Emission Inventory and Related Modeling Inputs Comparisons EPA and RPO Data

Project Purpose

- Compare the criteria pollutant emission estimates and related data contained within three emission inventories/modeling platforms
  - EPA 2001 CAIR EI
  - EPA 2002 NEI
  - RPO 2002 EIs
- Help quality assure the draft 2002 NEI
- Document and understand the differences in the three inventories, and any resulting differences in modeling studies
- Help identify new ancillary information from the RPOs to consider for including in EPA's 2002 modeling platform

Data Comparisons

- Emission Estimates – All sectors
  - Point
  - Nonpoint
  - Onroad
  - Nonroad
- Factor/Ancillary Data
  - Speciation profiles
  - Temporal profiles
  - Spatial profiles

Project Status

- “Dry Run” with Draft 2002 NEI and current RPO EIs
  - Collected EI data from EPA and RPOs
  - Collected Factor/Ancillary data from EPA and RPOs
  - Developed example reports
  - Will run reports and publish results in September 2005

Future Plans

- Run comparisons again with Final 2002 NEI and Final RPO EIs
- Run reports and publish results in 1Q 2006
- Report explaining major differences in 2Q 2006

Example Reports – EI Data

- Matrix
- Emission Totals
- Source Specific Comparisons
- Geographic

Example Reports - Factor/Ancillary Data

- Reports will contain which RPOs are using state/county specific profile data
- Reports will list profiles being used for each SCC for each RPO and 2001 CAIR modeling
- Reports will highlight instances where different profiles are being used by either RPOs or CAIR for high emitting SCCs

State-SCC-Pollutant-Date-Type

FIPSST	SCC	PLLT	Start Date	End Date	Emiss Type	NEI 2002	CAIR 2001	RPO 2002
09	10100205	CO	20011201	20020228	29			x
09	10100205	CO	20020101	20021231	30	x	x	x
09	10100205	CO	20020601	20020831	29			x
09	10100205	NOX	20020101	20021231	30	x	x	x
09	10100205	NOX	20020601	20020831	29			x
09	10100205	SO2	20020101	20021231	30	x	x	x
09	10100205	VOC	20020101	20021231	30	x	x	x
09	10100205	VOC	20020601	20020831	29			x
09	10100212	CO	20011201	20020228	29			x
09	10100212	CO	20020101	20021231	30	x	x	x
09	10100212	CO	20020601	20020831	29			x
09	10100212	NOX	20020101	20021231	30	x	x	x
09	10100212	NOX	20020601	20020831	29			x
09	10100212	SO2	20020101	20021231	30	x	x	x
09	10100212	VOC	20020101	20021231	30	x	x	x
09	10100212	VOC	20020601	20020831	29			x
09	10100217	CO	20011201	20020228	29			x
09	10100217	CO	20020101	20021231	30	x	x	x
09	10100217	CO	20020601	20020831	29			x

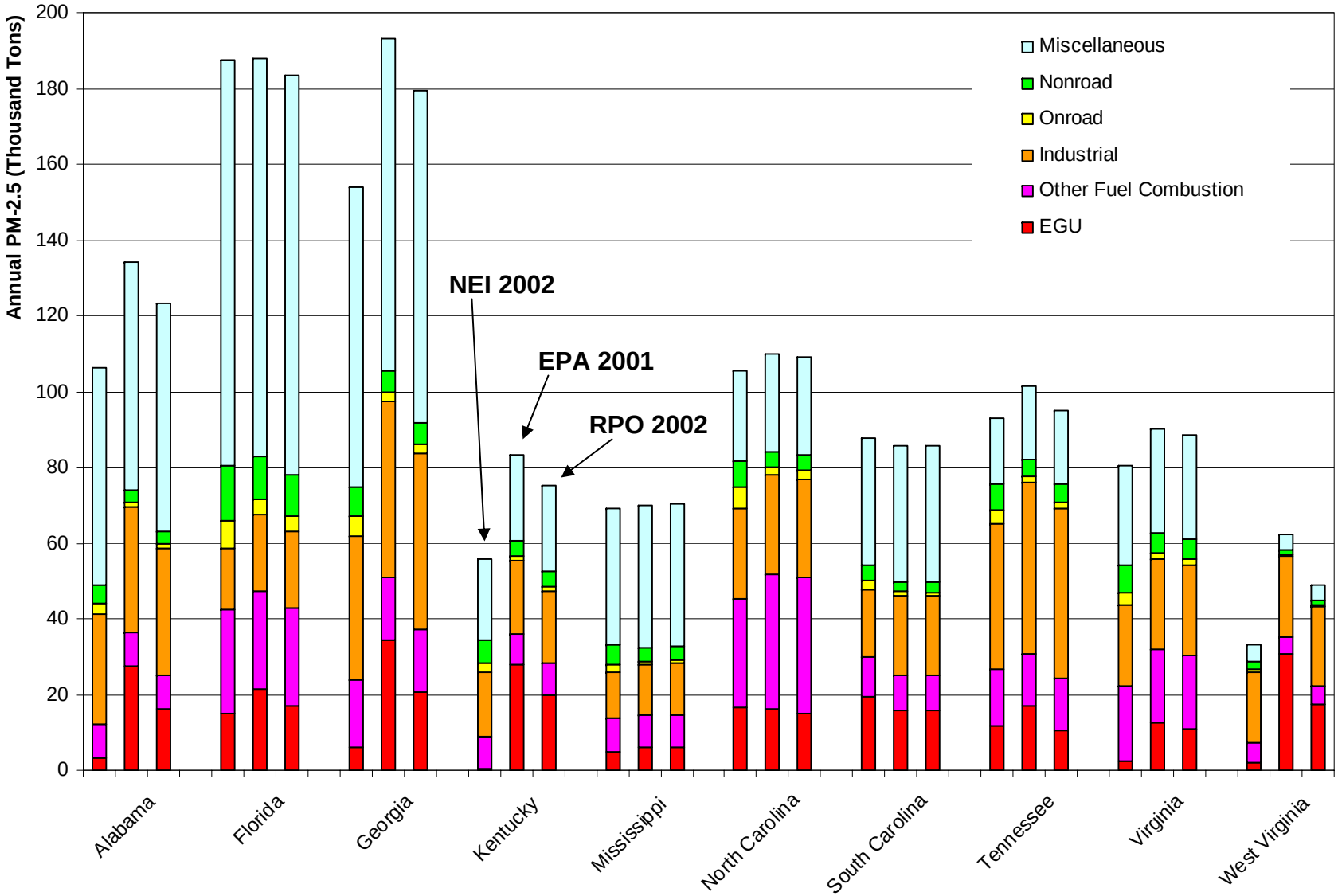
State-SCC-Pollutant

FIPS	SCC	Description	PLLT	Annual Emissions (Tons) RPO 2002	NEI 2002	CAIR 2001
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	CO	823.93	833.82	996.96
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	NOX	8,153.55	8,251.39	9,865.79
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM-CON	11.37	11.51	13.76
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM-FIL	2.03	2.05	2.46
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM10-FIL	2.00	2.02	2.42
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM10-PRI	46.55	47.11	56.32
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM25-FIL	0.09	0.09	0.11
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	PM25-PRI	23.33	23.61	28.23
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	SO2	139.72	141.39	169.06
42	20100101	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Turbine	VOC	177.05	179.18	214.23
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	CO	287.69	291.14	348.10
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	NOX	312.73	316.49	378.41
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM-CON	0.01	0.01	0.01
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM-FIL	0.69	0.70	0.84
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM10-FIL	0.68	0.69	0.83
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM10-PRI	7.42	7.51	8.98
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM25-FIL	0.40	0.40	0.48
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	PM25-PRI	7.22	7.31	8.74
42	20100102	Internal Combustion Engines; Electric Generation; Distillate Oil (Diesel); Reciprocating	SO2	8.82	8.92	10.67

State-Tier2

State	Tier 1	Tier 2	Annual Emissions (Tons) -- RPO 2002						
			VOC	NOX	CO	SO2	PM-10	PM-2.5	NH3
Arizona	Fuel Comb. Elec. Util.	Coal	589	80,970	4,904	70,643	9,087	6,617	5
		Oil	8	89	19	10	13	10	2
		Gas	101	3,340	810	17	119	119	48
		Internal Combustion	38	2,396	514	719	34	32	0
	Fuel Comb. Industrial	Coal	28	5,095	568	4,768	818	496	0
		Oil	21	315	76	426	41	30	8
		Gas	672	47,956	6,899	19	353	347	98
		Internal Combustion	208	6,431	1,357	7	13	8	0
	Fuel Comb. Other	Commercial/Institutional Oil	0	12	3	26	5	4	0
		Commercial/Institutional Gas	256	1,760	478	111	264	222	8
		Residential Wood	5,608	183	13,732	28	1,872	1,872	0
		Residential Other	105	1,941	756	16	146	146	7
	Chemical & Allied Product Mfg	Agricultural Chemical Mfg	0	191	11	0	82	43	1
	Metals Processing	Non-Ferrous Metals Processing	80	1,168	251	5,666	509	355	0
		Ferrous Metals Processing	3	0	0	0	0	0	0
		Metals Processing NEC	161	1,773	5,096	17,721	7,612	2,611	0
	Petroleum & Related Industries	Oil & Gas Production	4,431	10,839	2,114	3	0	0	0
		Petroleum Refineries & Related Industries	49	0	0	0	0	0	0

State-Major Category Summaries



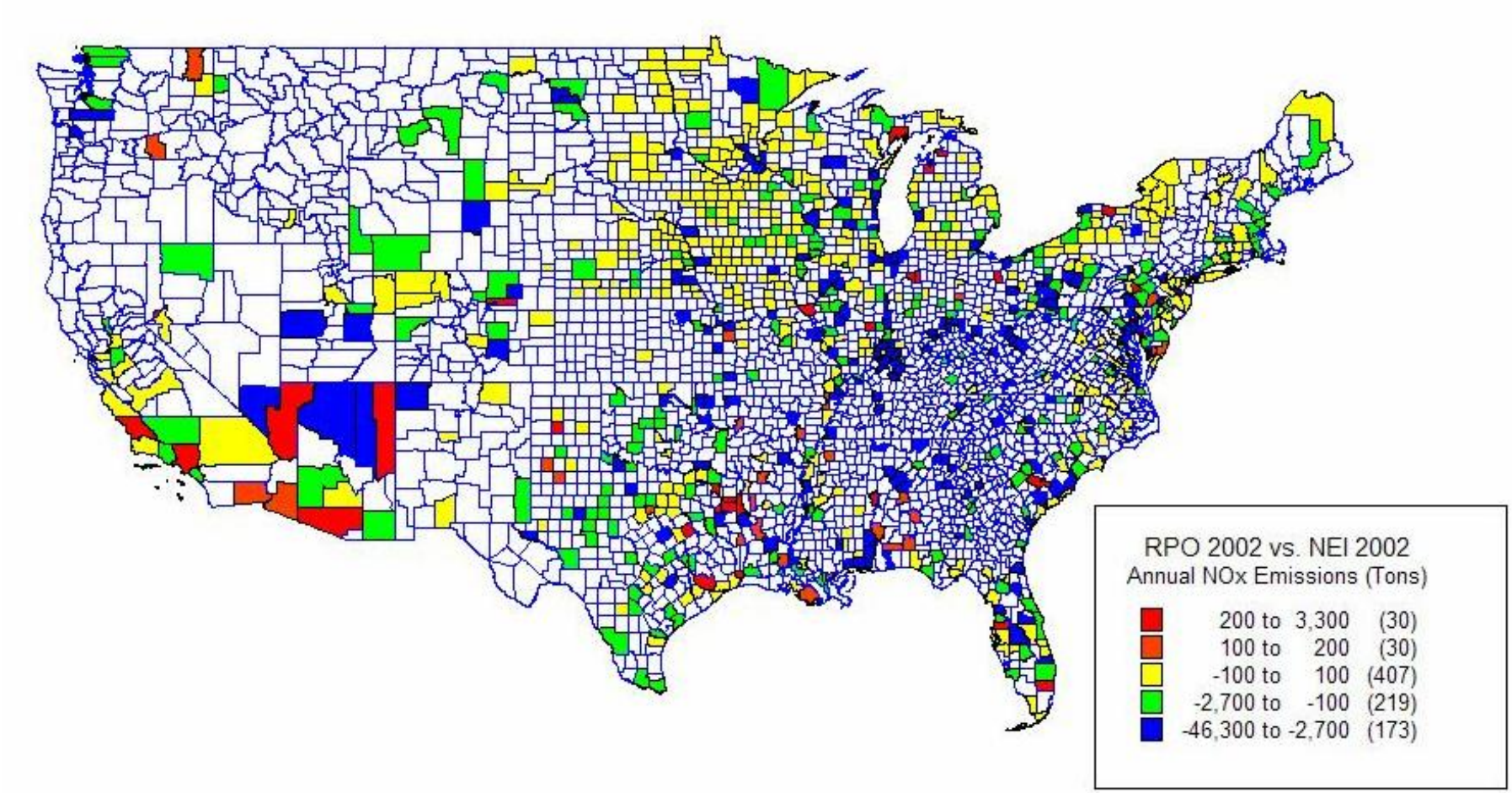
State-VMT Summaries

State	SCC	Description	Annual VMT (Millions)		
			NEI 2002	CAIR 2001	RPO 2002
Iowa	2201001110	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Interstate: Total	2287.2225	2282.6481	2289.5097
Iowa	2201001130	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Other Principal Arterial: Total	2779.2350	2773.6765	2782.0142
Iowa	2201001150	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Minor Arterial: Total	1375.1938	1372.4434	1376.5690
Iowa	2201001170	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Major Collector: Total	1756.5416	1753.0285	1758.2981
Iowa	2201001190	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Minor Collector: Total	439.2408	438.3623	439.6800
Iowa	2201001210	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Rural Local: Total	853.4094	851.7026	854.2628
Iowa	2201001230	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Urban Interstate: Total	1124.1916	1121.9432	1125.3158
Iowa	2201001270	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Urban Other Principal Arterial: Total	1613.7782	1610.5506	1615.3920
Iowa	2201001290	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Urban Minor Arterial: Total	1546.3063	1543.2137	1547.8526
Iowa	2201001310	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Urban Collector: Total	444.4677	443.5788	444.9122
Iowa	2201001330	Highway Vehicles - Gasoline; Light Duty Gasoline Vehicles (LDGV); Urban Local: Total	1002.3561	1000.3514	1003.3585
Iowa	2201020110	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Interstate: Total	1367.0666	1364.3325	1368.4337
Iowa	2201020130	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Other Principal Arterial: Total	1661.1407	1657.8184	1662.8018
Iowa	2201020150	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Minor Arterial: Total	821.9490	820.3051	822.7709
Iowa	2201020170	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Major Collector: Total	1049.8802	1047.7804	1050.9301
Iowa	2201020190	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Minor Collector: Total	262.5331	262.0080	262.7956
Iowa	2201020210	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Rural Local: Total	510.0809	509.0607	510.5910
Iowa	2201020230	Highway Vehicles - Gasoline; Light Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5); Urban Interstate: Total	671.9261	670.5822	672.5980

State-Top 25 Facility Lists

FIPS	Plant ID	Plant	PLLT	Annual Emissions (Tons)
54079	0006	APPALACHIAN POWER - JOHN E AMOS PLANT	SO2	107,847.51
54061	0001	MONONGAHELA POWER CO.- FORT MARTIN POWER	SO2	91,334.32
54051	0005	OHIO POWER - MITCHELL PLANT	SO2	59,327.40
54053	0009	APPALACHIAN POWER - MOUNTAINEER PLANT	SO2	43,125.89
54051	0006	OHIO POWER - KAMMER PLANT	SO2	42,179.77
54073	0005	MONONGAHELA POWER CO-PLEASANTS POWER STA	SO2	42,037.57
54053	0001	APPALACHIAN POWER CO.-PHILIP SPORN PLANT	SO2	41,320.29
54023	0003	MOUNT STORM POWER PLANT	SO2	23,439.89
54077	0001	MONONGAHELA POWER CO-ALBRIGHT	SO2	20,674.66
54039	0006	APPALACHIAN POWER - KANAWHA RIVER PLANT	SO2	15,733.63
54073	0004	MONONGAHELA POWER CO.-WILLOW ISLAND	SO2	14,523.43
54051	0002	PPG INDUSTRIES, INC.	SO2	13,076.22
54033	0015	MONONGAHELA POWER CO-HARRISON	SO2	8,719.42
54051	0011	VENCO MOUNDSVILLE CALCINING PLANT	SO2	7,570.45
54073	0006	CABOT CORPORATION-OHIO RIVER PLANT	SO2	6,986.56
54107	0001	DUPONT WASHINGTON WORKS	SO2	4,502.76
54049	0009	MONONGAHELA POWER CO.-RIVESVILLE POWER	SO2	4,438.08
54019	0001	ELKEM METALS COMPANY - ALLOY L.P.	SO2	3,397.87
54039	0007	BAYER CROPSCIENCE	SO2	3,252.43
54035	0002	CENTURY ALUMINUM OF WEST VIRGINIA	SO2	3,050.43
54073	0003	CYTEC INDUSTRIES - REDACTED NON-CONFID	SO2	2,444.68
54003	0006	CAPITOL CEMENT CORPORATION	SO2	1,622.49
54049	0026	AMERICAN BITUMINOUS POWER-GRANT TOWN PLT	SO2	1,494.25
54009	0002	WHEELING-PITTSBURGH STEEL CORPORATION	SO2	1,020.05
54039	0003	UNION CARBIDE (DOW) SO. CHARLESTON PLANT	SO2	1,011.41

State-Top 25 Stack Concentrations

FIPS	Plant ID	Plant Name	Stack ID	Pllt	Annual Emission (Tons)	Stack Flow (acfs)	Concentration (Tons/acfs)
01117	0004	LaFarge Building Materials	131	NOX	327.91	25.00	13.12
01091	0002	CEMEX, Inc.	007	NOX	407.76	50.00	8.16
01091	0002	CEMEX, Inc.	008	NOX	407.76	50.00	8.16
01097	5011	Degussa Corporation	042	NOX	24.56	3.53	6.96
01129	0003	Ciba Specialty Chemicals Corporation	017	NOX	17.64	3.27	5.39
01129	0003	Ciba Specialty Chemicals Corporation	016	NOX	17.64	3.63	4.86
01091	0002	CEMEX, Inc.	009	NOX	407.76	100.00	4.08
01091	0002	CEMEX, Inc.	010	NOX	407.76	100.00	4.08
01111	0014	Transcontinental Gas Pipe Line Corporati	014	NOX	78.95	25.33	3.12
01111	0014	Transcontinental Gas Pipe Line Corporati	018	NOX	14.90	5.50	2.71
01091	0007	Transcontinental Gas Pipe Line Corporati	005	NOX	655.12	306.67	2.14
01091	0007	Transcontinental Gas Pipe Line Corporati	023	NOX	628.88	306.67	2.05
01111	0014	Transcontinental Gas Pipe Line Corporati	011	NOX	790.18	390.00	2.03
01111	0014	Transcontinental Gas Pipe Line Corporati	010	NOX	785.41	390.00	2.01
01091	0007	Transcontinental Gas Pipe Line Corporati	013	NOX	1,203.79	603.33	2.00
01097	4005	Union Oil of California	008	NOX	479.00	245.00	1.96
01091	0007	Transcontinental Gas Pipe Line Corporati	016	NOX	48.44	25.33	1.91
01091	0007	Transcontinental Gas Pipe Line Corporati	003	NOX	580.48	306.67	1.89
01111	0014	Transcontinental Gas Pipe Line Corporati	002	NOX	573.67	306.67	1.87
01111	0014	Transcontinental Gas Pipe Line Corporati	012	NOX	715.88	390.00	1.84
01091	0007	Transcontinental Gas Pipe Line Corporati	002	NOX	546.00	306.67	1.78
01097	5012	Kerr-McGee Chemical LLC	008	NOX	24.40	13.75	1.77
01091	0007	Transcontinental Gas Pipe Line Corporati	006	NOX	535.04	306.67	1.74
01129	0009	ConocoPhillips Company	012	NOX	43.42	25.12	1.73
01091	0007	Transcontinental Gas Pipe Line Corporati	014	NOX	43.64	25.33	1.72

County Level Density Plot