	18,614	18,614
	ptnonipm	71,066	58,404	58,591	58,821	58,821	94,009	71,002	71,514	73,036	73,036	78,820	78,198	79,893	81,767	81,767
Illinois Total		619,612	525,649	489,337	469,141	468,026	854,165	583,435	492,768	411,834	386,397	3,133,402	2,138,723	1,930,214	1,925,253	2,113,801

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Indiana	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,224	2,606	2,682	2,790	2,954	52,285	46,823	45,667	45,598	47,880	14,057	15,202	16,157	17,366	19,391
	avefire	194	194	194	194	194	88	88	88	88	88	4,124	4,124	4,124	4,124	4,124
	nonpt	179,635	175,119	169,044	167,998	167,998	30,185	30,143	30,113	30,077	30,077	74,953	71,175	68,477	65,240	65,240
	nonroad	58,290	45,641	39,383	35,579	37,055	64,575	53,155	40,427	28,951	23,097	490,545	348,138	310,959	311,512	341,744
	onroad	140,188	88,653	73,730	62,110	56,619	216,188	129,374	82,459	55,049	42,080	1,738,790	1,012,624	897,036	878,274	949,534
	ptipm	2,015	2,165	2,228	2,296	2,296	283,890	133,912	124,167	89,313	89,313	15,540	17,814	18,639	19,602	19,602
	ptnonipm	55,935	51,787	51,787	51,787	51,787	80,147	67,032	67,032	67,032	67,032	364,487	364,486	364,486	364,486	364,486
Indiana Total		438,480	366,164	339,048	322,754	318,904	727,359	460,527	389,953	316,109	299,568	2,702,495	1,833,563	1,679,878	1,660,603	1,764,121
Iowa	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,653	1,661	1,649	1,634	1,631	33,166	26,959	25,825	25,333	25,870	7,209	7,866	8,426	9,118	10,227
	avefire	197	197	197	197	197	90	90	90	90	90	4,185	4,185	4,185	4,185	4,185
	nonpt	77,838	75,491	71,828	70,642	70,642	15,150	15,090	15,046	14,995	14,995	68,958	64,017	60,487	56,251	56,251
	nonroad	52,138	36,504	33,409	30,975	31,468	62,066	54,867	44,687	32,571	21,882	309,048	222,598	205,436	203,942	215,849
	onroad	75,852	48,452	40,299	34,011	31,136	115,521	73,751	48,103	32,218	26,448	1,055,157	621,002	532,276	496,019	557,162
	ptipm	579	850	908	980	980	81,995	55,090	58,628	59,383	59,383	5,444	7,942	8,769	9,377	9,377
	ptnonipm	37,943	32,631	32,631	32,631	32,631	38,861	38,837	38,837	38,837	38,837	36,521	36,501	36,501	36,501	36,501
Iowa Total		246,201	195,786	180,921	171,071	168,686	346,849	264,683	231,217	203,427	187,504	1,486,523	964,111	856,081	815,394	889,552
Kansas	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,133	2,163	2,140	2,106	2,064	41,147	33,193	31,895	31,222	31,119	9,118	9,928	10,669	11,524	12,849
	avefire	828	828	828	828	828	378	378	378	378	378	17,600	17,600	17,600	17,600	17,600
	nonpt	135,449	134,134	131,964	131,970	131,970	42,286	42,260	42,242	42,219	42,219	850,800	848,391	846,669	844,604	844,604
	nonroad	24,728	18,953	16,491	15,041	15,502	47,653	40,898	32,678	23,003	14,394	240,503	157,861	143,592	143,812	154,768
	onroad	52,786	33,638	27,861	23,429	22,563	85,617	50,252	31,627	21,109	17,589	683,936	391,573	344,300	335,289	382,426
	ptipm	1,062	821	844	864	864	96,943	70,545	51,433	51,547	51,547	6,793	6,229	6,453	7,235	7,235
	ptnonipm	26,274	22,766	22,766	22,766	22,766	70,704	70,616	70,616	70,616	70,616	74,809	74,779	74,779	74,779	74,779
Kansas Total		243,261	213,303	202,893	197,004	196,557	384,728	308,143	260,868	240,094	227,862	1,883,560	1,506,360	1,444,062	1,434,843	1,494,262

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Kentucky	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,487	2,629	2,716	2,868	3,195	70,391	64,975	63,275	63,565	69,851	17,830	19,313	20,293	21,803	24,580
	avefire	2,909	2,909	2,909	2,909	2,909	1,326	1,326	1,326	1,326	1,326	61,812	61,812	61,812	61,812	61,812
	nonpt	105,281	101,927	97,456	96,199	96,199	17,557	17,480	17,424	17,358	17,358	108,397	102,054	97,523	92,085	92,085
	nonroad	39,806	33,708	29,041	25,361	25,698	31,792	26,961	21,171	15,738	12,617	282,098	203,444	187,975	190,518	207,956
	onroad	82,321	51,892	42,149	34,769	31,858	147,749	85,183	51,140	32,067	24,626	1,052,158	599,767	523,949	508,439	543,459
	ptipm	1,479	1,561	1,615	1,696	1,696	200,955	95,712	68,876	62,024	62,024	12,544	28,316	28,389	29,085	29,085
	ptnonipm	44,884	42,586	42,581	42,589	42,589	38,541	28,382	28,382	28,382	28,382	110,047	110,047	110,047	110,047	110,047
Kentucky Total		279,168	237,212	218,465	206,392	204,145	508,311	320,019	251,594	220,459	216,183	1,644,885	1,124,751	1,029,988	1,013,789	1,069,025
Louisiana	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,960	4,264	4,498	4,966	6,236	216,290	209,740	204,037	205,657	233,694	45,941	47,622	48,188	50,103	56,877
	avefire	7,137	7,137	7,137	7,137	7,137	3,254	3,254	3,254	3,254	3,254	151,658	151,658	151,658	151,658	151,658
	nonpt	135,934	133,648	127,217	126,631	126,631	27,559	27,535	27,518	27,498	27,498	139,222	137,300	135,926	134,278	134,278
	nonroad	61,307	51,973	44,943	39,985	40,623	28,899	25,735	21,286	16,835	14,547	364,963	245,591	232,521	236,980	257,335
	onroad	77,802	49,098	38,299	31,376	31,178	124,192	70,328	43,492	28,662	23,290	943,962	539,202	464,965	451,997	512,934
	ptipm	1,239	574	645	714	714	82,293	25,960	27,522	27,607	27,607	12,682	26,764	28,465	28,817	28,817
	ptnonipm	79,781	61,820	61,820	61,820	61,820	211,449	211,225	211,225	211,225	211,225	134,203	133,982	133,982	133,982	133,982
Louisiana Total		367,159	308,515	284,560	272,630	274,339	693,935	573,776	538,334	520,739	541,115	1,792,631	1,282,120	1,195,706	1,187,815	1,275,881
Maine	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	365	370	375	388	423	1,708	1,716	1,711	1,781	2,112	3,650	3,769	3,981	4,206	4,459
	avefire	1,258	1,258	1,258	1,258	1,258	566	566	566	566	566	26,592	26,592	26,592	26,592	26,592
	nonpt	88,028	82,684	79,463	75,901	75,901	7,423	7,334	7,270	7,192	7,192	104,033	97,029	92,024	86,014	86,014
	nonroad	30,025	28,193	24,234	19,744	18,497	8,271	7,400	6,302	5,464	5,307	138,111	105,822	99,160	97,010	103,051
	onroad	26,131	17,146	14,673	12,325	10,670	47,227	26,670	16,408	10,550	7,687	360,595	210,877	187,476	181,502	189,853
	ptipm	67	236	214	132	132	1,188	6,660	6,208	3,969	3,969	1,084	5,986	5,357	3,798	3,798
	ptnonipm	5,151	4,542	4,542	4,542	4,542	18,895	18,045	18,045	18,045	18,045	15,861	15,107	15,107	15,107	15,107
Maine Total		151,026	134,429	124,759	114,290	111,422	85,277	68,390	56,509	47,566	44,878	649,927	465,182	429,698	414,230	428,874

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Maryland	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	5,360	5,482	5,733	6,069	6,432	17,106	16,209	15,875	16,480	18,380	17,581	18,062	19,265	20,716	22,413
	avefire	353	353	353	353	353	137	137	137	137	137	6,129	6,129	6,129	6,129	6,129
	nonpt	126,362	120,308	118,030	116,078	116,078	21,715	21,667	21,633	21,592	21,592	141,960	138,168	135,459	132,206	132,206
	nonroad	51,369	38,023	33,652	32,241	34,382	27,495	23,271	18,960	14,651	12,719	414,390	339,878	322,626	340,408	382,289
	onroad	71,591	48,559	38,202	31,292	28,704	121,659	68,358	41,721	25,955	20,660	1,004,611	599,433	526,263	519,267	575,218
	ptipm	478	521	616	693	693	73,527	18,640	20,882	22,653	22,653	4,546	10,599	11,472	12,092	12,092
	ptnonipm	5,758	4,570	4,570	4,570	4,570	22,109	17,826	17,826	17,826	17,826	94,448	94,404	94,404	94,404	94,404
Maryland Total		261,270	217,815	201,154	191,296	191,211	283,748	166,108	137,033	119,293	113,967	1,683,666	1,206,675	1,115,618	1,125,222	1,224,752
Massachusetts	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,443	2,487	2,601	2,734	2,921	17,144	15,668	15,702	16,151	17,570	18,602	19,525	20,876	22,357	24,040
	avefire	747	747	747	747	747	341	341	341	341	341	15,878	15,878	15,878	15,878	15,878
	nonpt	176,731	168,492	165,353	161,951	161,951	34,373	34,283	34,219	34,143	34,143	136,753	129,917	125,034	119,169	119,169
	nonroad	52,921	39,377	34,017	31,809	33,486	30,046	25,055	19,746	15,707	14,545	423,212	313,857	292,004	302,871	339,056
	onroad	71,646	45,768	35,321	28,541	26,110	128,362	67,279	38,153	22,168	17,469	960,011	542,302	495,891	497,918	557,054
	ptipm	595	384	370	427	427	32,561	11,748	10,341	12,444	12,444	10,922	9,109	8,673	7,936	7,936
	ptnonipm	7,722	6,559	6,559	6,559	6,559	15,394	14,849	14,849	14,849	14,849	10,656	10,621	10,621	10,621	10,621
Massachusetts Total		312,806	263,814	244,968	232,768	232,202	258,220	169,223	133,352	115,802	111,360	1,576,034	1,041,209	968,976	976,750	1,073,754
Michigan	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,504	2,732	2,987	3,375	4,065	43,025	44,993	47,692	53,325	69,133	26,763	28,629	31,302	34,872	39,287
	avefire	724	724	724	724	724	330	330	330	330	330	15,380	15,380	15,380	15,380	15,380
	nonpt	248,382	236,151	227,606	226,489	226,489	43,499	43,424	43,371	43,306	43,306	94,909	96,472	97,588	98,928	98,928
	nonroad	173,241	147,590	124,499	104,755	103,718	70,912	63,773	52,230	43,538	41,589	1,013,991	688,696	620,623	605,349	649,546
	onroad	207,762	124,457	104,607	88,580	79,226	315,420	189,800	120,465	80,551	60,564	2,744,658	1,461,558	1,273,212	1,221,058	1,283,487
	ptipm	1,243	1,350	1,562	1,602	1,602	141,908	83,271	80,290	79,933	79,933	13,367	12,926	15,503	17,748	17,748
	ptnonipm	39,832	32,854	32,854	32,854	32,854	82,202	77,597	77,597	77,597	77,597	66,873	66,685	66,685	66,685	66,685
Michigan Total		673,689	545,857	494,838	458,378	448,677	697,296	503,189	421,975	378,581	372,452	3,975,941	2,370,346	2,120,292	2,060,020	2,171,061

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Minnesota	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,611	1,662	1,672	1,712	1,871	55,371	50,040	48,393	48,235	52,459	8,411	8,982	9,212	9,710	11,224
	avefire	5,047	5,047	5,047	5,047	5,047	2,300	2,300	2,300	2,300	2,300	107,237	107,237	107,237	107,237	107,237
	nonpt	125,318	121,402	116,713	115,950	115,950	56,700	56,616	56,557	56,485	56,485	139,234	132,191	127,159	121,121	121,121
	nonroad	97,104	86,673	76,510	67,902	60,721	68,820	59,324	48,614	36,926	28,213	452,734	385,326	358,959	356,686	369,793
	onroad	102,566	73,518	62,866	53,880	46,670	163,172	106,140	65,740	43,094	35,370	1,314,360	897,668	786,262	764,896	834,696
	ptipm	646	672	815	916	916	86,917	38,630	41,007	42,469	42,469	7,468	5,933	8,643	9,316	9,316
	ptnonipm	29,541	26,591	26,652	26,726	26,726	67,813	66,107	66,325	66,615	66,615	47,015	47,365	48,177	49,063	49,063
Minnesota Total		361,833	315,564	290,274	272,132	257,902	501,094	379,158	328,936	296,125	283,912	2,076,459	1,584,702	1,445,649	1,418,029	1,502,451
Mississippi	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,386	2,516	2,548	2,651	2,997	66,650	61,821	60,034	60,314	67,010	10,656	11,332	11,801	12,595	14,577
	avefire	8,407	8,407	8,407	8,407	8,407	3,833	3,833	3,833	3,833	3,833	178,646	178,646	178,646	178,646	178,646
	nonpt	156,390	154,665	149,624	148,789	148,789	12,212	12,169	12,139	12,103	12,103	129,408	125,242	122,266	118,696	118,696
	nonroad	36,056	31,622	27,255	23,620	23,727	22,180	19,058	15,120	11,400	9,220	214,179	149,762	139,143	139,898	150,980
	onroad	62,375	40,881	31,707	26,200	24,829	105,505	62,300	37,951	24,286	18,302	739,190	448,208	388,570	379,133	410,973
	ptipm	629	363	429	472	472	45,850	29,058	23,371	20,263	20,263	5,286	4,402	6,799	6,440	6,440
	ptnonipm	43,224	37,751	37,751	37,751	37,751	60,244	58,269	56,826	56,826	56,826	54,587	53,581	53,581	53,581	53,581
Mississippi Total		309,467	276,205	257,721	247,890	246,971	316,473	246,507	209,274	189,025	187,557	1,331,952	971,174	900,807	888,989	933,893
Missouri	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,439	3,537	3,603	3,712	3,926	79,583	70,030	68,145	67,979	71,968	18,171	19,635	20,840	22,505	25,361
	avefire	1,488	1,488	1,488	1,488	1,488	678	678	678	678	678	31,611	31,611	31,611	31,611	31,611
	nonpt	162,795	157,282	151,104	149,030	149,030	32,910	32,785	32,695	32,588	32,588	168,352	158,163	150,885	142,152	142,152
	nonroad	63,279	50,345	43,558	39,288	40,437	52,997	46,091	37,054	27,534	20,719	479,319	333,739	311,545	318,976	350,123
	onroad	124,106	79,858	65,168	53,630	51,200	200,379	121,016	75,598	49,135	38,513	1,598,930	923,851	800,044	768,803	863,675
	ptipm	1,496	1,692	1,771	1,764	1,764	145,232	80,814	75,127	73,116	73,116	10,827	12,552	13,483	13,461	13,461
	ptnonipm	34,704	27,517	27,517	27,517	27,517	38,025	33,144	33,144	33,144	33,144	108,389	108,361	108,361	108,361	108,361
Missouri Total		391,308	321,719	294,210	276,429	275,362	549,803	384,556	322,440	284,174	270,726	2,415,599	1,587,913	1,436,771	1,405,869	1,534,746

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Montana	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,309	1,306	1,302	1,297	1,291	22,873	18,260	17,546	17,175	17,180	5,814	6,365	6,862	7,457	8,299
	avefire	10,085	10,085	10,085	10,085	10,085	5,187	5,187	5,187	5,187	5,187	203,759	203,759	203,759	203,759	203,759
	nonpt	23,573	22,543	21,452	21,032	21,032	3,797	3,767	3,746	3,720	3,720	35,673	33,199	31,432	29,312	29,312
	nonroad	12,968	11,853	10,184	8,322	7,914	18,777	16,576	13,643	9,792	6,048	85,304	60,793	57,185	56,226	58,516
	onroad	20,451	13,325	11,525	9,863	9,039	36,727	20,801	12,900	8,538	6,842	283,678	164,018	146,187	142,895	158,758
	ptipm	355	318	393	421	421	36,577	36,169	31,948	32,457	32,457	3,047	4,273	4,906	5,141	5,141
	ptnonipm	6,807	6,431	6,431	6,431	6,431	16,588	16,122	15,684	15,684	15,684	29,410	29,410	29,410	29,410	29,410
Montana Total		75,548	65,861	61,373	57,451	56,213	140,526	116,883	100,654	92,552	87,117	646,686	501,817	479,741	474,201	493,194
Nebraska	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,524	3,523	3,463	3,384	3,294	68,904	54,285	51,946	50,703	50,664	10,222	11,459	12,380	13,530	15,482
	avefire	837	837	837	837	837	381	381	381	381	381	17,780	17,780	17,780	17,780	17,780
	nonpt	40,762	39,632	37,860	37,441	37,441	13,820	13,798	13,782	13,763	13,763	66,672	64,882	63,603	62,069	62,069
	nonroad	18,442	14,727	12,636	11,084	11,092	39,889	34,573	27,908	19,576	11,818	155,107	108,019	98,448	97,078	102,149
	onroad	36,940	24,026	20,116	17,017	16,795	66,226	40,028	24,974	16,298	13,340	473,870	276,172	241,994	234,283	276,293
	ptipm	635	545	549	602	602	47,900	54,034	38,052	38,911	38,911	3,420	4,404	4,601	5,028	5,028
	ptnonipm	6,527	5,906	5,906	5,906	5,906	11,385	11,385	11,385	11,385	11,385	5,717	5,717	5,717	5,717	5,717
Nebraska Total		107,667	89,196	81,368	76,271	75,966	248,506	208,485	168,427	151,019	140,263	732,788	488,432	444,524	435,483	484,518
Nevada	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,057	1,094	1,150	1,223	1,290	12,958	11,168	11,212	11,566	12,047	11,214	11,954	13,121	14,601	16,127
	avefire	10,740	10,740	10,740	10,740	10,740	4,910	4,910	4,910	4,910	4,910	227,965	227,965	227,965	227,965	227,965
	nonpt	22,874	23,491	21,718	21,792	21,792	5,308	5,306	5,304	5,302	5,302	14,700	14,229	13,893	13,490	13,490
	nonroad	22,720	16,988	15,504	14,803	15,760	18,990	16,487	13,033	9,176	7,244	208,377	135,971	130,610	137,077	152,899
	onroad	26,884	22,191	19,306	17,057	16,380	28,320	20,307	14,625	11,256	9,913	301,082	231,710	223,133	236,365	262,598
	ptipm	483	445	597	674	674	48,366	46,403	32,260	34,817	34,817	2,798	8,072	9,139	7,369	7,369
	ptnonipm	1,649	1,493	1,493	1,493	1,493	7,509	7,509	7,509	7,509	7,509	6,985	6,985	6,985	6,985	6,985
Nevada Total		86,406	76,441	70,506	67,783	68,130	126,362	112,090	88,854	84,537	81,742	773,121	636,888	624,847	643,851	687,433

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
New Hampshire	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	118	124	132	143	159	1,866	1,781	1,752	1,783	2,004	2,305	2,398	2,553	2,721	2,916
	avefire	301	301	301	301	301	137	137	137	137	137	6,398	6,398	6,398	6,398	6,398
	nonpt	61,483	57,548	55,511	53,263	53,263	11,235	11,178	11,137	11,088	11,088	74,137	69,710	66,547	62,750	62,750
	nonroad	21,832	18,910	16,065	13,661	13,333	8,150	6,965	5,763	4,818	4,616	122,530	96,954	85,458	85,704	93,178
	onroad	21,682	14,879	12,393	10,267	9,342	38,799	23,734	14,685	9,164	6,716	294,533	180,168	158,722	155,253	171,336
	ptipm	104	150	165	189	189	7,000	2,619	3,065	3,964	3,964	643	3,375	3,404	3,140	3,140
	ptnonipm	1,496	721	721	721	721	2,786	2,783	2,783	2,783	2,783	2,082	2,080	2,080	2,080	2,080
New Hampshire Total		107,015	92,633	85,289	78,545	77,308	69,973	49,197	39,322	33,737	31,309	502,627	361,082	325,161	318,046	341,798
New Jersey	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,236	2,326	2,456	2,653	2,999	35,998	35,363	34,759	35,709	40,992	14,960	15,509	16,429	17,644	19,580
	avefire	488	488	488	488	488	223	223	223	223	223	10,375	10,375	10,375	10,375	10,375
	nonpt	151,657	144,567	142,238	140,176	140,176	26,393	26,342	26,305	26,261	26,261	84,145	79,593	76,342	72,437	72,437
	nonroad	78,629	57,795	50,544	48,222	51,422	40,876	35,077	28,499	23,040	21,269	635,064	467,523	442,732	464,876	523,535
	onroad	101,094	64,465	46,651	36,413	32,216	161,872	85,611	48,496	26,860	18,353	1,325,445	751,380	654,205	632,680	704,191
	ptipm	1,048	335	398	450	450	34,188	7,767	9,427	11,022	11,022	3,865	7,240	8,009	7,822	7,822
	ptnonipm	13,282	10,897	10,897	10,897	10,897	17,206	15,578	15,578	15,578	15,578	8,375	8,316	8,316	8,316	8,316
New Jersey Total		348,436	280,873	253,673	239,299	238,649	316,756	205,961	163,286	138,694	133,699	2,082,228	1,339,937	1,216,408	1,214,149	1,346,255
New Mexico	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,982	1,992	1,971	1,941	1,903	36,714	29,265	27,994	27,361	27,304	8,473	9,222	9,911	10,732	11,960
	avefire	27,488	27,488	27,488	27,488	27,488	12,582	12,582	12,582	12,582	12,582	583,216	583,216	583,216	583,216	583,216
	nonpt	36,950	35,170	33,450	33,088	33,088	7,532	7,517	7,505	7,492	7,492	29,666	28,367	27,439	26,326	26,326
	nonroad	13,499	11,181	10,062	9,237	9,636	9,681	8,353	6,706	4,981	4,047	119,501	78,164	74,832	78,007	86,466
	onroad	45,763	31,131	26,206	22,451	21,317	77,574	46,462	29,322	19,600	15,429	587,028	361,579	326,293	326,676	360,766
	ptipm	563	489	491	519	519	78,547	63,814	58,498	58,562	58,562	5,539	6,016	6,052	6,433	6,433
	ptnonipm	15,691	10,786	10,786	10,786	10,786	60,358	60,297	60,240	60,240	60,240	32,228	32,228	32,228	32,228	32,228
New Mexico Total		141,935	118,237	110,454	105,510	104,738	282,988	228,288	202,848	190,819	185,657	1,365,651	1,098,792	1,059,971	1,063,618	1,107,396

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
New York	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,473	2,619	2,745	2,936	3,266	40,659	38,350	38,161	39,370	44,334	22,205	23,864	25,657	27,886	30,840
	avefire	903	903	903	903	903	412	412	412	412	412	19,195	19,195	19,195	19,195	19,195
	nonpt	608,921	613,062	621,635	634,915	634,915	89,986	90,323	90,564	90,853	90,853	404,592	431,581	450,860	473,993	473,993
	nonroad	151,345	121,199	105,522	95,842	98,761	78,279	67,078	55,658	44,756	40,396	1,175,721	895,734	810,175	839,288	937,245
	onroad	212,929	137,568	102,389	80,584	74,771	290,698	165,594	103,189	62,605	44,498	2,822,801	1,596,877	1,390,297	1,328,878	1,526,678
	ptipm	857	1,082	1,100	1,107	1,107	81,201	39,914	34,490	33,735	33,735	12,204	20,230	17,499	17,890	17,890
	ptnonipm	6,218	5,365	5,365	5,365	5,365	38,992	32,096	32,096	32,096	32,096	54,133	54,080	54,080	54,080	54,080
New York Total		983,646	881,799	839,659	821,652	819,089	620,228	433,767	354,570	303,826	286,322	4,510,852	3,041,562	2,767,764	2,761,211	3,059,922
North Carolina	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,472	1,615	1,690	1,794	1,916	22,608	19,886	19,482	19,554	20,381	9,957	10,817	11,615	12,623	13,872
	avefire	58,889	58,889	58,889	58,889	58,889	11,424	11,424	11,424	11,424	11,424	429,388	429,388	429,388	429,388	429,388
	nonpt	231,094	222,255	212,129	210,082	210,082	18,869	18,761	18,684	18,591	18,591	321,101	312,266	305,955	298,382	298,382
	nonroad	88,972	68,628	59,717	54,845	57,309	61,664	50,178	38,433	27,759	22,701	746,344	586,105	540,968	560,093	622,450
	onroad	143,187	93,913	76,576	63,583	58,393	242,379	141,370	87,185	55,801	41,119	1,786,813	1,075,088	923,026	897,310	965,793
	ptipm	920	1,103	1,163	1,256	1,256	153,226	67,924	67,442	59,724	59,724	12,112	11,366	12,286	12,761	12,761
	ptnonipm	61,685	53,635	53,633	53,632	53,632	49,273	37,071	37,071	37,071	37,071	52,414	52,062	52,062	52,062	52,062
North Carolina Total		586,219	500,039	463,797	444,081	441,477	559,444	346,614	279,721	229,924	211,012	3,358,129	2,477,092	2,275,301	2,262,619	2,394,709
North Dakota	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,256	1,254	1,240	1,219	1,195	23,072	18,121	17,336	16,916	16,912	4,832	5,291	5,706	6,195	6,944
	avefire	527	527	527	527	527	240	240	240	240	240	11,204	11,204	11,204	11,204	11,204
	nonpt	14,911	14,177	13,461	13,174	13,174	4,007	3,987	3,972	3,955	3,955	20,488	18,845	17,671	16,262	16,262
	nonroad	13,565	11,430	9,536	7,778	7,197	38,012	33,288	27,270	19,093	10,734	91,869	66,050	59,029	54,726	53,229
	onroad	15,356	9,829	8,318	6,933	6,511	24,832	14,432	8,967	5,824	4,722	206,627	116,879	101,483	96,390	109,994
	ptipm	781	846	838	882	882	75,947	45,049	44,009	44,560	44,560	5,237	7,659	11,260	11,383	11,383
	ptnonipm	1,249	1,124	1,124	1,124	1,124	9,929	9,385	9,385	9,385	9,385	5,778	5,765	5,765	5,765	5,765
North Dakota Total		47,645	39,188	35,045	31,637	30,610	176,039	124,502	111,180	99,974	90,509	346,035	231,693	212,118	201,925	214,782

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Ohio	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,632	4,064	4,207	4,423	4,798	96,728	88,052	85,793	85,843	92,415	29,188	31,189	32,881	35,103	38,849
	avefire	178	178	178	178	178	81	81	81	81	81	3,787	3,787	3,787	3,787	3,787
	nonpt	285,528	275,689	272,521	271,610	271,610	41,466	41,405	41,360	41,307	41,307	150,302	145,351	141,813	137,566	137,566
	nonroad	103,414	77,465	67,241	61,754	64,960	90,812	74,081	55,950	40,458	34,425	910,152	623,175	564,041	573,594	633,745
	onroad	205,348	124,133	100,380	81,331	74,335	327,388	192,777	113,811	72,024	57,376	2,600,918	1,476,811	1,265,027	1,236,418	1,362,343
	ptipm	1,773	1,971	2,106	2,149	2,149	373,299	94,744	99,033	92,780	92,780	14,817	20,543	21,862	22,421	22,421
	ptnonipm	29,515	26,436	26,436	26,436	26,436	65,850	58,970	58,185	58,185	58,185	238,412	238,412	238,412	238,412	238,412
Ohio Total		629,389	509,937	473,070	447,881	444,466	995,625	550,110	454,213	390,678	376,570	3,947,575	2,539,269	2,267,823	2,247,301	2,437,123
Oklahoma	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,551	1,566	1,563	1,555	1,543	26,294	21,261	20,464	20,088	20,149	10,093	10,553	11,225	11,963	12,989
	avefire	3,749	3,749	3,749	3,749	3,749	1,709	1,709	1,709	1,709	1,709	79,673	79,673	79,673	79,673	79,673
	nonpt	200,442	196,496	192,447	191,677	191,677	94,574	94,542	94,518	94,490	94,490	385,235	382,569	380,664	378,379	378,379
	nonroad	38,015	29,720	25,931	23,686	24,511	31,331	26,945	21,961	16,410	12,410	308,218	206,115	186,014	190,974	209,343
	onroad	86,133	56,321	46,067	39,279	37,822	133,152	80,016	51,065	34,569	28,819	1,069,135	636,945	557,794	555,227	630,913
	ptipm	984	958	1,019	1,088	1,088	90,302	83,945	64,740	62,434	62,434	13,661	28,415	29,821	27,970	27,970
	ptnonipm	35,176	23,733	23,733	23,733	23,733	72,670	72,517	71,835	71,835	71,835	50,750	50,750	50,750	50,750	50,750
Oklahoma Total		366,050	312,543	294,508	284,767	284,123	450,033	380,935	326,293	301,535	291,847	1,916,764	1,395,018	1,295,939	1,294,935	1,390,016
Oregon	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,843	2,027	2,115	2,253	2,487	43,439	40,199	39,073	39,085	42,312	12,401	13,077	13,756	14,654	16,159
	avefire	37,328	37,328	37,328	37,328	37,328	17,857	17,857	17,857	17,857	17,857	778,193	778,193	778,193	778,193	778,193
	nonpt	242,829	239,638	238,352	239,218	239,218	16,998	17,009	17,018	17,028	17,028	342,444	333,115	326,451	318,454	318,454
	nonroad	39,821	32,299	28,149	25,088	25,679	26,372	22,638	18,141	13,685	11,363	304,850	212,615	193,709	199,468	220,481
	onroad	91,766	58,567	47,310	39,312	32,647	109,066	69,772	50,073	33,701	21,232	1,078,005	619,048	517,087	478,542	485,899
	ptipm	142	151	151	152	152	9,006	9,740	9,740	9,768	9,768	1,105	3,932	3,932	3,942	3,942
	ptnonipm	14,567	10,990	10,990	10,990	10,990	15,958	15,767	15,767	15,767	15,767	34,389	33,794	33,794	33,794	33,794
Oregon Total		428,297	381,001	364,395	354,342	348,502	238,696	192,982	167,669	146,890	135,326	2,551,388	1,993,775	1,866,922	1,827,046	1,856,922

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Pennsylvania	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,425	2,559	2,673	2,851	3,196	67,118	63,037	61,438	61,811	67,924	25,047	26,618	28,094	30,087	33,258
	avefire	256	256	256	256	256	117	117	117	117	117	5,450	5,450	5,450	5,450	5,450
	nonpt	281,740	264,980	261,647	260,079	260,079	53,435	53,333	53,260	53,173	53,173	265,035	256,636	250,638	243,439	243,439
	nonroad	96,797	79,165	69,633	63,072	65,413	62,168	51,401	40,177	30,881	27,101	856,737	612,784	547,716	566,481	631,795
	onroad	184,268	115,276	89,483	69,513	63,170	294,414	165,444	99,133	58,609	40,758	2,420,525	1,323,428	1,104,821	1,039,116	1,137,007
	ptipm	1,212	1,712	1,766	1,753	1,753	210,149	91,466	74,225	69,570	69,570	17,018	18,116	19,163	18,236	18,236
	ptnonipm	36,871	30,914	30,914	30,914	30,914	89,064	76,602	74,324	74,324	74,324	104,570	103,784	103,784	103,784	103,784
Pennsylvania Total		603,569	494,863	456,372	428,439	424,781	776,465	501,400	402,674	348,484	332,967	3,694,382	2,346,814	2,059,664	2,006,592	2,172,969
Rhode Island	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	162	166	180	197	214	876	824	874	950	1,028	2,923	3,009	3,290	3,628	3,959
	avefire	8	8	8	8	8	4	4	4	4	4	171	171	171	171	171
	nonpt	16,875	16,553	16,483	16,457	16,457	2,964	2,960	2,958	2,955	2,955	5,421	5,142	4,942	4,703	4,703
	nonroad	8,491	6,010	5,080	4,822	5,137	4,663	3,890	3,053	2,457	2,309	65,923	48,379	44,582	46,080	51,531
	onroad	14,366	10,124	7,869	6,810	5,805	16,720	9,655	6,550	4,125	3,514	188,240	113,984	101,917	97,100	105,592
	ptipm	39	49	45	41	41	712	475	396	357	357	453	1,926	1,751	1,616	1,616
	ptnonipm	1,894	1,360	1,360	1,360	1,360	2,060	1,938	1,938	1,938	1,938	1,781	1,758	1,758	1,758	1,758
Rhode Island Total		41,835	34,271	31,025	29,697	29,023	27,997	19,747	15,774	12,786	12,104	264,911	174,368	158,410	155,056	169,329
South Carolina	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	961	997	1,019	1,050	1,107	19,378	17,077	16,521	16,424	17,422	9,393	9,933	10,554	11,272	12,270
	avefire	5,171	5,171	5,171	5,171	5,171	2,357	2,357	2,357	2,357	2,357	109,880	109,880	109,880	109,880	109,880
	nonpt	185,429	185,163	181,315	182,844	182,844	20,281	20,275	20,271	20,267	20,267	145,294	145,455	145,570	145,708	145,708
	nonroad	50,041	38,078	32,999	30,535	31,883	29,982	24,512	18,902	13,850	11,690	377,166	295,785	271,673	280,073	310,041
	onroad	89,994	58,070	47,272	39,608	37,165	134,542	82,299	52,555	35,593	27,866	1,141,561	691,670	590,040	570,319	618,756
	ptipm	506	609	655	746	746	91,296	50,236	48,449	34,085	34,085	4,749	5,535	6,509	6,829	6,829
	ptnonipm	36,778	27,298	27,298	27,298	27,298	40,417	29,336	29,336	29,336	29,336	56,640	56,448	56,448	56,448	56,448
South Carolina Total		368,879	315,385	295,729	287,252	286,214	338,253	226,092	188,391	151,912	143,023	1,844,682	1,314,706	1,190,675	1,180,530	1,259,932

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
South Dakota	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	321	324	331	339	346	4,164	3,349	3,252	3,202	3,216	2,979	3,160	3,398	3,655	3,947
	avefire	3,985	3,985	3,985	3,985	3,985	1,817	1,817	1,817	1,817	1,817	84,689	84,689	84,689	84,689	84,689
	nonpt	19,597	18,840	17,980	17,644	17,644	5,200	5,177	5,160	5,140	5,140	24,107	22,176	20,796	19,141	19,141
	nonroad	12,322	10,531	8,874	7,352	6,964	27,219	23,755	19,402	13,665	7,961	79,151	59,285	53,433	50,681	50,964
	onroad	16,177	10,656	9,022	7,539	7,203	29,910	18,071	11,071	6,963	5,621	219,053	129,758	113,555	108,684	126,091
	ptipm	111	110	120	142	142	15,922	2,353	2,364	2,740	2,740	632	552	604	785	785
	ptnonipm	2,431	1,449	1,449	1,449	1,449	4,776	4,776	4,776	4,776	4,776	4,068	4,068	4,068	4,068	4,068
South Dakota Total		54,944	45,897	41,762	38,451	37,734	89,008	59,298	47,843	38,304	31,271	414,679	303,689	280,543	271,703	289,686
Tennessee	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,152	2,363	2,449	2,594	2,866	50,692	46,834	45,791	46,115	50,251	13,001	14,117	14,987	16,228	18,286
	avefire	2,220	2,220	2,220	2,220	2,220	1,012	1,012	1,012	1,012	1,012	47,175	47,175	47,175	47,175	47,175
	nonpt	148,677	145,508	137,119	135,241	135,241	18,676	18,604	18,552	18,490	18,490	119,973	114,059	109,836	104,767	104,767
	nonroad	60,023	49,015	42,584	38,065	39,112	40,970	34,909	27,163	20,352	16,955	460,143	305,294	281,937	287,728	316,789
	onroad	140,405	94,247	75,248	60,871	56,534	240,312	147,688	93,956	59,503	43,543	1,681,568	992,698	875,126	840,777	901,356
	ptipm	843	925	1,015	1,202	1,202	155,926	53,647	54,945	39,841	39,841	6,596	7,203	8,021	9,475	9,475
	ptnonipm	84,610	73,801	73,801	73,801	73,801	69,070	50,451	50,451	50,451	50,451	115,767	115,278	115,278	115,278	115,278
Tennessee Total		438,930	368,080	334,436	313,994	310,976	576,659	353,145	291,871	235,764	220,543	2,444,222	1,595,825	1,452,359	1,421,428	1,513,126
Texas	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	11,279	11,889	12,303	13,009	14,522	236,223	220,853	216,266	218,785	242,786	67,547	71,359	75,840	81,884	91,779
	avefire	13,201	13,201	13,201	13,201	13,201	4,890	4,890	4,890	4,890	4,890	256,966	256,966	256,966	256,966	256,966
	nonpt	695,600	675,342	669,427	668,063	668,063	274,338	274,244	274,177	274,096	274,096	463,577	455,678	450,036	443,265	443,265
	nonroad	174,723	135,696	120,305	113,364	119,864	152,771	126,111	98,419	70,456	54,433	1,578,739	1,196,045	1,128,017	1,174,843	1,309,218
	onroad	308,904	199,858	154,959	128,066	128,916	621,483	334,266	186,632	116,542	95,623	3,787,848	2,152,885	1,873,424	1,875,580	2,180,504
	ptipm	4,745	4,575	4,771	5,010	5,010	259,612	136,697	135,504	135,714	135,714	215,207	78,627	86,950	86,882	86,882
	ptnonipm	149,554	111,767	111,767	111,767	111,767	344,073	336,557	331,121	331,121	331,121	283,294	281,797	281,797	281,797	281,797
Texas Total		1,358,006	1,152,328	1,086,732	1,052,479	1,061,342	1,893,390	1,433,617	1,247,009	1,151,604	1,138,663	6,653,179	4,493,357	4,153,030	4,201,216	4,650,411

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Tribal Data	alm	218	217	212	206	199	858	672	642	626	626	302	347	376	413	484
	ptipm	241	30	30	24	24	97	232	232	182	182	828	1,171	1,171	918	918
	ptnonipm	601	389	383	382	382	6,623	6,620	6,620	6,620	6,620	2,573	2,573	2,581	2,587	2,587
Tribal Data Total		1,060	636	625	612	605	7,578	7,524	7,494	7,428	7,428	3,703	4,091	4,127	3,918	3,989
Utah	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,596	2,737	2,969	3,276	3,565	14,640	12,158	11,959	12,044	12,307	10,805	11,601	12,705	14,099	15,617
	avefire	15,469	15,469	15,469	15,469	15,469	7,052	7,052	7,052	7,052	7,052	328,713	328,713	328,713	328,713	328,713
	nonpt	54,443	53,042	50,928	50,352	50,352	6,948	6,937	6,929	6,920	6,920	79,323	78,434	77,799	77,036	77,036
	nonroad	25,488	23,357	20,391	17,151	16,833	15,026	13,024	10,343	7,840	6,675	172,729	119,498	113,186	114,711	124,803
	onroad	56,206	39,609	34,748	30,914	28,693	76,518	51,752	35,867	25,070	19,835	764,714	452,333	422,640	423,561	477,048
	ptipm	418	501	600	644	644	73,220	62,979	58,224	59,235	59,235	4,506	5,583	6,340	6,468	6,468
	ptnonipm	5,826	5,070	5,070	5,070	5,070	14,998	14,681	14,531	14,531	14,531	45,052	45,029	45,029	45,029	45,029
Utah Total		160,444	139,784	130,175	122,875	120,626	208,401	168,583	144,906	132,692	126,554	1,405,842	1,041,191	1,006,412	1,009,617	1,074,714
Vermont	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	53	57	61	66	70	49	51	57	64	71	1,220	1,280	1,372	1,469	1,560
	avefire	393	393	393	393	393	179	179	179	179	179	8,347	8,347	8,347	8,347	8,347
	nonpt	18,887	18,265	17,993	17,744	17,744	3,438	3,416	3,400	3,382	3,382	43,091	41,058	39,605	37,862	37,862
	nonroad	10,446	9,755	8,420	6,901	6,524	4,170	3,597	2,898	2,354	2,123	58,906	42,042	38,858	38,196	40,914
	onroad	18,139	11,951	9,772	7,646	6,600	21,783	13,393	8,581	5,448	3,908	237,164	131,797	119,269	119,078	133,225
	ptipm	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ptnonipm	1,097	1,025	1,025	1,025	1,025	790	790	790	790	790	1,078	1,078	1,078	1,078	1,078
Vermont Total		49,015	41,445	37,664	33,774	32,356	30,409	21,427	15,905	12,217	10,453	349,807	225,602	208,529	206,029	222,985

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Virginia	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	3,084	3,198	3,264	3,381	3,605	39,676	36,966	35,646	35,676	38,394	17,758	18,414	19,296	20,457	22,189
	avefire	3,194	3,194	3,194	3,194	3,194	1,456	1,456	1,456	1,456	1,456	67,866	67,866	67,866	67,866	67,866
	nonpt	201,748	190,207	185,542	181,688	181,688	53,605	53,529	53,475	53,409	53,409	208,041	201,223	196,351	190,501	190,501
	nonroad	67,441	50,452	44,451	41,960	44,479	45,848	36,688	28,740	21,036	17,403	520,042	473,574	442,744	463,608	518,461
	onroad	125,474	86,161	72,948	63,234	62,669	214,393	123,035	78,620	53,731	49,108	1,722,600	1,099,794	976,391	954,294	1,121,935
	ptipm	726	536	679	719	719	86,763	69,736	44,145	39,719	39,719	6,714	9,909	11,740	11,202	11,202
	ptnonipm	43,184	36,335	36,335	36,335	36,335	61,730	46,246	46,246	46,246	46,246	63,978	63,557	63,557	63,557	63,557
Virginia Total		444,850	370,082	346,413	330,511	332,689	503,471	367,656	288,327	251,274	245,737	2,606,999	1,934,337	1,777,945	1,771,484	1,995,711
Washington	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,248	2,433	2,548	2,738	3,152	66,992	65,363	65,801	69,264	82,840	20,193	21,483	22,856	24,617	27,397
	avefire	2,674	2,674	2,674	2,674	2,674	1,484	1,484	1,484	1,484	1,484	52,086	52,086	52,086	52,086	52,086
	nonpt	166,658	159,930	154,329	150,839	150,839	16,911	16,812	16,742	16,658	16,658	204,125	196,158	190,466	183,628	183,628
	nonroad	64,611	50,334	43,632	39,373	40,459	42,800	36,553	29,715	22,539	18,753	486,615	359,916	319,178	328,381	363,147
	onroad	159,797	109,815	94,849	81,074	68,508	199,767	123,689	87,124	58,303	38,337	1,820,900	1,174,345	1,016,289	938,502	954,906
	ptipm	219	342	350	349	349	16,122	17,357	17,581	17,552	17,552	1,665	6,954	7,264	7,158	7,158
	ptnonipm	12,429	11,631	11,631	11,631	11,631	24,522	24,522	24,522	24,522	24,522	39,106	39,106	39,106	39,106	39,106
Washington Total		408,636	337,160	310,013	288,679	277,612	368,598	285,781	242,970	210,321	200,146	2,624,689	1,850,047	1,647,245	1,573,478	1,627,429
West Virginia	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,180	1,291	1,333	1,422	1,664	32,148	30,383	30,081	31,151	36,257	5,139	5,692	6,067	6,676	8,049
	avefire	1,721	1,721	1,721	1,721	1,721	785	785	785	785	785	36,578	36,578	36,578	36,578	36,578
	nonpt	59,489	56,958	54,651	54,047	54,047	14,519	14,487	14,464	14,436	14,436	70,069	67,360	65,425	63,103	63,103
	nonroad	16,935	16,469	14,419	11,990	11,889	8,407	6,869	5,665	4,437	3,935	117,839	102,117	87,138	89,867	98,181
	onroad	36,949	21,900	17,904	14,639	12,233	60,216	32,252	19,840	13,006	9,265	502,130	270,712	225,844	210,771	206,623
	ptipm	1,175	1,289	1,328	1,332	1,332	227,827	55,352	50,926	45,760	45,760	10,319	10,228	10,492	10,572	10,572
	ptnonipm	14,241	12,089	12,089	12,089	12,089	46,627	37,778	37,778	37,778	37,778	89,898	89,898	89,898	89,898	89,898
West Virginia Total		131,691	111,717	103,446	97,239	94,975	390,529	177,906	159,538	147,353	148,216	831,973	582,585	521,442	507,465	513,003

State	Sector	[tons/yr] 2002 VOC	[tons/yr] 2009 Base VOC	[tons/yr] 2014 Base VOC	[tons/yr] 2020 Base VOC	[tons/yr] 2030 Base VOC	[tons/yr] 2002 NOX	[tons/yr] 2009 Base NOX	[tons/yr] 2014 Base NOX	[tons/yr] 2020 Base NOX	[tons/yr] 2030 Base NOX	[tons/yr] 2002 CO	[tons/yr] 2009 Base CO	[tons/yr] 2014 Base CO	[tons/yr] 2020 Base CO	[tons/yr] 2030 Base CO
Wisconsin	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	2,060	2,263	2,387	2,558	2,799	30,307	27,468	27,538	28,600	32,248	24,321	25,819	28,228	31,276	34,712
	avefire	561	561	561	561	561	256	256	256	256	256	11,924	11,924	11,924	11,924	11,924
	nonpt	230,068	229,658	228,764	231,695	231,695	21,994	21,984	21,976	21,967	21,967	166,779	162,598	159,612	156,028	156,028
	nonroad	111,779	96,076	81,098	68,764	69,593	53,430	45,761	36,575	28,977	26,142	569,467	416,240	377,144	372,039	409,058
	onroad	96,058	61,689	51,408	43,691	39,473	172,043	103,786	61,755	38,899	30,805	1,321,240	763,639	678,392	689,891	777,211
	ptipm	964	1,085	1,178	1,186	1,186	91,128	53,488	57,160	56,119	56,119	10,725	10,728	11,908	12,152	12,152
	ptnonipm	31,057	26,592	26,592	26,592	26,592	38,283	38,282	38,282	38,282	38,282	34,197	34,197	34,197	34,197	34,197
Wisconsin Total		472,549	417,924	391,988	375,047	371,899	407,440	291,025	243,541	213,100	205,819	2,138,654	1,425,145	1,301,406	1,307,507	1,435,283
Wyoming	afdust	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ag	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	alm	1,569	1,567	1,540	1,503	1,462	30,368	23,784	22,747	22,184	22,173	4,758	5,359	5,787	6,322	7,211
	avefire	8,852	8,852	8,852	8,852	8,852	4,035	4,035	4,035	4,035	4,035	188,099	188,099	188,099	188,099	188,099
	nonpt	16,411	15,646	15,077	14,867	14,867	4,309	4,295	4,285	4,273	4,273	19,192	18,058	17,248	16,276	16,276
	nonroad	9,088	8,874	7,619	6,154	5,774	5,470	4,713	3,958	3,017	2,312	53,551	40,841	36,120	35,787	37,725
	onroad	18,072	11,859	9,726	8,177	7,416	32,643	17,780	10,807	6,983	5,542	246,059	143,301	121,503	116,959	129,138
	ptipm	849	834	892	947	947	85,207	83,587	59,212	60,438	60,438	7,078	6,715	7,202	7,654	7,654
	ptnonipm	16,771	13,552	13,552	13,552	13,552	36,500	36,385	36,385	36,385	36,385	23,341	23,341	23,341	23,341	23,341
Wyoming Total		71,613	61,185	57,257	54,052	52,869	198,533	174,578	141,430	137,316	135,158	542,078	425,714	399,299	394,438	409,445
Grand Total		17,693,869	14,934,802	13,867,583	13,220,304	13,138,328	20,931,673	14,898,719	12,440,017	10,930,663	10,452,858	101,885,285	71,586,336	65,672,193	64,912,870	69,431,177

Table D-1b: Continental US, SO2, NH3, PM10, and PM2.5 emissions by Sector for 2002, and projection years 2009, 2014, 2020, and 2030.

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Alabama	afdust	0	0	0	0	0	0	0	0	0	0	100,288	100,332	100,364	100,402	100,402	33,476	33,491	33,501	33,514	33,514
	ag	0	0	0	0	0	57,802	64,346	69,023	74,633	74,633	0	0	0	0	0	0	0	0	0	0
	alm	4,801	3,667	3,602	4,241	6,220	13	15	16	17	20	2,236	2,248	2,281	2,379	2,663	1,878	1,883	1,896	1,963	2,202
	avefire	983	983	983	983	983	752	752	752	752	752	16,251	16,251	16,251	16,251	16,251	13,938	13,938	13,938	13,938	13,938
	nonpt	52,325	52,318	52,313	52,308	52,308	426	426	426	426	426	27,785	27,295	26,944	26,524	26,524	23,973	23,483	23,133	22,712	22,712
	nonroad	2,734	464	42	45	50	28	31	33	37	41	3,195	2,625	2,144	1,552	1,270	3,044	2,491	2,028	1,460	1,184
	onroad	5,599	729	605	667	745	5,627	6,012	6,512	7,075	7,776	4,223	3,019	2,453	2,298	2,447	3,117	1,943	1,357	1,129	1,142
	ptipm	448,329	269,794	244,393	187,851	187,851	783	882	1,044	1,034	1,034	26,138	16,214	19,576	39,221	39,221	22,612	12,147	15,281	34,364	34,364
	ptnonipm	89,762	88,763	88,763	88,763	88,763	2,224	2,224	2,224	2,224	2,224	19,710	18,644	18,644	18,644	18,644	13,647	13,017	13,017	13,017	13,017
Alabama Total		604,533	416,719	390,702	334,858	336,920	67,655	74,688	80,030	86,198	86,906	199,826	186,627	188,657	207,271	207,422	115,685	102,393	104,151	122,098	122,074
Arizona	afdust	0	0	0	0	0	0	0	0	0	0	121,322	121,322	121,322	121,322	121,322	19,626	19,626	19,626	19,626	19,626
	ag	0	0	0	0	0	29,493	29,674	29,804	29,958	29,958	0	0	0	0	0	0	0	0	0	0
	alm	2,297	713	419	475	531	12	14	15	17	20	2,617	2,572	2,602	2,649	2,688	2,060	2,017	2,036	2,071	2,098
	avefire	2,888	2,888	2,888	2,888	2,888	2,020	2,020	2,020	2,020	2,020	43,005	43,005	43,005	43,005	43,005	37,151	37,151	37,151	37,151	37,151
	nonpt	2,571	2,568	2,567	2,564	2,564	4,391	4,391	4,391	4,391	4,391	12,456	12,253	12,109	11,935	11,935	8,596	8,396	8,253	8,081	8,081
	nonroad	3,858	681	41	43	48	35	40	44	49	57	4,174	3,425	2,855	2,086	1,649	3,993	3,264	2,712	1,967	1,538
	onroad	2,876	862	735	888	1,125	5,150	6,417	7,561	8,994	11,238	4,021	3,441	3,002	3,112	3,839	2,951	2,225	1,656	1,532	1,812
	ptipm	70,709	41,901	40,434	36,801	36,801	566	1,408	1,414	1,529	1,529	9,551	7,943	7,887	8,403	8,403	7,565	5,936	5,897	6,467	6,467
	ptnonipm	21,702	21,702	21,702	21,702	21,702	72	72	72	72	72	5,723	5,574	5,574	5,574	5,574	3,044	2,963	2,963	2,963	2,963
Arizona Total		106,900	71,315	68,786	65,361	65,658	41,740	44,036	45,321	47,030	49,285	202,868	199,535	198,356	198,087	198,416	84,987	81,577	80,294	79,858	79,736

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Arkansas	afdust	0	0	0	0	0	0	0	0	0	0	92,523	92,523	92,523	92,524	92,524	24,639	24,639	24,639	24,639	24,639
	ag	0	0	0	0	0	110,954	118,597	124,059	130,611	130,611	0	0	0	0	0	0	0	0	0	0
	alm	4,648	3,013	2,708	3,067	4,454	19	22	24	26	29	1,348	1,328	1,320	1,340	1,452	1,243	1,225	1,217	1,235	1,339
	avefire	728	728	728	728	728	556	556	556	556	556	12,027	12,027	12,027	12,027	12,027	10,315	10,315	10,315	10,315	10,315
	nonpt	27,260	27,258	27,256	27,254	27,254	7,386	7,386	7,386	7,386	7,386	24,094	23,911	23,780	23,622	23,622	23,062	22,878	22,747	22,590	22,590
	nonroad	2,762	468	33	35	38	23	26	28	31	35	3,229	2,517	1,951	1,314	890	3,097	2,403	1,858	1,246	834
	onroad	3,078	405	346	387	463	3,001	3,231	3,526	3,871	4,529	2,202	1,613	1,338	1,280	1,463	1,612	1,034	739	631	684
	ptipm	70,754	97,797	39,079	39,582	39,582	346	622	858	843	843	2,004	4,182	5,463	5,820	5,820	1,750	3,413	4,656	4,995	4,995
	ptnonipm	19,032	18,999	18,999	18,999	18,999	1,255	1,290	1,316	1,346	1,346	14,101	13,812	13,812	13,812	13,812	9,593	9,473	9,473	9,473	9,473
Arkansas Total		128,262	148,667	89,149	90,050	91,517	123,540	131,731	137,754	144,672	145,337	151,529	151,915	152,215	151,740	151,611	75,312	75,381	75,645	75,125	74,870
California	afdust	0	0	0	0	0	0	0	0	0	0	196,231	196,525	196,736	196,989	196,989	47,562	47,615	47,653	47,698	47,698
	ag	0	0	0	0	0	152,308	156,311	159,176	162,610	162,610	0	0	0	0	0	0	0	0	0	0
	alm	40,887	27,491	19,337	14,863	21,107	180	193	203	215	237	10,124	9,970	9,726	9,692	10,788	9,534	9,381	9,148	9,113	10,148
	avefire	6,735	6,735	6,735	6,735	6,735	5,117	5,117	5,117	5,117	5,117	113,231	113,231	113,231	113,231	113,231	97,301	97,301	97,301	97,301	97,301
	nonpt	77,672	77,641	77,619	77,592	77,592	14,758	14,665	14,600	14,520	14,520	90,509	88,498	87,062	85,338	85,338	73,873	71,938	70,555	68,896	68,896
	nonroad	1,015	455	516	597	790	161	181	198	220	255	18,590	16,219	14,290	12,637	15,177	16,334	13,989	12,025	10,216	11,712
	onroad	4,786	1,855	2,002	2,189	2,502	37,468	27,409	22,337	19,206	17,590	23,103	23,613	22,170	21,262	22,604	12,395	12,463	11,365	10,559	11,026
	ptipm	1,018	6,577	6,259	6,204	6,204	1,380	3,307	4,213	5,522	5,522	1,905	469	512	574	574	1,876	348	374	412	412
	ptnonipm	41,761	41,477	41,089	41,128	41,128	3,367	3,367	3,367	3,367	3,367	26,854	25,998	25,998	25,998	25,998	16,655	16,284	16,284	16,284	16,284
California Total		173,874	162,231	153,557	149,308	156,058	214,738	210,550	209,211	210,777	209,217	480,546	474,524	469,725	465,721	470,699	275,530	269,318	264,705	260,479	263,477
Colorado	afdust	0	0	0	0	0	0	0	0	0	0	110,878	110,878	110,878	110,878	110,878	25,559	25,559	25,559	25,559	25,559
	ag	0	0	0	0	0	62,907	63,846	64,517	65,320	65,320	0	0	0	0	0	0	0	0	0	0
	alm	1,224	315	137	156	175	5	5	6	6	8	606	595	590	590	582	553	539	531	526	514
	avefire	1,719	1,719	1,719	1,719	1,719	1,299	1,299	1,299	1,299	1,299	28,019	28,019	28,019	28,019	28,019	24,054	24,054	24,054	24,054	24,054
	nonpt	6,460	6,459	6,458	6,457	6,457	71	71	71	71	71	15,059	14,719	14,475	14,183	14,183	13,545	13,204	12,961	12,669	12,669
	nonroad	3,545	611	43	45	50	31	36	39	44	50	3,909	3,163	2,602	1,901	1,452	3,746	3,018	2,474	1,796	1,356
	onroad	4,146	614	550	645	816	4,408	5,220	6,002	6,976	8,754	3,216	2,518	2,179	2,191	2,665	2,357	1,600	1,189	1,069	1,241
	ptipm	92,562	73,481	55,605	49,733	49,733	453	529	582	535	535	5,446	5,502	5,712	7,003	7,003	4,444	4,713	4,932	6,018	6,018
	ptnonipm	5,331	5,322	5,322	5,322	5,322	86	86	86	86	86	17,366	16,676	16,677	16,679	16,679	8,922	8,527	8,528	8,529	8,529
Colorado Total		114,989	88,522	69,834	64,078	64,274	69,260	71,091	72,603	74,337	76,123	184,499	182,071	181,134	181,445	181,461	83,181	81,213	80,226	80,219	79,940

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Connecticut	afdust	0	0	0	0	0	0	0	0	0	0	12,528	12,528	12,528	12,528	12,528	2,725	2,725	2,725	2,725	2,725
	ag	0	0	0	0	0	4,029	4,232	4,377	4,551	4,551	0	0	0	0	0	0	0	0	0	0
	alm	778	751	764	874	1,268	1	1	1	1	1	231	237	241	253	301	210	215	218	227	271
	avefire	4	4	4	4	4	3	3	3	3	3	65	65	65	65	65	56	56	56	56	56
	nonpt	18,455	18,447	18,441	18,434	18,434	1,438	1,407	1,385	1,358	1,358	10,716	10,152	9,749	9,266	9,266	10,446	9,882	9,479	8,996	8,996
	nonroad	1,382	249	27	29	33	17	18	20	22	25	1,702	1,408	1,195	933	823	1,619	1,335	1,130	876	766
	onroad	1,667	363	340	368	413	3,257	3,515	3,779	4,042	4,510	1,610	1,316	1,182	1,165	1,276	1,067	766	610	557	592
	ptipm	13,689	6,200	5,795	12,473	12,473	182	245	247	244	244	742	829	3,992	11,942	11,942	510	791	3,891	11,696	11,696
	ptnonipm	2,338	2,330	2,330	2,330	2,330	91	91	91	91	91	882	880	880	880	880	691	690	690	690	690
Connecticut Total		38,313	28,343	27,701	34,512	34,955	9,017	9,512	9,902	10,311	10,783	28,476	27,415	29,833	37,032	37,081	17,323	16,460	18,798	25,823	25,792
Delaware	afdust	0	0	0	0	0	0	0	0	0	0	6,258	6,258	6,258	6,258	6,258	863	863	863	863	863
	ag	0	0	0	0	0	12,536	14,172	15,342	16,745	16,745	0	0	0	0	0	0	0	0	0	0
	alm	3,470	3,243	3,234	3,664	5,371	0	0	0	0	1	452	511	561	655	907	401	454	499	583	810
	avefire	6	6	6	6	6	5	5	5	5	5	102	102	102	102	102	87	87	87	87	87
	nonpt	5,859	5,858	5,857	5,857	5,857	279	275	272	268	268	2,007	1,933	1,879	1,815	1,815	1,826	1,751	1,698	1,634	1,634
	nonroad	471	83	7	8	9	5	6	6	7	8	560	446	367	275	224	534	424	348	259	209
	onroad	556	114	101	112	124	903	994	1,078	1,178	1,294	572	417	359	355	383	406	253	188	171	178
	ptipm	33,104	23,047	21,650	20,757	20,757	30	119	148	132	132	1,969	6,352	6,466	6,610	6,610	1,693	3,083	3,217	3,421	3,421
	ptnonipm	41,342	11,538	11,538	11,538	11,538	161	152	152	152	152	1,041	904	904	904	904	783	576	576	576	576
Delaware Total		84,810	43,889	42,394	41,941	43,662	13,918	15,722	17,003	18,487	18,604	12,961	16,923	16,896	16,974	17,203	6,594	7,492	7,478	7,596	7,779
District of Columbia	afdust	0	0	0	0	0	0	0	0	0	0	2,255	2,255	2,255	2,255	2,255	411	411	411	411	411
	alm	45	9	2	2	3	0	0	0	0	0	13	11	11	11	10	13	11	11	10	10
	avefire	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	nonpt	1,559	1,559	1,559	1,559	1,559	13	13	13	13	13	489	481	476	469	469	427	419	413	406	406
	nonroad	343	59	3	3	3	2	3	3	3	4	298	226	176	109	64	288	218	170	104	60
	onroad	271	46	42	47	52	398	423	457	508	567	219	155	141	144	158	150	88	72	68	74
	ptipm	1,432	0	0	0	0	8	0	0	0	0	30	0	0	0	0	22	0	0	0	0
	ptnonipm	625	625	625	625	625	4	4	4	4	4	98	21	21	21	21	43	12	12	12	12
District of Columbia Total		4,275	2,299	2,230	2,236	2,242	426	443	477	529	589	3,402	3,149	3,080	3,008	2,977	1,353	1,159	1,088	1,011	973

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Florida	afdust	0	0	0	0	0	0	0	0	0	0	145,566	145,655	145,718	145,794	145,794	28,017	28,035	28,047	28,063	28,063
	ag	0	0	0	0	0	37,099	38,583	39,643	40,914	40,914	0	0	0	0	0	0	0	0	0	0
	alm	6,892	5,893	5,843	6,685	9,612	11	12	12	13	15	2,391	2,426	2,469	2,575	2,936	2,175	2,199	2,223	2,307	2,636
	avefire	7,018	7,018	7,018	7,018	7,018	5,366	5,366	5,366	5,366	5,366	115,996	115,996	115,996	115,996	115,996	99,484	99,484	99,484	99,484	99,484
	nonpt	70,489	70,484	70,480	70,475	70,475	448	448	448	448	448	41,371	40,935	40,623	40,248	40,248	38,847	38,410	38,098	37,724	37,724
	nonroad	12,540	2,110	174	184	207	125	139	151	166	192	13,637	10,831	8,952	6,680	5,412	13,001	10,302	8,489	6,287	5,040
	onroad	21,410	2,358	2,152	2,477	2,886	18,267	21,200	23,969	27,284	31,607	12,433	9,367	8,217	8,251	9,258	9,041	5,803	4,407	4,006	4,316
	ptipm	473,636	155,118	154,529	92,816	92,816	5,013	3,571	4,445	4,318	4,318	32,299	22,325	22,166	29,274	29,274	28,293	14,447	14,405	20,220	20,220
	ptnonipm	57,060	57,024	57,024	57,024	57,024	3,030	3,030	3,030	3,030	3,030	32,193	31,655	31,655	31,655	31,655	23,604	23,430	23,430	23,430	23,430
Florida Total		649,045	300,004	297,220	236,679	240,037	69,359	72,348	77,064	81,539	85,889	395,887	379,190	375,795	380,473	380,573	242,462	222,108	218,584	221,520	220,912
Georgia	afdust	0	0	0	0	0	0	0	0	0	0	181,397	181,397	181,397	181,397	181,397	59,910	59,910	59,910	59,910	59,910
	ag	0	0	0	0	0	80,733	89,607	95,949	103,556	103,556	0	0	0	0	0	0	0	0	0	0
	alm	3,247	1,969	1,807	2,101	2,860	12	13	14	16	18	1,332	1,320	1,327	1,363	1,457	1,135	1,122	1,120	1,142	1,218
	avefire	2,010	2,010	2,010	2,010	2,010	1,299	1,299	1,299	1,299	1,299	28,079	28,079	28,079	28,079	28,079	24,082	24,082	24,082	24,082	24,082
	nonpt	56,830	56,821	56,815	56,807	56,807	60	60	60	60	60	46,751	46,054	45,556	44,958	44,958	41,847	41,150	40,652	40,054	40,054
	nonroad	5,674	975	76	80	90	52	59	64	71	82	6,136	5,022	4,150	3,021	2,412	5,867	4,783	3,940	2,847	2,250
	onroad	11,238	1,525	1,308	1,503	1,809	10,642	12,213	13,708	15,548	18,473	8,539	6,232	5,184	5,043	5,785	6,366	4,025	2,868	2,477	2,699
	ptipm	512,983	212,600	210,100	146,083	146,083	593	840	989	971	971	31,663	24,007	23,976	35,951	35,951	25,407	17,485	17,485	29,266	29,266
	ptnonipm	56,203	56,188	56,188	56,188	56,188	4,571	4,581	4,588	4,597	4,597	21,224	20,585	20,585	20,585	20,585	15,692	15,426	15,426	15,426	15,426
Georgia Total		648,183	332,087	328,304	264,772	265,847	97,962	108,672	116,673	126,119	129,057	325,121	312,696	310,254	320,398	320,626	180,308	167,984	165,482	175,206	174,907
Idaho	afdust	0	0	0	0	0	0	0	0	0	0	139,528	139,669	139,770	139,891	139,891	28,351	28,376	28,393	28,414	28,414
	ag	0	0	0	0	0	62,376	62,655	62,855	63,094	63,094	0	0	0	0	0	0	0	0	0	0
	alm	645	168	70	74	81	3	4	4	4	5	471	453	449	449	445	447	427	421	419	413
	avefire	3,845	3,845	3,845	3,845	3,845	2,856	2,856	2,856	2,856	2,856	61,433	61,433	61,433	61,433	61,433	52,808	52,808	52,808	52,808	52,808
	nonpt	2,915	2,913	2,912	2,910	2,910	1,684	1,684	1,684	1,684	1,684	56,403	56,235	56,116	55,972	55,972	27,367	27,199	27,080	26,936	26,936
	nonroad	1,616	275	19	20	22	14	16	18	20	22	1,973	1,582	1,253	871	600	1,889	1,506	1,189	823	560
	onroad	1,310	205	179	203	246	1,418	1,645	1,853	2,083	2,514	1,068	821	691	669	772	785	527	380	328	360
	ptipm	0	0	192	308	308	0	43	47	49	49	1	2	146	242	242	1	1	128	214	214
	ptnonipm	17,597	17,597	17,597	17,597	17,597	1,074	1,074	1,074	1,074	1,074	4,569	4,409	4,409	4,409	4,409	2,528	2,441	2,441	2,441	2,441
Idaho Total		27,928	25,003	24,815	24,958	25,009	69,425	69,977	70,390	70,864	71,298	265,445	264,604	264,267	263,935	263,763	114,175	113,286	112,841	112,383	112,147

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Illinois	afdust	0	0	0	0	0	0	0	0	0	0	444,909	444,909	444,909	444,909	444,909	88,100	88,100	88,100	88,100	88,100
	ag	0	0	0	0	0	106,685	108,164	109,220	110,486	110,486	0	0	0	0	0	0	0	0	0	0
	alm	11,979	7,122	6,358	7,425	10,872	45	52	56	62	72	3,556	3,431	3,343	3,329	3,561	3,351	3,231	3,144	3,125	3,340
	avefire	20	20	20	20	20	15	15	15	15	15	323	323	323	323	323	277	277	277	277	277
	nonpt	5,395	5,387	5,382	5,376	5,376	1,631	1,631	1,631	1,631	1,631	16,972	16,262	15,755	15,147	15,147	15,181	14,471	13,964	13,356	13,356
	nonroad	10,913	1,933	126	132	148	88	102	112	124	145	11,316	8,576	6,671	4,450	3,103	10,881	8,220	6,375	4,224	2,912
	onroad	8,514	1,449	1,220	1,373	1,607	10,654	11,429	12,465	13,748	15,809	7,772	5,916	4,888	4,615	5,125	5,700	3,849	2,751	2,291	2,410
	ptipm	366,157	294,394	270,363	272,107	272,107	174	962	1,095	1,149	1,149	19,147	13,378	14,852	37,527	37,527	14,783	11,017	12,328	34,584	34,584
	ptnonipm	138,126	110,325	110,401	110,500	110,500	694	683	683	683	683	30,111	28,118	28,118	28,118	28,118	15,136	13,619	13,619	13,619	13,619
Illinois Total		541,103	420,630	393,869	396,933	400,630	119,986	123,039	125,276	127,898	129,989	534,106	520,913	518,859	538,417	537,812	153,409	142,786	140,559	159,578	158,599
Indiana	afdust	0	0	0	0	0	0	0	0	0	0	345,635	345,635	345,635	345,635	345,635	65,707	65,707	65,707	65,707	65,707
	ag	0	0	0	0	0	90,815	93,856	96,027	98,632	98,632	0	0	0	0	0	0	0	0	0	0
	alm	5,540	3,649	3,419	4,024	5,873	19	22	24	26	31	1,719	1,710	1,707	1,746	1,909	1,561	1,552	1,544	1,576	1,727
	avefire	24	24	24	24	24	19	19	19	19	19	401	401	401	401	401	344	344	344	344	344
	nonpt	59,775	59,770	59,765	59,760	59,760	4,214	4,214	4,214	4,214	4,214	60,255	59,765	59,414	58,994	58,994	32,611	32,120	31,770	31,350	31,350
	nonroad	5,981	1,042	73	77	86	48	55	60	67	78	6,039	4,593	3,562	2,367	1,691	5,803	4,398	3,401	2,246	1,588
	onroad	8,564	974	811	914	1,087	7,343	7,896	8,618	9,482	10,975	5,518	4,064	3,353	3,195	3,622	4,081	2,633	1,872	1,581	1,693
	ptipm	785,603	377,625	375,790	336,644	336,644	580	1,076	1,132	1,198	1,198	40,884	40,455	40,305	44,864	44,864	33,805	27,477	27,287	31,624	31,624
	ptnonipm	97,442	97,349	97,349	97,349	97,349	3,144	3,144	3,144	3,144	3,144	25,808	25,083	25,083	25,083	25,083	15,085	14,751	14,751	14,751	14,751
Indiana Total		962,930	540,433	537,231	498,791	500,823	106,183	110,283	113,238	116,784	118,291	486,257	481,705	479,460	482,284	482,198	158,996	148,983	146,677	149,179	148,783
Iowa	afdust	0	0	0	0	0	0	0	0	0	0	341,542	341,542	341,542	341,542	341,542	57,643	57,643	57,643	57,643	57,643
	ag	0	0	0	0	0	245,778	252,909	257,995	264,101	264,101	0	0	0	0	0	0	0	0	0	0
	alm	2,787	1,161	860	1,007	1,454	8	10	10	11	13	1,021	986	961	949	961	997	961	934	919	926
	avefire	25	25	25	25	25	19	19	19	19	19	407	407	407	407	407	349	349	349	349	349
	nonpt	19,832	19,824	19,818	19,811	19,811	7,404	7,404	7,404	7,404	7,404	12,833	12,192	11,734	11,185	11,185	11,476	10,835	10,378	9,828	9,828
	nonroad	6,248	1,063	59	61	66	47	53	58	64	74	7,210	5,048	3,805	2,539	1,419	6,949	4,859	3,654	2,427	1,340
	onroad	2,999	427	360	404	496	3,091	3,367	3,659	4,002	4,781	2,355	1,771	1,450	1,365	1,585	1,726	1,153	815	677	741
	ptipm	133,047	110,609	115,301	116,360	116,360	391	428	483	519	519	9,907	7,681	8,074	8,386	8,386	8,904	5,985	6,288	6,513	6,513
	ptnonipm	51,329	51,329	51,329	51,329	51,329	4,663	4,663	4,663	4,663	4,663	13,439	11,162	11,162	11,162	11,162	7,572	6,395	6,395	6,395	6,395
Iowa Total		216,267	184,437	187,751	188,996	189,540	261,401	268,852	274,292	280,784	281,574	388,712	380,789	379,135	377,535	376,647	95,615	88,180	86,455	84,751	83,736

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Kansas	afdust	0	0	0	0	0	0	0	0	0	0	455,984	455,984	455,984	455,984	455,984	74,515	74,515	74,515	74,515	74,515
	ag	0	0	0	0	0	97,384	97,802	98,101	98,458	98,458	0	0	0	0	0	0	0	0	0	0
	alm	2,895	603	131	152	194	11	12	13	15	17	1,237	1,185	1,152	1,127	1,087	1,207	1,155	1,120	1,093	1,051
	avefire	103	103	103	103	103	79	79	79	79	79	1,711	1,711	1,711	1,711	1,711	1,468	1,468	1,468	1,468	1,468
	nonpt	36,381	36,378	36,375	36,373	36,373	12,467	12,467	12,467	12,467	12,467	108,571	108,281	108,075	107,826	107,826	83,174	82,885	82,678	82,430	82,430
	nonroad	4,858	828	41	42	46	32	37	41	46	53	5,360	3,794	2,817	1,838	972	5,179	3,660	2,712	1,764	922
	onroad	2,893	379	312	348	431	2,870	3,081	3,343	3,657	4,421	2,200	1,576	1,279	1,206	1,427	1,629	1,019	710	594	665
	ptipm	129,827	77,367	48,068	52,641	52,641	421	377	393	454	454	7,246	7,037	7,178	7,749	7,749	5,912	5,723	5,953	6,244	6,244
	ptnonipm	10,793	10,793	10,793	10,793	10,793	60,100	60,994	61,633	62,398	62,398	9,430	8,890	8,890	8,890	8,890	4,941	4,718	4,718	4,718	4,718
Kansas Total		187,750	126,450	95,823	100,452	100,580	173,364	174,849	176,070	177,574	178,347	591,738	588,460	587,087	586,333	585,647	178,025	175,143	173,874	172,825	172,013
Kentucky	afdust	0	0	0	0	0	0	0	0	0	0	99,481	99,481	99,481	99,481	99,481	23,529	23,529	23,529	23,529	23,529
	ag	0	0	0	0	0	50,821	53,024	54,598	56,486	56,486	0	0	0	0	0	0	0	0	0	0
	alm	10,096	8,624	8,713	10,226	14,957	15	17	18	19	22	4,285	4,409	4,627	5,007	5,730	3,625	3,710	3,850	4,123	4,723
	avefire	364	364	364	364	364	278	278	278	278	278	6,010	6,010	6,010	6,010	6,010	5,155	5,155	5,155	5,155	5,155
	nonpt	34,229	34,219	34,211	34,203	34,203	231	231	231	231	231	23,283	22,460	21,872	21,167	21,167	18,590	17,767	17,180	16,474	16,474
	nonroad	3,008	511	38	40	44	25	29	32	35	40	3,376	2,667	2,108	1,452	1,052	3,236	2,547	2,008	1,377	987
	onroad	5,554	657	529	587	662	4,824	5,161	5,604	6,121	6,776	3,816	2,731	2,200	2,048	2,204	2,842	1,776	1,225	1,004	1,027
	ptipm	486,499	291,244	244,599	223,737	223,737	919	703	741	784	784	22,342	24,029	25,780	37,131	37,131	20,004	17,733	19,050	30,135	30,135
	ptnonipm	34,482	28,587	28,587	28,587	28,587	1,672	1,672	1,672	1,672	1,672	16,375	15,729	15,729	15,729	15,729	9,937	9,566	9,566	9,566	9,566
Kentucky Total		574,230	364,205	317,041	297,744	302,553	58,787	61,115	63,174	65,626	66,289	178,967	177,516	177,807	188,025	188,503	86,919	81,783	81,563	91,364	91,597
Louisiana	afdust	0	0	0	0	0	0	0	0	0	0	81,493	81,493	81,493	81,493	81,493	20,962	20,962	20,962	20,962	20,962
	ag	0	0	0	0	0	35,159	36,915	38,171	39,676	39,676	0	0	0	0	0	0	0	0	0	0
	alm	32,796	30,726	31,131	35,876	52,721	42	46	48	51	56	7,000	7,145	7,072	7,302	9,023	6,819	6,932	6,827	7,007	8,606
	avefire	892	892	892	892	892	682	682	682	682	682	14,746	14,746	14,746	14,746	14,746	12,647	12,647	12,647	12,647	12,647
	nonpt	2,378	2,374	2,372	2,370	2,370	23,169	23,169	23,169	23,169	23,169	19,038	18,790	18,612	18,399	18,399	17,862	17,614	17,436	17,223	17,223
	nonroad	2,834	473	42	45	49	29	32	34	37	42	3,331	2,634	2,091	1,476	1,138	3,174	2,500	1,980	1,390	1,061
	onroad	4,409	566	469	526	642	4,364	4,631	5,037	5,547	6,620	3,379	2,355	1,912	1,819	2,125	2,506	1,520	1,058	894	990
	ptipm	108,106	89,892	86,289	87,803	87,803	1,399	690	821	960	960	7,487	3,828	3,905	4,612	4,612	5,990	3,292	3,370	4,021	4,021
	ptnonipm	177,507	177,507	177,507	177,507	177,507	7,878	7,879	7,880	7,881	7,881	28,722	28,429	28,429	28,429	28,429	21,082	20,899	20,899	20,899	20,899
Louisiana Total		328,922	302,432	298,703	305,018	321,985	72,722	74,044	75,843	78,004	79,087	165,196	159,421	158,260	158,276	159,965	91,043	86,365	85,179	85,042	86,409

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Maine	afdust	0	0	0	0	0	0	0	0	0	0	13,067	13,067	13,067	13,067	13,067	4,134	4,134	4,134	4,134	4,134
	ag	0	0	0	0	0	6,154	6,540	6,816	7,147	7,147	0	0	0	0	0	0	0	0	0	0
	alm	195	155	131	126	178	1	1	1	1	1	455	494	524	585	772	405	441	467	522	694
	avefire	150	150	150	150	150	115	115	115	115	115	2,480	2,480	2,480	2,480	2,480	2,127	2,127	2,127	2,127	2,127
	nonpt	9,969	9,956	9,947	9,936	9,936	1,616	1,566	1,530	1,486	1,486	13,876	12,996	12,368	11,613	11,613	13,726	12,846	12,218	11,463	11,463
	nonroad	766	132	18	19	21	11	13	14	15	17	1,200	1,117	960	741	632	1,131	1,047	897	690	585
	onroad	1,122	198	160	176	196	1,467	1,574	1,700	1,841	2,024	1,178	834	667	622	660	876	544	372	306	307
	ptipm	2,137	34,757	33,238	21,911	21,911	129	381	328	180	180	86	454	432	299	299	65	415	394	266	266
	ptnonipm	20,778	19,390	19,390	19,390	19,390	809	343	343	343	343	5,963	5,243	5,243	5,243	5,243	4,268	3,750	3,750	3,750	3,750
Maine Total		35,116	64,738	63,033	51,708	51,783	10,302	10,533	10,847	11,129	11,313	38,304	36,685	35,740	34,649	34,766	26,732	25,304	24,359	23,259	23,327
Maryland	afdust	0	0	0	0	0	0	0	0	0	0	35,393	35,393	35,393	35,393	35,393	7,393	7,393	7,393	7,393	7,393
	ag	0	0	0	0	0	24,562	26,618	28,088	29,851	29,851	0	0	0	0	0	0	0	0	0	0
	alm	5,707	4,007	3,140	2,825	3,921	22	24	25	27	30	1,635	1,594	1,609	1,645	1,735	496	495	507	539	621
	avefire	32	32	32	32	32	24	24	24	24	24	613	613	613	613	613	531	531	531	531	531
	nonpt	40,864	40,857	40,852	40,846	40,846	606	579	559	535	535	25,058	24,553	24,191	23,757	23,757	19,764	19,258	18,897	18,463	18,463
	nonroad	2,577	452	41	43	49	28	31	34	38	43	3,102	2,537	2,150	1,677	1,440	2,954	2,408	2,033	1,575	1,340
	onroad	3,966	681	632	709	822	5,594	6,280	6,909	7,634	8,764	3,162	2,506	2,245	2,263	2,571	2,194	1,496	1,175	1,091	1,200
	ptipm	256,761	50,757	47,642	53,433	53,433	271	409	460	495	495	17,996	6,995	16,915	23,811	23,811	15,722	5,312	14,953	21,591	21,591
	ptnonipm	34,255	34,061	34,061	34,061	34,061	222	222	222	222	222	6,303	5,477	5,477	5,477	5,477	3,759	3,332	3,332	3,332	3,332
Maryland Total		344,162	130,846	126,399	131,949	133,164	31,330	34,187	36,322	38,826	39,965	93,261	79,668	88,593	94,638	94,798	52,813	40,225	48,821	54,515	54,470
Massachusetts	afdust	0	0	0	0	0	0	0	0	0	0	49,646	49,646	49,646	49,646	49,646	14,810	14,810	14,810	14,810	14,810
	ag	0	0	0	0	0	2,208	2,244	2,269	2,299	2,299	0	0	0	0	0	0	0	0	0	0
	alm	2,519	1,819	1,681	1,835	2,503	7	8	9	10	11	988	993	1,005	1,033	1,132	874	876	886	912	1,003
	avefire	93	93	93	93	93	71	71	71	71	71	1,544	1,544	1,544	1,544	1,544	1,324	1,324	1,324	1,324	1,324
	nonpt	25,261	25,248	25,239	25,228	25,228	4,070	4,021	3,986	3,944	3,944	28,552	27,661	27,025	26,261	26,261	26,536	25,646	25,010	24,246	24,246
	nonroad	2,385	429	46	49	55	28	31	34	37	43	2,871	2,373	2,005	1,541	1,330	2,732	2,252	1,896	1,448	1,240
	onroad	3,172	678	593	658	755	5,509	6,023	6,562	7,185	8,201	3,253	2,460	2,187	2,205	2,467	2,268	1,460	1,136	1,061	1,147
	ptipm	91,888	12,991	10,825	22,019	22,019	1,103	737	674	601	601	3,730	2,349	7,323	20,948	20,948	3,224	1,734	6,724	20,104	20,104
	ptnonipm	14,079	13,814	13,814	13,814	13,814	403	401	401	401	401	2,795	2,705	2,705	2,705	2,705	1,842	1,794	1,794	1,794	1,794
Massachusetts Total		139,397	55,073	52,291	63,696	64,468	13,401	13,537	14,006	14,548	15,571	93,379	89,732	93,440	105,884	106,033	53,610	49,896	53,581	65,699	65,667

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Michigan	afdust	0	0	0	0	0	0	0	0	0	0	208,843	208,843	208,843	208,843	208,843	40,894	40,894	40,894	40,894	40,894
	ag	0	0	0	0	0	55,273	56,151	56,778	57,531	57,531	0	0	0	0	0	0	0	0	0	0
	alm	14,466	15,415	17,203	21,207	31,136	5	6	6	6	7	2,637	3,000	3,337	3,929	5,386	2,389	2,711	3,009	3,537	4,848
	avefire	91	91	91	91	91	69	69	69	69	69	1,495	1,495	1,495	1,495	1,495	1,283	1,283	1,283	1,283	1,283
	nonpt	42,066	42,066	42,066	42,066	42,066	429	429	429	429	429	30,989	30,209	29,653	28,985	28,985	24,216	23,295	22,638	21,849	21,849
	nonroad	6,367	1,063	117	125	140	78	88	94	102	117	8,199	6,935	5,650	4,058	3,298	7,782	6,554	5,326	3,803	3,068
	onroad	13,508	1,362	1,106	1,226	1,404	9,813	10,307	11,090	12,003	13,412	7,881	5,651	4,538	4,220	4,579	5,894	3,714	2,569	2,108	2,154
	ptipm	348,377	228,218	245,203	243,651	243,651	286	771	947	1,122	1,122	13,170	12,070	12,685	12,451	12,451	10,648	8,179	8,739	8,620	8,620
	ptnonipm	72,631	71,976	71,976	71,976	71,976	952	946	946	946	946	17,151	15,417	15,417	15,417	15,417	10,346	9,326	9,326	9,326	9,326
Michigan Total		497,505	360,190	377,761	380,341	390,463	66,906	68,767	70,360	72,209	73,633	290,363	283,621	281,619	279,398	280,454	103,451	95,954	93,782	91,419	92,042
Minnesota	afdust	0	0	0	0	0	0	0	0	0	0	432,054	432,054	432,054	432,054	432,054	79,303	79,303	79,303	79,303	79,303
	ag	0	0	0	0	0	134,830	136,892	138,364	140,130	140,130	0	0	0	0	0	0	0	0	0	0
	alm	6,592	5,024	4,826	5,562	8,164	12	14	15	16	18	1,665	1,655	1,619	1,633	1,869	1,643	1,627	1,587	1,594	1,812
	avefire	631	631	631	631	631	482	482	482	482	482	10,427	10,427	10,427	10,427	10,427	8,943	8,943	8,943	8,943	8,943
	nonpt	14,747	14,737	14,730	14,721	14,721	1,226	1,226	1,226	1,226	1,226	26,968	26,093	25,468	24,718	24,718	24,496	23,621	22,996	22,245	22,245
	nonroad	6,525	1,138	84	88	97	59	68	74	82	93	8,097	6,277	4,957	3,540	2,319	7,759	5,990	4,716	3,348	2,171
	onroad	2,816	729	618	688	779	5,362	5,827	6,356	6,992	7,902	3,790	2,972	2,427	2,282	2,451	2,740	1,920	1,347	1,122	1,143
	ptipm	102,152	57,217	60,954	64,060	64,060	69	345	720	770	770	7,437	11,798	12,544	13,093	13,093	234	9,113	9,811	10,230	10,230
	ptnonipm	27,263	23,844	23,866	23,895	23,895	27,525	28,560	29,298	30,186	30,186	22,425	20,345	20,357	20,370	20,370	4,097	3,924	3,933	3,942	3,942
Minnesota Total		160,725	103,320	105,707	109,644	112,346	169,566	173,414	176,535	179,883	180,807	512,863	511,620	509,853	508,117	507,301	129,215	134,440	132,636	130,728	129,790
Mississippi	afdust	0	0	0	0	0	0	0	0	0	0	139,219	139,251	139,274	139,302	139,302	38,120	38,130	38,137	38,146	38,146
	ag	0	0	0	0	0	58,575	63,939	67,773	72,371	72,371	0	0	0	0	0	0	0	0	0	0
	alm	9,163	8,214	8,487	10,082	14,822	18	20	21	22	25	3,057	3,085	3,091	3,203	3,736	2,668	2,689	2,680	2,764	3,235
	avefire	1,051	1,051	1,051	1,051	1,051	804	804	804	804	804	17,370	17,370	17,370	17,370	17,370	14,897	14,897	14,897	14,897	14,897
	nonpt	6,796	6,790	6,786	6,781	6,781	196	196	196	196	196	17,827	17,289	16,904	16,443	16,443	16,769	16,232	15,847	15,386	15,386
	nonroad	2,119	356	29	30	33	19	22	23	25	29	2,479	1,959	1,537	1,055	777	2,370	1,864	1,459	996	726
	onroad	3,591	501	382	429	505	3,606	3,866	4,190	4,584	5,203	3,058	2,281	1,817	1,695	1,915	2,309	1,527	1,044	854	907
	ptipm	67,593	51,938	50,434	56,664	56,664	456	327	513	497	497	3,122	2,777	3,378	10,168	10,168	2,625	1,860	2,475	9,133	9,133
	ptnonipm	36,519	29,914	29,914	29,914	29,914	1,414	852	852	852	852	19,535	18,524	18,524	18,524	18,524	10,019	9,307	9,307	9,307	9,307
Mississippi Total		126,831	98,763	97,082	104,951	109,771	65,088	70,024	74,371	79,351	79,976	205,667	202,537	201,896	207,760	208,235	89,778	86,507	85,847	91,483	91,739

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Missouri	afdust	0	0	0	0	0	0	0	0	0	0	458,324	458,324	458,324	458,324	458,324	96,070	96,070	96,070	96,070	96,070
	ag	0	0	0	0	0	107,023	108,403	109,390	110,571	110,571	0	0	0	0	0	0	0	0	0	0
	alm	8,610	5,550	5,106	5,930	8,593	19	22	23	25	29	2,548	2,514	2,491	2,531	2,769	2,489	2,448	2,419	2,448	2,664
	avefire	186	186	186	186	186	142	142	142	142	142	3,074	3,074	3,074	3,074	3,074	2,636	2,636	2,636	2,636	2,636
	nonpt	44,573	44,557	44,545	44,531	44,531	3,830	3,830	3,830	3,830	3,830	32,399	31,072	30,123	28,985	28,985	28,217	26,890	25,941	24,803	24,803
	nonroad	5,143	885	61	65	72	43	49	54	59	68	5,929	4,506	3,519	2,444	1,671	5,690	4,311	3,357	2,320	1,567
	onroad	6,148	947	797	889	1,059	6,918	7,468	8,133	8,903	10,427	5,199	3,836	3,144	2,975	3,367	3,819	2,479	1,750	1,470	1,574
	ptipm	249,942	235,578	231,753	241,550	241,550	705	743	806	814	814	8,868	11,539	11,541	12,431	12,431	5,818	9,222	9,174	10,080	10,080
	ptnonipm	111,547	110,331	110,331	110,331	110,331	322	322	322	322	322	14,083	13,678	13,678	13,678	13,678	7,424	7,084	7,084	7,084	7,084
Missouri Total		426,149	398,034	392,779	403,482	406,322	119,002	120,978	122,699	124,666	126,203	530,423	528,542	525,895	524,442	524,298	152,163	151,141	148,432	146,911	146,480
Montana	afdust	0	0	0	0	0	0	0	0	0	0	188,368	188,368	188,368	188,368	188,368	40,180	40,180	40,180	40,180	40,180
	ag	0	0	0	0	0	45,890	46,222	46,459	46,743	46,743	0	0	0	0	0	0	0	0	0	0
	alm	1,688	340	62	72	83	6	7	8	9	10	711	675	659	648	633	690	653	636	623	606
	avefire	1,422	1,422	1,422	1,422	1,422	946	946	946	946	946	19,949	19,949	19,949	19,949	19,949	17,311	17,311	17,311	17,311	17,311
	nonpt	1,961	1,957	1,954	1,951	1,951	50	50	50	50	50	5,765	5,446	5,218	4,944	4,944	5,569	5,249	5,021	4,747	4,747
	nonroad	2,009	340	17	17	18	14	16	18	20	22	2,344	1,697	1,261	821	431	2,261	1,632	1,210	786	407
	onroad	1,062	145	115	128	153	1,032	1,109	1,207	1,323	1,549	908	621	486	452	512	688	411	274	223	238
	ptipm	23,396	17,149	21,174	22,221	22,221	11	195	233	247	247	2,404	5,150	8,524	9,203	9,203	2,077	3,585	5,604	6,179	6,179
	ptnonipm	13,271	12,239	9,688	9,688	9,688	265	265	265	265	265	5,538	5,388	5,323	5,323	5,323	2,576	2,454	2,414	2,414	2,414
Montana Total		44,809	33,592	34,433	35,499	35,536	48,214	48,810	49,185	49,601	49,832	225,987	227,295	229,788	229,709	229,364	71,352	71,475	72,650	72,464	72,084
Nebraska	afdust	0	0	0	0	0	0	0	0	0	0	320,650	320,650	320,650	320,650	320,650	50,787	50,787	50,787	50,787	50,787
	ag	0	0	0	0	0	166,773	168,886	170,397	172,205	172,205	0	0	0	0	0	0	0	0	0	0
	alm	4,764	950	163	188	225	18	21	22	24	29	1,958	1,862	1,791	1,732	1,651	1,942	1,844	1,773	1,712	1,630
	avefire	105	105	105	105	105	80	80	80	80	80	1,729	1,729	1,729	1,729	1,729	1,483	1,483	1,483	1,483	1,483
	nonpt	29,575	29,572	29,570	29,568	29,568	3,143	3,143	3,143	3,143	3,143	12,679	12,447	12,281	12,082	12,082	8,655	8,422	8,257	8,058	8,058
	nonroad	4,181	712	32	33	36	27	31	34	38	44	4,637	3,257	2,391	1,530	747	4,484	3,144	2,304	1,471	711
	onroad	2,011	286	217	242	314	1,874	1,998	2,159	2,353	2,968	1,723	1,253	975	893	1,092	1,312	849	566	452	515
	ptipm	67,576	118,340	41,587	39,642	39,642	190	266	282	307	307	1,551	3,082	3,761	4,012	4,012	1,191	2,484	3,163	3,346	3,346
	ptnonipm	6,018	6,018	6,018	6,018	6,018	421	422	422	422	422	1,623	1,614	1,614	1,614	1,614	806	801	801	801	801
Nebraska Total		114,229	155,982	77,691	75,796	75,907	172,525	174,846	176,539	178,571	179,197	346,550	345,893	345,192	344,243	343,578	70,659	69,815	69,134	68,109	67,330

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Nevada	afdust	0	0	0	0	0	0	0	0	0	0	61,096	61,096	61,096	61,096	61,096	11,371	11,371	11,371	11,371	11,371
	ag	0	0	0	0	0	5,598	5,647	5,682	5,723	5,723	0	0	0	0	0	0	0	0	0	0
	alm	990	454	377	429	479	3	3	3	4	4	445	442	450	464	473	419	414	420	431	438
	avefire	1,346	1,346	1,346	1,346	1,346	1,026	1,026	1,026	1,026	1,026	22,169	22,169	22,169	22,169	22,169	19,018	19,018	19,018	19,018	19,018
	nonpt	12,476	12,475	12,474	12,473	12,473	199	199	199	199	199	4,389	4,331	4,289	4,238	4,238	2,735	2,676	2,634	2,584	2,584
	nonroad	2,025	358	22	23	26	17	20	22	24	28	2,115	1,713	1,418	1,018	779	2,027	1,636	1,349	961	726
	onroad	360	177	194	235	278	1,532	1,964	2,339	2,795	3,309	644	638	664	750	876	399	347	328	353	406
	ptipm	49,276	31,272	26,457	30,331	30,331	460	585	645	483	483	3,629	5,097	9,268	13,192	13,192	3,283	4,072	7,846	11,430	11,430
	ptnonipm	1,342	1,342	1,342	1,342	1,342	164	164	164	164	164	3,240	3,196	3,196	3,196	3,196	1,435	1,420	1,420	1,420	1,420
Nevada Total		67,815	47,424	42,213	46,179	46,276	8,999	9,608	10,080	10,418	10,937	97,728	98,682	102,548	106,123	106,017	40,687	40,954	44,385	47,569	47,393
New Hampshire	afdust	0	0	0	0	0	0	0	0	0	0	6,175	6,175	6,175	6,175	6,175	2,194	2,194	2,194	2,194	2,194
	ag	0	0	0	0	0	1,354	1,377	1,394	1,414	1,414	0	0	0	0	0	0	0	0	0	0
	alm	238	219	220	252	363	0	0	0	0	0	98	100	103	108	123	86	87	89	93	107
	avefire	38	38	38	38	38	29	29	29	29	29	622	622	622	622	622	534	534	534	534	534
	nonpt	7,408	7,400	7,394	7,387	7,387	835	803	780	753	753	13,351	12,797	12,401	11,926	11,926	12,658	12,104	11,708	11,233	11,233
	nonroad	673	119	15	16	18	9	10	11	12	14	942	833	707	541	463	891	784	664	506	430
	onroad	880	180	148	165	193	1,266	1,417	1,564	1,723	1,999	969	760	619	579	639	714	497	347	286	298
	ptipm	44,009	8,279	9,970	14,096	14,096	58	259	258	231	231	2,632	1,318	3,470	8,806	8,806	2,305	1,195	3,305	8,540	8,540
	ptnonipm	2,570	2,570	2,570	2,570	2,570	56	56	56	56	56	459	459	459	459	459	390	390	390	390	390
New Hampshire Total		55,815	18,803	20,354	24,524	24,664	3,607	3,952	4,092	4,217	4,495	25,248	23,064	24,556	29,216	29,213	19,772	17,785	19,231	23,776	23,726
New Jersey	afdust	0	0	0	0	0	0	0	0	0	0	16,305	16,305	16,305	16,305	16,305	1,392	1,392	1,392	1,392	1,392
	ag	0	0	0	0	0	3,827	3,953	4,044	4,152	4,152	0	0	0	0	0	0	0	0	0	0
	alm	14,587	15,243	16,581	20,019	29,344	11	12	13	13	15	1,786	1,889	1,963	2,142	2,749	1,611	1,703	1,764	1,922	2,478
	avefire	61	61	61	61	61	47	47	47	47	47	1,009	1,009	1,009	1,009	1,009	865	865	865	865	865
	nonpt	10,726	10,718	10,713	10,707	10,707	2,648	2,648	2,648	2,648	2,648	15,987	15,375	14,937	14,411	14,411	13,074	12,462	12,024	11,498	11,498
	nonroad	3,378	607	65	69	78	41	45	49	54	63	4,162	3,432	2,915	2,283	1,992	3,958	3,255	2,756	2,144	1,855
	onroad	3,658	845	800	880	1,016	7,635	8,373	9,081	9,860	11,338	3,805	3,107	2,830	2,894	3,198	2,537	1,802	1,456	1,405	1,477
	ptipm	51,299	20,935	19,045	20,861	20,861	170	537	592	566	566	4,835	3,176	4,565	6,656	6,656	4,010	2,594	3,832	5,731	5,731
	ptnonipm	9,930	6,233	6,233	6,233	6,233	475	475	475	475	475	3,131	2,966	2,966	2,966	2,966	2,464	2,337	2,337	2,337	2,337
New Jersey Total		93,640	54,642	53,498	58,829	68,300	14,854	16,091	16,948	17,815	19,303	51,020	47,259	47,490	48,667	49,286	29,910	26,409	26,425	27,294	27,633

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
New Mexico	afdust	0	0	0	0	0	0	0	0	0	0	440,334	440,334	440,334	440,334	440,334	80,348	80,348	80,348	80,348	80,348
	ag	0	0	0	0	0	36,340	36,476	36,574	36,690	36,690	0	0	0	0	0	0	0	0	0	0
	alm	2,550	522	106	122	140	9	11	12	13	15	1,110	1,060	1,029	1,004	966	1,084	1,033	1,000	974	934
	avefire	3,450	3,450	3,450	3,450	3,450	2,626	2,626	2,626	2,626	2,626	56,719	56,719	56,719	56,719	56,719	48,662	48,662	48,662	48,662	48,662
	nonpt	2,825	2,823	2,821	2,820	2,820	39	39	39	39	39	5,984	5,816	5,696	5,552	5,552	5,346	5,178	5,058	4,914	4,914
	nonroad	975	167	12	13	14	9	10	11	12	14	1,062	859	700	501	380	1,016	818	665	472	355
	onroad	2,254	337	280	319	370	2,323	2,638	2,961	3,339	3,862	1,965	1,416	1,151	1,100	1,211	1,476	926	641	540	563
	ptipm	51,016	26,035	25,999	26,112	26,112	10	392	398	464	464	8,024	5,334	5,347	5,544	5,544	5,557	4,673	4,686	4,874	4,874
	ptnonipm	18,179	16,513	16,513	16,513	16,513	44	44	44	44	44	3,986	3,821	3,821	3,821	3,821	3,290	3,179	3,179	3,179	3,179
New Mexico Total		81,249	49,846	49,182	49,349	49,420	41,401	42,236	42,665	43,226	43,754	519,183	515,360	514,798	514,576	514,528	146,779	144,818	144,239	143,964	143,830
New York	afdust	0	0	0	0	0	0	0	0	0	0	139,896	139,896	139,896	139,896	139,896	29,997	29,997	29,997	29,997	29,997
	ag	0	0	0	0	0	49,281	49,900	50,342	50,873	50,873	0	0	0	0	0	0	0	0	0	0
	alm	9,353	7,050	6,128	6,277	9,061	29	31	33	35	39	1,780	1,826	1,865	1,965	2,267	1,394	1,441	1,494	1,600	1,861
	avefire	113	113	113	113	113	86	86	86	86	86	1,866	1,866	1,866	1,866	1,866	1,601	1,601	1,601	1,601	1,601
	nonpt	125,559	125,618	125,661	125,711	125,711	3,964	4,158	4,297	4,463	4,463	83,468	87,036	89,585	92,644	92,644	58,823	62,022	64,307	67,049	67,049
	nonroad	6,797	1,209	125	134	151	79	89	97	107	123	8,303	6,886	5,734	4,304	3,512	7,909	6,535	5,427	4,047	3,274
	onroad	8,075	1,710	1,595	1,756	2,170	14,582	15,853	17,084	18,456	22,335	8,059	7,022	6,174	5,596	6,781	5,547	4,426	3,491	2,752	3,227
	ptipm	238,034	140,744	113,238	111,224	111,224	2,439	1,609	1,279	1,279	1,279	13,669	8,019	28,290	31,952	31,952	12,081	6,441	26,168	29,757	29,757
	ptnonipm	59,078	59,043	59,043	59,043	59,043	1,241	1,239	1,239	1,239	1,239	8,565	7,661	7,661	7,661	7,661	4,410	3,752	3,752	3,752	3,752
New York Total		447,008	335,486	305,901	304,257	307,473	71,702	72,966	74,457	76,538	80,437	265,606	260,213	281,073	285,884	286,580	121,762	116,215	136,236	140,555	140,518
North Carolina	afdust	0	0	0	0	0	0	0	0	0	0	91,287	91,287	91,287	91,287	91,287	25,474	25,474	25,474	25,474	25,474
	ag	0	0	0	0	0	158,188	168,029	175,054	183,488	183,488	0	0	0	0	0	0	0	0	0	0
	alm	1,840	1,044	928	1,084	1,516	7	8	9	10	11	6,752	7,029	7,746	8,718	9,680	4,789	4,977	5,468	6,137	6,808
	avefire	696	696	696	696	696	532	532	532	532	532	11,509	11,509	11,509	11,509	11,509	9,870	9,870	9,870	9,870	9,870
	nonpt	22,020	22,006	21,996	21,984	21,984	236	236	236	236	236	40,945	39,800	38,981	38,000	38,000	38,389	37,243	36,425	35,443	35,443
	nonroad	5,750	989	81	86	97	54	60	66	73	84	6,313	5,104	4,185	3,033	2,406	6,035	4,862	3,974	2,861	2,247
	onroad	8,683	1,147	963	1,095	1,250	7,953	8,925	9,900	11,115	12,540	6,517	4,723	3,865	3,701	4,026	4,874	3,077	2,157	1,827	1,884
	ptipm	471,337	202,194	154,504	144,734	144,734	124	574	639	670	670	22,259	21,598	22,962	29,362	29,362	16,031	16,477	17,377	23,517	23,517
	ptnonipm	56,065	54,306	54,306	54,306	54,306	1,485	1,469	1,470	1,470	1,470	13,744	13,326	13,326	13,326	13,326	9,828	9,391	9,391	9,391	9,391
North Carolina Total		566,392	282,382	233,475	223,985	224,583	168,580	179,835	187,906	197,594	199,032	199,327	194,376	193,860	198,935	199,596	115,291	111,371	110,135	114,520	114,634

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
North Dakota	afdust	0	0	0	0	0	0	0	0	0	0	269,751	269,751	269,751	269,751	269,751	50,500	50,500	50,500	50,500	50,500
	ag	0	0	0	0	0	71,302	71,557	71,739	71,957	71,957	0	0	0	0	0	0	0	0	0	0
	alm	1,601	316	51	59	68	6	7	7	8	10	684	652	630	612	587	670	637	614	595	569
	avefire	66	66	66	66	66	50	50	50	50	50	1,089	1,089	1,089	1,089	1,089	934	934	934	934	934
	nonpt	5,768	5,765	5,763	5,761	5,761	69	69	69	69	69	3,751	3,539	3,387	3,205	3,205	3,241	3,029	2,877	2,695	2,695
	nonroad	4,106	696	28	28	30	25	29	32	36	41	4,634	3,177	2,282	1,433	603	4,486	3,072	2,205	1,382	577
	onroad	700	100	78	85	107	733	758	804	857	1,037	608	430	336	305	360	455	286	191	152	168
	ptipm	140,535	78,026	36,622	43,908	43,908	378	370	364	376	376	7,625	5,960	6,124	5,960	5,960	6,479	5,059	5,202	5,076	5,076
	ptnonipm	15,449	11,305	11,305	11,305	11,305	139	139	139	139	139	1,437	1,422	1,422	1,422	1,422	1,105	1,103	1,103	1,103	1,103
North Dakota Total		168,224	96,275	53,913	61,212	61,244	72,703	72,979	73,204	73,491	73,678	289,580	286,021	285,022	283,777	282,978	67,870	64,618	63,626	62,437	61,623
Ohio	afdust	0	0	0	0	0	0	0	0	0	0	236,316	236,316	236,316	236,316	236,316	49,900	49,900	49,900	49,900	49,900
	ag	0	0	0	0	0	98,711	101,976	104,307	107,105	107,105	0	0	0	0	0	0	0	0	0	0
	alm	11,191	8,372	8,056	9,339	13,647	32	36	39	42	49	3,393	3,424	3,437	3,561	4,095	3,113	3,135	3,134	3,235	3,722
	avefire	22	22	22	22	22	17	17	17	17	17	368	368	368	368	368	316	316	316	316	316
	nonpt	19,810	19,810	19,810	19,810	19,810	8,527	8,420	8,344	8,253	8,253	25,444	24,784	24,312	23,746	23,746	23,761	23,101	22,629	22,063	22,063
	nonroad	8,254	1,429	112	119	134	74	83	91	101	117	8,400	6,603	5,278	3,649	2,902	8,043	6,299	5,018	3,443	2,713
	onroad	12,682	1,414	1,171	1,305	1,519	10,986	11,569	12,466	13,570	15,357	8,049	5,875	4,807	4,549	5,058	5,933	3,792	2,673	2,246	2,364
	ptipm	1,145,194	425,975	364,335	299,575	299,575	74	1,207	1,292	1,330	1,330	62,308	40,958	37,583	39,452	39,452	55,730	30,936	27,757	29,467	29,467
	ptnonipm	111,233	109,789	101,330	101,330	101,330	6,370	6,370	6,370	6,370	6,370	14,370	14,039	13,858	13,858	13,858	10,000	9,705	9,576	9,576	9,576
Ohio Total		1,308,387	566,810	494,835	431,499	436,037	124,789	129,677	132,925	136,787	138,597	358,650	332,368	325,960	325,500	325,796	156,798	127,183	121,004	120,246	120,120
Oklahoma	afdust	0	0	0	0	0	0	0	0	0	0	395,931	395,931	395,931	395,931	395,931	70,686	70,686	70,686	70,686	70,686
	ag	0	0	0	0	0	95,061	97,973	100,054	102,549	102,549	0	0	0	0	0	0	0	0	0	0
	alm	1,890	469	181	207	269	7	8	8	9	11	886	853	838	828	813	841	809	791	779	762
	avefire	469	469	469	469	469	359	359	359	359	359	7,747	7,747	7,747	7,747	7,747	6,644	6,644	6,644	6,644	6,644
	nonpt	7,542	7,538	7,535	7,531	7,531	11,358	11,358	11,358	11,358	11,358	54,339	53,993	53,746	53,449	53,449	43,886	43,540	43,293	42,996	42,996
	nonroad	3,093	520	36	38	42	26	29	32	35	40	3,494	2,636	2,063	1,452	1,012	3,353	2,521	1,967	1,377	948
	onroad	5,344	619	524	594	728	4,626	5,089	5,637	6,296	7,538	3,501	2,565	2,123	2,038	2,401	2,592	1,652	1,173	1,000	1,118
	ptipm	111,841	165,330	79,570	64,002	64,002	909	1,010	1,186	1,067	1,067	3,350	5,373	6,598	7,609	7,609	1,722	4,311	5,534	6,350	6,350
	ptnonipm	38,495	33,153	33,153	33,153	33,153	3,118	3,118	3,118	3,118	3,118	9,175	8,903	8,903	8,903	8,903	5,241	4,852	4,852	4,852	4,852
Oklahoma Total		168,673	208,098	121,468	105,994	106,194	115,463	118,943	121,752	124,790	126,040	478,422	478,000	477,948	477,956	477,863	134,966	135,015	134,941	134,685	134,357

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Oregon	afdust	0	0	0	0	0	0	0	0	0	0	82,013	82,013	82,013	82,013	82,013	30,637	30,637	30,637	30,637	30,637
	ag	0	0	0	0	0	40,655	41,158	41,518	41,949	41,949	0	0	0	0	0	0	0	0	0	0
	alm	4,212	3,487	3,423	3,923	5,694	9	10	10	11	13	1,498	1,509	1,513	1,560	1,770	1,371	1,377	1,373	1,409	1,599
	avefire	4,896	4,896	4,896	4,896	4,896	3,542	3,542	3,542	3,542	3,542	75,861	75,861	75,861	75,861	75,861	65,350	65,350	65,350	65,350	65,350
	nonpt	9,845	9,846	9,846	9,847	9,847	1,061	1,061	1,061	1,061	1,061	50,681	49,765	49,110	48,325	48,325	49,407	48,479	47,816	47,020	47,020
	nonroad	2,559	434	35	37	41	24	27	29	32	37	2,902	2,358	1,920	1,386	1,080	2,773	2,243	1,822	1,306	1,008
	onroad	3,488	450	398	448	504	3,270	3,758	4,181	4,656	5,213	2,707	2,151	1,697	1,537	1,622	2,021	1,458	994	778	767
	ptipm	12,285	12,552	12,552	12,606	12,606	162	298	298	298	298	711	392	392	449	449	326	331	331	385	385
	ptnonipm	5,307	5,307	5,307	5,307	5,307	787	787	787	787	787	9,828	9,532	9,532	9,532	9,532	6,203	6,042	6,042	6,042	6,042
Oregon Total		42,592	36,971	36,457	37,064	38,896	49,509	50,641	51,426	52,337	52,900	226,200	223,580	222,039	220,662	220,651	158,088	155,917	154,365	152,927	152,808
Pennsylvania	afdust	0	0	0	0	0	0	0	0	0	0	130,508	130,508	130,508	130,508	130,508	32,224	32,224	32,224	32,224	32,224
	ag	0	0	0	0	0	76,675	79,474	81,473	83,870	83,870	0	0	0	0	0	0	0	0	0	0
	alm	8,354	6,729	6,553	7,510	10,928	14	16	17	18	21	2,376	2,396	2,399	2,478	2,857	2,268	2,276	2,267	2,329	2,677
	avefire	32	32	32	32	32	25	25	25	25	25	530	530	530	530	530	454	454	454	454	454
	nonpt	68,349	68,335	68,326	68,314	68,314	3,689	3,689	3,689	3,689	3,689	41,841	40,757	39,983	39,053	39,053	31,263	30,179	29,404	28,475	28,475
	nonroad	5,203	918	89	95	107	55	62	68	75	87	6,256	5,295	4,442	3,335	2,782	5,969	5,028	4,205	3,138	2,596
	onroad	7,885	1,369	1,169	1,285	1,504	10,618	11,363	12,227	13,212	15,234	7,250	5,426	4,514	4,293	4,821	5,219	3,436	2,475	2,108	2,253
	ptipm	907,734	244,722	206,230	188,589	188,589	401	1,234	1,311	1,237	1,237	63,198	31,689	31,114	30,850	30,850	53,067	24,131	23,255	23,155	23,155
	ptnonipm	88,132	81,441	75,605	75,605	75,605	1,334	1,298	1,298	1,298	1,298	22,391	20,443	20,393	20,393	20,393	11,549	10,265	10,186	10,186	10,186
Pennsylvania Total		1,085,688	403,546	358,004	341,431	345,080	92,811	97,160	100,108	103,424	105,460	274,351	237,044	233,883	231,440	231,794	142,015	107,994	104,472	102,070	102,021
Rhode Island	afdust	0	0	0	0	0	0	0	0	0	0	2,501	2,501	2,501	2,501	2,501	481	481	481	481	481
	ag	0	0	0	0	0	235	237	239	241	241	0	0	0	0	0	0	0	0	0	0
	alm	78	64	68	77	85	0	0	0	0	0	8	8	8	7	7	0	0	0	0	0
	avefire	1	1	1	1	1	1	1	1	1	1	17	17	17	17	17	14	14	14	14	14
	nonpt	3,365	3,364	3,364	3,364	3,364	15	15	15	15	15	1,171	1,136	1,110	1,080	1,080	1,107	1,072	1,046	1,016	1,016
	nonroad	354	63	7	8	9	4	5	5	6	6	427	342	285	218	189	406	324	270	205	176
	onroad	425	86	85	94	107	854	940	1,023	1,122	1,274	343	290	292	313	356	209	150	141	147	165
	ptipm	18	0	0	0	0	58	151	137	126	126	12	7	7	6	6	11	4	4	4	4
	ptnonipm	2,649	2,349	2,349	2,349	2,349	47	47	47	47	47	288	256	256	256	256	173	153	153	153	153
Rhode Island Total		6,889	5,928	5,874	5,892	5,915	1,213	1,395	1,467	1,557	1,710	4,767	4,556	4,475	4,398	4,412	2,401	2,199	2,110	2,020	2,010

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
South Carolina	afdust	0	0	0	0	0	0	0	0	0	0	82,088	82,099	82,108	82,117	82,117	25,657	25,661	25,664	25,667	25,667
	ag	0	0	0	0	0	27,945	29,692	30,941	32,440	32,440	0	0	0	0	0	0	0	0	0	0
	alm	1,946	1,231	1,108	1,267	1,842	4	5	5	6	7	714	711	709	720	779	668	662	656	663	715
	avefire	646	646	646	646	646	494	494	494	494	494	10,684	10,684	10,684	10,684	10,684	9,163	9,163	9,163	9,163	9,163
	nonpt	30,016	30,008	30,003	29,996	29,996	223	223	223	223	223	19,393	18,766	18,318	17,780	17,780	18,139	17,512	17,064	16,526	16,526
	nonroad	2,816	482	41	44	49	27	30	33	36	41	3,102	2,489	2,041	1,490	1,208	2,960	2,368	1,936	1,404	1,127
	onroad	5,021	651	551	617	720	4,710	5,163	5,643	6,206	7,137	3,588	2,629	2,163	2,055	2,283	2,648	1,695	1,200	1,013	1,067
	ptipm	212,572	150,469	122,606	97,472	97,472	306	343	415	424	424	17,707	17,282	17,579	22,636	22,636	13,734	12,638	12,799	17,647	17,647
	ptnonipm	57,307	56,870	56,870	56,870	56,870	1,552	1,552	1,552	1,552	1,552	12,696	11,699	11,699	11,699	11,699	8,159	7,403	7,403	7,403	7,403
South Carolina Total		310,324	240,357	211,824	186,911	187,595	35,263	37,504	39,307	41,381	42,319	149,971	146,357	145,299	149,182	149,186	81,128	77,100	75,884	79,486	79,315
South Dakota	afdust	0	0	0	0	0	0	0	0	0	0	202,326	202,326	202,326	202,326	202,326	38,332	38,332	38,332	38,332	38,332
	ag	0	0	0	0	0	101,949	102,814	103,432	104,172	104,172	0	0	0	0	0	0	0	0	0	0
	alm	318	69	18	20	23	1	1	1	2	2	172	167	168	170	172	156	151	151	152	152
	avefire	498	498	498	498	498	381	381	381	381	381	8,235	8,235	8,235	8,235	8,235	7,062	7,062	7,062	7,062	7,062
	nonpt	10,304	10,301	10,299	10,296	10,296	51	51	51	51	51	6,683	6,434	6,256	6,042	6,042	4,463	4,214	4,036	3,822	3,822
	nonroad	2,901	492	21	22	23	18	21	23	26	30	3,289	2,286	1,658	1,051	477	3,181	2,207	1,599	1,012	455
	onroad	852	125	95	103	129	843	901	968	1,041	1,280	746	548	419	372	436	564	370	240	185	203
	ptipm	12,545	12,249	4,275	4,865	4,865	50	34	37	48	48	450	231	476	589	589	420	218	447	531	531
	ptnonipm	1,480	1,480	1,480	1,480	1,480	50	50	50	50	50	609	515	515	515	515	291	249	249	249	249
South Dakota Total		28,898	25,214	16,685	17,284	17,314	103,343	104,253	104,944	105,770	106,013	222,509	220,741	220,052	219,300	218,791	54,470	52,803	52,116	51,345	50,806
Tennessee	afdust	0	0	0	0	0	0	0	0	0	0	95,767	95,767	95,767	95,767	95,767	22,530	22,530	22,530	22,530	22,530
	ag	0	0	0	0	0	34,210	35,494	36,411	37,512	37,512	0	0	0	0	0	0	0	0	0	0
	alm	6,292	5,318	5,393	6,362	9,273	12	14	15	16	18	1,853	1,869	1,858	1,906	2,193	1,707	1,720	1,707	1,749	2,012
	avefire	277	277	277	277	277	212	212	212	212	212	4,587	4,587	4,587	4,587	4,587	3,934	3,934	3,934	3,934	3,934
	nonpt	32,714	32,705	32,698	32,690	32,690	164	164	164	164	164	26,842	26,074	25,526	24,869	24,869	20,663	19,896	19,348	18,690	18,690
	nonroad	3,728	642	54	57	64	35	39	43	47	54	4,225	3,416	2,759	1,954	1,496	4,040	3,253	2,620	1,845	1,399
	onroad	7,674	1,039	830	946	1,104	6,671	7,448	8,258	9,235	10,488	6,128	4,447	3,539	3,319	3,671	4,667	2,982	2,026	1,658	1,719
	ptipm	333,618	158,140	137,637	153,894	153,894	425	436	487	572	572	16,268	10,716	14,520	38,254	38,254	13,910	8,769	12,704	35,970	35,970
	ptnonipm	84,316	83,903	83,903	83,903	83,903	2,394	2,394	2,394	2,394	2,394	30,328	27,121	27,121	27,121	27,121	22,054	19,684	19,684	19,684	19,684
Tennessee Total		468,619	282,025	260,792	278,130	281,205	44,124	46,202	47,986	50,152	51,415	185,996	173,997	175,677	197,775	197,957	93,505	82,769	84,553	106,059	105,938

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Texas	afdust	0	0	0	0	0	0	0	0	0	0	1,290,391	1,290,973	1,291,390	1,291,887	1,291,887	242,993	243,086	243,153	243,232	243,232
	ag	0	0	0	0	0	354,873	360,460	364,456	369,242	369,242	0	0	0	0	0	0	0	0	0	0
	alm	27,280	23,890	24,302	28,470	41,368	57	63	67	73	82	8,936	8,940	8,759	8,857	10,280	8,146	8,147	7,980	8,070	9,380
	avefire	1,178	1,178	1,178	1,178	1,178	1,118	1,118	1,118	1,118	1,118	25,228	25,228	25,228	25,228	25,228	21,578	21,578	21,578	21,578	21,578
	nonpt	109,215	109,204	109,195	109,185	109,185	1,983	1,983	1,983	1,983	1,983	72,265	71,333	70,666	69,867	69,867	47,394	46,461	45,795	44,995	44,995
	nonroad	14,990	2,566	180	189	211	128	145	158	175	202	15,766	12,270	9,862	6,978	5,127	15,126	11,733	9,401	6,607	4,798
	onroad	21,522	3,084	2,506	2,863	3,479	21,943	24,625	27,464	31,029	37,361	16,034	12,192	10,036	10,043	11,798	11,699	7,710	5,342	4,834	5,466
	ptipm	562,594	346,683	339,382	338,519	338,519	5,941	4,839	5,537	6,148	6,148	34,257	35,123	35,202	38,150	38,150	24,920	24,844	24,955	27,849	27,849
	ptnonipm	245,060	172,556	164,923	164,923	164,923	2,297	2,279	2,279	2,279	2,279	38,861	36,535	36,020	36,020	36,020	27,189	25,562	25,310	25,310	25,310
Texas Total		981,840	659,160	641,666	645,327	658,863	388,340	395,512	403,063	412,046	418,416	1,501,740	1,492,592	1,487,162	1,487,030	1,488,357	399,045	389,120	383,512	382,476	382,608
Tribal Data	alm	132	25	3	4	4	1	1	1	1	1	58	55	52	50	48	0	0	0	0	0
	ptipm	6	0	0	0	0	65	92	92	72	72	31	4	4	3	3	31	3	3	2	2
	ptnonipm	204	203	203	203	203	4	4	4	4	4	1,872	1,868	1,868	1,868	1,868	856	852	852	852	852
Tribal Data Total		342	228	206	207	207	69	96	96	76	77	1,961	1,927	1,925	1,922	1,919	887	855	855	854	854
Utah	afdust	0	0	0	0	0	0	0	0	0	0	54,020	54,020	54,020	54,020	54,020	7,864	7,864	7,864	7,864	7,864
	ag	0	0	0	0	0	20,448	20,960	21,326	21,765	21,765	0	0	0	0	0	0	0	0	0	0
	alm	1,065	344	213	242	272	5	6	7	8	9	153	152	157	162	166	140	140	144	148	152
	avefire	1,934	1,934	1,934	1,934	1,934	1,479	1,479	1,479	1,479	1,479	31,961	31,961	31,961	31,961	31,961	27,412	27,412	27,412	27,412	27,412
	nonpt	3,427	3,426	3,425	3,423	3,423	1,268	1,268	1,268	1,268	1,268	10,385	10,268	10,185	10,085	10,085	9,079	8,970	8,893	8,800	8,800
	nonroad	1,437	251	21	22	25	14	16	18	20	22	1,703	1,463	1,199	845	647	1,625	1,389	1,135	796	604
	onroad	1,989	335	310	361	432	2,457	2,903	3,335	3,851	4,579	1,658	1,327	1,165	1,176	1,352	1,187	829	628	570	628
	ptipm	33,167	39,360	41,355	44,170	44,170	269	372	416	418	418	6,351	5,480	7,400	8,532	8,532	4,901	4,265	5,940	6,933	6,933
	ptnonipm	9,305	8,454	7,790	7,790	7,790	529	529	529	529	529	6,893	6,577	6,551	6,551	6,551	2,955	2,810	2,809	2,809	2,809
Utah Total		52,325	54,103	55,047	57,942	58,045	26,469	27,534	28,377	29,336	30,069	113,124	111,248	112,639	113,333	113,315	55,162	53,678	54,825	55,332	55,203

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
Vermont	afdust	0	0	0	0	0	0	0	0	0	0	13,658	13,658	13,658	13,658	13,658	4,814	4,814	4,814	4,814	4,814
	ag	0	0	0	0	0	8,821	8,851	8,872	8,898	8,898	0	0	0	0	0	0	0	0	0	0
	alm	6	6	7	7	8	0	0	0	0	0	29	30	32	35	37	21	22	24	26	28
	avefire	49	49	49	49	49	38	38	38	38	38	812	812	812	812	812	696	696	696	696	696
	nonpt	5,385	5,382	5,380	5,378	5,378	214	214	214	214	214	5,823	5,539	5,336	5,093	5,093	5,415	5,151	4,962	4,736	4,736
	nonroad	368	64	7	8	9	5	5	6	6	7	516	463	390	292	236	490	436	366	273	220
	onroad	622	125	103	118	148	939	1,047	1,147	1,262	1,467	645	632	554	557	720	465	418	322	291	355
	ptipm	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ptnonipm	911	911	911	911	911	16	16	16	16	16	337	337	337	337	337	237	237	237	237	237
Vermont Total		7,341	6,538	6,458	6,471	6,503	10,043	10,172	10,293	10,434	10,639	21,819	21,471	21,119	20,783	20,893	12,137	11,774	11,422	11,072	11,085
Virginia	afdust	0	0	0	0	0	0	0	0	0	0	60,865	60,865	60,865	60,865	60,865	19,662	19,662	19,662	19,662	19,662
	ag	0	0	0	0	0	43,811	45,905	47,402	49,197	49,197	0	0	0	0	0	0	0	0	0	0
	alm	5,595	3,378	2,998	3,428	4,904	13	15	16	18	21	1,905	1,875	1,854	1,872	2,004	1,836	1,801	1,774	1,783	1,900
	avefire	399	399	399	399	399	305	305	305	305	305	6,599	6,599	6,599	6,599	6,599	5,659	5,659	5,659	5,659	5,659
	nonpt	32,923	32,910	32,901	32,889	32,889	1,621	1,621	1,621	1,621	1,621	53,941	52,867	52,100	51,179	51,179	29,947	28,873	28,106	27,185	27,185
	nonroad	4,289	741	60	63	71	41	46	51	56	64	4,809	3,897	3,247	2,437	2,009	4,593	3,709	3,079	2,294	1,872
	onroad	6,662	1,019	920	1,032	1,269	7,889	8,893	9,831	10,881	13,168	4,939	3,736	3,278	3,306	3,976	3,486	2,250	1,711	1,589	1,850
	ptipm	239,777	151,541	148,291	135,834	135,834	192	353	471	435	435	15,400	10,317	13,940	15,885	15,885	14,431	8,356	11,602	13,372	13,372
	ptnonipm	67,691	67,253	67,253	67,253	67,253	3,500	3,498	3,498	3,498	3,498	13,041	11,869	11,869	11,869	11,869	9,734	8,671	8,671	8,671	8,671
Virginia Total		357,338	257,240	252,821	240,899	242,619	57,373	60,638	63,196	66,011	68,310	161,498	152,025	153,752	154,011	154,385	89,350	78,981	80,264	80,215	80,171
Washington	afdust	0	0	0	0	0	0	0	0	0	0	106,176	106,176	106,176	106,176	106,176	26,908	26,908	26,908	26,908	26,908
	ag	0	0	0	0	0	42,133	42,712	43,126	43,622	43,622	0	0	0	0	0	0	0	0	0	0
	alm	11,488	10,791	11,291	13,423	19,682	151	171	193	236	339	2,416	2,601	2,758	3,074	3,959	2,271	2,447	2,594	2,895	3,749
	avefire	407	407	407	407	407	248	248	248	248	248	5,126	5,126	5,126	5,126	5,126	4,487	4,487	4,487	4,487	4,487
	nonpt	7,254	7,241	7,231	7,219	7,219	1,711	1,711	1,711	1,711	1,711	35,624	34,598	33,864	32,983	32,983	31,983	31,023	30,337	29,513	29,513
	nonroad	5,380	707	57	60	67	39	44	48	53	61	4,776	3,742	3,044	2,207	1,704	4,567	3,563	2,890	2,081	1,590
	onroad	5,539	790	688	794	914	5,168	6,206	7,111	8,125	9,323	4,545	3,315	2,767	2,685	2,941	3,407	2,161	1,550	1,330	1,380
	ptipm	19,108	3,954	3,946	4,064	4,064	62	512	537	528	528	2,456	3,091	3,090	3,213	3,213	2,025	2,465	2,464	2,582	2,582
	ptnonipm	24,623	24,601	24,601	24,601	24,601	774	771	771	771	771	4,970	4,895	4,895	4,895	4,895	3,224	3,189	3,189	3,189	3,189
Washington Total		73,799	48,491	48,221	50,569	56,954	50,285	52,375	53,744	55,293	56,602	166,089	163,544	161,720	160,359	160,997	78,872	76,244	74,419	72,985	73,398

State	Sector	[tons/yr] 2002 SO2	[tons/yr] 2009 Base SO2	[tons/yr] 2014 Base SO2	[tons/yr] 2020 Base SO2	[tons/yr] 2030 Base SO2	[tons/yr] 2002 NH3	[tons/yr] 2009 Base NH3	[tons/yr] 2014 Base NH3	[tons/yr] 2020 Base NH3	[tons/yr] 2030 Base NH3	[tons/yr] 2002 PM10	[tons/yr] 2009 Base PM10	[tons/yr] 2014 Base PM10	[tons/yr] 2020 Base PM10	[tons/yr] 2030 Base PM10	[tons/yr] 2002 PM2_5	[tons/yr] 2009 Base PM2_5	[tons/yr] 2014 Base PM2_5	[tons/yr] 2020 Base PM2_5	[tons/yr] 2030 Base PM2_5
West Virginia	afdust	0	0	0	0	0	0	0	0	0	0	24,640	24,644	24,647	24,650	24,650	11,305	11,309	11,311	11,314	11,314
	ag	0	0	0	0	0	9,879	10,474	10,898	11,408	11,408	0	0	0	0	0	0	0	0	0	0
	alm	5,707	5,433	5,830	7,090	10,433	8	9	10	11	12	1,478	1,526	1,573	1,689	2,036	1,281	1,322	1,357	1,453	1,763
	avefire	215	215	215	215	215	165	165	165	165	165	3,557	3,557	3,557	3,557	3,557	3,050	3,050	3,050	3,050	3,050
	nonpt	14,589	14,585	14,582	14,578	14,578	72	72	72	72	72	12,220	11,866	11,613	11,310	11,310	11,130	10,776	10,523	10,219	10,219
	nonroad	780	128	13	14	15	8	9	10	11	13	1,005	906	751	541	455	956	856	707	508	424
	onroad	2,675	248	201	217	230	1,950	1,957	2,056	2,175	2,273	1,542	1,004	792	725	732	1,149	648	440	358	343
	ptipm	509,488	200,473	178,167	168,660	168,660	210	628	644	649	649	31,248	22,049	21,938	21,957	21,957	28,884	16,535	16,219	16,230	16,230
	ptnonipm	54,107	54,106	54,106	54,106	54,106	688	688	688	688	688	10,625	10,097	10,097	10,097	10,097	7,450	7,113	7,113	7,113	7,113
West Virginia Total		587,561	275,187	253,113	244,879	248,237	12,981	14,002	14,544	15,178	15,280	86,314	75,648	74,967	74,526	74,794	65,205	51,609	50,721	50,246	50,457
Wisconsin	afdust	0	0	0	0	0	0	0	0	0	0	103,735	103,735	103,735	103,735	103,735	30,705	30,705	30,705	30,705	30,705
	ag	0	0	0	0	0	113,949	114,789	115,389	116,109	116,109	0	0	0	0	0	0	0	0	0	0
	alm	4,781	3,992	4,195	5,137	7,496	11	13	14	15	17	1,353	1,417	1,492	1,632	1,954	1,182	1,236	1,300	1,421	1,709
	avefire	70	70	70	70	70	54	54	54	54	54	1,159	1,159	1,159	1,159	1,159	994	994	994	994	994
	nonpt	6,369	6,370	6,370	6,370	6,370	266	266	266	266	266	26,104	25,736	25,474	25,159	25,159	25,407	25,040	24,777	24,462	24,462
	nonroad	5,015	845	81	87	99	52	60	65	71	83	6,090	4,944	3,967	2,840	2,296	5,796	4,684	3,747	2,666	2,138
	onroad	7,218	815	676	766	897	6,006	6,492	7,111	7,894	9,065	4,479	3,403	2,810	2,684	2,985	3,317	2,215	1,573	1,327	1,395
	ptipm	192,946	141,203	125,070	123,645	123,645	375	583	662	680	680	5,576	8,465	8,831	8,890	8,890	5,029	7,151	7,432	7,441	7,441
	ptnonipm	63,651	63,431	63,431	63,431	63,431	397	397	397	397	397	10,466	9,199	9,199	9,199	9,199	5,856	5,445	5,445	5,445	5,445
Wisconsin Total		280,051	216,726	199,892	199,507	202,009	121,110	122,653	123,957	125,486	126,672	158,961	158,058	156,666	155,297	155,377	78,287	77,469	75,972	74,461	74,288
Wyoming	afdust	0	0	0	0	0	0	0	0	0	0	272,299	272,299	272,299	272,299	272,299	41,010	41,010	41,010	41,010	41,010
	ag	0	0	0	0	0	18,575	18,801	18,963	19,156	19,156	0	0	0	0	0	0	0	0	0	0
	alm	2,088	404	56	65	75	8	9	10	11	13	866	824	793	766	730	857	814	782	754	717
	avefire	1,106	1,106	1,106	1,106	1,106	846	846	846	846	846	18,289	18,289	18,289	18,289	18,289	15,686	15,686	15,686	15,686	15,686
	nonpt	6,181	6,179	6,178	6,176	6,176	91	91	91	91	91	3,717	3,571	3,467	3,342	3,342	2,922	2,776	2,672	2,547	2,547
	nonroad	559	95	7	8	8	5	6	7	7	8	689	565	450	312	214	659	537	426	295	200
	onroad	905	122	95	103	122	893	931	997	1,075	1,252	799	524	402	365	407	606	347	226	180	189
	ptipm	83,423	62,706	58,597	58,204	58,204	386	414	443	470	470	9,599	8,653	9,763	10,727	10,727	7,936	7,053	8,032	8,875	8,875
	ptnonipm	33,676	33,653	33,653	33,653	33,653	301	301	301	301	301	19,234	18,528	18,528	18,528	18,528	14,143	13,941	13,941	13,941	13,941
Wyoming Total		127,938	104,266	99,692	99,315	99,345	21,104	21,398	21,656	21,957	22,136	325,494	323,255	323,991	324,629	324,536	83,819	82,164	82,775	83,288	83,165
Grand Total		14,649,986	9,233,950	8,473,877	8,171,411	8,295,030	3,901,951	4,023,868	4,123,379	4,241,636	4,297,455	12,817,898	12,554,430	12,551,458	12,671,074	12,680,651	4,938,898	4,671,411	4,661,327	4,768,531	4,764,633

Appendix E: Description of Animal Population Data and Projections

This description is in the form of a document provided by Bill Schrock, U.S.EPA, OAQPS to Madeleine Strum and Marc Houyoux, U.S.EPA, OAQPS February 20, 2007.

Future Emission Estimates (02/19/07)

In the EPA's ammonia inventory for animal agricultural operations (National Emission Inventory - Ammonia Emissions from Animal Agricultural Operations; Revised Draft Report; April 22, 2005), population projections for the beef, dairy, swine, and poultry animal sectors were developed and used to estimate future ammonia emissions from these animal sectors. To develop the 2005 population projections, EPA used inventory data from the U.S. Department of Agriculture (USDA) and the Food and Agriculture Policy and Research Institute (FAPRI).

Since completion of the 2005 ammonia emissions inventory, FAPRI released an updated report (FAPRI, 2006) that contains animal population data and projections that cover the years 2002 to 2015. Additionally, USDA released updated inventory reports (Poultry – Production and Value 2005 Summary (USDA, 2006a), 2005 Chicken and Egg Summary (USDA, 2006b). These data were used to update the 2005 animal inventory projections.

The data sources and the methodology used to develop the population projections for each animal type are discussed below (Attachment A contains the data used for each projection). These future projections do not account for any changes in animal populations or regional dislocations associated with EPA's revised effluent limitations guidelines and standards for concentrated animal feeding operations promulgated in December 2002 (68 FR 7176, February 12, 2003). Due to insufficient data, animal population projections and future emission estimates were not developed for sheep, goats, and horses.

Dairy Cattle. The FAPRI report provides estimated national milk cow inventory data from 2006 through 2015 and shows an overall decline in U.S. dairy cow populations. The FAPRI projections depict an essentially linear relationship between 2001 milk cow populations and subsequent years. The EPA estimated future dairy cattle populations using a linear regression analysis of the national population data available from the FAPRI report, covering 1982 through 2015. Figure 1 illustrates the linear projection of the national dairy cow population.

Beef Cattle. The USDA provides estimated national cattle inventory projections. Beef production has a clear cycle generated by producers' expectations about future prices, grain market cycles, and other economic conditions. The pace of the cycle is limited by the reproductive capacity of the animal. Cattle inventories can expand only as fast as cows can reproduce. This has historically resulted in a 7- to 12-year cycle, from peak to peak (Kohls, 1998). Peaks and troughs of the cycle are 5 to 6 percent higher or lower than the general trend in cattle populations so the stage of the cycle can make a significant difference in population at any given future date.

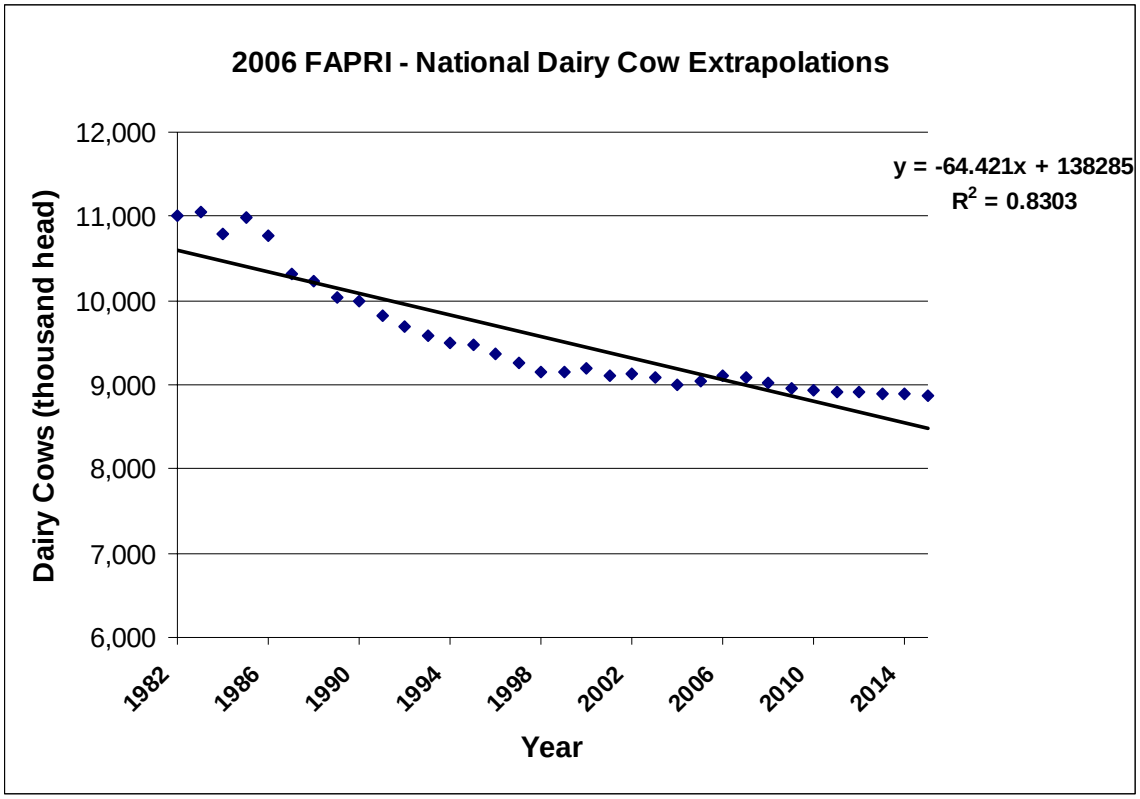

Figure 1. Dairy Cow Inventory Projections

The EPA decomposed the beef cow inventory time series into a trend line, a cyclical component, and a random error component (Bowerman, 1987). The trend line was estimated by linear regression of the inventory data from 1990 to 2015 on a time variable. The cyclical component was then estimated as the percentage deviation from the trend line in the historical data. A graph of that information appeared to show a cyclic trend (trough to peak). (The robust U.S. economy of the 1990s may explain the longer than average cycle.) With so little data, EPA assumed the down side of the cycle was symmetrical with the up side, so the data set would contain three values for each stage of the cycle. The average of the absolute value of the three observations represents the cyclical component. The EPA forecasted the trend line out to 2030 and adjusted it by the average percentage deviation from the trend for that stage of the cycle, as illustrated in Figure 2.

The projection data for the beef cattle inventory show some difference in growth cycle of beef cows versus other beef cattle (e.g., steers, bulls). The EPA conducted a separate analysis of these animal populations. Other beef cattle populations appear to follow similar cycles and were forecasted using the same technique as beef cows (see Figure 3).

Swine. Annual swine populations are categorized by breeding and market swine. The FAPRI report presents annual inventory data and projected breeding swine and market swine inventories (rather than a combined total). The FAPRI data show an

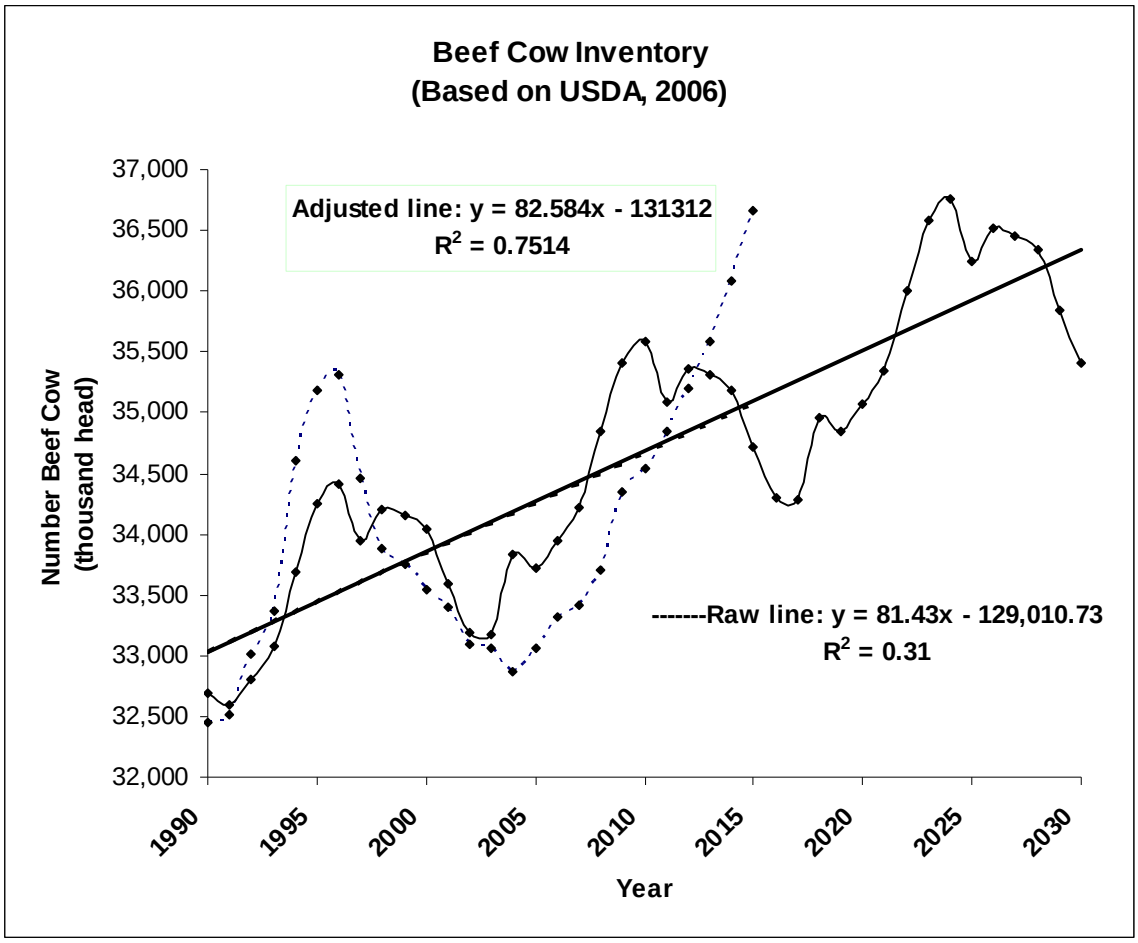

Figure 2. Beef Cow Inventory Projections

overall increase in swine production over time. Due to increasing productivity (i.e., increased number of pigs per litter), the population of breeding swine is expected to decline over the long term.

The EPA estimated future swine populations using a cycle and trend decomposition analysis. Breeding and market swine population projections and inventory data from the FAPRI report capture the variability of the swine production cycle. Changes in the pork industry in the 1990's have made recent data atypical and inconsistent. For example, EPA replaced the 1996 market hog cyclical deviation with the average of all of the other data because it was so far out of line with the hog cycle.

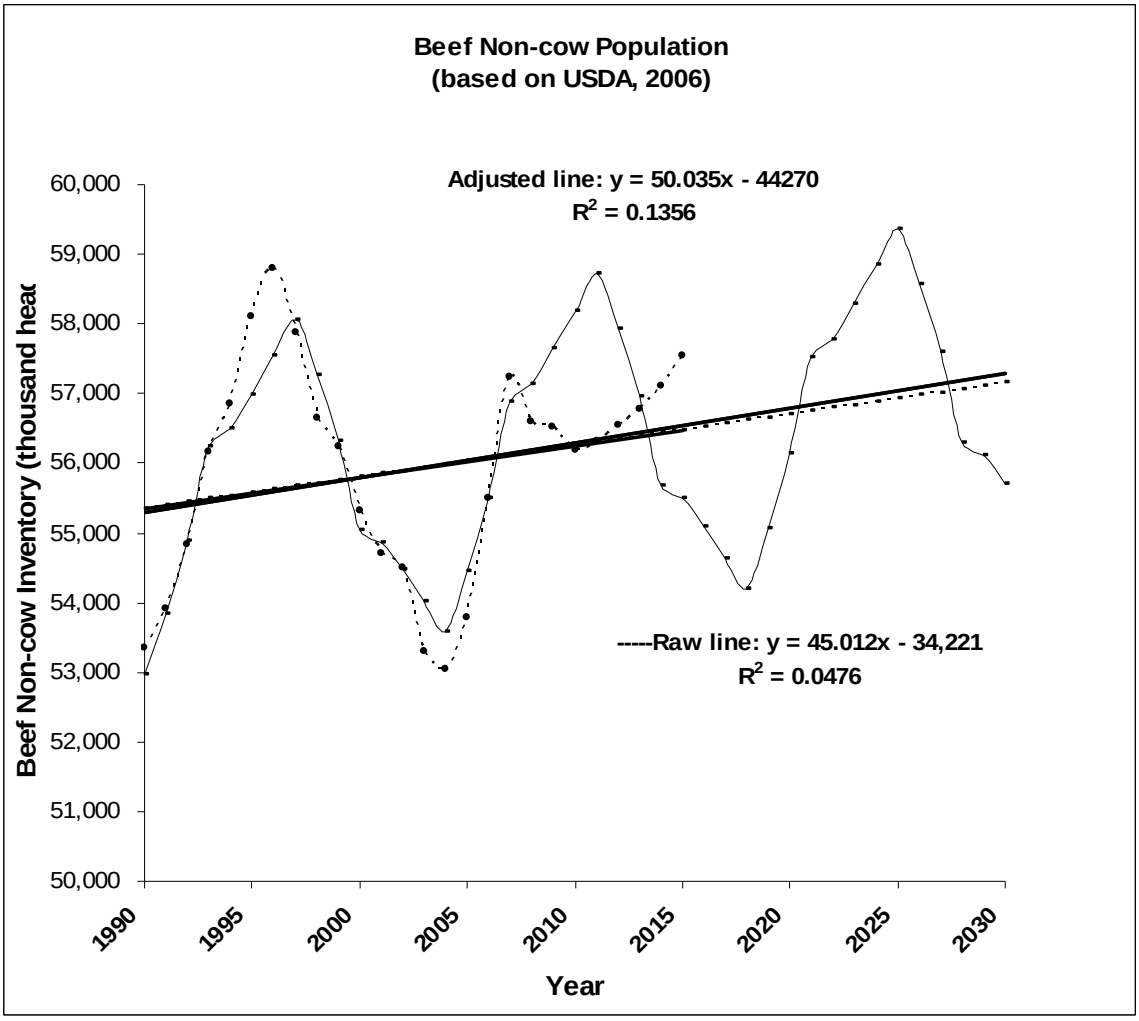

Figure 3. Non-cow Beef Inventory Projections

The EPA estimated the trend and deviations from the trend as in the beef cattle analysis. However, it was not possible to apply the identical technique from the beef cattle industry to the hog industry because a well-defined periodic cycle was not evident in the annual data. The EPA evaluated a 3-year moving average of the deviation to further reduce the random component. As the smoothed cycle continued to appear irregular, EPA assumed that the 2010's will repeat the pattern of the 1990's. Breeding hog populations were estimated using a similar approach. See Figures 4 and 5 for an illustration of the swine projections for the market hog and breeding hog inventories, respectively.

Poultry. Annual poultry populations in the EPA's ammonia emissions inventory for animal agriculture are presented for broilers, turkeys, and layers. To project populations of broilers and turkeys, EPA determined the number of animals related to the pounds of broilers and turkeys produced (the USDA data are for the weight of federally inspected meat slaughtered and total weight of meat produced for 2010 to 2015, rather than number of animals).

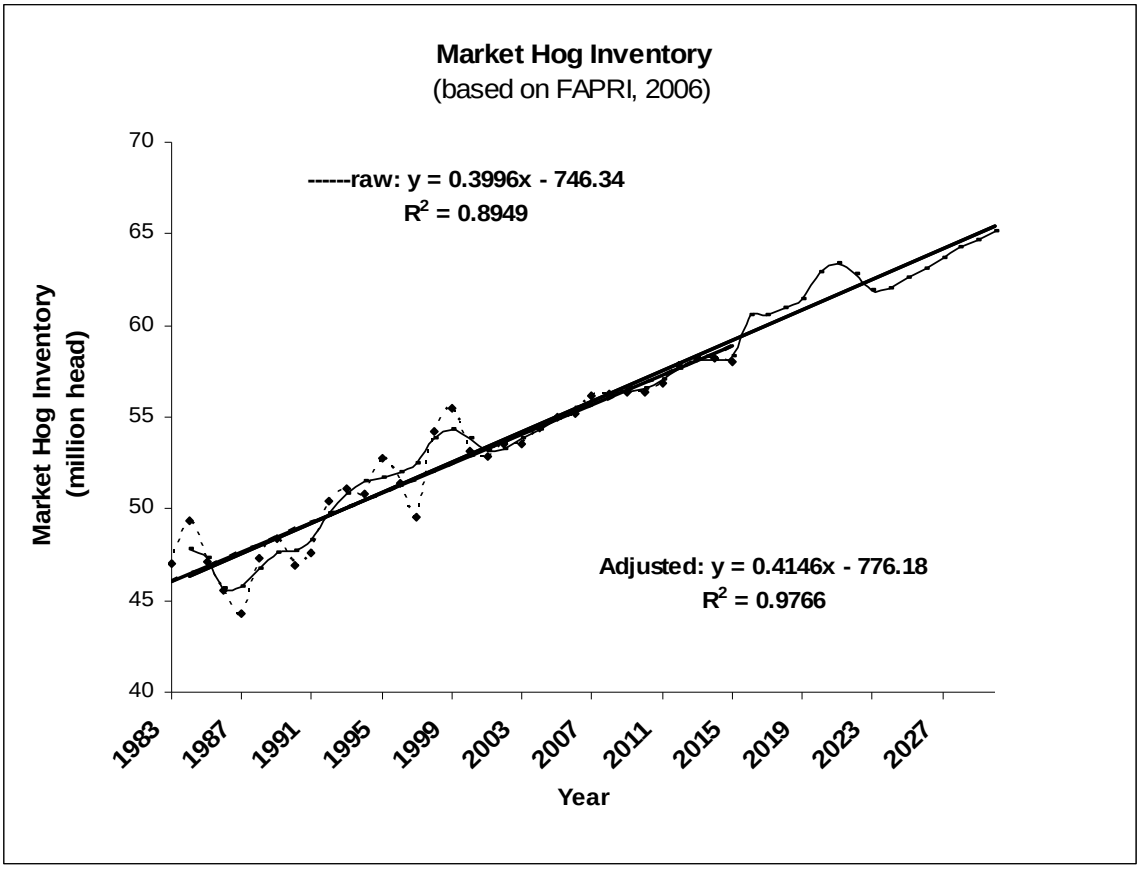

Figure 4. Market Hog Inventory Projections

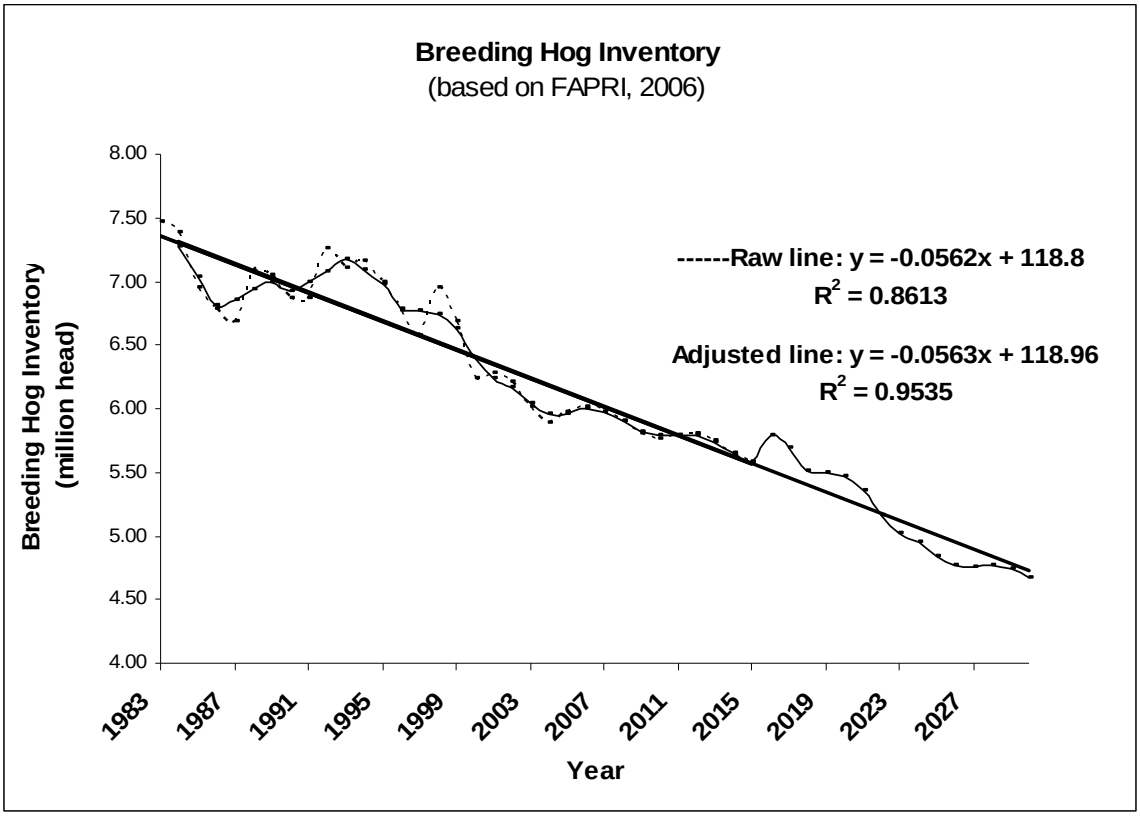

Figure 5. Breeding Hog Inventory Projections

EPA calculated a national average weight of broilers and turkeys produced from 1990 to 2005 and used a linear regression analysis to develop a relationship between both the number of birds produced and their total weight in pounds as a function of year. Figure 6 illustrates the millions of pounds of birds produced per year. This relationship was used to convert USDA's projections for 2005 and 2010 to number of birds. EPA also used a linear regression analysis to predict the pounds of poultry produced for 2015, 2020, and 2030 and converted these estimates to number of birds. Figures 7 and 8 present the population projections for broilers and turkeys, respectively.

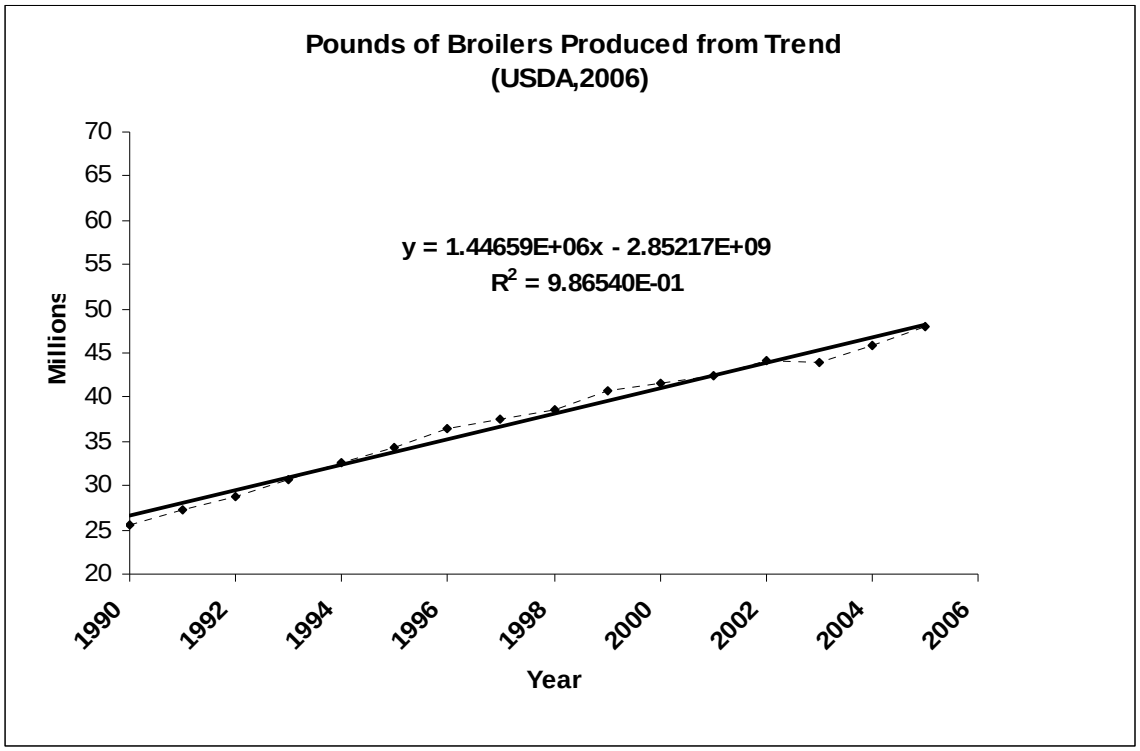

Figure 6. Broiler Pounds Projection

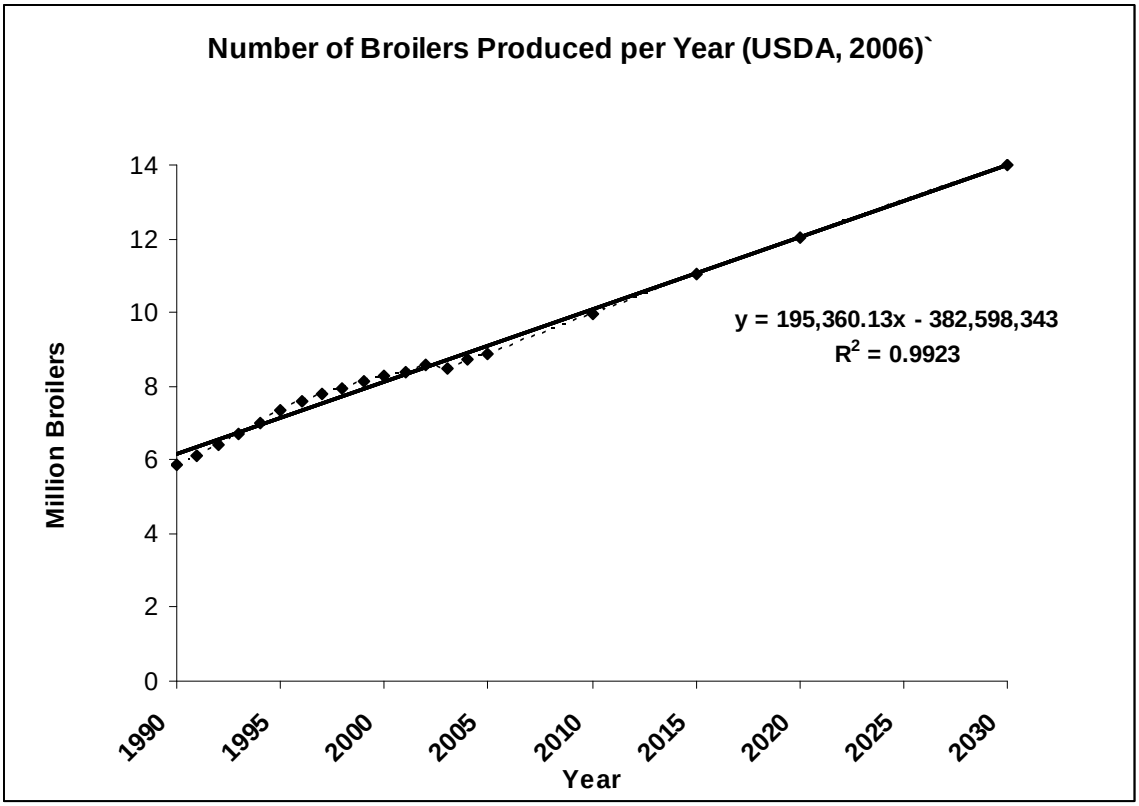

Figure 7. Broiler Inventory Projection

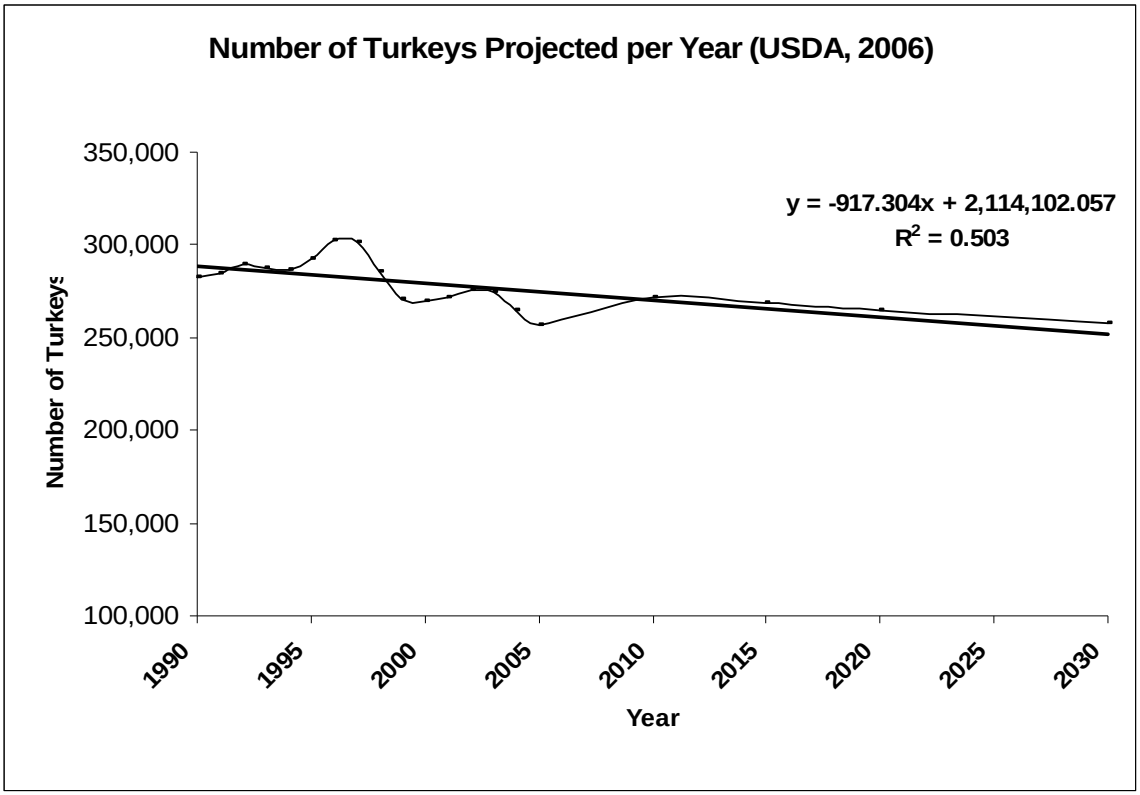

Figure 8. Turkey Inventory Projection

Layer populations are divided into hens (layers 20 weeks old and greater), pullets (chicks less than 20 weeks old), and other chickens. The USDA projections do not include projections of animal populations, only national projections of egg production for 2010 to 2012.

To project populations of layers, EPA determined the number of animals related to the number of eggs produced. The USDA/NASS publishes an annual summary of layer data in the *Chickens and Eggs* report. With these data, EPA calculated a national average number of eggs produced per layer from 1990 to 2005 and used a linear regression analysis to develop a relationship between number of eggs produced and the number of birds. This relationship was used to convert USDA's projections to number of birds. The EPA also used a linear regression analysis to predict the number of eggs produced in the U.S. for 2015, 2020, and 2030. Figure 9 shows the national layer population projection.

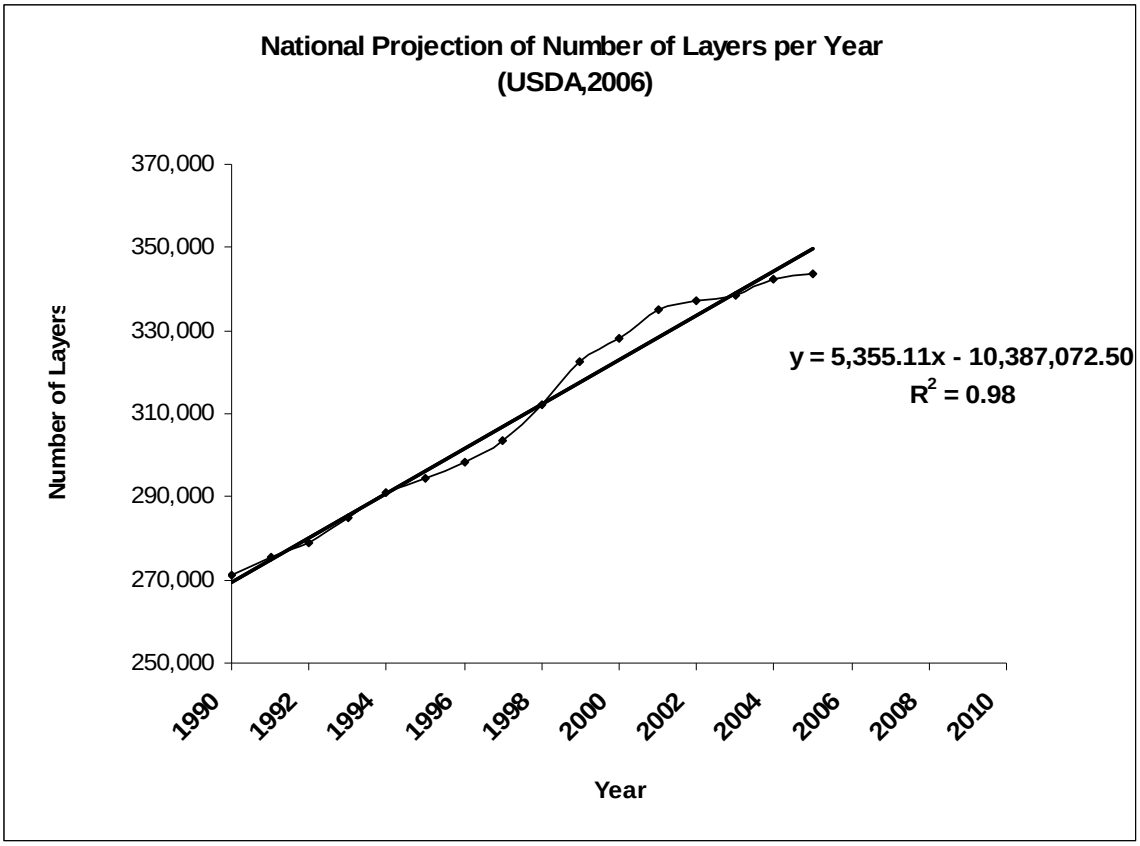

Figure 9. Egg Layer Projection

References

Bowerman, Bruce L. and Richard To. O'Connell (1987) Time Series Forecasting: Unified Concepts and Computer Implementation (Second Edition). Boston, MA. Duxbury Press.

FAPRI (2006). U.S. and World Agricultural Outlook. January 2006. FAPRI Staff Report 06-FSR 1. Iowa State University and University of Missouri-Columbia
Ames, Iowa.

Kohls, Richard L. and Joseph N. Uhl. (1998) Marketing Edition). Upper Saddle River, NJ Prentice Hall.

USDA (2006a). Poultry - Production and Value. 2005 Summary. April 2006.
http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1130

USDA (2006b). National Agricultural Statistics Service (NASS). Chicken and Eggs. December 2005.
http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1028

Appendix F: Development of Animal Population Growth Factors

The data provided in Appendix E were used to develop projected animal populations for the future years of 2009, 2014, and 2020. These populations were then used to develop projection factors, which were assigned to SCCs based on the animal category. If the animal was not one of the categories covered by the data in Appendix E, it was assigned an "overall weighted average" projection factor, based on 2002 NH3 emissions for each animal category. There is also a "poultry weighted average" for particular poultry not covered by the poultry categories; this represents a weighted average across broilers, turkeys and layers.

Table F-1. Summary of Regression Line Equations and Animal Population Projections (From data in Appendix E)

Animal Category		Regression Line Equation	Population Units	Projected Animal Populations (by year)				Percent Difference From 2002[a]		
				2002	2009	2014	2020	2009	2014	2020
Dairy		y = -64.421(x) + 138,285	thousand head	9,314	8,863	8,541	8,155	-4.84	-8.30	-12.45
Beef	Cow	y = 82.584(x) - 131,312	thousand head	34,021	34,599	35,012	35,508	1.70	2.91	4.37
	Noncow	y = 50.035(x) - 44,270	thousand head	55,900	56,250	56,500	56,801	0.63	1.07	1.61
	Total	y= 123.74(x) - 157,730	thousand head	89,997	90,864	91,482	92,225	0.96	1.65	2.47
Swine	Market	y = 0.4146(x) - 776.18	million head	53.8	56.8	58.8	61.3	5.39	9.24	13.86
	Breeding	y = -0.0563(x) + 118.96	million head	6.2	5.9	5.6	5.2	-6.31	-10.81	-16.22
	Total	y = 0.3577(x) - 656.01	million head	60.1	62.6	64.4	66.5	4.17	7.14	10.71
Poultry	Broilers	y = 195,360.13(x) - 382,598,343	birds	8,512,637	9,880,158	10,856,959	12,029,120	16.06	27.54	41.31
	Turkeys	y = -917.304(x) + 2,114,102.057	birds	277,659	271,238	266,652	261,148	-2.31	-3.96	-5.95
	Layers	y = 5,355.11(x) - 10,387,072.50	birds	333,858	371,343	398,119	430,250	11.23	19.25	28.87

The percent difference was calculated using the following equation:

% Diff = (2002 pop. - pop. for year of interest)/(2002 pop.)*100

In cases where the population decreases with time, the percent difference is a negative value.

Table F-2. Growth factors computed from population values in Table F-1

Animal Category	Projection factors to use for 2002 platform			
	2009	2014	2020	
Dairy Cow	1.000	1.000	1.000	Changed from regression values to keep flat
Beef	1.010	1.016	1.025	
Pork	1.042	1.071	1.107	
Broilers	1.161	1.275	1.413	
Turkeys	1.000	1.000	1.000	Changed regression values to keep flat
Layers	1.112	1.192	1.289	
Poultry Wght Average	1.125	1.214	1.321	
Overall Wght Average	1.044	1.075	1.112	

Table F-3. Livestock projections by SCC, based on Table F-2 Projection Factors (PFs)

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
2805000000	-9	-9	Beef	1.010	1.016	1.025	Livestock;Agriculture - Livestock;Total	afdust	0	1,213
2805001000	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle - finishing operations on feedlots (drylots);Dust Kicked-up by Hooves (use 28-05-020, -001, -002, or -003 for Waste	afdust	0	17,450
2805000000	-9	-9	Overall Wght Ave	1.044	1.075	1.112	Livestock;Agriculture - Livestock;Total	ag	91,814	0
2805001100	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle - finishing operations on feedlots (drylots);Confinement	ag	139,186	0
2805001200	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle - finishing operations on feedlots (drylots);Manure handling and storage	ag	56	0
2805001300	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle - finishing operations on feedlots (drylots);Land application of manure	ag	114,779	0
2805002000	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle production composite;Not Elsewhere Classified	ag	727	0

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
2805003100	-9	-9	Beef	1.010	1.016	1.025	Livestock;Beef cattle - finishing operations on pasture/range;Confinement	ag	268,833	0
2805007100	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry production - layers with dry manure management systems;Confinement	ag	107,537	0
2805007300	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry production - layers with dry manure management systems;Land application of manure	ag	2,488	0
2805008100	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry production - layers with wet manure management systems;Confinement	ag	5,985	0
2805008200	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry production - layers with wet manure management systems;Manure handling and storage	ag	16,238	0
2805008300	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry production - layers with wet manure management systems;Land application of manure	ag	2,730	0
2805009100	-9	-9	Broilers	1.161	1.275	1.413	Livestock;Poultry production - broilers;Confinement	ag	143,258	0
2805009200	-9	-9	Broilers	1.161	1.275	1.413	Livestock;Poultry production - broilers;Manure handling and storage	ag	26,007	0
2805009300	-9	-9	Broilers	1.161	1.275	1.413	Livestock;Poultry production - broilers;Land application of manure	ag	117,079	0
2805010100	-9	-9	Turkeys	1.000	1.000	1.000	Livestock;Poultry production - turkeys;Confinement	ag	27,599	0
2805010200	-9	-9	Turkeys	1.000	1.000	1.000	Livestock;Poultry production - turkeys;Manure handling and storage	ag	4,965	0
2805010300	-9	-9	Turkeys	1.000	1.000	1.000	Livestock;Poultry production - turkeys;Land application of manure	ag	24,841	0
2805018000	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle composite;Not Elsewhere Classified	ag	27,879	0
2805019100	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - flush dairy;Confinement	ag	16,958	0
2805019200	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - flush dairy;Manure handling and storage	ag	47,287	0
2805019300	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - flush dairy;Land application of manure	ag	4,270	0
2805020001	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Cattle and Calves Waste Emissions;Milk Cows	ag	12,828	0
2805020002	-9	-9	Beef	1.010	1.016	1.025	Livestock;Cattle and Calves Waste Emissions;Beef Cows	ag	33,822	0

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
2805020003	-9	-9	Beef	1.010	1.016	1.025	Livestock;Cattle and Calves Waste Emissions;Heifers and Heifer Calves	ag	27,032	0
2805020004	-9	-9	Beef	1.010	1.016	1.025	Livestock;Cattle and Calves Waste Emissions;Steers, Steer Calves, Bulls, and Bull Calves	ag	31,085	0
2805021100	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - scrape dairy;Confinement	ag	41,090	0
2805021200	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - scrape dairy;Manure handling and storage	ag	66,438	0
2805021300	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - scrape dairy;Land application of manure	ag	78,221	0
2805022100	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - deep pit dairy;Confinement	ag	4,827	0
2805022200	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - deep pit dairy;Manure handling and storage	ag	225	0
2805022300	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - deep pit dairy;Land application of manure	ag	2,745	0
2805023100	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - drylot/pasture dairy;Confinement	ag	38,340	0
2805023200	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - drylot/pasture dairy;Manure handling and storage	ag	797	0
2805023300	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Dairy cattle - drylot/pasture dairy;Land application of manure	ag	47,819	0
2805025000	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production composite;Not Elsewhere Classified (see also 28-05-039, -047, -053)	ag	65,507	0
2805030000	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Livestock;Poultry Waste Emissions;Not Elsewhere Classified (see also 28-05-007, -008, -009)	ag	41,447	0
2805030001	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Livestock;Poultry Waste Emissions;Pullet Chicks and Pullets less than 13 weeks old	ag	714	0
2805030002	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Livestock;Poultry Waste Emissions;Pullets 13 weeks old and older but less than 20 weeks old	ag	522	0
2805030003	-9	-9	Layers	1.112	1.192	1.289	Livestock;Poultry Waste Emissions;Layers	ag	3,412	0
2805030004	-9	-9	Broilers	1.161	1.275	1.413	Livestock;Poultry Waste Emissions;Broilers	ag	1,639	0
2805030007	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Livestock;Poultry Waste Emissions;Ducks	ag	2,879	0
2805030008	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Livestock;Poultry Waste Emissions;Geese	ag	166	0

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
2805030009	-9	-9	Turkeys	1.000	1.000	1.000	Livestock;Poultry Waste Emissions;Turkeys	ag	11,491	0
2805035000	-9	-9	Overall Wght Ave	1.044	1.075	1.112	Livestock;Horses and Ponies Waste Emissions;Not Elsewhere Classified	ag	45,361	0
2805039100	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - operations with lagoons (unspecified animal age);Confinement	ag	64,088	0
2805039200	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - operations with lagoons (unspecified animal age);Manure handling and storage	ag	125,866	0
2805039300	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - operations with lagoons (unspecified animal age);Land application of manure	ag	10,405	0
2805040000	-9	-9	Overall Wght Ave	1.044	1.075	1.112	Livestock;Sheep and Lambs Waste Emissions;Total	ag	18,675	0
2805045000	-9	-9	Overall Wght Ave	1.044	1.075	1.112	Livestock;Goats Waste Emissions;Not Elsewhere Classified	ag	16,253	0
2805045002	-9	-9	Overall Wght Ave	1.044	1.075	1.112	Livestock;Goats Waste Emissions;Angora Goats	ag	6	0
2805045003	-9	-9	Dairy Cow	1.000	1.000	1.000	Livestock;Goats Waste Emissions;Milk Goats	ag	7	0
2805047100	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - deep-pit house operations (unspecified animal age);Confinement	ag	87,815	0
2805047300	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - deep-pit house operations (unspecified animal age);Land application of manure	ag	38,878	0
2805053100	-9	-9	Pork	1.042	1.071	1.107	Livestock;Swine production - outdoor operations (unspecified animal age);Confinement	ag	683	0
30202000	-9	-9	Pork	1.042	1.071	1.107	Food and Agriculture;Beef Cattle Feedlots;undefined *	ptnonipm	35,011	0
30202001	-9	-9	Beef	1.010	1.016	1.025	Food and Agriculture;Beef Cattle Feedlots;Feedlots: General	ptnonipm	42,238	64
30202002	-9	-9	Beef	1.010	1.016	1.025	Food and Agriculture;Beef Cattle Feedlots;Feedlots: General	ptnonipm	0	114
30202101	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Food and Agriculture;Eggs and Poultry Production;Manure Handling: Dry	ptnonipm	524	0
30202105	-9	-9	Poultry Wght Ave	1.125	1.214	1.321	Food and Agriculture;Eggs and Poultry Production;Manure Handling: Wet	ptnonipm	0	0
30203099	-9	NH3	Dairy Cow	1.000	1.000	1.000	Food and Agriculture;Dairy Products;Other Not Classified	ptnonipm	5,353	111

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
30203099	-9	PM10	Dairy Cow	1.000	1.000	1.000	Food and Agriculture;Dairy Products;Other Not Classified	ptnonipm	0	0
30203099	-9	PM2_5	Dairy Cow	1.000	1.000	1.000	Food and Agriculture;Dairy Products;Other Not Classified	ptnonipm	0	111
39999999	T$15445	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	14	0
39999999	T$18506	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	8	0
39999999	T$18024	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$16314	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	1	0
39999999	T$16559	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$17408	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	2	0
39999999	00502060	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	1	0
39999999	T$17168	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	4	0
39999999	T$16050	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	3	0
39999999	T$17626	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	2	0
39999999	T$18683	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$17682	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	4	0

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
39999999	T$18089	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	17	0
39999999	T$13933	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	8	0
39999999	T$16753	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$16725	NH3	Dairy Cow	1.000	1.000	1.000	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
30288801	0009	NH3	Poultry Wght Ave	1.125	1.214	1.321	Food and Agriculture;Fugitive Emissions;Specify in Comments Field	ptnonipm	9	0
39999999	T$17477	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	5	0
39999999	T$17544	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	4	0
39999999	T$15164	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	15	0
39999999	T$14331	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	7	0
39999999	T$14336	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	9	0
39999999	T$15830	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$15830	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	0	0
39999999	T$17365	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other Not Classified	ptnonipm	1	0
39999999	T$2867	NH3	Poultry Wght Ave	1.125	1.214	1.321	Miscellaneous Manufacturing Industries;Miscellaneous Industrial Processes;Other	ptnonipm	4	0

SCC	Plant ID	Poll-utant	Category from Table F-2	2009 PF	2014 PF	2020 PF	SCC Description * 10-digit SCCs all begin with "Miscellaneous Area Sources;Agriculture Production –" and 8-digit SCCs all begin with "Industrial Processes"	Sector	2002 NH3 (tons)	2002 PM2.5 (tons)
							Not Classified			
Even though this is a Beef SCC, it is only used in the 2002 NEI for Swine farms.										

Appendix G: Description of VMT growth approach

The approach described in the technical memorandum from E.H. Pechan and Associates, dated October 2006 was used with the following modification implemented by OTAQ prior to using the VMT in NMIM. The memorandum is provided following this brief discussion of the modification.

April 25, 2007 Addendum: Change in the VMT Projection Method Documented in the Technical Memorandum by E.H. Pechan and Associates dated October 2006.

After an extensive review of the Pechan methodology described in the technical memorandum, "Vehicle Miles Traveled (VMT) Projection Methods," (October 2006), EPA's Office of Transportation and Air Quality (OTAQ) identified one aspect of the method that should be changed. The approach used in the method to apply the Annual Energy Outlook (AEO) growth estimates by fuel type as well, as vehicle type results in the national total VMT (with all vehicle types and fuel types combined), in future calendar years made for growth projections that were smaller than anticipated. Since the VMT portion assigned to diesel vehicles in the 2002 National Emission Inventory (NEI) is smaller than estimated by AEO, the significant growth in diesel VMT was blunted in the Pechan approach, making the diesel VMT, and ultimately the total VMT, smaller than would be expected in future years.

OTAQ has resolved this problem with an adjustment in how the AEO growth data were used. Growth in VMT occurs by vehicle type, regardless of the fuel ultimately used. Rather using the AEO numbers as representing a growth in the VMT of vehicle types of each fuel type, the AEO numbers instead are now used to represent a "VMT demand" by vehicle type that can be satisfied by both gasoline and diesel fueled vehicles.

The change in the method occurs in Step 3 of Section A, so that the national control totals of VMT are now determined by vehicle type with all fuel types combined. These control totals are then distributed to gasoline and diesel subgroups using the ratio of the AEO VMT estimates by fuel type. The AEO fuel type splits are preferable to using MOBILE6 defaults, since the AEO projections include the latest estimates for fuel demand in future calendar years. Once these splits were made, the resulting set of control totals by vehicle type and fuel type were used as they were in the original Pechan methodology.

Since this change only occurs in the control totals and because these control totals are proportionally allocated to the counties, roadway types and vehicle classes; the ratio of the new control total to the existing control total by vehicle class and fuel type can be applied to every VMT estimate including the vehicle class and fuel type combination. This adjustment was done as a post-processing step on the results of the original method. The national VMT sum by vehicle type and fuel type matches the new national control totals.

VEHICLE MILES TRAVELED (VMT) PROJECTION METHODS

TECHNICAL MEMORANDUM

PECHAN

5528-B Hempstead Way
Springfield, VA 22151

703-813-6700 telephone
703-813-6729 facsimile

3622 Lyckan Parkway
Suite 2005
Durham, NC 27707

919-493-3144 telephone
919-493-3182 facsimile

P.O. Box 4361
El Dorado Hills, CA 95762

916-708-1893 telephone
530-677-0337 facsimile

Prepared for:

Laurel Driver
Emission Inventory Group
Office of Air Quality Planning and Standards
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Prepared by:

Andy Bollman
E.H. Pechan & Associates, Inc.
3622 Lyckan Parkway, Suite 2005
Durham, NC 27707

October 2006

[This page intentionally left blank.]

CONTENTS

Page

TABLES

Page

ACRONYMS AND ABBREVIATIONS

AEO	Annual Energy Outlook
CLDT	commercial light-duty truck
CNG	compressed natural gas
DOE	Department of Energy
EGAS	Economic Growth Analysis System
EIA	Energy Information Administration
EPA	U.S. Environmental Protection Agency
FAC	freight adjustment coefficient
HDDBS	heavy-duty diesel bus-school
HDDBT	heavy-duty diesel bus-transit
HDDV	heavy-duty diesel vehicle
HDGB	heavy-duty gasoline bus
HDGV	heavy-duty gasoline vehicle
ICE	internal combustion engine
LDDT	light-duty diesel truck
LDDV	light-duty diesel vehicle
LDGT	light-duty gasoline truck
LDGV	light-duty gasoline vehicle
LDV	light-duty vehicle
LPG	liquefied petroleum gas
NEI	National Emissions Inventory
NMIM	National Mobile Inventory Model
OTAQ	Office of Transportation and Air Quality
Pechan	E.H. Pechan & Associates, Inc.
REMI	Regional Economic Models, Inc.
SCC	source classification code
VMT	vehicle miles traveled

CHAPTER I. INTRODUCTION

The U.S. Environmental Protection Agency (EPA)'s Office of Transportation and Air Quality (OTAQ) requires vehicle miles traveled (VMT) projections to support future policy analyses. In particular, EPA needs VMT projections for each county in the United States and analogous geographic areas in Puerto Rico and the U.S. Virgin Islands for select years over 2009-2030 (2009, 2010, 2014, 2015, 2020, and 2030).[1] In keeping with base year VMT data used in the National Mobile Inventory Model (NMIM), the VMT projections are to be reported by vehicle type and road type. The purpose of this document is to describe the data and methods used to develop these VMT projections.

Chapter II provides an overview of the three sets of forecast methods and presents a summary of the VMT estimates for each forecast year. Chapter III describes the light-duty VMT projection methods. The VMT projection methods for commercial light trucks are presented in Chapter IV. Chapter V presents the freight truck VMT projection methods. Chapter VI presents the references that were consulted in preparing this document.

[1] After commencing work under this study, EPA notified Pechan that it also wanted VMT projections for 2010 and 2015. Pechan was unable to develop estimates for these years using the approach described in this memorandum. However, Pechan calculated estimates for these years through interpolation (e.g., 2010 values were estimated by interpolating between the 2009 and 2014 estimates computed using the methods described herein).

CHAPTER II. OVERVIEW OF METHODS AND RESULTS

Pechan prepared VMT projections using 2002 National Emissions Inventory (NEI) VMT data as the starting point. The VMT projection methodologies utilize the following information:

- National VMT projections by major vehicle category and fuel type from the Department of Energy (DOE)'s "Annual Energy Outlook 2006" (DOE, 2006).
- National VMT vehicle type proportions supplied in EPA's MOBILE6 onroad mobile source emissions model.
- Industry sector VMT weighting coefficients from DOE's "Annual Energy Outlook 2006."
- State-level industry sector output and driving population estimates from version 5.5 economic models prepared by Regional Economic Models, Inc. (REMI) (Houyoux, 2004).
- County-level population estimates from EPA's Benefits Mapping and Analysis Program (BenMAP) (Davidson, 2006).

In some cases, Pechan relied on additional sources of information in preparing the VMT projections (e.g., population estimates for Alaska and Hawaii were obtained from State sources or the Bureau of the Census). The following chapters describe in more detail the data and procedures that were used to prepare these projections.

Table II-1 displays base and forecast year national VMT projections by vehicle type. Table II-2 presents the State-level VMT estimates.

Table II-1. National Base and Forecast Year VMT by Vehicle Type (millions of miles)

Vehicle Type Description	2002	2009	2010	2014	2015	2020	2030
Class 2B Heavy-Duty Diesel Vehicles	21,631	24,995	25,514	27,589	28,172	31,087	37,957
Class 2B Heavy-Duty Gasoline Vehicles	67,750	78,289	79,914	86,414	88,240	97,369	118,891
Class 3 Heavy-Duty Diesel Vehicles	7,085	7,657	7,834	8,541	8,779	9,969	13,159
Class 3 Heavy-Duty Gasoline Vehicles	2,935	2,984	3,043	3,278	3,356	3,747	4,712
Class 4 Heavy-Duty Diesel Vehicles	6,479	7,920	8,178	9,209	9,480	10,838	14,307
Class 4 Heavy-Duty Gasoline Vehicles	1,496	1,073	1,058	1,000	1,014	1,084	1,363
Class 5 Heavy-Duty Diesel Vehicles	3,285	4,185	4,332	4,920	5,077	5,860	7,752
Class 5 Heavy-Duty Gasoline Vehicles	2,769	2,601	2,630	2,744	2,794	3,044	3,816
Class 6 Heavy-Duty Diesel Vehicles	14,736	17,112	17,576	19,430	20,001	22,854	30,161
Class 6 Heavy-Duty Gasoline Vehicles	5,980	5,614	5,682	5,956	6,068	6,626	8,309
Class 7 Heavy-Duty Diesel Vehicles	21,366	26,838	27,522	30,255	30,996	34,701	42,875
Class 7 Heavy-Duty Gasoline Vehicles	2,856	4,833	5,143	6,383	6,613	7,764	9,886
Class 8A Heavy-Duty Diesel Vehicles	27,831	33,930	34,747	38,017	38,928	43,486	54,433
Class 8A Heavy-Duty Gasoline Vehicles	89	144	154	194	200	232	300
Class 8B Heavy-Duty Diesel Vehicles	103,804	126,430	129,452	141,540	144,916	161,796	201,734
Class 8B Heavy-Duty Gasoline Vehicles	76	0	0	0	0	0	0
Diesel School Buses	4,377	6,342	6,565	7,457	7,647	8,596	10,595
Diesel Transit and Urban Buses	3,007	3,626	3,718	4,086	4,180	4,650	5,712
Gasoline Buses	1,322	1,124	1,067	836	832	810	1,047
Light-duty Diesel Truck 1 & 2	1,483	226	181	0	0	0	0
Light-duty Diesel Truck 3 & 4	7,075	14,702	15,997	21,177	22,888	31,442	62,329
Light-duty Diesel Vehicle	4,367	3,705	3,815	4,258	4,467	5,512	10,786
Light-duty Gasoline Truck 1	171,722	240,116	251,005	294,561	303,424	347,741	404,104
Light-duty Gasoline Truck 2	581,534	812,715	849,511	996,692	1,026,615	1,176,233	1,367,194
Light-duty Gasoline Truck 3	172,333	239,772	250,521	293,513	302,239	345,870	403,399
Light-duty Gasoline Truck 4	79,492	110,594	115,554	135,392	139,419	159,557	186,026
Light-duty Gasoline Vehicles	1,512,162	1,366,503	1,358,083	1,324,402	1,327,064	1,340,371	1,554,365
Motorcycle	11,738	12,083	12,267	13,000	13,193	14,155	16,541
Total	***2,840,778***	***3,156,115***	***3,221,060***	***3,480,843***	***3,546,601***	***3,875,392***	***4,571,753***

Table II-2. Base and Forecast Year VMT by State (millions of miles)

State Name	2002	2009	2010	2014	2015	2020	2030
Alabama	55,722	59,728	60,704	64,609	65,543	70,214	78,173
Alaska	4,897	5,593	5,740	6,331	6,497	7,324	8,796
Arizona	52,505	64,987	67,251	76,306	78,715	90,761	114,869
Arkansas	29,894	32,220	32,805	35,148	35,747	38,741	46,133
California	300,760	344,766	352,814	385,006	393,220	434,289	510,581
Colorado	43,539	51,539	53,035	59,021	60,569	68,307	86,404
Connecticut	30,996	33,423	33,925	35,934	36,372	38,559	43,424
Delaware	8,835	9,681	9,843	10,489	10,648	11,447	12,695
Dist. Columbia	3,840	4,056	4,118	4,365	4,443	4,835	5,405
Florida	178,366	206,522	211,731	232,568	237,785	263,870	307,488
Georgia	106,727	121,874	124,748	136,245	139,247	154,256	185,217
Hawaii	8,886	9,734	9,906	10,595	10,773	11,664	12,843
Idaho	14,167	16,400	16,798	18,390	18,763	20,624	25,020
Illinois	105,024	114,156	116,324	124,994	127,242	138,483	161,512
Indiana	72,524	78,687	80,174	86,119	87,651	95,310	112,670
Iowa	31,365	33,868	34,469	36,872	37,500	40,640	49,556
Kansas	28,443	30,646	31,166	33,247	33,779	36,440	44,842
Kentucky	48,109	51,834	52,723	56,279	57,155	61,537	69,018
Louisiana	43,294	46,004	46,797	49,966	50,825	55,122	66,956
Maine	14,652	15,758	16,015	17,041	17,297	18,577	20,754
Maryland	53,758	60,139	61,338	66,133	67,284	73,034	84,682
Massachusetts	53,231	58,773	59,872	64,266	65,324	70,615	81,440
Michigan	98,634	104,602	106,256	112,870	114,565	123,041	140,209
Minnesota	53,151	58,220	59,286	63,552	64,596	69,816	79,219
Mississippi	36,277	39,325	40,033	42,863	43,602	47,294	55,242
Missouri	69,140	74,847	76,183	81,526	82,866	89,568	106,404
Montana	10,395	11,172	11,363	12,125	12,322	13,309	15,843
Nebraska	19,137	20,606	20,957	22,359	22,727	24,564	31,698
Nevada	14,502	18,481	19,168	21,913	22,607	26,075	30,938
New Hampshire	12,579	14,205	14,499	15,675	15,942	17,273	20,186
New Jersey	72,609	79,739	81,123	86,659	87,942	94,356	109,964
New Mexico	23,348	26,437	27,057	29,536	30,148	33,211	38,623
New York	140,752	152,260	154,630	164,110	166,361	177,616	218,270
North Carolina	80,200	89,725	91,627	99,234	101,239	111,265	126,875
North Dakota	7,336	7,667	7,768	8,170	8,272	8,782	10,891
Ohio	107,859	114,883	116,788	124,409	126,381	136,240	157,502
Oklahoma	45,732	50,542	51,611	55,885	56,961	62,341	75,989
Oregon	33,246	37,168	37,964	41,147	41,936	45,886	51,936
Pennsylvania	104,879	112,474	114,244	121,323	123,097	131,963	154,662
Rhode Island	8,173	8,952	9,114	9,763	9,926	10,743	12,323
South Carolina	47,074	51,668	52,622	56,437	57,400	62,215	72,495
South Dakota	8,498	9,210	9,350	9,911	10,034	10,648	13,255
Tennessee	68,315	76,179	77,856	84,564	86,293	94,933	110,228
Texas	217,820	245,163	250,737	273,035	278,829	307,798	373,791
Utah	24,421	28,508	29,301	32,477	33,290	37,358	44,700
Vermont	9,517	10,747	10,996	11,994	12,256	13,563	16,975
Virginia	77,396	86,624	88,380	95,403	97,078	105,450	129,349
Washington	54,461	62,977	64,609	71,139	72,825	81,259	94,037
West Virginia	19,544	19,615	19,811	20,597	20,808	21,863	23,155
Wisconsin	58,744	64,816	66,139	71,431	72,808	79,691	92,958
Wyoming	9,006	9,384	9,510	10,015	10,144	10,786	12,679
Puerto Rico	18,110	19,166	19,421	20,440	20,614	21,482	22,508
Virgin Islands	389	363	361	354	354	354	370
Total	***2,840,778***	***3,156,115***	***3,221,060***	***3,480,843***	***3,546,601***	***3,875,392***	***4,571,753***

CHAPTER III. LIGHT-DUTY VMT PROJECTION METHODS

Pechan prepared light-duty (less than 8,500 lbs) vehicle (LDV) miles traveled projections for the following MOBILE6 model vehicle categories:

Fuel Type	Vehicle Category
Diesel	Light-Duty Diesel Vehicle (LDDV) Class 1 Light-Duty Diesel Truck (LDDT1) Class 2 Light-Duty Diesel Truck (LDDT2) Class 3 Light-Duty Diesel Truck (LDDT3) Class 4 Light-Duty Diesel Truck (LDDT4)
Gasoline	Light-Duty Gasoline Vehicle (LDGV) Class 1 Light-Duty Gasoline Truck (LDGT1) Class 2 Light-Duty Gasoline Truck (LDGT2) Class 3 Light-Duty Gasoline Truck (LDGT3) Class 4 Light-Duty Gasoline Truck (LDGT4) Motorcycles

This chapter describes the major steps that Pechan used to forecast county-level VMT for these vehicle types and for each of 12 roadway types.

A. NATIONAL PROJECTIONS BY FUEL TYPE

Step 1: Develop Growth Factors from AEO National VMT Projections Data

In addition to gasoline and diesel, "Annual Energy Outlook 2006" (AEO2006) reports LDV miles projections for the following non-conventional fuel types:

Alcohol Fuel Technology
- Methanol-flex fuel internal combustion engine (ICE)
- Methanol ICE
- Ethanol-flex fuel ICE
- Ethanol ICE

Natural Gas Technology
- Compressed natural gas (CNG) ICE
- CNG Bi-fuel
- Liquefied petroleum gas (LPG) ICE
- Liquefied petroleum gas Bi-fuel

Electric Technology
- Electric vehicle
- Electric-diesel hybrid
- Electric-gasoline hybrid

Fuel Cell Technology
- Fuel cell gasoline
- Fuel cell methanol
- Fuel cell hydrogen

The NEI, NMIM, and MOBILE6 do not currently report VMT data for these fuel types. Therefore, Pechan combined the VMT estimates for each of the above with AEO VMT estimates for gasoline- or diesel-fueled vehicles. In particular, Pechan summed VMT for the electric-diesel hybrid category with the AEO conventional diesel-fueled VMT estimates. All other nonconventional fueled-VMT estimates were added to the AEO conventional gasoline-fueled VMT. These steps resulted in national total gasoline LDV miles traveled and total diesel LDV miles traveled estimates for 2003-2030. Because the first year reported in AEO2006 is 2003, Pechan developed 2002 VMT estimates by applying 2003VMT/2002VMT ratios from AEO2005 to the AEO2006 VMT estimates for 2003. Finally, Pechan developed separate gasoline and diesel-fueled VMT growth factors for the following forecast years: 2009, 2014, 2020, and 2030. Each growth factor was developed relative to the 2002 VMT.

Step 2: Compile Base Year VMT Projections Data

Next, Pechan summed the 2002 NEI county-level VMT data, which is reported by vehicle and roadway type to yield national gasoline VMT and national diesel VMT totals.

Step 3: Apply Step 1 Growth Factors to Step 2 Base Year VMT

Pechan applied the national AEO-based growth factors for gasoline LDV and diesel LDV to the national 2002 gasoline LDV and 2002 diesel LDV to yield national gasoline LDV and national diesel LDV miles traveled control totals.

B. VEHICLE CATEGORY-LEVEL PROJECTIONS

Step 1: Calculate Gasoline and Diesel LDV Miles Traveled Fractions by Vehicle Type

For 2002 and each forecast year, Pechan used MOBILE6 VMT vehicle type fractions to compute the fraction of total gasoline LDV miles traveled associated with each of the six LDV gasoline vehicle categories. Pechan also calculated analogous fractions for each of the three LDV diesel vehicle categories.

Step 2: Multiply Step 1 Fractions by 2002 and Forecast Year VMT Data Computed Above

Pechan multiplied the appropriate year fractions from Step 1 by the national 2002 gasoline (or diesel) LDV miles traveled data compiled from Step 3 above to yield preliminary national VMT forecasts by vehicle category.

Step 3: Compute Vehicle-Category Growth Factors from Step 2 VMT Estimates

Pechan developed VMT growth factors for each forecast year for each of the nine LDV categories from the preliminary VMT forecast data computed in Step 2. Each growth factor was developed relative to 2002 VMT.

Step 4: Multiply Step 3 Growth Factors by 2002 NEI VMT Data

Next, Pechan applied the Step 3 national growth factors by vehicle category to the 2002 NEI county-level VMT data to develop preliminary forecast year LDV miles traveled data by county and vehicle category.

Step 5: Compute Year/County-Specific Vehicle Category-Level Ratios by Fuel Type

Pechan next computed the proportion of each county's total gasoline (or diesel) VMT in each year that is associated with each vehicle category. These calculations were performed using 2002 NEI VMT data and the preliminary forecast year VMT data calculated in Step 4.

C. FINAL VMT PROJECTIONS

Step 1: Compute Proportion of National Driving Population in Each County

For each year of interest, Pechan compiled State-level driving population estimates from version 5.5 REMI economic models.[2] Pechan then allocated these estimates to each county based on each county's proportion of total State population as reported for each year in BenMAP. Next, Pechan computed the fraction of total national driving population by county for each study year.

Step 2: Multiply Proportions from Step 1 by National 2002 NEI LDV Miles Traveled

Pechan then applied the year 2002 county fractions computed in Step 1 to the national 2002 LDV miles traveled by fuel type from the NEI. Pechan also applied the forecast year fractions in Step 1 by the national LDV miles traveled values by fuel type/year, which were calculated as described in Step 3 of Section A above.

Step 3: Compute Growth Factors by County and Fuel Type from Step 2 VMT Data

Using 2002 VMT as the base year, Pechan computed county/fuel type-level growth factors for each forecast year from the VMT values computed in Step 2.

Step 4: Apply Step 3 Growth Factors to 2002 NEI VMT and Sum Forecast VMT by Fuel Type

Pechan then multiplied the Step 3 growth factors by the county-level 2002 NEI VMT data and summed the results by fuel type and forecast year across all counties to obtain estimates of national VMT by fuel type/year.

[2] Because estimates were not available for 16+ year olds, Pechan used REMI estimates for 15+ year olds.

Step 5: Compute VMT Adjustment Factors

For each forecast year, Pechan calculated adjustment factors representing the ratio of control total LDV miles traveled by fuel type (calculated in Step 3 of Section A) to the LDV miles traveled estimates by fuel type which were derived in Step 4 above.

Step 6: Compute Final Growth Factors by Fuel Type and Year

Next, Pechan multiplied the fuel- and year-specific adjustment factors from Step 5 by the Step 3 county-level growth factors by fuel type/year. The resulting values represent growth factors that will yield national LDV miles traveled estimates by fuel type that match the control totals computed in Step 3 of Section A.

Step 7: Develop Final LDV Miles Traveled Estimates by Fuel Type and Year

Pechan then multiplied the Step 6 growth factors by the 2002 NEI county-level VMT estimates to yield final county-level gasoline LDV and diesel LDV miles traveled for each forecast year.

Step 8: Develop Final LDV Miles Traveled Estimates by Vehicle Category, Fuel Type, and Year

Next, Pechan multiplied the year/county-specific vehicle category-level ratios by fuel type, which were computed in Step 5 of Section B, by the Step 7 county-level gasoline LDV and diesel LDV miles traveled for each forecast year. This step produced the final LDV miles traveled forecasts by year, county, and vehicle category.

Step 9: Develop/Apply 2002 Roadway Category Fractions to Step 8 Final VMT Estimates

Finally, Pechan developed ratios from 2002 NEI VMT data that represent the fraction of each county's vehicle category VMT by roadway type. These ratios were then applied to the Step 8 VMT data to produce the final LDV miles traveled data by year, county, vehicle category, and roadway type.

Step 10: Prepare Forecast Year VMT Estimates for Puerto Rico and U.S. Virgin Islands

For each vehicle category and year, Pechan first developed national VMT per driving age population estimates by dividing the Step 9 LDV miles traveled data by national driving population estimates compiled from version 5.5 REMI economic models. Next, Pechan multiplied these values by the territory-level driving age population estimates for each year, which were obtained from the Bureau of the Census' International Data Base (DOC, 2006). Pechan then developed growth factors from the products of these calculations (with 2002 as the base year), which were then applied to the base year (2002) NEI VMT data for Puerto Rico and Virgin Islands to yield LDV miles traveled by year, county, vehicle category, and roadway type.

Step 11: Prepare VMT Estimates for 2010 and 2015 via Interpolation

Finally, Pechan estimated LDV miles traveled estimates by year, county, vehicle category, and roadway type for two years that were not in the original scope for this study (2010 and 2015). Pechan estimated 2010 VMT by applying one-fifth of the estimated 2009-2014 VMT change by county, vehicle category, and roadway type to the 2009 VMT estimates. A similar procedure was applied to estimate 2015 VMT from 2014 and 2020 VMT estimates.

CHAPTER IV. COMMERCIAL LIGHT-DUTY TRUCK MILES TRAVELED PROJECTION METHODS

Pechan prepared commercial light-duty truck (8,500 to 10,000 lbs) miles traveled projections for the following MOBILE6 model vehicle categories: Class 2b heavy-duty gasoline vehicle (HDGV2b) and Class 2b heavy-duty diesel vehicle (HDDV2b). This chapter describes the major steps that Pechan used to forecast county-level VMT for these vehicle types and for each roadway type.

A. NATIONAL PROJECTIONS BY FUEL TYPE

Step 1: Develop Growth Factors from AEO National VMT Projections Data

The AEO reports VMT projections for total commercial light-duty trucks (CLDTs) − note that separate forecasts for gasoline CLDT and diesel CLDT are not provided. Because the first year reported in AEO2006 is 2003, Pechan developed 2002 VMT estimates by applying 2003VMT/2002VMT ratios from AEO2005 to the AEO2006 VMT estimates for 2003. Finally, Pechan developed CLDT miles traveled growth factors (relative to 2002) for the following forecast years: 2009, 2014, 2020, and 2030.

Step 2: Compile Base Year VMT Projections Data

Next, Pechan summed the 2002 NEI county-level VMT data, which is reported by vehicle and roadway type to yield national CLDT miles traveled totals.

Step 3: Apply Step 1 Growth Factors to Step 2 Base Year VMT

Pechan applied the national AEO-based growth factors to the national total 2002 CLDT miles traveled to produce national CLDT miles traveled control totals.

B. VEHICLE CATEGORY-LEVEL PROJECTIONS

Step 1: Calculate CLDT Miles Traveled Fractions by Vehicle Type

For 2002 and each forecast year, Pechan used MOBILE6 VMT vehicle type fractions to compute the fraction of total CLDT miles traveled associated with the two CLDT vehicle categories (i.e., HDGV2b and HDDV2b).

Step 2: Multiply Step 1 Fractions by 2002 and Forecast Year VMT Data Computed Above

Pechan multiplied the appropriate year fractions from Step 1 by the national 2002 CLDT miles traveled data compiled from Step 3 above to yield preliminary national CLDT miles traveled forecasts by vehicle category.

Step 3: Compute Vehicle-Category Growth Factors from Step 2 VMT Estimates

Pechan developed VMT growth factors for each forecast year for each CLDT category from the preliminary VMT forecast data computed in Step 2. Each growth factor was developed relative to 2002 VMT.

Step 4: Multiply Step 3 Growth Factors by 2002 NEI VMT Data

Next, Pechan applied the Step 3 national growth factors by vehicle category to the 2002 NEI county-level VMT data to develop preliminary forecast year CLDT miles traveled data by county and vehicle category.

Step 5: Compute Year/County-Specific Vehicle Category-Level Ratios

Pechan next computed the proportion of each county's total CLDT miles traveled in each year that is associated with each vehicle category. These calculations were performed using 2002 NEI VMT data and the preliminary forecast year VMT data developed in Step 4.

C. FINAL VMT PROJECTIONS

Step 1: Compute State-Level CLDT Miles Traveled Weighting Factors

For each of the sectors associated with CLDT miles traveled, Pechan multiplied State-level industry output from version 5.5 REMI economic models and the Chapter II LDV miles traveled estimates by the appropriate AEO2006 sector VMT weighting factors:

- Agriculture output (0.216);
- Construction output (0.217);
- Manufacturing output (0.222);
- Mining output (0.024);
- Utilities output (0.040); and
- LDV vehicle miles traveled (0.281).

These computations were performed for each analysis year. Next, Pechan computed each State's proportion of the resulting national total value for each analysis year. These proportions are weights that are used to represent each State's proportion of CLDT vehicle miles traveled in each year.

Step 2: Compute County-Level CLDT Miles Traveled Weighting Factors

For each year of interest, Pechan compiled county-level driving population estimates from version 5.5 REMI economic models.[3] For each year, Pechan computed the fraction of total State driving population by county and multiplied these fractions by the Step 1 State-level weighting factors to produce county-level CLDT miles traveled weighting factors.

[3] Because estimates were not available for 16+ year olds, Pechan used REMI estimates for 15+ year olds.

Step 3: Multiply Proportions from Step 2 by National 2002 NEI CLDT Miles Traveled

Next, Pechan applied the year 2002 fractions computed in Step 2 to the national 2002 CLDT miles traveled by fuel type values from the NEI. Pechan also applied the forecast year fractions in Step 2 to the forecast year national CLDT miles traveled estimates, which were calculated as described in Step 3 of Section A above.

Step 4: Compute Growth Factors by County and Fuel Type from Step 3 VMT Data

Using 2002 VMT as the base year, Pechan computed county/fuel type-level growth factors for each forecast year from the VMT values computed in Step 3.

Step 5: Apply Step 4 Growth Factors to 2002 NEI VMT and Sum Forecast VMT by Fuel Type

Pechan then multiplied the Step 4 growth factors by the county-level 2002 NEI VMT data and summed the results by fuel type and forecast year across all counties to obtain estimates of national CLDT miles traveled by fuel type/year.

Step 6: Compute VMT Adjustment Factors

For each forecast year, Pechan calculated adjustment factors representing the ratio of control total CLDT miles traveled by fuel type (calculated in Step 3 of Section A) to the CLDT miles traveled estimates by fuel type that were derived in Step 5 above.

Step 7: Compute Final Growth Factors by Fuel Type and Year

Next, Pechan multiplied the fuel- and year-specific adjustment factors from Step 6 by the Step 4 county-level growth factors by fuel type. The resulting values represent growth factors that will yield national CLDT miles traveled estimates by fuel type that match the control totals computed in Step 3 of Section A.

Step 8: Develop Final CLDT Miles Traveled Estimates by Fuel Type and Year

Pechan then multiplied the Step 7 growth factors by the 2002 NEI county-level VMT estimates to yield final county-level CLDT miles traveled by fuel type for each forecast year.

Step 9: Develop Final CLDT Miles Traveled Estimates by Vehicle Category, County, and Year

Next, Pechan multiplied the year/county-specific vehicle category-level ratios by fuel type, which were computed in Step 5 of Section B, by the Step 8 county-level gasoline CLDT and diesel CLDT miles traveled for each forecast year. This step yields the final CLDT miles traveled forecasts by year, county, and vehicle category.

Step 10: Develop/Apply 2002 Roadway Category Fractions to Step 9 Final VMT Estimates

Finally, Pechan developed ratios from 2002 NEI VMT data that represent the fraction of each county's CLDT vehicle category VMT by roadway type. These ratios were then applied to the Step 9 VMT data to produce the final CLDT miles traveled data by year, county, vehicle category, and roadway type.

Step 11: Prepare Forecast Year VMT Estimates for Puerto Rico and U.S. Virgin Islands

For each vehicle category and year, Pechan first developed national VMT per driving age population estimates by dividing the Step 10 national VMT data by national driving population estimates compiled from version 5.5 REMI economic models. Next, Pechan multiplied these values by the territory-level driving age population estimates for each year, which were obtained from the Bureau of the Census' International Data Base (DOC, 2006). Pechan then developed growth factors from the products of these calculations (with 2002 as the base year), which were applied to the base year (2002) NEI VMT data for Puerto Rico and Virgin Islands to produce CLDT miles traveled by year, county, vehicle category, and roadway type.

Step 12: Prepare VMT Estimates for 2010 and 2015 via Interpolation

Finally, Pechan estimated CLDT miles traveled estimates by year, county, vehicle category, and roadway type for two years that were not in the original scope of this study (2010 and 2015). Pechan estimated 2010 VMT by applying one-fifth of the estimated 2009-2014 VMT change by county, vehicle category, and roadway type to the 2009 VMT estimates. A similar procedure was applied to estimate 2015 VMT from 2014 and 2020 VMT estimates.

CHAPTER V. FREIGHT TRUCK MILES TRAVELED PROJECTION METHODS

Pechan prepared freight truck (greater than 10,000 lbs) miles traveled projections for the following MOBILE6 model vehicle categories:

Size Category	Fuel Type	Vehicle Category
Medium-Duty (10,001 lbs to 26,000 lbs)	Diesel	Class 3 Heavy-Duty Diesel Vehicles (HDDV3) Class 4 Heavy-Duty Diesel Vehicles (HDDV4) Class 5 Heavy-Duty Diesel Vehicles (HDDV5) Class 6 Heavy-Duty Diesel Vehicles (HDDV6)
	Gasoline	Class 3 Heavy-Duty Gasoline Vehicles (HDGV3) Class 4 Heavy-Duty Gasoline Vehicles (HDGV4) Class 5 Heavy-Duty Gasoline Vehicles (HDGV5) Class 6 Heavy-Duty Gasoline Vehicles(HDGV6)
Heavy-Duty (>26,000 lbs)	Diesel	Class 7 Heavy-Duty Diesel Vehicles (HDDV7) Class 8a Heavy-Duty Diesel Vehicles (HDDV8a) Class 8b Heavy-Duty Diesel Vehicles (HDDV8b) Heavy-Duty Diesel Buses – Transit (HDDBT) Heavy-Duty Diesel Buses – School (HDDBS)
	Gasoline	Class 7 Heavy-Duty Gasoline Vehicles (HDGV7) Class 8a Heavy-Duty Gasoline Vehicles (HDGV8a) Class 8b Heavy-Duty Gasoline Vehicles (HDDV8b) Heavy-Duty Gasoline Buses (HDGB)

This chapter describes the steps that Pechan used to forecast county-level VMT for these vehicle types and for each roadway type.

A. NATIONAL PROJECTIONS BY FUEL TYPE

Step 1: Develop Growth Factors from AEO National VMT Projections Data

The AEO2006 provides freight truck VMT forecasts by combination of size category (medium-duty and heavy-duty) and fuel type (diesel and gasoline). Because the first year reported in AEO2006 is 2003, Pechan developed 2002 VMT estimates by applying 2003VMT/2002VMT ratios from AEO2005 to the AEO2006 VMT estimates for 2003. Finally, Pechan developed four sets of freight truck VMT growth factors (medium-duty diesel, medium-duty gasoline, heavy-duty diesel, and heavy-duty gasoline). Each set of growth factors, which were calculated relative to 2002 VMT, was developed for the following forecast years: 2009, 2014, 2020, and 2030.

Step 2: Compile Base Year VMT Projections Data

Next, Pechan summed the 2002 NEI county-level VMT data, which is reported by vehicle and roadway type to yield four sets of national freight truck VMT totals, representing each size category/fuel type combination.

Step 3: Apply Step 1 Growth Factors to Step 2 Base Year VMT

Pechan applied the national AEO-based growth factors from Step 1 to the national 2002 freight truck VMT estimates from Step 2 to yield national VMT control totals for medium-duty diesel, medium-duty gasoline, heavy-duty diesel, and heavy-duty gasoline vehicles.

B. VEHICLE CATEGORY-LEVEL PROJECTIONS

Step 1: Calculate Gasoline and Diesel Freight Truck Miles Traveled Fractions by Vehicle Type

For 2002 and each forecast year, Pechan used MOBILE6 VMT vehicle type fractions to compute the fraction of total miles traveled within each of the four size category/fuel type combinations that is associated with each MOBILE6 vehicle category (see table in Section A above for vehicle category list).

Step 2: Multiply Step 1 Fractions by 2002 and Forecast Year VMT Data Computed Above

Pechan multiplied the appropriate year fractions from Step 1 by the relevant national 2002 miles traveled data compiled from Step 3 above to yield preliminary national VMT forecasts by freight truck category.

Step 3: Compute Vehicle-Category Growth Factors from Step 2 VMT Estimates

Pechan developed VMT growth factors for each forecast year for each of the seventeen freight truck categories from the preliminary VMT forecast data computed in Step 2. Each growth factor was developed relative to 2002 VMT.

Step 4: Multiply Step 3 Growth Factors by 2002 NEI VMT Data

Next, Pechan applied the Step 3 national growth factors by freight truck category to the 2002 NEI county-level VMT data to develop preliminary forecast year freight truck miles traveled estimates by county and vehicle category.

Step 5: Compute Year/County-Specific Vehicle Category-Level Ratios by Fuel Type

Pechan next computed, for each analysis year, the proportion of each county's VMT by size category/fuel type combination that is associated with each MOBILE6 freight truck category (e.g., the proportion of total heavy-duty diesel VMT from class 7 heavy-duty diesel vehicles). These calculations were performed using 2002 NEI VMT data and the preliminary forecast year VMT data developed in Step 4.

C. FINAL VMT PROJECTIONS

Step 1: Compute State-Level Freight Truck Miles Traveled Weighting Factors

For each of the sectors associated with freight truck miles traveled, Pechan multiplied State-level industry output from version 5.5 REMI economic models by the appropriate AEO2006 sector weighting factors. Unlike the similar CLDT procedure, AEO2006 uses industry sector weighting factors (freight adjustment coefficients) that differ by year. The 12 industry sectors are listed below, along with the equations and equation inputs that were used to calculate the freight adjustment coefficient (FAC)s by industry sector and year.

*FAC(sector,year) = FAC_T0(sector) + {1 - FAC_T0(sector)} / {1 + e^[FAC_K * (FAC_T5 - year)]}*

where FAC_T0 =	*Chemicals, Rubber, and Plastic*	*= 1.02081*
	Primary Metals	*= 0.97291*
	Processed Food	*= 1.00359*
	Paper Products	*= 1.00662*
	Petroleum Products	*= 0.99450*
	Stone, Clay, Glass, and Concrete	*= 0.99474*
	Metal Durables	*= 0.97462*
	Other Manufacturing	*= 1.05086*
	Agriculture	*= 1.04475*
	Mining	*= 1.05285*
	Utilities	*= 1.01386*
	Government	*= 1.01386; and*

FAC_K = log(9.0) / (FAC_T9 - FAC_T5),
FAC_T5 = year of 50% FAC decay = 2002,
FAC_T9 = year of 90% FAC decay = 2007.

These computations were performed for each analysis year. Next, Pechan computed each State's proportion of the resulting national total value in each year. These proportions are weights that are used to represent each State's proportion of freight truck miles traveled in each year.

Step 2: Compute County-Level Freight Truck Miles Traveled Weighting Factors

For each year of interest, Pechan compiled county-level driving population estimates from version 5.5 REMI economic models.[4] For each year, Pechan computed the fraction of total State driving population associated with each county and multiplied these fractions by the Step 1 State-level weighting factors to produce county-level freight truck miles traveled weighting factors.

[4] Because estimates were not available for 16+ year olds, Pechan used REMI estimates for 15+ year olds.

Step 3: Multiply Proportions from Step 2 by National 2002 NEI Freight Truck Miles Traveled

Next, Pechan applied the year 2002 fractions computed in Step 2 to the national 2002 freight truck miles traveled values by size category/fuel type from the NEI. Pechan also applied the forecast year fractions in Step 2 to the national freight truck miles traveled estimates by size category/fuel type in each forecast year, which were calculated as described in Step 3 of Section A above.

Step 4: Compute Growth Factors by County and Fuel Type from Step 3 VMT Data

Using 2002 VMT as the base year, Pechan computed county/size category/fuel type-level growth factors for each forecast year from the VMT values computed in Step 3.

Step 5: Apply Step 4 Growth Factors to 2002 NEI VMT and Sum Forecast VMT by Fuel Type

Pechan then multiplied the Step 4 growth factors by the county-level 2002 NEI VMT data and summed the results by size category, fuel type, and forecast year across all counties to obtain estimates of national VMT by size category, fuel type, and year.

Step 6: Compute VMT Adjustment Factors

For each forecast year, Pechan calculated adjustment factors representing the ratio of control total freight truck miles traveled by size category and fuel type (calculated in Step 3 of Section A) to the freight truck miles traveled estimates by size category and fuel type that were derived in Step 5 above.

Step 7: Compute Final Growth Factors by Size Category, Fuel Type, and Year

Next, Pechan multiplied the size category, fuel, and year-specific adjustment factors from Step 6 by the Step 3 county, size category, fuel type, and year-specific growth factors. The resulting values represent growth factors that will yield national freight truck miles traveled estimates by size category and fuel type that match the control totals computed in Step 3 of Section A.

Step 8: Develop Final Freight Truck Miles Traveled Estimates by Size Category, Fuel Type, and Year

Pechan then multiplied the Step 7 growth factors by the 2002 NEI county-level VMT estimates to yield final county-level freight truck miles traveled by size category and fuel type for each forecast year.

Step 9: Develop Final Freight Truck Miles Traveled Estimates by Vehicle Category, County, and Year

Next, Pechan multiplied the year/county-specific vehicle category-level ratios by fuel type, which were computed in Step 5 of Section B, by the county/size category/fuel type freight truck

miles traveled estimates from Step 8. This step yields the final freight truck miles traveled forecasts by year, county, and vehicle category.

Step 10: Develop/Apply 2002 Roadway Category Fractions to Step 9 Final VMT Estimates

Finally, Pechan developed ratios from 2002 NEI VMT data that represent the fraction of each county's freight truck vehicle category VMT by roadway type. These ratios were then applied to the Step 9 VMT data to produce the final freight truck miles traveled values by year, county, vehicle category, and roadway type.

Step 11: Prepare Forecast Year VMT Estimates for Puerto Rico and U.S. Virgin Islands

For each vehicle category and year, Pechan first developed national VMT per driving age population estimates by dividing the Step 10 VMT data by national driving population estimates compiled from version 5.5 REMI economic models. Next, Pechan multiplied these values by the territory-level driving age population estimates for each year, which were obtained from the Bureau of the Census' International Data Base (DOC, 2006). Pechan then developed growth factors from the products of these calculations (with 2002 as the base year), which were applied to the base year (2002) NEI VMT data for Puerto Rico and Virgin Islands to produce freight truck miles traveled by year, county, vehicle category, and roadway type.

Step 12: Prepare VMT Estimates for 2010 and 2015 via Interpolation

Finally, Pechan estimated freight truck miles traveled estimates by year, county, vehicle category, and roadway type for two years that were not in the original scope of this study (2010 and 2015). In particular, Pechan estimated 2010 VMT by applying one-fifth of the estimated 2009-2014 VMT change by county, vehicle category, and roadway type to the 2009 VMT estimate. A similar procedure was applied to estimate 2015 VMT from 2014 and 2020 VMT estimates.

CHAPTER VI. REFERENCES

Davidson, 2006: Davidson, Ken, U.S. Environmental Protection Agency, *Cty_Pop_xxxx.xls* [Electronic files], transmitted to Andy Bollman, E.H. Pechan & Associates, Inc., September 15, 2006.

DOC, 2006: U.S. Department of Commerce, Bureau of the Census, "International Data Base," available from http://www.census.gov/ipc/www/idbnew.html, accessed September 2006.

DOE, 2006: U.S. Department of Energy, Energy Information Administration, Office of Integrated Analysis and Forecasting, "Annual Energy Outlook 2006, with Projections through 2030," DOE/EIA-0383(2006), Washington, DC, February 2006.

Houyoux, 2004: Houyoux, Marc, U.S. Environmental Protection Agency, *REMI ver 5.5 baseline.zip* [Electronic File], Office of Air Quality Planning and Standards, Research Triangle Park, NC, March 2, 2004.

Appendix H: Summary of Portable Fuel Container (PFC) Inventories and Resulting Projection Factors

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
AL	2501011011	Residential: Permeation	1513.6	1526.7	156.5	167.0	1.009	0.103	0.110
AL	2501011012	Residential: Evaporation	2955.2	2980.9	305.5	326.0	1.009	0.103	0.110
AL	2501011013	Residential: Spillage During Transport	216.9	229.8	219.0	236.0	1.060	1.010	1.088
AL	2501011014	Residential: Refilling at Pump: Vapor Displacement	70.8	87.3	94.7	102.3	1.233	1.337	1.444
AL	2501011015	Residential: Refilling at Pump: Spillage	5.8	6.4	6.9	7.4	1.088	1.179	1.274
AL	2501012011	Commercial: Permeation	48.3	48.8	5.0	5.3	1.009	0.103	0.110
AL	2501012012	Commercial: Evaporation	94.4	95.2	9.8	10.4	1.009	0.103	0.110
AL	2501012013	Commercial: Spillage During Transport	295.8	313.5	298.7	322.0	1.060	1.010	1.088
AL	2501012014	Commercial: Refilling at Pump: Vapor Displacement	136.5	168.3	182.5	197.1	1.233	1.337	1.444
AL	2501012015	Commercial: Refilling at Pump: Spillage	11.2	12.2	13.3	14.3	1.088	1.179	1.274
Alabama Total			5348.5	5469.1	1291.7	1387.8			
AK	2501011011	Residential: Permeation	268.7	238.7	29.2	31.1	0.888	0.109	0.116
AK	2501011012	Residential: Evaporation	524.5	466.0	57.0	60.8	0.888	0.109	0.116
AK	2501011013	Residential: Spillage During Transport	29.7	31.9	30.5	32.7	1.073	1.028	1.102
AK	2501011014	Residential: Refilling at Pump: Vapor Displacement	9.0	10.8	11.7	12.5	1.203	1.297	1.393
AK	2501011015	Residential: Refilling at Pump: Spillage	0.7	0.8	0.9	0.9	1.100	1.186	1.274
AK	2501012011	Commercial: Permeation	8.6	7.6	0.9	1.0	0.888	0.109	0.116
AK	2501012012	Commercial: Evaporation	16.8	14.9	1.8	1.9	0.888	0.109	0.116
AK	2501012013	Commercial: Spillage During Transport	40.5	43.5	41.6	44.7	1.073	1.028	1.102
AK	2501012014	Commercial: Refilling at Pump: Vapor Displacement	17.3	20.9	22.5	24.2	1.203	1.297	1.393
AK	2501012015	Commercial: Refilling at Pump: Spillage	1.4	1.6	1.7	1.8	1.100	1.186	1.274
Alaska Total			917.2	836.6	197.8	211.7			
AZ	2501011011	Residential: Permeation	1305.4	1278.3	153.1	163.5	0.979	0.117	0.125
AZ	2501011012	Residential: Evaporation	2548.8	2495.8	299.0	319.2	0.979	0.117	0.125
AZ	2501011013	Residential: Spillage During Transport	310.1	325.7	309.1	334.4	1.050	0.997	1.078
AZ	2501011014	Residential: Refilling at Pump: Vapor Displacement	102.3	119.4	129.8	140.7	1.167	1.269	1.375
AZ	2501011015	Residential: Refilling at Pump: Spillage	8.8	9.5	10.3	11.2	1.080	1.175	1.273
AZ	2501012011	Commercial: Permeation	41.7	40.8	4.9	5.2	0.979	0.117	0.125
AZ	2501012012	Commercial: Evaporation	81.4	79.7	9.5	10.2	0.979	0.117	0.125
AZ	2501012013	Commercial: Spillage During Transport	423.0	444.3	421.7	456.2	1.050	0.997	1.078
AZ	2501012014	Commercial: Refilling at Pump: Vapor Displacement	197.1	230.1	250.2	271.1	1.167	1.269	1.375
AZ	2501012015	Commercial: Refilling at Pump: Spillage	16.9	18.3	19.9	21.6	1.080	1.175	1.273
Arizona Total			5035.7	5041.8	1607.7	1733.3			
AR	2501011011	Residential: Permeation	1078.8	1102.5	110.6	118.0	1.022	0.102	0.109
AR	2501011012	Residential: Evaporation	2106.3	2152.5	215.9	230.3	1.022	0.102	0.109
AR	2501011013	Residential: Spillage During Transport	128.4	136.9	130.7	140.6	1.066	1.018	1.095
AR	2501011014	Residential: Refilling at Pump: Vapor Displacement	42.4	51.0	55.2	59.5	1.202	1.300	1.401
AR	2501011015	Residential: Refilling at Pump: Spillage	3.3	3.7	4.0	4.3	1.093	1.182	1.274
AR	2501012011	Commercial: Permeation	34.5	35.2	3.5	3.8	1.022	0.102	0.109
AR	2501012012	Commercial: Evaporation	67.3	68.8	6.9	7.4	1.022	0.102	0.109
AR	2501012013	Commercial: Spillage During Transport	175.2	186.7	178.3	191.8	1.066	1.018	1.095
AR	2501012014	Commercial: Refilling at Pump: Vapor Displacement	81.8	98.3	106.4	114.6	1.202	1.300	1.401
AR	2501012015	Commercial: Refilling at Pump: Spillage	6.4	7.0	7.6	8.2	1.093	1.182	1.274
Arkansas Total			3724.5	3842.5	819.0	878.3			

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
CA	2501011011	Residential: Permeation	3800.2	1593.2	891.3	951.3	0.419	0.235	0.250
CA	2501011012	Residential: Evaporation	7419.7	3110.7	1740.3	1857.5	0.419	0.235	0.250
CA	2501011013	Residential: Spillage During Transport	1597.7	1655.4	1799.8	1948.7	1.036	1.126	1.220
CA	2501011014	Residential: Refilling at Pump: Vapor Displacement	607.9	584.8	637.0	690.9	0.962	1.048	1.137
CA	2501011015	Residential: Refilling at Pump: Spillage	51.7	55.8	60.8	66.0	1.081	1.177	1.277
CA	2501012011	Commercial: Permeation	121.4	50.9	28.5	30.4	0.419	0.235	0.250
CA	2501012012	Commercial: Evaporation	237.0	99.4	55.6	59.3	0.419	0.235	0.250
CA	2501012013	Commercial: Spillage During Transport	2179.5	2258.3	2455.2	2658.3	1.036	1.126	1.220
CA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	1171.6	1127.0	1227.5	1331.6	0.962	1.048	1.137
CA	2501012015	Commercial: Refilling at Pump: Spillage	99.4	107.5	117.0	126.9	1.081	1.177	1.277
California Total			17286.2	10643.0	9012.9	9720.8			
CO	2501011011	Residential: Permeation	1227.3	717.5	122.7	131.0	0.585	0.100	0.107
CO	2501011012	Residential: Evaporation	2396.3	1400.8	239.6	255.8	0.585	0.100	0.107
CO	2501011013	Residential: Spillage During Transport	257.1	270.2	256.5	277.4	1.051	0.998	1.079
CO	2501011014	Residential: Refilling at Pump: Vapor Displacement	89.6	87.6	95.3	103.2	0.978	1.064	1.152
CO	2501011015	Residential: Refilling at Pump: Spillage	7.3	7.9	8.6	9.3	1.081	1.175	1.273
CO	2501012011	Commercial: Permeation	39.2	22.9	3.9	4.2	0.585	0.100	0.107
CO	2501012012	Commercial: Evaporation	76.5	44.7	7.7	8.2	0.585	0.100	0.107
CO	2501012013	Commercial: Spillage During Transport	350.7	368.5	349.9	378.4	1.051	0.998	1.079
CO	2501012014	Commercial: Refilling at Pump: Vapor Displacement	172.6	168.9	183.6	198.9	0.978	1.064	1.152
CO	2501012015	Commercial: Refilling at Pump: Spillage	14.0	15.1	16.5	17.8	1.081	1.175	1.273
Colorado Total			4630.7	3104.1	1284.2	1384.2			
CT	2501011011	Residential: Permeation	633.9	103.7	88.4	94.4	0.164	0.140	0.149
CT	2501011012	Residential: Evaporation	1237.6	202.4	172.7	184.3	0.164	0.140	0.149
CT	2501011013	Residential: Spillage During Transport	157.3	151.8	164.7	178.0	0.965	1.047	1.132
CT	2501011014	Residential: Refilling at Pump: Vapor Displacement	53.5	43.6	47.3	51.3	0.815	0.885	0.959
CT	2501011015	Residential: Refilling at Pump: Spillage	4.6	5.0	5.4	5.9	1.082	1.176	1.274
CT	2501012011	Commercial: Permeation	20.2	3.3	2.8	3.0	0.164	0.140	0.149
CT	2501012012	Commercial: Evaporation	39.5	6.5	5.5	5.9	0.164	0.140	0.149
CT	2501012013	Commercial: Spillage During Transport	214.6	207.0	224.7	242.8	0.965	1.047	1.132
CT	2501012014	Commercial: Refilling at Pump: Vapor Displacement	103.0	83.9	91.2	98.8	0.815	0.885	0.959
CT	2501012015	Commercial: Refilling at Pump: Spillage	8.9	9.6	10.4	11.3	1.082	1.176	1.274
Connecticut Total			2473.1	816.8	813.2	875.7			
DE	2501011011	Residential: Permeation	138.1	37.3	23.0	24.5	0.270	0.166	0.178
DE	2501011012	Residential: Evaporation	269.6	72.8	44.9	47.9	0.270	0.166	0.178
DE	2501011013	Residential: Spillage During Transport	40.9	39.4	42.8	46.2	0.965	1.047	1.131
DE	2501011014	Residential: Refilling at Pump: Vapor Displacement	13.2	13.2	14.4	15.6	1.004	1.091	1.182
DE	2501011015	Residential: Refilling at Pump: Spillage	1.2	1.3	1.4	1.5	1.082	1.176	1.273
DE	2501012011	Commercial: Permeation	4.4	1.2	0.7	0.8	0.270	0.166	0.178
DE	2501012012	Commercial: Evaporation	8.6	2.3	1.4	1.5	0.270	0.166	0.178
DE	2501012013	Commercial: Spillage During Transport	55.7	53.8	58.3	63.1	0.965	1.047	1.131
DE	2501012014	Commercial: Refilling at Pump: Vapor Displacement	25.4	25.5	27.7	30.0	1.004	1.091	1.182
DE	2501012015	Commercial: Refilling at Pump: Spillage	2.3	2.5	2.7	2.9	1.082	1.176	1.273
Delware Total			559.4	249.3	217.4	234.1			
DC	2501011011	Residential: Permeation	75.0	22.0	14.3	15.2	0.293	0.191	0.203
DC	2501011012	Residential: Evaporation	146.4	42.9	27.9	29.7	0.293	0.191	0.203
DC	2501011013	Residential: Spillage During Transport	12.0	12.0	12.9	13.8	1.002	1.077	1.153
DC	2501011014	Residential: Refilling at Pump: Vapor Displacement	3.1	3.3	3.5	3.8	1.049	1.129	1.210
DC	2501011015	Residential: Refilling at Pump: Spillage	0.3	0.3	0.4	0.4	1.105	1.189	1.275
DC	2501012011	Commercial: Permeation	2.4	0.7	0.5	0.5	0.293	0.191	0.203
DC	2501012012	Commercial: Evaporation	4.7	1.4	0.9	1.0	0.293	0.191	0.203

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
DC	2501012013	Commercial: Spillage During Transport	16.3	16.4	17.6	18.8	1.002	1.077	1.153
DC	2501012014	Commercial: Refilling at Pump: Vapor Displacement	6.0	6.3	6.8	7.3	1.049	1.129	1.210
DC	2501012015	Commercial: Refilling at Pump: Spillage	0.6	0.6	0.7	0.7	1.105	1.189	1.275
Washington, D.C. Total			266.7	105.9	85.4	91.2			
FL	2501011011	Residential: Permeation	4531.7	6139.8	488.2	521.3	1.355	0.108	0.115
FL	2501011012	Residential: Evaporation	8848.1	11987.7	953.2	1017.8	1.355	0.108	0.115
FL	2501011013	Residential: Spillage During Transport	984.3	1033.9	981.5	1061.7	1.050	0.997	1.079
FL	2501011014	Residential: Refilling at Pump: Vapor Displacement	316.5	454.0	493.9	535.2	1.434	1.560	1.691
FL	2501011015	Residential: Refilling at Pump: Spillage	27.9	30.1	32.8	35.5	1.080	1.175	1.273
FL	2501012011	Commercial: Permeation	144.7	196.1	15.6	16.7	1.355	0.108	0.115
FL	2501012012	Commercial: Evaporation	282.6	382.9	30.4	32.5	1.355	0.108	0.115
FL	2501012013	Commercial: Spillage During Transport	1342.7	1410.4	1338.9	1448.4	1.050	0.997	1.079
FL	2501012014	Commercial: Refilling at Pump: Vapor Displacement	610.0	874.9	951.8	1031.5	1.434	1.560	1.691
FL	2501012015	Commercial: Refilling at Pump: Spillage	53.7	58.0	63.1	68.4	1.080	1.175	1.273
Florida Total			17142.3	22567.7	5349.5	5769.0			
GA	2501011011	Residential: Permeation	1769.3	1935.4	246.6	263.3	1.094	0.139	0.149
GA	2501011012	Residential: Evaporation	3454.4	3778.9	481.5	514.0	1.094	0.139	0.149
GA	2501011013	Residential: Spillage During Transport	447.1	470.6	447.2	483.3	1.053	1.000	1.081
GA	2501011014	Residential: Refilling at Pump: Vapor Displacement	131.1	168.1	182.7	197.9	1.283	1.394	1.510
GA	2501011015	Residential: Refilling at Pump: Spillage	12.5	13.6	14.7	16.0	1.082	1.176	1.274
GA	2501012011	Commercial: Permeation	56.5	61.8	7.9	8.4	1.094	0.139	0.149
GA	2501012012	Commercial: Evaporation	110.3	120.7	15.4	16.4	1.094	0.139	0.149
GA	2501012013	Commercial: Spillage During Transport	609.9	642.0	610.0	659.3	1.053	1.000	1.081
GA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	252.6	324.0	352.2	381.3	1.283	1.394	1.510
GA	2501012015	Commercial: Refilling at Pump: Spillage	24.1	26.1	28.4	30.7	1.082	1.176	1.274
Georgia Total			6867.8	7541.2	2386.6	2570.7			
HI	2501011011	Residential: Permeation	387.2	468.1	28.1	30.0	1.209	0.073	0.078
HI	2501011012	Residential: Evaporation	755.9	913.9	54.9	58.6	1.209	0.073	0.078
HI	2501011013	Residential: Spillage During Transport	54.2	57.0	54.2	58.6	1.052	0.999	1.081
HI	2501011014	Residential: Refilling at Pump: Vapor Displacement	20.4	28.5	31.0	33.6	1.393	1.517	1.645
HI	2501011015	Residential: Refilling at Pump: Spillage	1.5	1.7	1.8	2.0	1.082	1.178	1.277
HI	2501012011	Commercial: Permeation	12.4	15.0	0.9	1.0	1.209	0.073	0.078
HI	2501012012	Commercial: Evaporation	24.1	29.2	1.8	1.9	1.209	0.073	0.078
HI	2501012013	Commercial: Spillage During Transport	74.0	77.8	73.9	80.0	1.052	0.999	1.081
HI	2501012014	Commercial: Refilling at Pump: Vapor Displacement	39.4	54.9	59.7	64.8	1.393	1.517	1.645
HI	2501012015	Commercial: Refilling at Pump: Spillage	3.0	3.2	3.5	3.8	1.082	1.178	1.277
Hawaii Total			1372.1	1649.2	309.8	334.2			
ID	2501011011	Residential: Permeation	292.0	290.1	49.1	52.4	0.994	0.168	0.179
ID	2501011012	Residential: Evaporation	570.1	566.4	95.9	102.3	0.994	0.168	0.179
ID	2501011013	Residential: Spillage During Transport	71.0	75.3	71.7	77.3	1.060	1.010	1.089
ID	2501011014	Residential: Refilling at Pump: Vapor Displacement	18.2	23.4	25.3	27.3	1.285	1.393	1.504
ID	2501011015	Residential: Refilling at Pump: Spillage	1.9	2.1	2.3	2.4	1.088	1.180	1.274
ID	2501012011	Commercial: Permeation	9.3	9.3	1.6	1.7	0.994	0.168	0.179
ID	2501012012	Commercial: Evaporation	18.2	18.1	3.1	3.3	0.994	0.168	0.179
ID	2501012013	Commercial: Spillage During Transport	96.9	102.7	97.9	105.5	1.060	1.010	1.089
ID	2501012014	Commercial: Refilling at Pump: Vapor Displacement	35.0	45.0	48.8	52.7	1.285	1.393	1.504
ID	2501012015	Commercial: Refilling at Pump: Spillage	3.7	4.0	4.3	4.7	1.088	1.180	1.274
Idaho Total			1116.3	1136.3	399.9	429.6			

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
IL	2501011011	Residential: Permeation	1662.7	1602.4	296.4	316.3	0.964	0.178	0.190
IL	2501011012	Residential: Evaporation	3246.4	3128.7	578.7	617.6	0.964	0.178	0.190
IL	2501011013	Residential: Spillage During Transport	510.5	539.0	512.7	553.5	1.056	1.004	1.084
IL	2501011014	Residential: Refilling at Pump: Vapor Displacement	136.0	161.5	175.4	189.7	1.188	1.290	1.395
IL	2501011015	Residential: Refilling at Pump: Spillage	14.1	15.3	16.6	17.9	1.084	1.178	1.274
IL	2501012011	Commercial: Permeation	53.1	51.2	9.5	10.1	0.964	0.178	0.190
IL	2501012012	Commercial: Evaporation	103.7	99.9	18.5	19.7	0.964	0.178	0.190
IL	2501012013	Commercial: Spillage During Transport	696.5	735.3	699.3	755.0	1.056	1.004	1.084
IL	2501012014	Commercial: Refilling at Pump: Vapor Displacement	262.1	311.3	338.0	365.6	1.188	1.290	1.395
IL	2501012015	Commercial: Refilling at Pump: Spillage	27.1	29.4	31.9	34.5	1.084	1.178	1.274
Illinois Total			6712.2	6674.0	2676.9	2880.0			
IN	2501011011	Residential: Permeation	1105.4	1376.6	166.5	177.6	1.245	0.151	0.161
IN	2501011012	Residential: Evaporation	2158.2	2687.7	325.0	346.8	1.245	0.151	0.161
IN	2501011013	Residential: Spillage During Transport	279.0	294.7	280.4	302.6	1.056	1.005	1.085
IN	2501011014	Residential: Refilling at Pump: Vapor Displacement	79.1	107.9	117.1	126.6	1.363	1.480	1.600
IN	2501011015	Residential: Refilling at Pump: Spillage	7.7	8.3	9.0	9.8	1.085	1.178	1.273
IN	2501012011	Commercial: Permeation	35.3	44.0	5.3	5.7	1.245	0.151	0.161
IN	2501012012	Commercial: Evaporation	68.9	85.8	10.4	11.1	1.245	0.151	0.161
IN	2501012013	Commercial: Spillage During Transport	380.7	402.1	382.5	412.8	1.056	1.005	1.085
IN	2501012014	Commercial: Refilling at Pump: Vapor Displacement	152.5	207.9	225.6	243.9	1.363	1.480	1.600
IN	2501012015	Commercial: Refilling at Pump: Spillage	14.8	16.0	17.4	18.8	1.085	1.178	1.273
Indiana Total			4281.5	5230.9	1539.2	1655.7			
IA	2501011011	Residential: Permeation	653.0	727.9	81.8	87.2	1.115	0.125	0.134
IA	2501011012	Residential: Evaporation	1275.0	1421.3	159.6	170.3	1.115	0.125	0.134
IA	2501011013	Residential: Spillage During Transport	120.6	127.8	121.8	131.3	1.060	1.010	1.089
IA	2501011014	Residential: Refilling at Pump: Vapor Displacement	35.9	46.6	50.5	54.5	1.298	1.407	1.519
IA	2501011015	Residential: Refilling at Pump: Spillage	3.2	3.5	3.8	4.1	1.088	1.180	1.274
IA	2501012011	Commercial: Permeation	20.9	23.3	2.6	2.8	1.115	0.125	0.134
IA	2501012012	Commercial: Evaporation	40.7	45.4	5.1	5.4	1.115	0.125	0.134
IA	2501012013	Commercial: Spillage During Transport	164.5	174.4	166.1	179.1	1.060	1.010	1.089
IA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	69.2	89.8	97.4	105.1	1.298	1.407	1.519
IA	2501012015	Commercial: Refilling at Pump: Spillage	6.2	6.8	7.4	8.0	1.088	1.180	1.274
Iowa Total			2389.3	2666.8	696.1	747.9			
KS	2501011011	Residential: Permeation	552.1	597.1	74.7	79.7	1.082	0.135	0.144
KS	2501011012	Residential: Evaporation	1077.9	1165.8	145.8	155.7	1.082	0.135	0.144
KS	2501011013	Residential: Spillage During Transport	119.7	126.5	120.4	129.9	1.057	1.005	1.085
KS	2501011014	Residential: Refilling at Pump: Vapor Displacement	33.6	44.8	48.6	52.5	1.333	1.447	1.564
KS	2501011015	Residential: Refilling at Pump: Spillage	3.3	3.6	3.9	4.2	1.085	1.178	1.274
KS	2501012011	Commercial: Permeation	17.6	19.1	2.4	2.5	1.082	0.135	0.144
KS	2501012012	Commercial: Evaporation	34.4	37.2	4.7	5.0	1.082	0.135	0.144
KS	2501012013	Commercial: Spillage During Transport	163.3	172.6	164.2	177.2	1.057	1.005	1.085
KS	2501012014	Commercial: Refilling at Pump: Vapor Displacement	64.7	86.3	93.6	101.2	1.333	1.447	1.564
KS	2501012015	Commercial: Refilling at Pump: Spillage	6.3	6.9	7.5	8.1	1.085	1.178	1.274
Kansas Total			2073.0	2259.7	665.7	716.1			
KY	2501011011	Residential: Permeation	944.1	995.9	137.6	146.8	1.055	0.146	0.156
KY	2501011012	Residential: Evaporation	1843.4	1944.5	268.6	286.6	1.055	0.146	0.156
KY	2501011013	Residential: Spillage During Transport	166.0	176.7	168.6	181.5	1.064	1.016	1.093
KY	2501011014	Residential: Refilling at Pump: Vapor Displacement	46.1	57.9	62.7	67.6	1.257	1.361	1.467

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
KY	2501011015	Residential: Refilling at Pump: Spillage	4.4	4.8	5.2	5.6	1.091	1.182	1.274
KY	2501012011	Commercial: Permeation	30.2	31.8	4.4	4.7	1.055	0.146	0.156
KY	2501012012	Commercial: Evaporation	58.9	62.1	8.6	9.2	1.055	0.146	0.156
KY	2501012013	Commercial: Spillage During Transport	226.5	241.0	230.1	247.6	1.064	1.016	1.093
KY	2501012014	Commercial: Refilling at Pump: Vapor Displacement	88.8	111.6	120.8	130.2	1.257	1.361	1.467
KY	2501012015	Commercial: Refilling at Pump: Spillage	8.4	9.2	9.9	10.7	1.091	1.182	1.274
Kentucky Total			3416.5	3635.4	1016.4	1090.4			
LA	2501011011	Residential: Permeation	1519.9	1795.9	152.1	162.3	1.182	0.100	0.107
LA	2501011012	Residential: Evaporation	2967.6	3506.4	297.0	316.9	1.182	0.100	0.107
LA	2501011013	Residential: Spillage During Transport	181.0	192.8	184.0	198.0	1.065	1.017	1.094
LA	2501011014	Residential: Refilling at Pump: Vapor Displacement	57.2	76.7	83.0	89.5	1.341	1.452	1.565
LA	2501011015	Residential: Refilling at Pump: Spillage	4.7	5.2	5.6	6.0	1.092	1.182	1.274
LA	2501012011	Commercial: Permeation	48.5	57.4	4.9	5.2	1.182	0.100	0.107
LA	2501012012	Commercial: Evaporation	94.8	112.0	9.5	10.1	1.182	0.100	0.107
LA	2501012013	Commercial: Spillage During Transport	247.0	263.0	251.1	270.1	1.065	1.017	1.094
LA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	110.1	147.8	159.9	172.4	1.341	1.452	1.565
LA	2501012015	Commercial: Refilling at Pump: Spillage	9.1	10.0	10.8	11.6	1.092	1.182	1.274
Louisiana Total			5240.0	6166.9	1157.8	1242.1			
ME	2501011011	Residential: Permeation	308.9	74.4	47.4	50.6	0.241	0.154	0.164
ME	2501011012	Residential: Evaporation	603.0	145.3	92.6	98.8	0.241	0.154	0.164
ME	2501011013	Residential: Spillage During Transport	60.9	59.7	64.5	69.5	0.980	1.059	1.140
ME	2501011014	Residential: Refilling at Pump: Vapor Displacement	19.4	19.6	21.2	22.9	1.010	1.093	1.179
ME	2501011015	Residential: Refilling at Pump: Spillage	1.7	1.8	2.0	2.1	1.090	1.181	1.274
ME	2501012011	Commercial: Permeation	9.9	2.4	1.5	1.6	0.241	0.154	0.164
ME	2501012012	Commercial: Evaporation	19.3	4.6	3.0	3.2	0.241	0.154	0.164
ME	2501012013	Commercial: Spillage During Transport	83.1	81.4	88.0	94.7	0.980	1.059	1.140
ME	2501012014	Commercial: Refilling at Pump: Vapor Displacement	37.4	37.8	40.9	44.1	1.010	1.093	1.179
ME	2501012015	Commercial: Refilling at Pump: Spillage	3.2	3.5	3.8	4.1	1.090	1.181	1.274
Maine Total			1146.8	430.6	364.9	391.6			
MD	2501011011	Residential: Permeation	956.1	236.0	139.2	148.6	0.247	0.146	0.155
MD	2501011012	Residential: Evaporation	1866.7	460.9	271.7	290.1	0.247	0.146	0.155
MD	2501011013	Residential: Spillage During Transport	273.4	262.9	285.5	308.8	0.962	1.044	1.130
MD	2501011014	Residential: Refilling at Pump: Vapor Displacement	93.8	92.6	100.7	109.1	0.987	1.074	1.164
MD	2501011015	Residential: Refilling at Pump: Spillage	8.1	8.8	9.5	10.3	1.080	1.175	1.273
MD	2501012011	Commercial: Permeation	30.5	7.5	4.4	4.7	0.247	0.146	0.155
MD	2501012012	Commercial: Evaporation	59.6	14.7	8.7	9.3	0.247	0.146	0.155
MD	2501012013	Commercial: Spillage During Transport	372.9	358.6	389.4	421.2	0.962	1.044	1.130
MD	2501012014	Commercial: Refilling at Pump: Vapor Displacement	180.7	178.4	194.1	210.4	0.987	1.074	1.164
MD	2501012015	Commercial: Refilling at Pump: Spillage	15.6	16.9	18.4	19.9	1.080	1.175	1.273
Maryland Total			3857.5	1637.3	1421.7	1532.5			
MA	2501011011	Residential: Permeation	1008.5	207.2	154.9	165.3	0.205	0.154	0.164
MA	2501011012	Residential: Evaporation	1969.0	404.6	302.5	322.8	0.205	0.154	0.164
MA	2501011013	Residential: Spillage During Transport	256.3	248.3	269.2	290.6	0.969	1.050	1.134
MA	2501011014	Residential: Refilling at Pump: Vapor Displacement	84.7	75.4	81.9	88.6	0.890	0.967	1.046
MA	2501011015	Residential: Refilling at Pump: Spillage	7.4	8.0	8.7	9.4	1.084	1.177	1.274
MA	2501012011	Commercial: Permeation	32.2	6.6	4.9	5.3	0.205	0.154	0.164
MA	2501012012	Commercial: Evaporation	62.9	12.9	9.7	10.3	0.205	0.154	0.164
MA	2501012013	Commercial: Spillage During Transport	349.7	338.8	367.2	396.4	0.969	1.050	1.134

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
MA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	163.2	145.3	157.8	170.7	0.890	0.967	1.046
MA	2501012015	Commercial: Refilling at Pump: Spillage	14.2	15.4	16.8	18.2	1.084	1.177	1.274
Massachusetts Total			3948.1	1462.6	1373.5	1477.6			
MI	2501011011	Residential: Permeation	3676.6	2068.6	298.0	318.0	0.563	0.081	0.086
MI	2501011012	Residential: Evaporation	7178.5	4038.9	581.9	620.9	0.563	0.081	0.086
MI	2501011013	Residential: Spillage During Transport	430.3	456.4	435.0	468.7	1.061	1.011	1.089
MI	2501011014	Residential: Refilling at Pump: Vapor Displacement	155.6	150.7	163.3	176.3	0.968	1.050	1.133
MI	2501011015	Residential: Refilling at Pump: Spillage	11.5	12.6	13.6	14.7	1.088	1.180	1.274
MI	2501012011	Commercial: Permeation	117.4	66.1	9.5	10.2	0.563	0.081	0.086
MI	2501012012	Commercial: Evaporation	229.3	129.0	18.6	19.8	0.563	0.081	0.086
MI	2501012013	Commercial: Spillage During Transport	587.0	622.6	593.4	639.3	1.061	1.011	1.089
MI	2501012014	Commercial: Refilling at Pump: Vapor Displacement	299.9	290.4	314.7	339.8	0.968	1.050	1.133
MI	2501012015	Commercial: Refilling at Pump: Spillage	22.2	24.2	26.2	28.3	1.088	1.180	1.274
Michigan Total			12708.4	7859.5	2454.2	2635.8			
MN	2501011011	Residential: Permeation	1030.3	1036.1	151.6	161.8	1.006	0.147	0.157
MN	2501011012	Residential: Evaporation	2011.6	2022.9	296.0	315.8	1.006	0.147	0.157
MN	2501011013	Residential: Spillage During Transport	224.7	238.2	226.9	244.6	1.060	1.010	1.089
MN	2501011014	Residential: Refilling at Pump: Vapor Displacement	63.6	77.7	84.2	90.9	1.221	1.323	1.429
MN	2501011015	Residential: Refilling at Pump: Spillage	6.0	6.6	7.1	7.7	1.088	1.180	1.274
MN	2501012011	Commercial: Permeation	32.9	33.1	4.8	5.2	1.006	0.147	0.157
MN	2501012012	Commercial: Evaporation	64.3	64.6	9.5	10.1	1.006	0.147	0.157
MN	2501012013	Commercial: Spillage During Transport	306.5	324.9	309.6	333.7	1.060	1.010	1.089
MN	2501012014	Commercial: Refilling at Pump: Vapor Displacement	122.6	149.7	162.3	175.2	1.221	1.323	1.429
MN	2501012015	Commercial: Refilling at Pump: Spillage	11.6	12.7	13.7	14.8	1.088	1.180	1.274
Minnesota Total			3874.1	3966.4	1265.7	1359.7			
MS	2501011011	Residential: Permeation	798.8	1265.5	103.1	110.0	1.584	0.129	0.138
MS	2501011012	Residential: Evaporation	1559.6	2470.8	201.3	214.8	1.584	0.129	0.138
MS	2501011013	Residential: Spillage During Transport	113.1	120.7	115.4	124.0	1.068	1.021	1.097
MS	2501011014	Residential: Refilling at Pump: Vapor Displacement	31.5	48.7	52.6	56.7	1.544	1.669	1.797
MS	2501011015	Residential: Refilling at Pump: Spillage	2.9	3.2	3.4	3.7	1.095	1.183	1.274
MS	2501012011	Commercial: Permeation	25.5	40.4	3.3	3.5	1.584	0.129	0.138
MS	2501012012	Commercial: Evaporation	49.8	78.9	6.4	6.9	1.584	0.129	0.138
MS	2501012013	Commercial: Spillage During Transport	154.2	164.7	157.4	169.2	1.068	1.021	1.097
MS	2501012014	Commercial: Refilling at Pump: Vapor Displacement	60.8	93.8	101.4	109.2	1.544	1.669	1.797
MS	2501012015	Commercial: Refilling at Pump: Spillage	5.6	6.1	6.6	7.1	1.095	1.183	1.274
Mississippi Total			2801.8	4292.8	751.0	805.0			
MO	2501011011	Residential: Permeation	1198.4	1261.2	170.9	182.4	1.052	0.143	0.152
MO	2501011012	Residential: Evaporation	2339.9	2462.4	333.6	356.0	1.052	0.143	0.152
MO	2501011013	Residential: Spillage During Transport	271.3	287.0	273.2	294.7	1.058	1.007	1.086
MO	2501011014	Residential: Refilling at Pump: Vapor Displacement	79.4	97.5	105.7	114.2	1.227	1.331	1.438
MO	2501011015	Residential: Refilling at Pump: Spillage	7.4	8.0	8.7	9.4	1.086	1.178	1.274
MO	2501012011	Commercial: Permeation	38.3	40.3	5.5	5.8	1.052	0.143	0.152
MO	2501012012	Commercial: Evaporation	74.7	78.6	10.7	11.4	1.052	0.143	0.152
MO	2501012013	Commercial: Spillage During Transport	370.1	391.5	372.7	402.0	1.058	1.007	1.086
MO	2501012014	Commercial: Refilling at Pump: Vapor Displacement	153.1	187.8	203.8	220.2	1.227	1.331	1.438
MO	2501012015	Commercial: Refilling at Pump: Spillage	14.2	15.4	16.8	18.1	1.086	1.178	1.274
Missouri Total			4546.8	4829.7	1501.5	1614.2			
MT	2501011011	Residential: Permeation	217.8	208.5	34.3	36.6	0.957	0.158	0.168

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
MT	2501011012	Residential: Evaporation	425.2	407.0	67.0	71.5	0.957	0.158	0.168
MT	2501011013	Residential: Spillage During Transport	40.1	42.8	40.9	44.0	1.068	1.020	1.096
MT	2501011014	Residential: Refilling at Pump: Vapor Displacement	10.6	13.0	14.0	15.1	1.223	1.323	1.424
MT	2501011015	Residential: Refilling at Pump: Spillage	1.0	1.1	1.2	1.3	1.094	1.183	1.275
MT	2501012011	Commercial: Permeation	7.0	6.7	1.1	1.2	0.957	0.158	0.168
MT	2501012012	Commercial: Evaporation	13.6	13.0	2.1	2.3	0.957	0.158	0.168
MT	2501012013	Commercial: Spillage During Transport	54.7	58.4	55.8	60.0	1.068	1.020	1.096
MT	2501012014	Commercial: Refilling at Pump: Vapor Displacement	20.4	25.0	27.0	29.1	1.223	1.323	1.424
MT	2501012015	Commercial: Refilling at Pump: Spillage	2.0	2.2	2.4	2.5	1.094	1.183	1.275
Montana Total			792.4	777.8	246.0	263.6			
NE	2501011011	Residential: Permeation	286.7	393.5	51.7	55.2	1.372	0.180	0.193
NE	2501011012	Residential: Evaporation	559.9	768.3	101.0	107.8	1.372	0.180	0.193
NE	2501011013	Residential: Spillage During Transport	74.7	79.1	75.4	81.3	1.060	1.009	1.088
NE	2501011014	Residential: Refilling at Pump: Vapor Displacement	19.4	27.1	29.3	31.7	1.396	1.514	1.634
NE	2501011015	Residential: Refilling at Pump: Spillage	2.0	2.2	2.4	2.6	1.087	1.179	1.274
NE	2501012011	Commercial: Permeation	9.2	12.6	1.7	1.8	1.372	0.180	0.193
NE	2501012012	Commercial: Evaporation	17.9	24.5	3.2	3.4	1.372	0.180	0.193
NE	2501012013	Commercial: Spillage During Transport	101.9	107.9	102.8	110.9	1.060	1.009	1.088
NE	2501012014	Commercial: Refilling at Pump: Vapor Displacement	37.4	52.2	56.5	61.1	1.396	1.514	1.634
NE	2501012015	Commercial: Refilling at Pump: Spillage	3.9	4.2	4.6	4.9	1.087	1.179	1.274
Nebraska Total			1112.8	1471.5	428.6	460.6			
NV	2501011011	Residential: Permeation	400.0	624.0	60.0	64.1	1.560	0.150	0.160
NV	2501011012	Residential: Evaporation	781.0	1218.4	117.2	125.2	1.560	0.150	0.160
NV	2501011013	Residential: Spillage During Transport	141.1	147.8	140.2	151.8	1.048	0.994	1.076
NV	2501011014	Residential: Refilling at Pump: Vapor Displacement	42.1	61.3	66.7	72.3	1.456	1.584	1.718
NV	2501011015	Residential: Refilling at Pump: Spillage	4.1	4.4	4.8	5.2	1.078	1.174	1.273
NV	2501012011	Commercial: Permeation	12.8	19.9	1.9	2.0	1.560	0.150	0.160
NV	2501012012	Commercial: Evaporation	24.9	38.9	3.7	4.0	1.560	0.150	0.160
NV	2501012013	Commercial: Spillage During Transport	192.5	201.7	191.2	207.0	1.048	0.994	1.076
NV	2501012014	Commercial: Refilling at Pump: Vapor Displacement	81.1	118.1	128.5	139.3	1.456	1.584	1.718
NV	2501012015	Commercial: Refilling at Pump: Spillage	7.8	8.4	9.2	9.9	1.078	1.174	1.273
Nevada Total			1687.4	2442.9	723.5	780.9			
NH	2501011011	Residential: Permeation	366.1	62.1	39.4	42.0	0.170	0.108	0.115
NH	2501011012	Residential: Evaporation	714.8	121.3	76.8	82.0	0.170	0.108	0.115
NH	2501011013	Residential: Spillage During Transport	63.3	58.8	63.7	68.7	0.929	1.006	1.086
NH	2501011014	Residential: Refilling at Pump: Vapor Displacement	20.8	17.6	19.1	20.6	0.843	0.915	0.989
NH	2501011015	Residential: Refilling at Pump: Spillage	1.7	1.9	2.0	2.2	1.086	1.178	1.274
NH	2501012011	Commercial: Permeation	11.7	2.0	1.3	1.3	0.170	0.108	0.115
NH	2501012012	Commercial: Evaporation	22.8	3.9	2.5	2.6	0.170	0.108	0.115
NH	2501012013	Commercial: Spillage During Transport	86.4	80.3	86.9	93.8	0.929	1.006	1.086
NH	2501012014	Commercial: Refilling at Pump: Vapor Displacement	40.2	33.9	36.8	39.7	0.843	0.915	0.989
NH	2501012015	Commercial: Refilling at Pump: Spillage	3.3	3.6	3.9	4.2	1.086	1.178	1.274
New Hampshire Total			1331.1	385.4	332.4	357.3			
NJ	2501011011	Residential: Permeation	1443.1	316.8	212.0	226.3	0.220	0.147	0.157
NJ	2501011012	Residential: Evaporation	2817.7	618.6	413.9	441.8	0.220	0.147	0.157
NJ	2501011013	Residential: Spillage During Transport	393.0	378.7	411.1	444.6	0.964	1.046	1.131
NJ	2501011014	Residential: Refilling at Pump: Vapor Displacement	131.2	124.7	135.6	146.9	0.950	1.033	1.119
NJ	2501011015	Residential: Refilling at Pump: Spillage	11.6	12.5	13.6	14.8	1.081	1.176	1.274

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
NJ	2501012011	Commercial: Permeation	46.1	10.1	6.8	7.2	0.220	0.147	0.157
NJ	2501012012	Commercial: Evaporation	90.0	19.8	13.2	14.1	0.220	0.147	0.157
NJ	2501012013	Commercial: Spillage During Transport	536.2	516.7	560.9	606.4	0.964	1.046	1.131
NJ	2501012014	Commercial: Refilling at Pump: Vapor Displacement	252.9	240.2	261.3	283.0	0.950	1.033	1.119
NJ	2501012015	Commercial: Refilling at Pump: Spillage	22.3	24.1	26.2	28.4	1.081	1.176	1.274
New Jersey Total			5744.1	2262.2	2054.5	2213.5			
NM	2501011011	Residential: Permeation	426.0	358.6	54.7	58.3	0.842	0.128	0.137
NM	2501011012	Residential: Evaporation	831.7	700.2	106.7	113.9	0.842	0.128	0.137
NM	2501011013	Residential: Spillage During Transport	75.5	80.0	76.2	82.2	1.060	1.010	1.089
NM	2501011014	Residential: Refilling at Pump: Vapor Displacement	23.0	25.7	27.9	30.1	1.118	1.212	1.309
NM	2501011015	Residential: Refilling at Pump: Spillage	2.0	2.2	2.4	2.6	1.088	1.180	1.274
NM	2501012011	Commercial: Permeation	13.6	11.5	1.7	1.9	0.842	0.128	0.137
NM	2501012012	Commercial: Evaporation	26.6	22.4	3.4	3.6	0.842	0.128	0.137
NM	2501012013	Commercial: Spillage During Transport	103.0	109.1	104.0	112.1	1.060	1.010	1.089
NM	2501012014	Commercial: Refilling at Pump: Vapor Displacement	44.4	49.6	53.8	58.1	1.118	1.212	1.309
NM	2501012015	Commercial: Refilling at Pump: Spillage	3.9	4.3	4.6	5.0	1.088	1.180	1.274
New Mexico Total			1549.6	1363.6	435.4	467.7			
NY	2501011011	Residential: Permeation	2537.7	684.6	458.4	489.1	0.270	0.181	0.193
NY	2501011012	Residential: Evaporation	4954.7	1336.7	894.9	954.9	0.270	0.181	0.193
NY	2501011013	Residential: Spillage During Transport	656.3	639.9	692.6	746.7	0.975	1.055	1.138
NY	2501011014	Residential: Refilling at Pump: Vapor Displacement	194.7	200.1	217.0	234.4	1.028	1.115	1.204
NY	2501011015	Residential: Refilling at Pump: Spillage	18.5	20.2	21.9	23.6	1.088	1.180	1.274
NY	2501012011	Commercial: Permeation	81.1	21.9	14.6	15.6	0.270	0.181	0.193
NY	2501012012	Commercial: Evaporation	158.3	42.7	28.6	30.5	0.270	0.181	0.193
NY	2501012013	Commercial: Spillage During Transport	895.3	872.9	944.8	1018.6	0.975	1.055	1.138
NY	2501012014	Commercial: Refilling at Pump: Vapor Displacement	375.2	385.7	418.2	451.7	1.028	1.115	1.204
NY	2501012015	Commercial: Refilling at Pump: Spillage	35.7	38.8	42.1	45.4	1.088	1.180	1.274
New York Total			9907.3	4243.4	3733.0	4010.4			
NC	2501011011	Residential: Permeation	2672.9	2390.6	250.0	266.9	0.894	0.094	0.100
NC	2501011012	Residential: Evaporation	5218.7	4667.6	488.2	521.1	0.894	0.094	0.100
NC	2501011013	Residential: Spillage During Transport	438.7	462.4	439.6	474.8	1.054	1.002	1.082
NC	2501011014	Residential: Refilling at Pump: Vapor Displacement	156.8	180.8	196.4	212.5	1.153	1.252	1.355
NC	2501011015	Residential: Refilling at Pump: Spillage	12.2	13.2	14.3	15.5	1.083	1.176	1.273
NC	2501012011	Commercial: Permeation	85.4	76.4	8.0	8.5	0.894	0.094	0.100
NC	2501012012	Commercial: Evaporation	166.7	149.1	15.6	16.6	0.894	0.094	0.100
NC	2501012013	Commercial: Spillage During Transport	598.5	630.8	599.7	647.8	1.054	1.002	1.082
NC	2501012014	Commercial: Refilling at Pump: Vapor Displacement	302.2	348.4	378.4	409.5	1.153	1.252	1.355
NC	2501012015	Commercial: Refilling at Pump: Spillage	23.5	25.4	27.6	29.9	1.083	1.176	1.273
North Carolina Total			9675.5	8944.6	2417.8	2603.1			
ND	2501011011	Residential: Permeation	142.7	130.3	20.8	22.2	0.913	0.146	0.156
ND	2501011012	Residential: Evaporation	278.5	254.3	40.6	43.3	0.913	0.146	0.156
ND	2501011013	Residential: Spillage During Transport	26.5	28.2	26.9	28.9	1.065	1.017	1.094
ND	2501011014	Residential: Refilling at Pump: Vapor Displacement	7.0	8.5	9.2	9.9	1.217	1.316	1.418
ND	2501011015	Residential: Refilling at Pump: Spillage	0.7	0.8	0.8	0.9	1.092	1.182	1.275
ND	2501012011	Commercial: Permeation	4.6	4.2	0.7	0.7	0.913	0.146	0.156
ND	2501012012	Commercial: Evaporation	8.9	8.1	1.3	1.4	0.913	0.146	0.156
ND	2501012013	Commercial: Spillage During Transport	36.1	38.4	36.7	39.5	1.065	1.017	1.094
ND	2501012014	Commercial: Refilling at Pump: Vapor Displacement	13.5	16.4	17.7	19.1	1.217	1.316	1.418

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
ND	2501012015	Commercial: Refilling at Pump: Spillage	1.3	1.5	1.6	1.7	1.092	1.182	1.275
North Dakota Total			519.7	490.6	156.3	167.6			
OH	2501011011	Residential: Permeation	3127.4	890.8	313.4	334.5	0.285	0.100	0.107
OH	2501011012	Residential: Evaporation	6106.2	1739.3	611.8	653.0	0.285	0.100	0.107
OH	2501011013	Residential: Spillage During Transport	571.9	528.5	573.1	619.0	0.924	1.002	1.082
OH	2501011014	Residential: Refilling at Pump: Vapor Displacement	197.4	230.1	250.0	270.5	1.166	1.267	1.370
OH	2501011015	Residential: Refilling at Pump: Spillage	15.9	17.2	18.7	20.3	1.083	1.177	1.273
OH	2501012011	Commercial: Permeation	99.9	28.5	10.0	10.7	0.285	0.100	0.107
OH	2501012012	Commercial: Evaporation	195.0	55.6	19.5	20.9	0.285	0.100	0.107
OH	2501012013	Commercial: Spillage During Transport	780.2	720.9	781.8	844.4	0.924	1.002	1.082
OH	2501012014	Commercial: Refilling at Pump: Vapor Displacement	380.4	443.5	481.8	521.3	1.166	1.267	1.370
OH	2501012015	Commercial: Refilling at Pump: Spillage	30.6	33.1	36.0	39.0	1.083	1.177	1.273
Ohio Total			11504.9	4687.6	3096.0	3333.4			
OK	2501011011	Residential: Permeation	1116.8	932.0	107.2	114.4	0.834	0.096	0.102
OK	2501011012	Residential: Evaporation	2180.6	1819.7	209.3	223.4	0.834	0.096	0.102
OK	2501011013	Residential: Spillage During Transport	170.1	179.6	170.9	184.4	1.056	1.005	1.084
OK	2501011014	Residential: Refilling at Pump: Vapor Displacement	58.2	66.4	72.1	77.9	1.140	1.238	1.338
OK	2501011015	Residential: Refilling at Pump: Spillage	4.7	5.1	5.5	6.0	1.084	1.177	1.274
OK	2501012011	Commercial: Permeation	35.7	29.8	3.4	3.7	0.834	0.096	0.102
OK	2501012012	Commercial: Evaporation	69.6	58.1	6.7	7.1	0.834	0.096	0.102
OK	2501012013	Commercial: Spillage During Transport	232.0	245.0	233.1	251.6	1.056	1.005	1.084
OK	2501012014	Commercial: Refilling at Pump: Vapor Displacement	112.2	127.9	138.9	150.2	1.140	1.238	1.338
OK	2501012015	Commercial: Refilling at Pump: Spillage	9.0	9.8	10.6	11.5	1.084	1.177	1.274
Oklahoma Total			3988.9	3473.3	957.7	1030.3			
OR	2501011011	Residential: Permeation	1083.6	655.2	108.2	115.4	0.605	0.100	0.107
OR	2501011012	Residential: Evaporation	2115.8	1279.2	211.2	225.3	0.605	0.100	0.107
OR	2501011013	Residential: Spillage During Transport	180.3	190.5	181.2	195.6	1.056	1.005	1.085
OR	2501011014	Residential: Refilling at Pump: Vapor Displacement	61.5	59.6	64.7	70.0	0.969	1.052	1.138
OR	2501011015	Residential: Refilling at Pump: Spillage	5.0	5.4	5.8	6.3	1.085	1.178	1.274
OR	2501012011	Commercial: Permeation	34.6	20.9	3.5	3.7	0.605	0.100	0.107
OR	2501012012	Commercial: Evaporation	67.6	40.9	6.7	7.2	0.605	0.100	0.107
OR	2501012013	Commercial: Spillage During Transport	246.0	259.9	247.2	266.8	1.056	1.005	1.085
OR	2501012014	Commercial: Refilling at Pump: Vapor Displacement	118.6	114.9	124.8	135.0	0.969	1.052	1.138
OR	2501012015	Commercial: Refilling at Pump: Spillage	9.5	10.4	11.2	12.2	1.085	1.178	1.274
Oregon Total			3922.5	2636.8	964.6	1037.5			
PA	2501011011	Residential: Permeation	1915.2	639.7	354.5	378.4	0.334	0.185	0.198
PA	2501011012	Residential: Evaporation	3739.3	1248.9	692.2	738.7	0.334	0.185	0.198
PA	2501011013	Residential: Spillage During Transport	523.4	508.6	550.9	594.4	0.972	1.053	1.136
PA	2501011014	Residential: Refilling at Pump: Vapor Displacement	151.6	182.6	198.2	214.3	1.205	1.308	1.414
PA	2501011015	Residential: Refilling at Pump: Spillage	15.0	16.2	17.6	19.1	1.086	1.178	1.274
PA	2501012011	Commercial: Permeation	61.2	20.4	11.3	12.1	0.334	0.185	0.198
PA	2501012012	Commercial: Evaporation	119.4	39.9	22.1	23.6	0.334	0.185	0.198
PA	2501012013	Commercial: Spillage During Transport	714.0	693.8	751.5	810.8	0.972	1.053	1.136
PA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	292.1	351.9	382.0	412.9	1.205	1.308	1.414
PA	2501012015	Commercial: Refilling at Pump: Spillage	28.8	31.2	33.9	36.7	1.086	1.178	1.274
Pennsylvania Total			7559.9	3733.3	3014.3	3240.9			
RI	2501011011	Residential: Permeation	105.9	34.3	26.0	27.7	0.324	0.245	0.262
RI	2501011012	Residential: Evaporation	206.8	67.0	50.7	54.1	0.324	0.245	0.262

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
RI	2501011013	Residential: Spillage During Transport	37.4	36.4	39.4	42.5	0.973	1.054	1.136
RI	2501011014	Residential: Refilling at Pump: Vapor Displacement	10.0	10.8	11.7	12.7	1.083	1.176	1.271
RI	2501011015	Residential: Refilling at Pump: Spillage	1.1	1.2	1.3	1.4	1.086	1.179	1.274
RI	2501012011	Commercial: Permeation	3.4	1.1	0.8	0.9	0.324	0.245	0.262
RI	2501012012	Commercial: Evaporation	6.6	2.1	1.6	1.7	0.324	0.245	0.262
RI	2501012013	Commercial: Spillage During Transport	51.0	49.7	53.8	58.0	0.973	1.054	1.136
RI	2501012014	Commercial: Refilling at Pump: Vapor Displacement	19.2	20.9	22.6	24.5	1.083	1.176	1.271
RI	2501012015	Commercial: Refilling at Pump: Spillage	2.0	2.2	2.4	2.6	1.086	1.179	1.274
Rhode Island Total			443.5	225.6	210.4	226.1			
SC	2501011011	Residential: Permeation	1086.5	1457.6	124.5	132.9	1.342	0.115	0.122
SC	2501011012	Residential: Evaporation	2121.3	2846.0	243.1	259.5	1.342	0.115	0.122
SC	2501011013	Residential: Spillage During Transport	211.0	222.4	211.4	228.4	1.054	1.002	1.083
SC	2501011014	Residential: Refilling at Pump: Vapor Displacement	66.8	95.2	103.4	111.9	1.425	1.548	1.675
SC	2501011015	Residential: Refilling at Pump: Spillage	5.9	6.3	6.9	7.5	1.083	1.177	1.273
SC	2501012011	Commercial: Permeation	34.7	46.6	4.0	4.2	1.342	0.115	0.122
SC	2501012012	Commercial: Evaporation	67.8	90.9	7.8	8.3	1.342	0.115	0.122
SC	2501012013	Commercial: Spillage During Transport	287.8	303.4	288.4	311.6	1.054	1.002	1.083
SC	2501012014	Commercial: Refilling at Pump: Vapor Displacement	128.7	183.5	199.3	215.6	1.425	1.548	1.675
SC	2501012015	Commercial: Refilling at Pump: Spillage	11.3	12.2	13.3	14.3	1.083	1.177	1.273
South Carolina Total			4021.7	5264.0	1202.0	1294.2			
SD	2501011011	Residential: Permeation	141.6	161.4	23.8	25.4	1.140	0.168	0.179
SD	2501011012	Residential: Evaporation	276.4	315.2	46.5	49.6	1.140	0.168	0.179
SD	2501011013	Residential: Spillage During Transport	30.3	32.3	30.8	33.1	1.065	1.017	1.094
SD	2501011014	Residential: Refilling at Pump: Vapor Displacement	7.8	10.1	10.9	11.8	1.301	1.407	1.516
SD	2501011015	Residential: Refilling at Pump: Spillage	0.8	0.9	0.9	1.0	1.092	1.182	1.274
SD	2501012011	Commercial: Permeation	4.5	5.2	0.8	0.8	1.140	0.168	0.179
SD	2501012012	Commercial: Evaporation	8.8	10.1	1.5	1.6	1.140	0.168	0.179
SD	2501012013	Commercial: Spillage During Transport	41.3	44.0	42.0	45.2	1.065	1.017	1.094
SD	2501012014	Commercial: Refilling at Pump: Vapor Displacement	15.0	19.5	21.1	22.7	1.301	1.407	1.516
SD	2501012015	Commercial: Refilling at Pump: Spillage	1.5	1.7	1.8	1.9	1.092	1.182	1.274
South Dakota Total			528.1	600.3	180.2	193.3			
TN	2501011011	Residential: Permeation	1547.6	2000.9	187.7	200.4	1.293	0.121	0.129
TN	2501011012	Residential: Evaporation	3021.7	3906.6	366.6	391.2	1.293	0.121	0.129
TN	2501011013	Residential: Spillage During Transport	268.1	283.9	270.4	291.6	1.059	1.009	1.088
TN	2501011014	Residential: Refilling at Pump: Vapor Displacement	79.4	114.5	124.2	134.2	1.443	1.565	1.690
TN	2501011015	Residential: Refilling at Pump: Spillage	7.3	7.9	8.6	9.2	1.087	1.179	1.274
TN	2501012011	Commercial: Permeation	49.4	63.9	6.0	6.4	1.293	0.121	0.129
TN	2501012012	Commercial: Evaporation	96.5	124.8	11.7	12.5	1.293	0.121	0.129
TN	2501012013	Commercial: Spillage During Transport	365.7	387.3	368.9	397.7	1.059	1.009	1.088
TN	2501012014	Commercial: Refilling at Pump: Vapor Displacement	153.0	220.7	239.3	258.5	1.443	1.565	1.690
TN	2501012015	Commercial: Refilling at Pump: Spillage	14.0	15.2	16.5	17.8	1.087	1.179	1.274
Tennessee Total			5602.6	7125.5	1599.8	1719.5			
TX	2501011011	Residential: Permeation	3351.9	1418.2	544.0	580.7	0.423	0.162	0.173
TX	2501011012	Residential: Evaporation	6544.6	2769.0	1062.1	1133.9	0.423	0.162	0.173
TX	2501011013	Residential: Spillage During Transport	898.6	868.6	942.0	1017.7	0.967	1.048	1.133
TX	2501011014	Residential: Refilling at Pump: Vapor Displacement	285.3	363.0	394.5	427.0	1.273	1.383	1.497
TX	2501011015	Residential: Refilling at Pump: Spillage	26.2	28.3	30.8	33.3	1.083	1.177	1.274
TX	2501012011	Commercial: Permeation	107.1	45.3	17.4	18.5	0.423	0.162	0.173

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
TX	2501012012	Commercial: Evaporation	209.0	88.4	33.9	36.2	0.423	0.162	0.173
TX	2501012013	Commercial: Spillage During Transport	1225.8	1184.9	1285.1	1388.3	0.967	1.048	1.133
TX	2501012014	Commercial: Refilling at Pump: Vapor Displacement	549.8	699.7	760.3	822.9	1.273	1.383	1.497
TX	2501012015	Commercial: Refilling at Pump: Spillage	50.3	54.5	59.2	64.1	1.083	1.177	1.274
Texas Total			13248.6	7520.1	5129.2	5522.7			
UT	2501011011	Residential: Permeation	411.3	446.4	70.2	74.9	1.085	0.171	0.182
UT	2501011012	Residential: Evaporation	803.1	871.6	137.1	146.3	1.085	0.171	0.182
UT	2501011013	Residential: Spillage During Transport	97.8	103.7	98.9	106.6	1.061	1.011	1.089
UT	2501011014	Residential: Refilling at Pump: Vapor Displacement	25.7	32.6	35.3	38.1	1.270	1.376	1.485
UT	2501011015	Residential: Refilling at Pump: Spillage	2.6	2.9	3.1	3.3	1.088	1.180	1.274
UT	2501012011	Commercial: Permeation	13.1	14.3	2.2	2.4	1.085	0.171	0.182
UT	2501012012	Commercial: Evaporation	25.7	27.8	4.4	4.7	1.085	0.171	0.182
UT	2501012013	Commercial: Spillage During Transport	133.4	141.5	134.9	145.4	1.061	1.011	1.089
UT	2501012014	Commercial: Refilling at Pump: Vapor Displacement	49.5	62.8	68.1	73.5	1.270	1.376	1.485
UT	2501012015	Commercial: Refilling at Pump: Spillage	5.0	5.5	6.0	6.4	1.088	1.180	1.274
Utah Total			1567.2	1709.2	560.2	601.7			
VT	2501011011	Residential: Permeation	113.9	32.2	20.8	22.2	0.283	0.183	0.195
VT	2501011012	Residential: Evaporation	222.3	62.9	40.6	43.3	0.283	0.183	0.195
VT	2501011013	Residential: Spillage During Transport	26.9	26.3	28.4	30.6	0.979	1.059	1.140
VT	2501011014	Residential: Refilling at Pump: Vapor Displacement	8.0	8.6	9.3	10.0	1.070	1.159	1.250
VT	2501011015	Residential: Refilling at Pump: Spillage	0.7	0.8	0.9	0.9	1.090	1.181	1.274
VT	2501012011	Commercial: Permeation	3.6	1.0	0.7	0.7	0.283	0.183	0.195
VT	2501012012	Commercial: Evaporation	7.1	2.0	1.3	1.4	0.283	0.183	0.195
VT	2501012013	Commercial: Spillage During Transport	36.7	35.9	38.8	41.8	0.979	1.059	1.140
VT	2501012014	Commercial: Refilling at Pump: Vapor Displacement	15.5	16.6	17.9	19.4	1.070	1.159	1.250
VT	2501012015	Commercial: Refilling at Pump: Spillage	1.4	1.6	1.7	1.8	1.090	1.181	1.274
Vermont Total			436.2	188.0	160.5	172.2			
VA	2501011011	Residential: Permeation	1246.2	335.7	192.9	206.0	0.269	0.155	0.165
VA	2501011012	Residential: Evaporation	2433.2	655.4	376.7	402.1	0.269	0.155	0.165
VA	2501011013	Residential: Spillage During Transport	360.3	347.0	376.7	407.3	0.963	1.045	1.130
VA	2501011014	Residential: Refilling at Pump: Vapor Displacement	119.9	123.2	133.9	145.1	1.027	1.117	1.209
VA	2501011015	Residential: Refilling at Pump: Spillage	10.6	11.5	12.5	13.5	1.081	1.175	1.273
VA	2501012011	Commercial: Permeation	39.8	10.7	6.2	6.6	0.269	0.155	0.165
VA	2501012012	Commercial: Evaporation	77.7	20.9	12.0	12.8	0.269	0.155	0.165
VA	2501012013	Commercial: Spillage During Transport	491.5	473.4	513.9	555.6	0.963	1.045	1.130
VA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	231.2	237.4	258.1	279.6	1.027	1.117	1.209
VA	2501012015	Commercial: Refilling at Pump: Spillage	20.5	22.1	24.1	26.1	1.081	1.175	1.273
Virginia Total			5030.9	2237.4	1907.0	2054.6			
WA	2501011011	Residential: Permeation	1467.0	923.7	166.2	177.3	0.630	0.113	0.121
WA	2501011012	Residential: Evaporation	2864.2	1803.5	324.5	346.3	0.630	0.113	0.121
WA	2501011013	Residential: Spillage During Transport	286.9	302.9	288.0	311.0	1.055	1.004	1.084
WA	2501011014	Residential: Refilling at Pump: Vapor Displacement	94.8	91.4	99.3	107.5	0.965	1.048	1.134
WA	2501011015	Residential: Refilling at Pump: Spillage	7.9	8.6	9.3	10.1	1.084	1.177	1.274
WA	2501012011	Commercial: Permeation	46.9	29.5	5.3	5.7	0.630	0.113	0.121
WA	2501012012	Commercial: Evaporation	91.5	57.6	10.4	11.1	0.630	0.113	0.121
WA	2501012013	Commercial: Spillage During Transport	391.4	413.2	392.9	424.2	1.055	1.004	1.084
WA	2501012014	Commercial: Refilling at Pump: Vapor Displacement	182.6	176.2	191.4	207.1	0.965	1.048	1.134
WA	2501012015	Commercial: Refilling at Pump: Spillage	15.3	16.5	18.0	19.4	1.084	1.177	1.274

state	SCC	Description	2002 VOC (tons)	2010 VOC (tons)	2015 VOC (tons)	2020 VOC (tons)	PF: 2002-2010	PF: 2002-2015	PF: 2002-2020
Washington Total			5448.5	3823.1	1505.3	1619.7			
WV	2501011011	Residential: Permeation	644.5	539.0	75.5	80.6	0.836	0.117	0.125
WV	2501011012	Residential: Evaporation	1258.4	1052.3	147.5	157.3	0.836	0.117	0.125
WV	2501011013	Residential: Spillage During Transport	83.7	89.4	85.5	91.8	1.068	1.021	1.097
WV	2501011014	Residential: Refilling at Pump: Vapor Displacement	25.1	28.5	30.8	33.2	1.134	1.226	1.320
WV	2501011015	Residential: Refilling at Pump: Spillage	2.1	2.4	2.5	2.7	1.095	1.184	1.274
WV	2501012011	Commercial: Permeation	20.6	17.2	2.4	2.6	0.836	0.117	0.125
WV	2501012012	Commercial: Evaporation	40.2	33.6	4.7	5.0	0.836	0.117	0.125
WV	2501012013	Commercial: Spillage During Transport	114.2	122.0	116.6	125.3	1.068	1.021	1.097
WV	2501012014	Commercial: Refilling at Pump: Vapor Displacement	48.4	54.9	59.4	63.9	1.134	1.226	1.320
WV	2501012015	Commercial: Refilling at Pump: Spillage	4.1	4.5	4.9	5.3	1.095	1.184	1.274
West Virginia Total			2241.5	1943.8	529.8	567.7			
WI	2501011011	Residential: Permeation	1307.8	881.3	160.8	171.6	0.674	0.123	0.131
WI	2501011012	Residential: Evaporation	2553.4	1720.7	314.0	335.1	0.674	0.123	0.131
WI	2501011013	Residential: Spillage During Transport	237.0	251.2	239.4	258.0	1.060	1.010	1.089
WI	2501011014	Residential: Refilling at Pump: Vapor Displacement	71.7	74.6	80.9	87.3	1.041	1.128	1.218
WI	2501011015	Residential: Refilling at Pump: Spillage	6.4	6.9	7.5	8.1	1.088	1.179	1.274
WI	2501012011	Commercial: Permeation	41.8	28.1	5.1	5.5	0.674	0.123	0.131
WI	2501012012	Commercial: Evaporation	81.6	55.0	10.0	10.7	0.674	0.123	0.131
WI	2501012013	Commercial: Spillage During Transport	323.3	342.7	326.5	351.9	1.060	1.010	1.089
WI	2501012014	Commercial: Refilling at Pump: Vapor Displacement	138.2	143.8	155.9	168.3	1.041	1.128	1.218
WI	2501012015	Commercial: Refilling at Pump: Spillage	12.3	13.3	14.5	15.6	1.088	1.179	1.274
Wisconsin Total			4773.4	3517.7	1314.6	1412.1			
WY	2501011011	Residential: Permeation	119.5	99.2	19.6	21.0	0.830	0.164	0.175
WY	2501011012	Residential: Evaporation	233.3	193.7	38.3	40.9	0.830	0.164	0.175
WY	2501011013	Residential: Spillage During Transport	23.6	25.1	24.0	25.8	1.067	1.019	1.095
WY	2501011014	Residential: Refilling at Pump: Vapor Displacement	6.1	7.0	7.5	8.1	1.136	1.228	1.323
WY	2501011015	Residential: Refilling at Pump: Spillage	0.6	0.7	0.7	0.8	1.094	1.183	1.274
WY	2501012011	Commercial: Permeation	3.8	3.2	0.6	0.7	0.830	0.164	0.175
WY	2501012012	Commercial: Evaporation	7.5	6.2	1.2	1.3	0.830	0.164	0.175
WY	2501012013	Commercial: Spillage During Transport	32.1	34.3	32.7	35.2	1.067	1.019	1.095
WY	2501012014	Commercial: Refilling at Pump: Vapor Displacement	11.8	13.4	14.5	15.6	1.136	1.228	1.323
WY	2501012015	Commercial: Refilling at Pump: Spillage	1.2	1.3	1.4	1.5	1.094	1.183	1.274
Wyoming Total			439.5	384.0	140.7	150.8			
Grand Total			226814	185568	73659	79271			

Appendix I: Summary of Vehicle Miles Traveled (VMT) for 2002 and Projected Years

	VMT (Millions of Miles)				
STATE	2002	2009	2014	2020	2030
Alabama	55,722	59,540	64,506	70,285	78,836
Arizona	52,505	66,726	79,004	95,220	123,715
Arkansas	29,894	32,197	35,199	38,931	46,816
California	300,760	351,409	395,126	450,577	547,163
Colorado	43,539	51,459	59,049	68,570	87,588
Connecticut	30,996	33,295	35,854	38,574	43,765
Delaware	8,835	9,652	10,475	11,464	12,820
District of Columbia	3,840	4,044	4,358	4,842	5,456
Florida	178,366	205,757	232,064	263,977	309,893
Georgia	106,727	121,640	136,236	154,726	187,465
Idaho	14,167	16,352	18,366	20,654	25,254
Illinois	105,024	113,803	124,805	138,641	162,918
Indiana	72,524	78,407	85,939	95,341	113,476
Iowa	31,365	33,702	36,735	40,567	49,731
Kansas	28,443	30,540	33,180	36,457	45,178
Kentucky	48,109	51,635	56,139	61,526	69,493
Louisiana	43,294	45,844	49,865	55,148	67,460
Maine	14,652	15,707	17,011	18,590	20,914
Maryland	53,758	60,542	66,843	74,291	87,736
Massachusetts	53,231	58,517	64,072	70,561	81,898
Michigan	98,634	104,777	113,344	124,060	143,016
Minnesota	53,151	57,935	63,314	69,692	79,523
Mississippi	36,277	40,273	44,218	49,351	59,527
Missouri	69,140	74,629	81,419	89,688	107,351
Montana	10,395	11,136	12,103	13,317	15,964
Nebraska	19,137	20,902	22,815	25,300	33,185
Nevada	14,502	18,373	21,811	26,007	31,030
New Hampshire	12,579	14,157	15,644	17,281	20,338
New Jersey	72,609	79,397	86,421	94,336	110,735
New Mexico	23,348	26,352	29,485	33,238	38,933
New York	140,752	154,520	167,529	183,007	230,836
North Carolina	80,200	89,933	99,742	112,349	129,868
North Dakota	7,336	7,642	8,154	8,787	10,969
Ohio	107,859	114,476	124,149	136,286	158,633
Oklahoma	45,732	50,363	55,770	62,368	76,566
Oregon	33,246	37,148	41,217	46,133	52,784
Pennsylvania	104,879	112,131	121,150	132,128	156,027
Rhode Island	8,173	8,908	9,730	10,731	12,389
South Carolina	47,074	51,518	56,364	62,300	73,148
South Dakota	8,498	9,181	9,894	10,655	13,355

	VMT (Millions of Miles)				
STATE	2002	2009	2014	2020	2030
Tennessee	68,315	76,062	84,586	95,238	111,516
Texas	217,820	245,103	273,591	309,616	380,244
Utah	24,421	28,400	32,404	37,370	45,084
Vermont	9,517	12,383	14,231	16,796	23,349
Virginia	77,396	86,935	96,075	106,783	132,805
Washington	54,461	62,978	71,301	81,750	95,637
West Virginia	19,544	19,598	20,623	21,964	23,489
Wisconsin	58,744	64,590	71,285	79,720	93,632
Wyoming	9,006	9,354	9,998	10,794	12,778

Appendix J: National Inventories of Commercial Marine Vessel and Locomotive Emissions for 2002 and Projection Years used to Develop Projection Factors

Table J-1 Locomotive and Commercial Marine Diesel Emissions from Excel file entitled: "FinalBase20070131.xls". These data were sent by David Brzezinski of EPA, OTAQ to Madeleine Strum, EPA, OAQPS on 2/14/2007

	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr		
YEAR	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**NH3**	**SO2**	**SCC**	**Description**
2002								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2002								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2002	43,699.83	106,271.83	964,979.26	26,374.03	25,582.81	328.29	65,434.36	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2002	1,243.91	3,025.01	27,468.01	750.73	728.21	12.09	2,409.78	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2002	867.57	2,109.80	19,157.60	523.60	507.89	5.81	1,158.28	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2002	904.75	2,200.22	19,978.64	546.04	529.66	6.02	1,199.16	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2002	3,949.05	9,603.54	87,202.92	2,383.36	2,311.86	26.01	5,184.35	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2002	17,228.58	151,330.52	834,025.23	29,618.84	28,730.28	401.48	80,353.00	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2003								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2003								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2003	43,743.26	108,849.99	918,694.90	26,760.35	25,957.54	336.58	67,086.51	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2003	1,189.05	2,917.37	27,188.50	725.20	703.45	12.40	2,470.63	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2003	848.94	2,100.04	19,108.72	518.73	503.17	5.96	1,187.53	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2003	882.50	2,182.65	19,859.94	539.16	522.99	6.17	1,229.44	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2003	4,803.69	10,410.43	89,952.36	2,426.72	2,353.92	26.67	5,315.25	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives

	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr		
YEAR	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**NH3**	**SO2**	**SCC**	**Description**
2003	17,321.36	152,555.80	834,748.65	30,285.24	29,376.68	405.10	81,072.56	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2004								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2004								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2004	43,786.69	111,428.15	872,410.53	27,146.67	26,332.27	355.63	70,883.26	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2004	1,134.20	2,809.74	26,908.98	699.67	678.68	13.10	2,610.45	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2004	830.32	2,090.28	19,059.84	513.86	498.44	6.30	1,254.74	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2004	860.24	2,165.07	19,741.25	532.28	516.31	6.52	1,299.02	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2004	5,658.34	11,217.32	92,701.80	2,470.08	2,395.98	28.18	5,616.07	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2004	17,311.46	153,080.17	830,313.34	30,665.96	29,745.98	408.74	81,807.94	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2005								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2005								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2005	43,830.12	114,006.32	826,126.17	27,532.99	26,707.00	359.14	71,582.24	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2005	1,079.34	2,702.10	26,629.47	674.14	653.92	13.23	2,636.19	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2005	811.70	2,080.52	19,010.96	508.99	493.72	6.36	1,267.11	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2005	837.99	2,147.50	19,622.55	525.40	509.64	6.58	1,311.83	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2005	6,512.98	12,024.21	95,451.24	2,513.44	2,438.04	28.45	5,671.45	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2005	17,295.06	153,498.80	825,229.38	30,971.52	30,042.38	412.42	82,542.83	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2009								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2009								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2009	43,485.53	122,270.55	755,489.99	24,964.91	24,215.96	382.65	12,581.28	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations

	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr		
YEAR	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**NH3**	**SO2**	**SCC**	**Description**
2009	1,074.45	2,720.99	27,635.10	616.43	597.93	14.09	463.34	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2009	761.91	2,120.85	15,941.12	437.55	424.43	6.77	222.71	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2009	783.68	2,181.45	16,396.58	450.05	436.55	7.01	230.57	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2009	7,653.28	13,456.90	100,466.57	2,465.29	2,391.33	30.32	996.81	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2009	16,870.10	149,965.84	781,105.44	28,171.67	27,326.52	427.47	46,838.50	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2014								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2014								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2014	42,517.67	132,370.25	722,365.22	23,873.57	23,157.36	414.29	1,628.33	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2014	1,163.20	2,945.75	29,917.80	658.48	638.73	15.26	59.97	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2014	704.22	2,207.05	12,260.97	395.25	383.40	7.33	28.82	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2014	724.34	2,270.11	12,611.29	406.55	394.35	7.59	29.84	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2014	8,155.73	14,568.45	101,965.89	2,582.17	2,504.71	32.82	129.01	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2014	16,273.37	143,917.41	721,909.90	25,406.32	24,644.13	447.06	22,293.17	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2020								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2020								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2020	41,264.74	145,597.07	704,353.37	22,917.80	22,230.26	455.65	1,894.24	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2020	1,279.43	3,240.10	30,895.35	724.01	702.29	16.78	69.76	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2020	632.67	2,315.13	10,764.47	350.46	339.95	8.07	33.53	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2020	650.74	2,381.28	11,072.02	360.48	349.66	8.35	34.71	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2020	8,805.16	16,024.18	103,389.09	2,761.62	2,678.77	36.10	150.08	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives

	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr	tons/yr		
YEAR	**VOC**	**CO**	**NOx**	**PM10**	**PM25**	**NH3**	**SO2**	**SCC**	**Description**
2020	16,071.19	139,711.67	676,154.45	22,923.26	22,235.56	471.75	3,104.41	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.
2030								2280002100	Commercial Marine Vessels; Diesel; Port emissions
2030								2280002200	Commercial Marine Vessels; Diesel; Underway emissions
2030	39,872.67	170,643.49	703,846.90	21,684.63	21,034.09	534.00	2,219.94	2285002006	Class I LH Railroad Equipment, Diesel,Line Haul Locomotives: Class I Operations
2030	1,499.53	3,797.48	31,449.42	835.61	810.54	19.67	81.75	2285002007	Class II/III LH Railroad Equipment, Diesel,Line Haul Locomotives: Class II/III Operations
2030	547.16	2,507.16	9,789.85	295.02	286.17	9.45	39.30	2285002008	Passenger Railroad Equipment, Diesel,Line Haul Locomotives: Passenger Trains (Amtrak)
2030	562.79	2,578.79	10,069.56	303.45	294.35	9.79	40.68	2285002009	Commuter Railroad Equipment, Diesel,Line Haul Locomotives: Commuter Lines
2030	9,331.13	18,780.74	99,070.39	2,767.23	2,684.21	42.31	175.89	2285002010	Switch Railroad Equipment, Diesel,Yard Locomotives
2030	17,177.98	143,790.71	680,024.87	24,494.99	23,760.14	515.98	3,586.30	N/A	Commercial Marine Vessels; Diesel; Port+Underway emissions combined.

Table J-2. Residual Oil Commercial Marine Vessel inventories Used to Develop Projection Factors. Data from Excel file entitled:
"Loco&CMV inventories_NRT4FRM.xls".
Sent by Penny Carey, OTAQ, to Madeleine Strum, OAQPS on 9/14/2006.

Commercial Marine Residual 50-State Annual Inventories
SCC: 2280003000

	tons/year					
	VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2
1996	7,676	15,716	189,974	17,139	16,625	156,246
1997	8,024	16,438	196,959	17,779	17,246	157,608
1998	8,382	17,183	203,943	18,441	17,888	159,561
1999	8,730	17,905	210,589	19,085	18,512	161,580
2000	9,069	18,609	216,949	19,715	19,123	163,694
2001	9,403	19,300	223,076	20,336	19,725	165,928
2002	9,733	19,984	229,020	20,951	20,323	168,309
2003	10,062	20,666	234,834	21,567	20,920	170,863
2004	10,393	21,350	240,570	22,186	21,521	173,617
2005	10,729	22,042	246,280	22,814	22,130	176,598
2006	11,070	22,748	252,016	23,456	22,752	179,832
2007	11,421	23,471	257,829	24,115	23,391	183,345
2008	11,783	24,217	263,773	24,795	24,052	187,164
2009	12,160	24,992	269,898	25,503	24,738	191,316
2010	12,421	25,517	274,115	25,996	25,216	192,801
2011	12,964	26,646	282,902	27,015	26,205	200,722
2012	13,397	27,537	289,884	27,829	26,994	206,030
2013	13,854	28,476	297,256	28,688	27,827	211,777
2014	14,336	29,469	305,070	29,595	28,707	217,988
2015	14,848	30,520	313,378	30,556	29,639	224,691
2016	15,391	31,636	322,231	31,575	30,628	231,912
2017	15,968	32,822	331,682	32,656	31,676	239,677
2018	16,580	34,081	341,782	33,804	32,790	248,014
2019	17,231	35,420	352,584	35,024	33,973	256,948
2020	18,127	37,283	367,469	36,701	35,600	271,212
2021	18,660	38,357	376,500	37,695	36,564	276,714
2022	19,441	39,965	389,719	39,156	37,981	287,600
2023	20,271	41,673	403,847	40,706	39,485	299,189
2024	21,153	43,486	418,936	42,350	41,079	311,508
2025	22,087	45,409	435,038	44,092	42,769	324,583
2026	23,077	47,448	452,207	45,937	44,559	338,442
2027	24,126	49,606	470,492	47,889	46,452	353,110
2028	25,235	51,891	489,947	49,953	48,455	368,614
2029	26,408	54,306	510,623	52,134	50,570	384,981

Commercial Marine Residual 50-State Annual Inventories

SCC: 2280003000

	tons/year					
	VOC	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**
2030	27,537	56,623	530,805	54,231	52,604	399,746
2031	28,952	59,548	555,846	56,861	55,155	420,408
2032	30,329	62,385	580,498	59,417	57,634	439,522
2033	31,779	65,374	606,579	62,107	60,244	459,604
2034	33,304	68,519	634,141	64,936	62,988	480,681
2035	34,908	71,825	663,237	67,908	65,871	502,779
2036	36,592	75,297	693,917	71,028	68,897	525,926
2037	38,359	78,941	726,235	74,299	72,070	550,147
2038	40,211	82,762	760,241	77,728	75,396	575,470
2039	42,151	86,765	795,989	81,317	78,878	601,920
2040	44,181	90,954	833,529	85,073	82,520	629,524

Source: 2012 LM CMV-FRM.xls

Documentation: Tier 4 nonroad FRM estimates, documented in FRM RIA.