The What, Why, When and How of SIP Modeling Documentation

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Disclaimer

- This presentation is not an all-inclusive or exhaustive compilation of the materials that should or could be included in a State Implementation Plan (SIP) revision.
- Addressing only the items discussed in the presentation do not guarantee that the SIP, when submitted to EPA, will be approved.
- The presentation is provided as a resource for consideration in documenting a SIP.
- States have flexibility in how they document their SIPs.

What is EPA's Purpose in a SIP Review?

- To ensure the SIP complies with the Clean Air Act.
- To ensure compliance with the applicable NAAQS.
- To assist the states in the development of a well documented and defensible plan that results in the above two objectives.

Why Does EPA Need Detailed Modeling Documentation?

- To support the Agency's conclusions of attainment.
- To assist in the development of the Federal Register notices.
- To help the Agency defend the SIP if litigation or questions arise from our proposed and final actions.
- We can only use what is in the SIP to support our actions.
- To identify air quality issues.

Why Model?

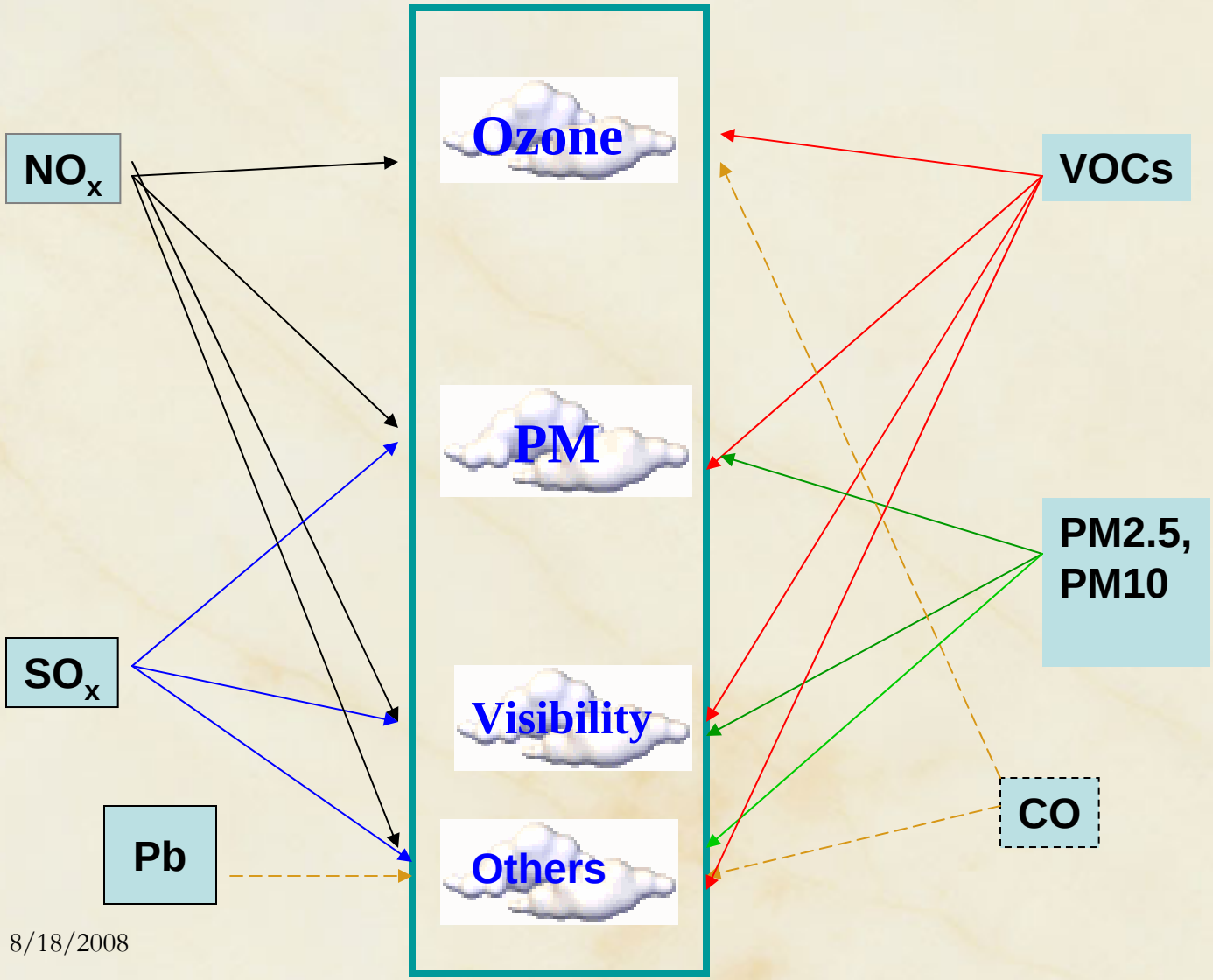
- To scientifically demonstrate that the national ambient air quality standards (NAAQS) have been or will be attained.
- Modeling is required by U.S. law (1970 Clean Air Act, 1990 CAA Amendments) for criteria pollutants), in most cases.

When to Model?

- NAAQS Attainment Plans
- Redesignations
- Emission trading
- Regional haze
- Source-specific SIP revisions

What are the Criteria Pollutants?

Similar Pollutants for Different Programs



Similar Sources for Different Programs

Mobile Sources

NOx, VOC, Toxics

(Cars, trucks, airplanes, boats, etc.)

Industrial Sources

NOx, VOC, SOx, Toxics, Lead

(Power plants, factories, refineries/chemical plants, etc.)

Area Sources

NOx, VOC, Toxics, Lead

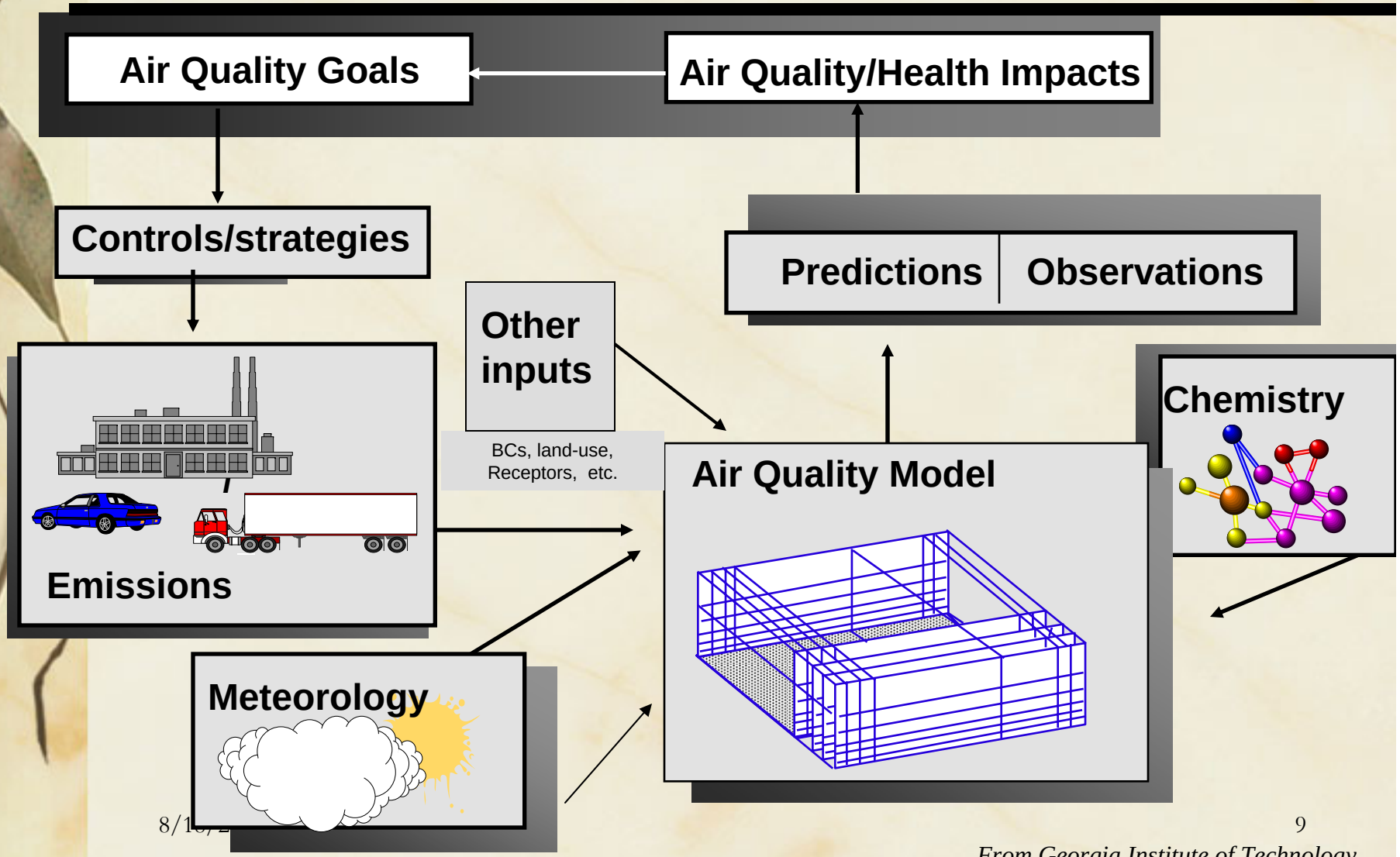
(Homes, small business, farming equipment, fires, etc.)

Chemistry

Meteorology

- Ozone
- PM
- Acid Rain
- Visibility
- Air Toxics
- Atmospheric Deposition

Same Approaches with Air Quality Models



From Georgia Institute of Technology

Steps for Modeling Demonstration/Documentation

- Conceptual Description
- Modeling/Analysis Protocol
- Emissions Preparations and Results
- Air Quality/Meteorology Preparations and Results
- Performance Evaluation for Air Quality Model (and Other Analyses)
- Description of the Strategy Demonstrating Attainment
- Supplemental Analyses/Weight of Evidence Determination
- Data Access

http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

Modeling Steps

- Conceptual Description
  - Qualitative and quantitative discussion of the area's NAA problem;
  - Regional versus local influences.
  - Analyzes emissions, air quality; and processes, conditions, and influences for ozone, PM, and/or regional haze formation.
- Modeling Protocol
  - Communicate scope of the analysis and document stakeholder involvement.
  - Types of analyses performed; steps followed in each type of analyses; rationale for choice of the modeling system and model configurations and input assumption
  - Developed at start of project.

Modeling Steps

- Emissions Preparations and Results
  - Assurance a valid, consistent emissions data base, developed with appropriate procedures and tools, are used to derive emission estimates needed for air quality modeling.
  - Document quality assurance methods applied;
  - Process to convert data base to model-compatible inputs;
  - *Deviations from existing guidance and underlying rationale;*
  - Pollutants: VOC, NOx, SO2, NH3, PM2.5, PM10, and CO (as appropriate) total emissions by State/County and for major source categories.
  - Include these items in SIP Narrative

http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

Modeling Steps

- Air Quality/Meteorology Preparations and Results
  - Assurance that representative air quality and meteorological inputs are used in analyses
  - Description of data base and procedures used to derive and quality assure inputs for modeling;
  - *Departures from guidance and their underlying rationale.*
    - http://www.epa.gov/ttn/scram/
  - Performance of meteorological model used to generate meteorological inputs to the air quality model.

http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

Modeling Steps

- Performance Evaluation for Air Quality Model (and Other Analyses)
  - Show decision makers and the public how well the model (or other analyses) reproduced observations on the days selected for analysis for each nonattainment area and appropriate subregions.
  - *Includes graphical and statistical analyses*
  - Summary of observational data base available for comparison;
  - Identification of performance tests used and their results (including diagnostic analyses);
  - Ability to reproduce observed temporal and spatial patterns;
  - Overall assessment of what the performance evaluation implies.

Modeling Steps

- Supplemental Analyses/Weight of Evidence Determination
  - Assure the EPA and the public that the strategy meets applicable attainment tests and is likely to produce attainment of the NAAQS and/or uniform rate of progress by the required time.
  - Description of the modeled test and observational data base used;
  - Identification of air quality model used;
  - Identification of other analyses performed; Outcome of each analysis, including the modeled attainment test;
  - Assessment of the credibility associated with each type of analysis in this application;
  - Narrative describing process used to conclude the overall weight of available evidence supports a hypothesis that the selected strategy is adequate to attain the NAAQS.

http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

Modeling Steps

- Data Access
  - Enables the EPA or other interested parties to replicate model performance and attainment simulation results, as well as results obtained with other analyses.
  - Assurance that data files are archived and that provision has been made to maintain them;
  - Technical procedures for accessing input and output files;
  - Identify computer on which files were generated and can be read, as well as software necessary to process model outputs;
  - Identification of contact person, means for downloading files and administrative procedures which need to be satisfied to access the files.
  - We may/could ask for any and/or all modeling input and output files.

http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

What the Reviewer Needs To Know

- Why is the change needed?
- What is the underlying reason or documentation to support a decision or conclusion associated with the revision or demonstration?
- Are all required program elements present and adequately documented?
- Are deviations from EPA guidance or the approved protocol sufficiently documented with the appropriate rationales?
- What guidance was relied upon for the modeling?

What Does EPA Look for?

- Conceptual discussion of problem.
- Rationale for modeling system choice.
- How was modeling system configured and simulated?
  - Databases and choices for modeling inputs.
  - Reasons model performance (MPE) supports developing future control strategies.
  - MPE for NAA, surrounding areas, domain.
- Tables, charts, figures, text.
- Include these discussions in SIP Narrative

So Many Questions Need Addressing

- How are emissions developed and projected?
- Quality assurance and control procedures?
- What emission rates were modeled for the point sources?
- How were deviations to protocols addressed?
- Was a modeling protocol developed?

Control Strategy
- What EPA Needs to Know

- Qualitative documentation of the modeled strategy.
- State and local reductions for precursors modeled and not-modeled.
- Clean Air Act mandated reductions.
- Regulatory versus voluntary controls.
- Identify controls within and outside NAA.
- Sensitivity analyses of the impacts of specific reductions.
- Implementation dates.

Example Table of PM2.5 Attainment Controls

Control	Type	Pollutants	Affected emission units	Implementation date	Federally enforceable	Reductions (tpy)
CAIR	Federal	SO2, NOx, PM2.5	EGUs	Phased implementation until 2015	Yes	2020.0 Sox 1200.0 NOx 2400.0 PM
NOx SIP Call	Federal	NOx	EGUs	2004	Yes	579.0
NOx RACT	State	NOx, SO2, PM	6 plants explicitly named	2009	Submitted in SIP	150.0 SO2 25.0 NOx 99.0 PM
Utility	Consent decree	NOx, SO2, PM	EGUs in City?	2007	Yes	88.0 SO2 75.0 NOx 120.0 PM
heavy duty diesel (2007) engine standard	Federal	NOx, NMHC*	Onroad trucks & buses	Between 2007-2010	Yes	
Tier 2 Tailpipe	Federal	NOx	Onroad vehicles	2005	Yes	
Nonroad diesel rule	Federal	SO2	Nonroad sources	2007-2012		

200x Ozone Attainment Demonstration SIP Reductions Examples

Control Measure	200x NOx Reduction (TPD)	200x VOC Reduction (TPD)
State gasoline	23.74	24.56
Large electric utility steam generators	289.83	0
Ozone Action days program	4.28	6.51
Large NOx units in NAA	18.83	0
Changes in Enhanced I&M	12.25	11.33
Expanded new source review rule	20.94	26. 0
Expanded RACT rules	20.00	0
New boilers & fuel burning equip.	0.67	0
Stationary engines & gas turbines	30.00	0
National LEV program	18.19	9.07
Locomotive engine standards	4.88	0.03
Consumer/commercial products II	0	13.82
Marine engine standards	0	1.25
Non-road diesel eng. stand. II & III	7.13	12.97
Total	**450.74**	**105.54**

Compliance Tests - What EPA Needs to Know

- ✓ Monitored and Unmonitored Attainment Test
  - Recommend using EPA Model Attainment Test Software (MATS)
  - Show modeled test results at all NAA monitors.
  - Show unmonitored attainment test

- ✓ Relative reduction factors for ozone and/or each component of PM2.5 and regional haze (as applicable)
  - Show specifics of how each RRFs were developed,
  - Define nearby cell, thresholds,
  - Detail speciation process using SANDWICH technique.
    - http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf

For Weight of Evidence (WOE) - What EPA Needs to Know

- ✓ Supplemental weight of evidence analysis to support modeling.
  - Other studies, sensitivity analyses, other modeling analyses
- ✓ It is not enough to just predict DVFs =< NAAQS for ozone and PM2.5.
  - Show how AQ improvement is related to emissions reductions.

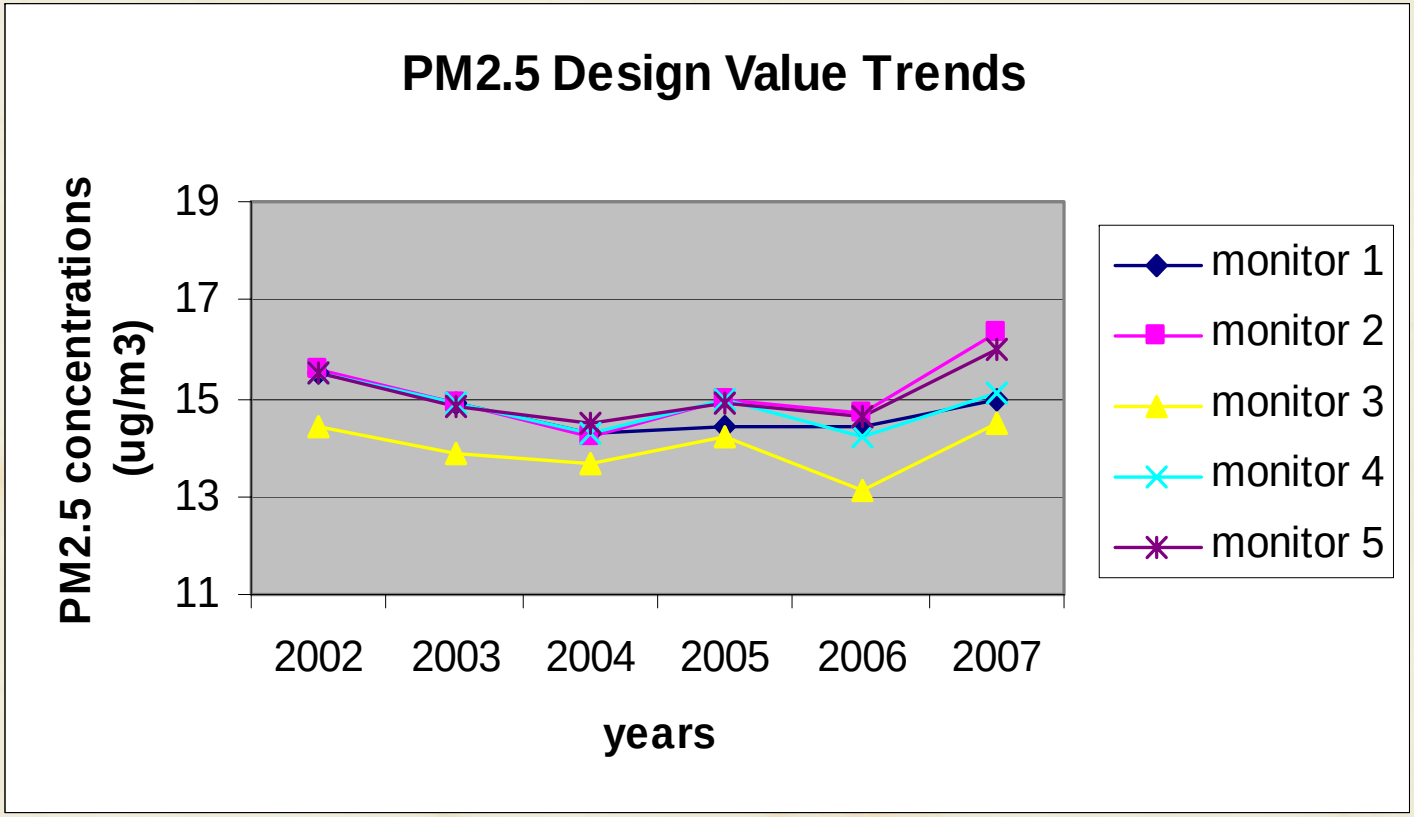
For Weight of Evidence (WOE) - What EPA Needs to Know

- ✓ Evidence that emissions remain at or below projected levels throughout the 3-year period used to determine future attainment for PM2.5 and ozone and/or 5-year period for uniform rate of progress assessments.

    - Discuss current air quality and emissions at time of SIP submittal
    - Discuss levels of reductions expected for controls modeled or not modeled but will come on line within the 3—year period leading to attainment.
    - Document reductions and controls implemented in the 3 years leading to attainment.

8-Hr Ozone Design Values for Nonattainment Area Monitors

Monitoring Site	Baseline 5-yr weighted Observed Ozone Design Value (a) (DVC)	Days used in RRF	Threshold (ppb) (b)	Average Modeled Baseline Maximum 8-Hour Ozone (c)	Average Modeled 2009 Maximum 8-Hour Ozone (d)	Relative Reduction Factor (e) (RRF)	Future 2009 Ozone Design Value (f) (DVF)
Jasper, GA	84.3	12	85	92.575	81.387	0.879	74.1
Column, GA	90	16	85	94.65	84.45	0.892	80.3
Hialeah, TN	90	12	84	99.391	89.808	0.903	81.3
Sassafras, TN	86	16	85	94.962	86.893	0.915	78.7
Wyoming, AL	81	13	81	86.853	76.161	0.876	71.0
Big Hollow, AL	80.3	13	84	94.146	82.669	0.878	70.5


PM2.5 Design Value Trends
PM2.5 concentrations (ug/m3)
19
17
15
13
11
2002
2003
2004
2005
2006
2007
years
monitor 1
monitor 2
monitor 3
monitor 4
monitor 5

Sample EPA Review of a Submittal

NAA monitor	2009 DVF	2009 MATS	2009 DV other modeling	05-07 DV (ug/m3)	2005 Yearly Avg	2006 Yearly Avg	2007 Yearly Avg
Monitor 2	15.2	15.2	14.8	16.3	16.3	15.2	17.3
Monitor 5	15.4	15.0	14.3	16.0	16.8	14.3	16.9
Monitor 4	14.9	14.2	13.6	15.1	15.5	13.8	15.9

Additional Reductions for WOE

Table 3.4-2 Utility NOx Emission Reductions since 2006 Ozone Season

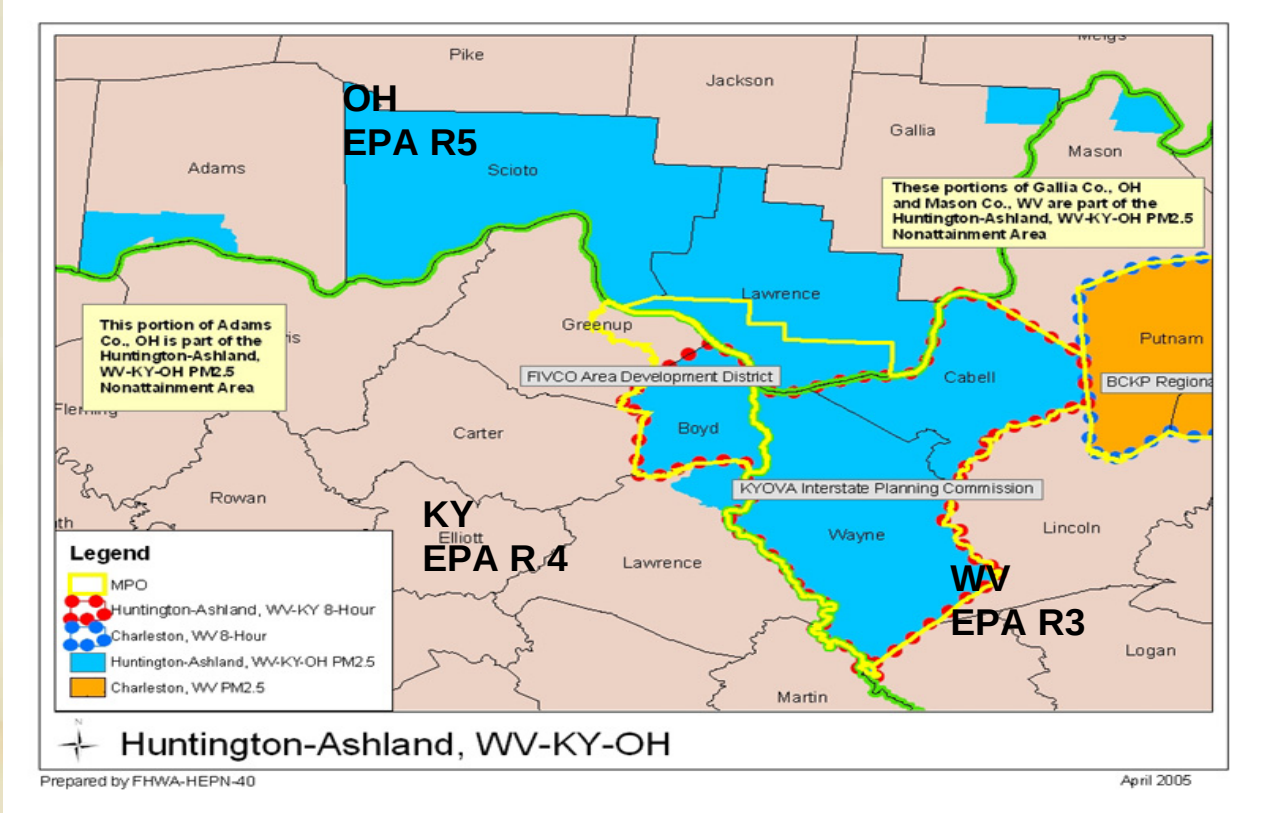
Facility	County	Technology	Operational Date	Ozone Season Reductions (tons/season)
Allen Steam Station Unit 2 Unit 3	Gaston	 SNCR SNCR	 Spring 2007 Fall 2007	~300
Buck Steam Station Units 3 & 4 Units 5 & 6	Rowan	 Low NOx Burners SNCR	 Spring 2007 Fall 2006	~350
Riverbend Unit 4 Unit 5 Unit 6 Unit 7	Gaston	 SNCR SNCR & Burners SNCR & Burners SNCR	 Spring 2007 Spring 2007 Fall 2006 Fall 2006	~325
Marshall Steam Station Unit 2 Unit 3 Unit 4	Catawba	 SNCR SCR SNCR	 Spring 2007 Fall 2008 Fall 2006	~2,300
Total expected reduction = 3,275 tons/ozone season				

SNCR = Selective Non-Catalytic Reduction
SCR = Selective Catalytic Reduction

WOE Emission Reductions Expected from SIP submittal for 2009 Attainment dates

Controls	Implementation date	2007-2009 Major NAA NOx reductions modeled (tpd)	Emission Reductions (tpd)	2007-2009 Major NAA NOx reductions Not modeled (tpd)	Emission Reductions (tpd)	Air Quality Improvement (ppb)	Pollutants
Diesel engines >50 hp	2006-2008	?	?		?		PM, SO2
Federal CTG's for Group II categories	?	?			?		VOCs
Federal Tier 2 measures (phased)	2007-2009	?			?		NOx
Federal Nonroad diesel Tier 3	2006-2008	?			?		PM, SO2
Locomotive and engines Tier 2	2005 and after?	?			?		NOx
Tier 2 On-road mobile standards	2008-2009	?			?		NOx
Heavy duty gas &diesel H'way Veh. stds	After 2007						NOX & VOCs
Other controls							

* As available

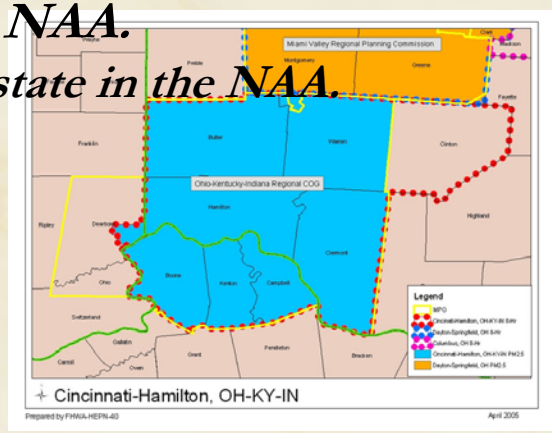


Multistate Nonattainment Areas

A Special Case

Multistate Nonattainment Areas

- Could involve several states and several EPA Regions.
- SIPS should be consistent between states.
- ***Early and often*** **consultation** between states recommended.
  - Critical to ensure consistent results are developed, demonstrated and submitted.
- EPA Regions consult on multistate SIPs for consistency.
- ***Attainment SIPs should address entire NAA.***
  - ***Not just the portion of the submitting state in the NAA.***



What EPA Needs to see in Multistate Nonattainment SIPs

- Control strategy that addresses the entire NAA.
- Submitting State can only develop controls for its state sources.
  - SIP could/should mention any controls developed/modeled by/from other NAA states.
- Inventory summaries (i.e., modeling. Transportation conformity, baseline) address all NAA counties.
- Attainment test, model performance, WOE, demonstration and documentation address monitors in the entire NAA.

Helpful Hints for All Submittals

- Document assumptions and procedures used in the control strategy modeling (do not assume we know what you did).
- Clearly state if NAAQS compliance is modeled.
- Clearly state level of emissions needed for attainment and the reductions achieved by control strategy from baseline.
- Clearly list and discuss modeled versus not-modeled and regulatory from voluntary controls. Quantify reductions.
- Document guidance used in develop the SIP.

Helpful Hints for Submittals

- Ensure consistency between main text, tables, and charts in SIP Narrative and appendices.
- Appendices are great and recommended, but direct reader to appropriate sections in the SIP Narrative.
- Coordinate SIP reviews with Regional Office early and often.

Emission Inventory Sidebar

Different types of Emissions Inventories

1. SIP actual inventory
2. Modeling demonstration inventory
3. Consolidated Emissions Reporting Rule

Importance of Inventories

- Cornerstone of the SIP
- Basis/source of controls
- Critical and used in RFP reduction plans, ROP, RACT, RACM, modeling, redesignations, source-specific SIPs, conformity, etc.
- A well documented inventory is used by EPA beyond the submitted SIP. (NEI, national regulatory modeling, emission trends, etc.)
- A great tool for reviewing and cross-checking State regulatory submittals.
- Used by public for information.

Different Types of Inventories

SIP Inventories

- Comprehensive, accurate, current ***actual*** inventory for relevant pollutants and all sources in ***nonattainment area***
- Required per Section 172(c)(3) and/or sections 182(a)(1) and 182(a)(3) of CAA
- A plan submittal that must be approved or disapproved under section 110(k) and must meet the requirements of section 110(a)(2)
- The starting point from which the other SIP inventories are derived.
- **A SIP requirement.**
  - Subject to a *public hearing* and *approved* into the State's SIP
  - Should form the basis of developing and projecting modeling inventories
  - Documentation for development of the inventory should be submitted in SIP – qualitative and quantitative.
  - Not necessarily met by mentioning CERR submittal

Modeling Emission Inventories

- Required to support attainment demonstrations as applicable per nonattainment designation and NAAQS
- Should be developed from actual inventory required under Section 172(c)(3) and/or sections 182(a)(1) and 182(a)(3) of CAA.
- Could involve typical emissions.
- See previous slides for additional information.

Consolidated Emissions Reporting Rule (CERR)

- Required regardless of the attainment status of counties within the State
- Pollutants Reported
  - SOx, VOC, NOx, CO, Pb, PM10, PM2.5, NH3
- Sources/Geographic Area
  - Point, Area, Onroad Mobile, Nonroad Mobile, Biogenics
  - National
- Point Source threshold
  - Two sets of thresholds for national reporting (large sources and smaller sources),
  - Different thresholds for Nonattainment Areas

Consolidated Emissions Reporting Rule (CERR)

- Reporting frequency
  - Large Point Sources – Annual and
  - Small Point Sources - Triennial
  - Area, Onroad Mobile, Nonroad Mobile, Biogenics –Triennial

- Consolidated Emissions Reporting Rule (CERR)
  - http://www.epa.gov/ttn/chief/cerr/index.html

- Little documentation required, no public hearing required.

How are 182(a)(1) and 182(a)(3) met in the Ozone SIP?

- The ozone implementation rule references the CERR requirements so there are no additional data requirements for ozone SIPs.
- The SIP inventory must be approved by EPA as a SIP element.
- The SIP inventory is subject to public hearing requirements,
  - The CERR is not subject to public hearing.
  - More documentation beyond that submitted for CERR is required on how the SIP inventory was developed.

How is 172(c)(3) met in the PM2.5 SIP?

- The PM implementation rule (page 20647) has language indicating the CERR may satisfy SIP EI requirements.
- CERR may satisfy SIP EI requirements but additional data elements may be needed depending upon the PM nonattainment problem.
- For example, if woodstoves are a big source in the area and the attainment strategy relies significantly on controls of that source, a more refined inventory for this category (than what is in the CERR) would be preferable for the nonattainment counties in the state.
- The SIP inventory must be approved by EPA as a SIP element.
- The SIP inventory is subject to public hearing requirements,
  - The CERR is not subject to public hearing.
  - More documentation beyond that submitted for CERR is required on how the SIP inventory was developed.

What does EPA Recommend?

- Development of an Inventory Preparation Plan (IPP).
  - IPPs should include descriptions of inventory objectives and general procedures, QC plan, documentation.
  - IPP developed prior to SIP submittal and inventory work.
- SIP documentation is sufficiently detailed for EPA to evaluate how the emission inventory was prepared.
  - Essentially, how IPP was implemented with results.
- Includes descriptions and identification of the activity data and emission factors used.
  - Any adjustments made to derive the required temporal basis for the estimates.

What Could EPA look for?

- Emission inventory thresholds and geographic coverage.
- Documentation of QA/QC procedures.
- Deviations from EPA inventory guidance recommendations.
- Summaries of emission estimates, assumptions, procedures, etc.
  - http://www.epa.gov/ttn/chief/net/2002inventory.html#documentation
  - *Example Documentation Report for 1990 Base Year Ozone and Carbon Monoxide State Implementation Plan Emission Inventories* 23 (http://www.epa.gov/ttn/chief/eidocs/exdocument.pdf
- Differences from modeling inventory totals which may use different assumptions.

Emission Summaries

County	Point (typical)		Area (typical)		Off-road mobile		On-road mobile		Total: All Source Categories		Difference
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009	2009-2002
North Carolina											
Cabarrus	2.6	2.4	0.8	0.9	5.4	4.5	17.2	10.8	**26.0**	**18.6**	**-7.4**
Gaston	34.8	22.0	1.3	1.3	4.9	4.0	20.0	11.6	**61.0**	**38.9**	**-22.1**
Iredell*	10.8	3.8	0.9	1.0	4.4	3.5	29.9	19.8	**46.0**	**28.1**	**-17.9**
Lincoln	0.3	0.1	0.5	0.6	1.9	1.6	6.1	4.5	**8.8**	**6.8**	**-2.0**
Mecklenburg	2.1	2.1	7.0	7.4	32.1	27.4	78.7	41.9	**119.9**	**78.8**	**-41.1**
Rowan	11.0	9.2	0.8	0.9	4.1	3.4	19.7	11.2	**35.6**	**24.7**	**-10.9**
Union	0.2	0.2	1.0	1.1	7.7	6.3	11.3	7.0	**20.2**	**14.6**	**-5.6**
NC Total	**61.8**	**39.8**	**12.3**	**13.3**	**60.5**	**50.7**	**182.9**	**106.8**	**317.5**	**210.5**	**-107.0**
South Carolina											
York *	11.1	5.4	1.8	1.8	7.0	5.7	15.7	10.2	**35.6**	**23.1**	**-12.5**
NAA Total	**72.90**	**45.20**	**14.10**	**15.00**	**67.50**	**56.40**	**198.60**	**117.00**	**353.1**	**233.6**	**-119.5**

1998 Point Source Emissions for Jeff County(lbs/day)

Item	ID	Plant Name	VOC	NOx	CO
60	0143	MARATHON OIL, LOU TERM	539.8	0.0	0.0
61	0144	MARCUS PAINT COMPANY	90.0	0.0	0.0
62	0145	ROGERS GROUP, AVOCA RD	0.0	0.0	0.0
63	0148	LOU MED CENTER STEAM PLANT	6.6	641.4	396.6
64	0149	MSD, MORRIS FORMAN PLANT	4.9	56.7	11.9
65	0150	RIVERSIDE PAVING COMPANY	0.0	0.0	223.0
66	0152	THE VALSPAR CORPORATION	58.0	0.0	0.0
67	0160	NATIONAL PRODUCTS INC	31.3	0.0	0.0
68	0161	NAVAL ORDNANCE STATION	96.0	19.6	4.9
69	0167	UNITED DIST, STITZEL-WELLER	2,286.3	0.0	0.0
70	0168	PPG ARCHITECTUAL FINISHES	235.0	0.0	0.0
71	0171	PHILIP MORRIS, MAPLE ST	2,077.3	238.0	55.5
72	0172	PHILIP MORRIS, LMCP	13.0	0.0	0.0
73	0174	PORCELAIN METALS CORP	0.0	33.0	0.0
74	0175	COURTAULDS COATINGS, PLANT #1	492.7	0.0	0.0
75	0176	COURTAULDS COATINGS, PLANT #2	46.5	0.0	0.0
76	0178	CONDEA VISTA COMPANY	0.0	0.0	0.0
77	0179	PROGRESS PAINT COMPANY	39.1	0.0	0.0
78	0180	PURINA MILLS INC	0.0	0.0	0.0
79	0185	AKZO COATINGS	579.0	45.9	0.0
80	0186	REYNOLDS METALS CO, PLANT #1	3,798.0	25.9	0.0
81	0187	REYNOLDS METALS CO, PLANT #3	688.8	41.3	10.3
82	0189	ROHM & HAAS KENTUCKY INC	922.9	589.7	42.7
83	0193	STONE CONTAINER CORP	778.1	0.0	0.0
84	0202	ALGOOD FOOD CO.	0.0	134.0	0.0
85	0204	SHIVELY WOOD PRODUCTS	43.3	0.0	0.0
86	0206	SOUTHERN GRAPHIC SYSTEMS	167.6	0.0	0.0
87	0212	NATIONAL LINEN SERVICE	301.0	0.0	0.0
88	0214	CHEVRON USA, LOU TERM	438.0	18.3	0.0
89	0220	SUN REFINING & MARKETING	260.8	0.0	0.0
90	0221	TECHNICAL PRODUCTS INC	3.1	0.0	0.0
91	0222	ITAPCO LOUISVILLE TERM	1.5	0.0	0.0
92	0223	TEXAS GAS TRANSMISSION	166.7	5,828.6	165.2
93	0225	CITGO PETROLEUM CORPORATION	216.4	0.0	0.0
94	0227	TUBE TURNS INC	6.1	28.9	7.2
95	0233	CHALLENGER LIFTS	62.3	0.0	0.0
96	0234	HENRY VOGT COMPANY	3.3	52.0	6.7
97	0242	SOUTHERN BAPTIST SEMINARY	0.0	0.0	0.0
98	0243	UNITED DIST PRODUCTION	5,823.4	0.0	0.0
99	0244	EARLY TIMES DIST	8,683.5	130.4	38.5
100	0245	FISCHER PACKING COMPANY	0.0	32.6	9.9
101	0246	ASHLAND CHEMICAL CO	0.0	0.0	0.0
102	0248	JOHNSON CONTROLS (closing)	0.0	0.0	0.0
103	0251	ALLIED READY MIX - CANE RUN	0.0	0.0	0.0
104	0251	ALLIED READY-MIX COMPANY, INC	0.0	0.0	0.0
105	0256	KY AIR NATIONAL GUARD	0.0	0.0	0.0
106	0258	CSR-HYDRO CONDUIT	0.0	0.0	0.0
107	0262	LAMINATING SERVICES INC	106.0	0.0	0.0
108	0266	DEVOE & RAYNOLDS COMPANY	101.6	0.0	0.0
109	0267	BRINLY-HARDY COMPANY	0.0	4.8	0.0
110	0283	ZEON CHEMICALS KY, INC	666.2	0.0	0.0
111	0288	WIRECRAFTERS, INC	192.0	0.0	0.0
112	0291	GOLDEN FOODS INC	9.1	98.7	45.2
113	0294	APPLIED SURFACE TECHNOLOGY	112.0	0.0	0.0
114	0296	LOU & JEFF CO. RIVERPORT	0.0	0.0	0.0
115	0299	BEECHMONT PRESS INC	48.6	0.0	0.0
116	0317	HESCO PARTS CORP.	52.0	0.0	0.0
117	0322	COMPONENT FINISHING UNLIMITED, INC	33.0	0.0	0.0
118	0333	V. G. REED & SONS, INC.	57.9	0.0	0.0

Point Source Emissions

Table 6. Catawba County Point Sources - 2002 Annual Emissions

Plant Name	Unit ID	SCC	VOC	NOx	SO2	PM10	PM2.5	NH3
DUKE ENERGY – MARSHALL STEAM – 3703500073								
	G-1	10100212	51.5797	6021.807	26468.56	1836.039	1445.153	0
	G-1	10100501	0.0301	3.3209	10.8457	0.3813	0.2809	0
	G-2	10100212	50.4644	4935.479	25869.42	1427.49	1252.048	0
	G-2	10100501	0.0189	2.1398	6.9969	0.2367	0.1799	0
	G-4	10100212	29.0336	4867.094	14931.31	690.3903	664.6189	0
	G-4	10100501	0.0109	1.4245	4.6649	0.1631	0.1196	0
	G-5	10100212	28.6145	3259.115	15042.42	915.1579	762.75	0
	G-5	10100501	0.0203	2.2628	7.4073	0.2537	0.1928	0
	Plant Total		159.7724	19092.64	82341.62	4870.112	4125.344	0
APAC - ATLANTIC, INC. – HICKORY PLANT -3703500009								
	G-1	30500242	3.88	10.84	8.76	2.06	1.32	0
	Plant Total	30500242	3.88	10.84	8.76	2.06	1.32	0
BROPHILL FURNITURE CONOVER PLANT - 3703500017								

The last entry for such a table would total all emissions in the county.

Example County Point Sources –Baseline Annual/Summer Emissions*

Plant Name	Unit ID	SCC	VOC	NOx	SO2	PM10	PM2.5	NH3
Georgia Cooperative – Jackson County								
	R-1	10101	45.3	4098.2	34123.9	1533.0	1333.3	0
	R-2	10102	0.45	10.2	23.2	0.234	0.43	0
	R-3	10103	34.6	5550.4	23567.3	1236.7	2491.9	0
	Plant total		80.35	9658.5	57714.4	2769.9	3825.6	0
Marathon Refinery – Henderson County								
	01	30231	1200.0	3453.0	1255.9	433.0	222.0	
Kentucky Phosphate - Hamilton County								
All Point source totals								

*Units are tons per year

Area Source Emissions

Item	ASCT	Category Description	Total Activity	Pt Source Activity	Em Factors VOC	CO	NOx	Days/ Wk	Seas Adj	Cntrl Factor	Emissions(lbs/day) VOC	CO	NOx	Emissions (TPY) VOC	CO	NOx
1	2501060053	TANK TRUCK UNLOADING	326,400	0	1.7	0	0	6	1.05	1.000	1,867	0	0	277.4	0.0	0
2	2501060201	UNDERGROUND TANK BREATHING	326,400	0	1.0	0	0	7	1.05	1.000	942	0	0	163.2	0.0	0
3	2501060052	VEHICLE REFUELING – DISPLACEMENT	326,400	0	1.1	0	0	7	1.05	1.000	1,036	0	0	179.5	0.0	0
4	2501060053	VEHICLE REFUELING – SPILLAGE	326,400	0	0.7	0	0	7	1.05	1.000	659	0	0	114.2	0.0	0
5	2505030120	TANK TRUCKS IN TRANSIT	803,700	0	0.12	0	0	6	1.05	1.000	325	0	0	48.2	0.0	0
6	2505020120	BARGE LOADING EVAP LOSSES	0	0	0	0	0	7	1.00	1.000	0	0	0	0.0	0.0	0
7	2505020120	BARGES IN TRANSIT EVAP LOSSES	0	0	0	0	0	7	1.00	1.000	0	0	0	0.0	0.0	0
8	2275900101	AIRCFT REFUEL–JET–STAND FLD	31,061	0	0.038	0	0	7	1.00	1.000	3	0	0	0.6	0.0	0
9	2275900101	AIRCFT REFUEL–AVGAS–STAND FLD	142	0	7.19	0	0	7	1.00	1.000	3	0	0	0.5	0.0	0
10	2275900101	AIRCFT REF–AVGAS–BOWMAN FLD	283	0	7.19	0	0	7	1.00	1.000	6	0	0	1.0	0.0	0
11	2501060200	LEAKING UNDERGROUND STG TANKS	20	0	1400	0	0	7	1.00	1.000	77	0	0	14.0	0.0	0
12	2420010370	DRY CLEANING–PETR SOLVENT	1,935	1,935	6.43	0	0	6	1.00	1.000	0	0	0	0.0	0.0	0
13	2415065000	COLD CLEAN–AUTO REPAIR	347	0	999	0	0	5	1.00	1.000	777	0	0	0.0	0.0	0

Annual Area Source Emissions

SCC	description	county	VOC tpy	NOx tpy	SO2 tpy	PM10 tpy	PM2.5 tpy	NH3 tpy
2102002000	Indust. Bituminous / subbitu. Coal, all boiler types							
		Jackson						
2275900000	Aircraft refueling, all fuels, all processes							
		Jackson						
2402008000	Surface coating, traffic marking all solvent types							
		Jackson						

End of Sidebar
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Modeling and EI Guidance

- Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations
  - http://www.epa.gov/ttn/chief/eidocs/eiguid/eiguidfinal_nov2005.pdf
- Appendix W to Part 51 of 40 CFR: "Guideline on air Quality Models"
  - http://www.epa.gov/scram001/guidance/guide/appw_05.pdf
- Guidance on the Use of Models and Other Analysis for Demonstration Attainment of Air Quality Goals for Ozone , PM2.5 and Regional Haze
  - http://www.epa.gov/scram001/guidance/guide/final-03-pm-rh-guidance.pdf
- Ozone and PM2.5 Implementation Rules

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