

Oklahoma's Wichita Mountains Wilderness Area Regional Haze Planning



Tribal Consultation
August 14, 2007

The Air Quality Division of the Department of Environmental Quality

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What is Regional Haze?

- July 1, 1999 – EPA promulgated Regional Haze Regulations
- Regional haze is visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area.
- The ultimate goal of the Regional Haze Program is to return the nation's Class I areas to natural visibility conditions by 2064.
- The program intends to remedy existing and prevent future human-caused impairment of visibility in mandatory Federal Class I areas.
- The program addresses aesthetics rather than health concerns

Wichita Mountains Wilderness Area

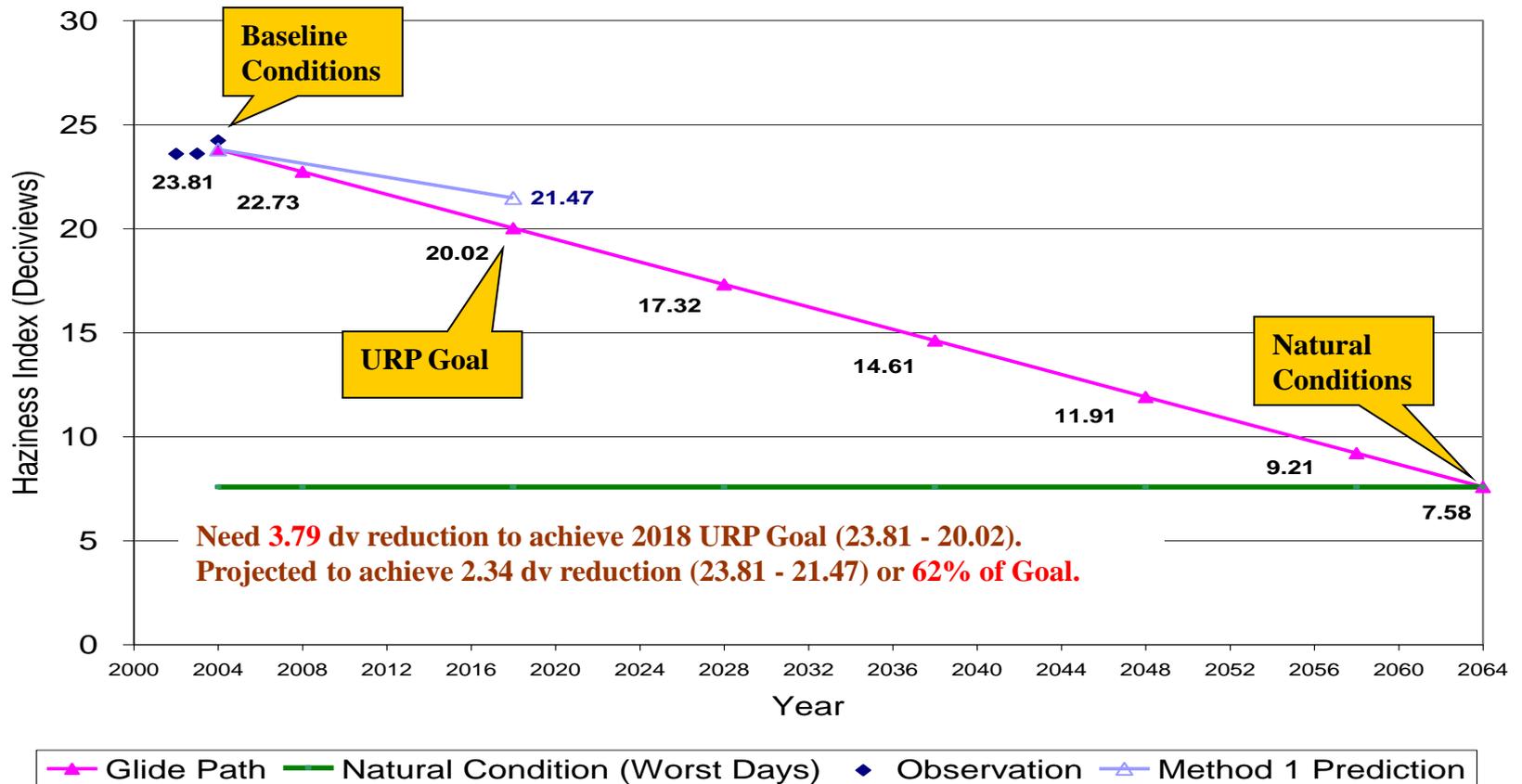


- Oklahoma's only Class I Area
- Located in Comanche County near Ft. Sill Military Reservation
- Contained within Wichita Mountains Wildlife Refuge
- Consists of North Mountain and Charons Garden Wilderness Areas

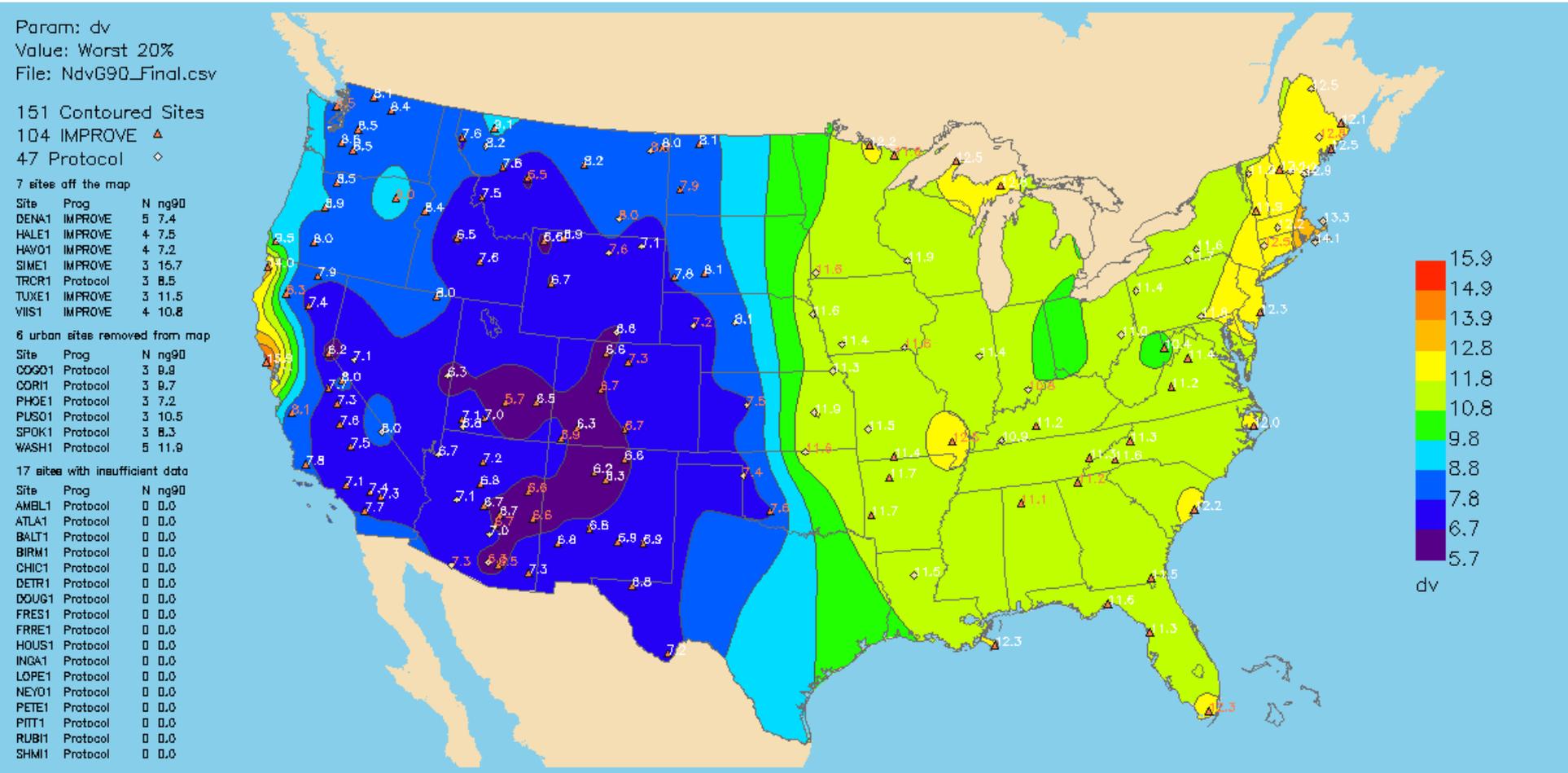
Regional Haze Terminology

- **BART** –Best Available Retrofit Technology
- **Deciview (dv)** - The unit of measurement of haze
- **URP** – Uniform Rate of Progress
- **Glide path** – Haze versus date plot of 2002 baseline conditions and 2064 natural conditions which is used to establish URP
- **RPO** – Regional Planning Organization.
- **CENRAP** - Central Regional Air Planning Association
- **RPG** - Reasonable Progress Goal
- **SIP** – State Implementation Plan
- **AOI** – Area of Influence

Uniform Rate of Reasonable Progress Glide Path Wichita Mountains – 20% Worst Days



Natural Haze Levels II



<http://vista.cira.colostate.edu/views>

From the Visibility Information Exchange Web System

2004 Worst 20% dv

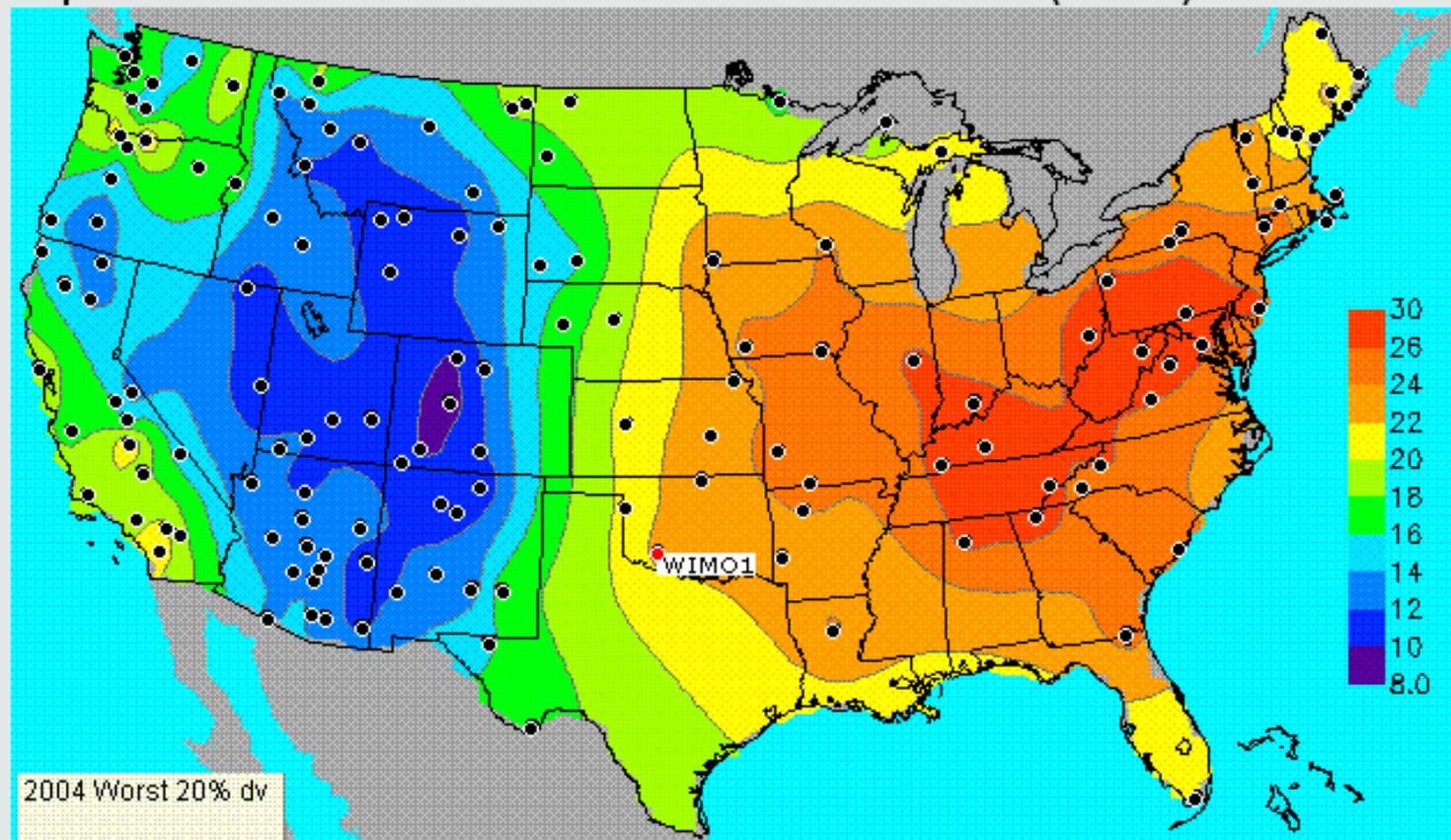
Spatial and Seasonal Patterns

[Page Help](#)

[Regional Haze Data Set Information](#)

Map View

Selected Site: **Wichita Mountains (WIMO1)**



Year

2004

Parameter

dv

Data Aggregation

- Best 20%
- Worst 20%
- Annual
- 1st Quarter
- 2nd Quarter
- 3rd Quarter
- 4th Quarter

Sort Parameter

- Aerosol best
- Selected Parameter

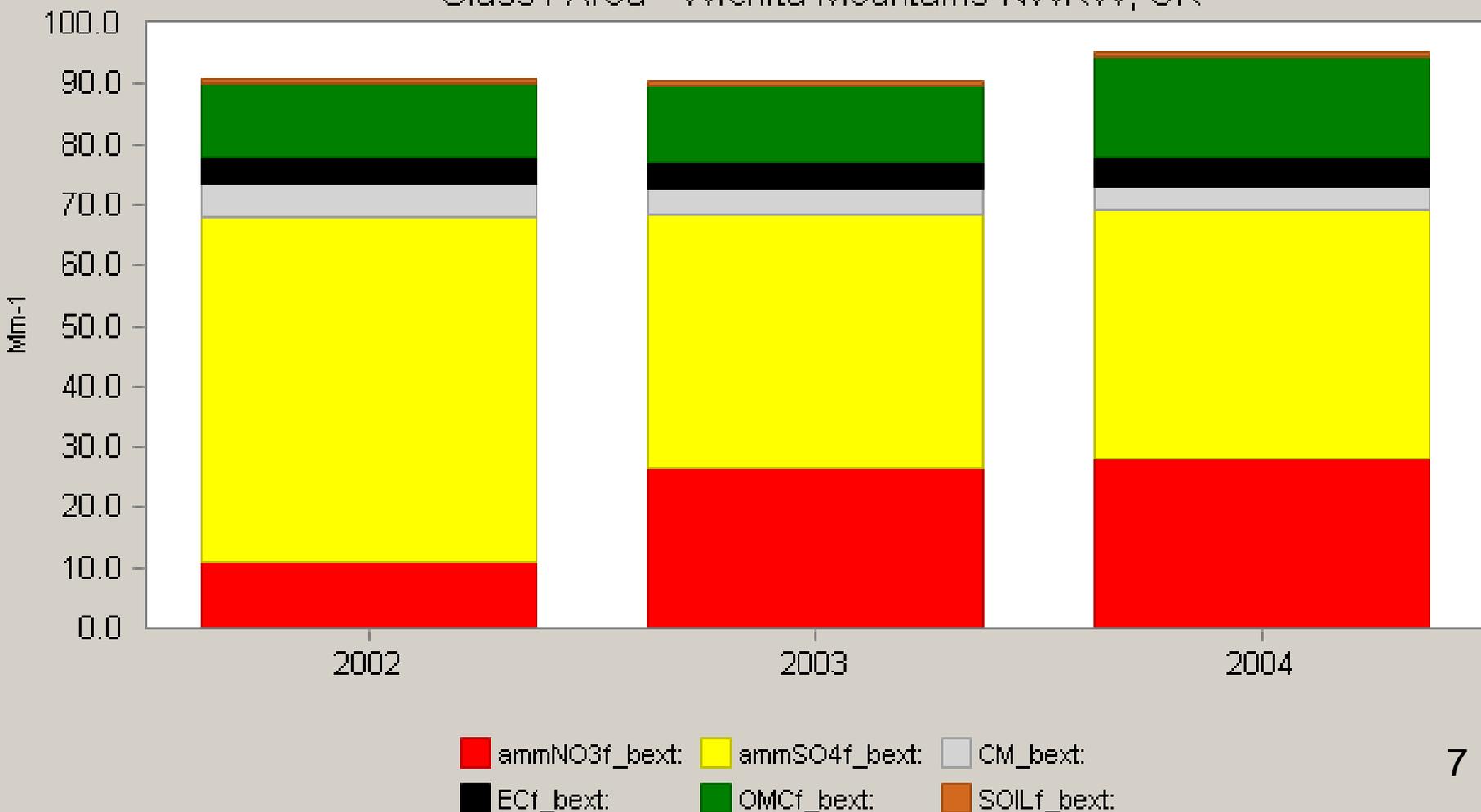
Interpolation

- Krig
- 1/R2

Species Contributions to Haze

WIMO1

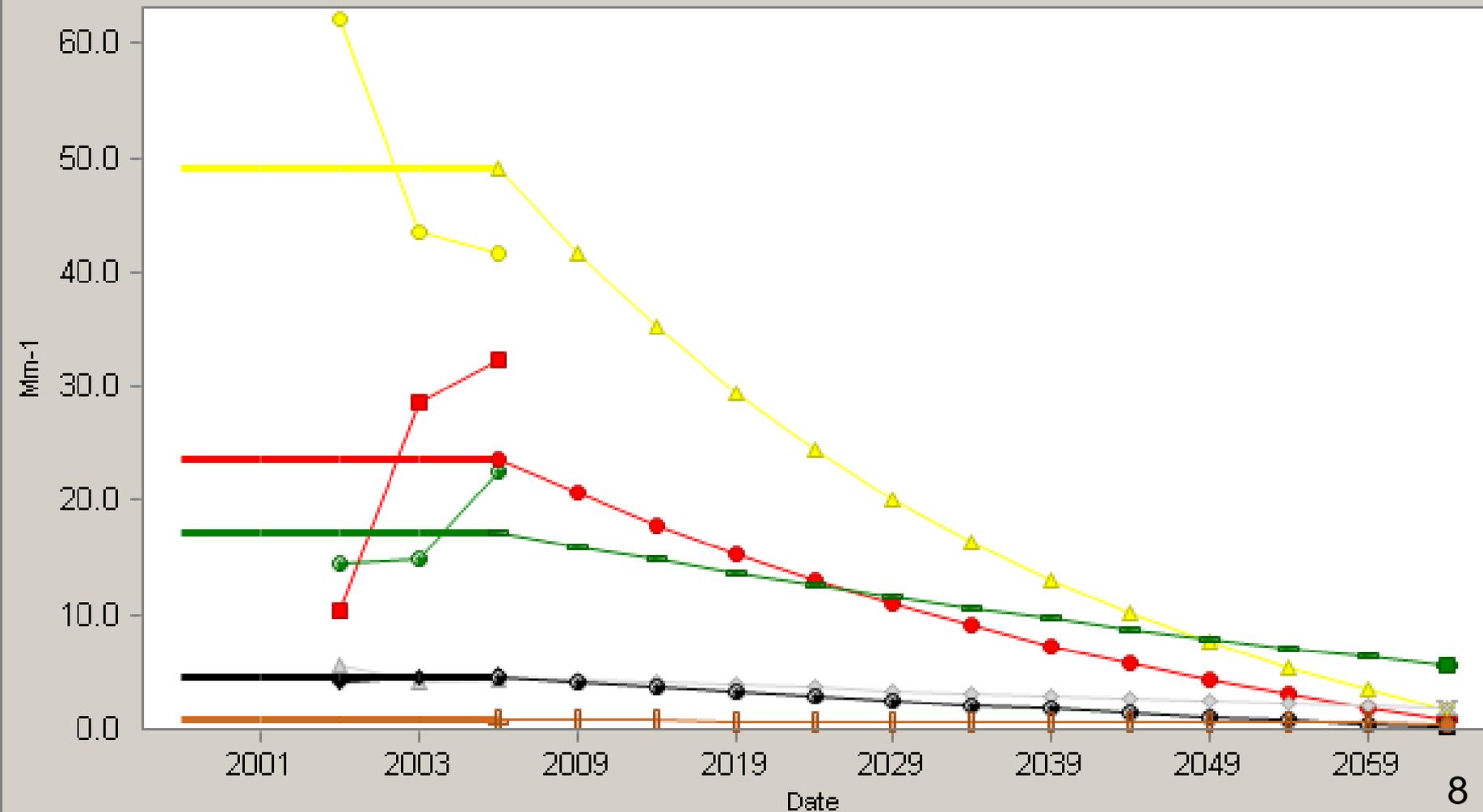
Class I Area - Wichita Mountains NWRW, OK



Species Glide Slopes

WIMO1

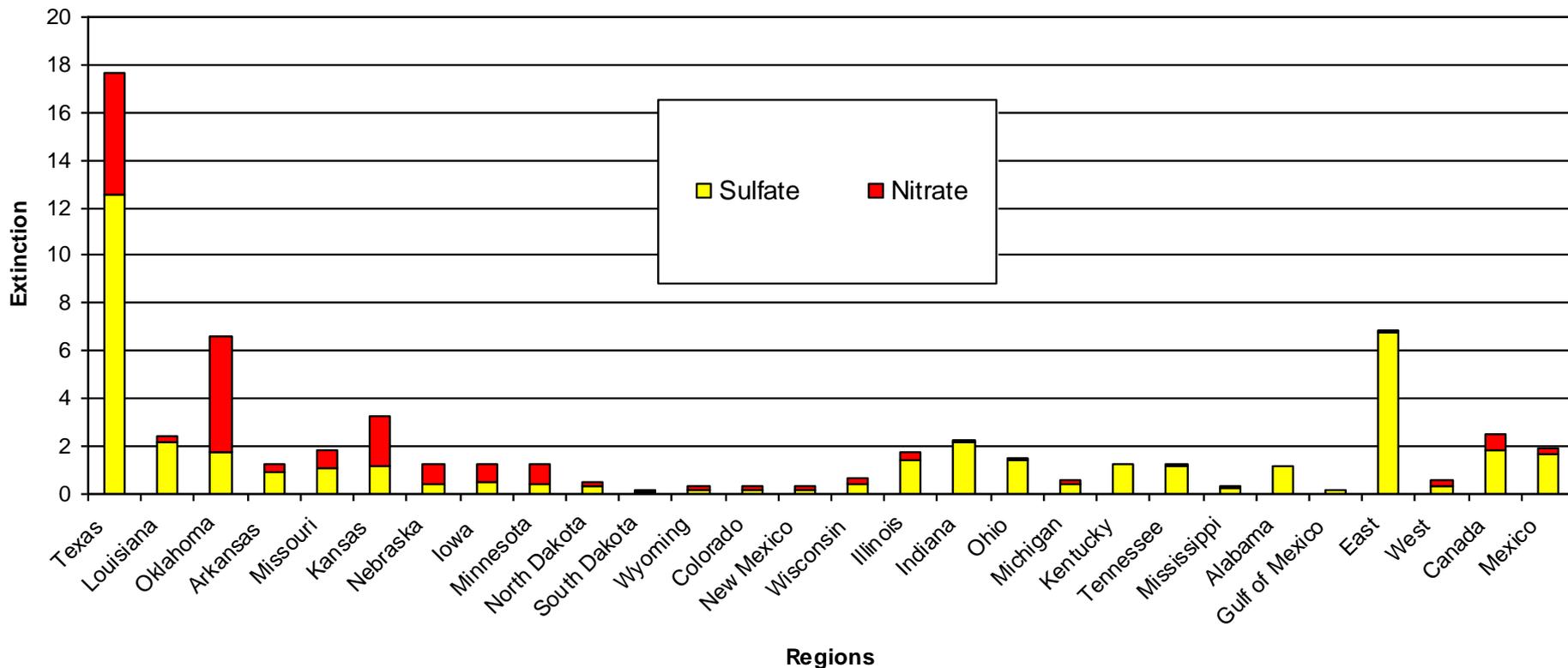
Class I Area - Wichita Mountains NWRW, OK



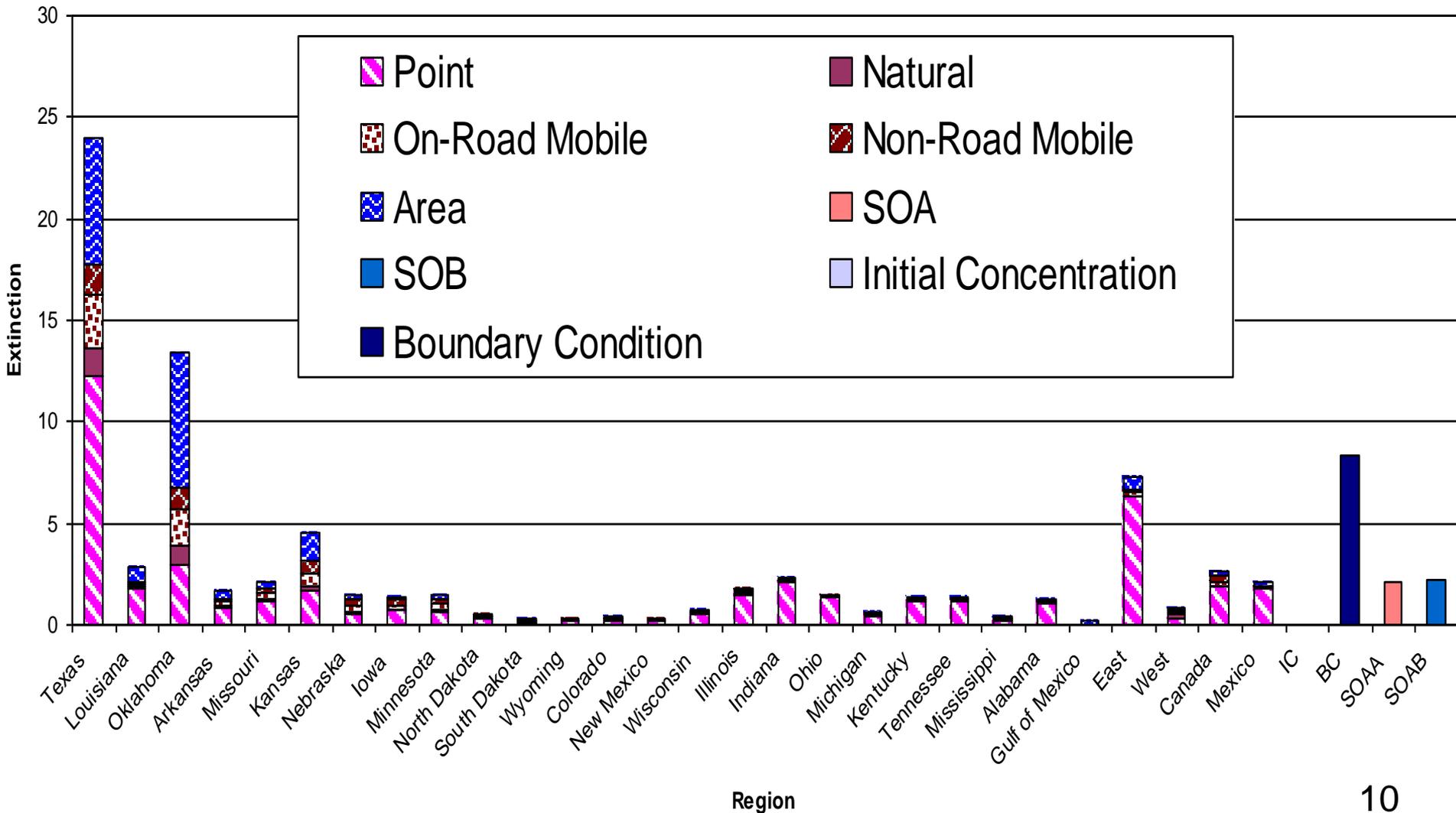
Source of Visibility-Related Pollutants Effecting Wichita Mountains Class 1 Area

Modeled Contributions by Region

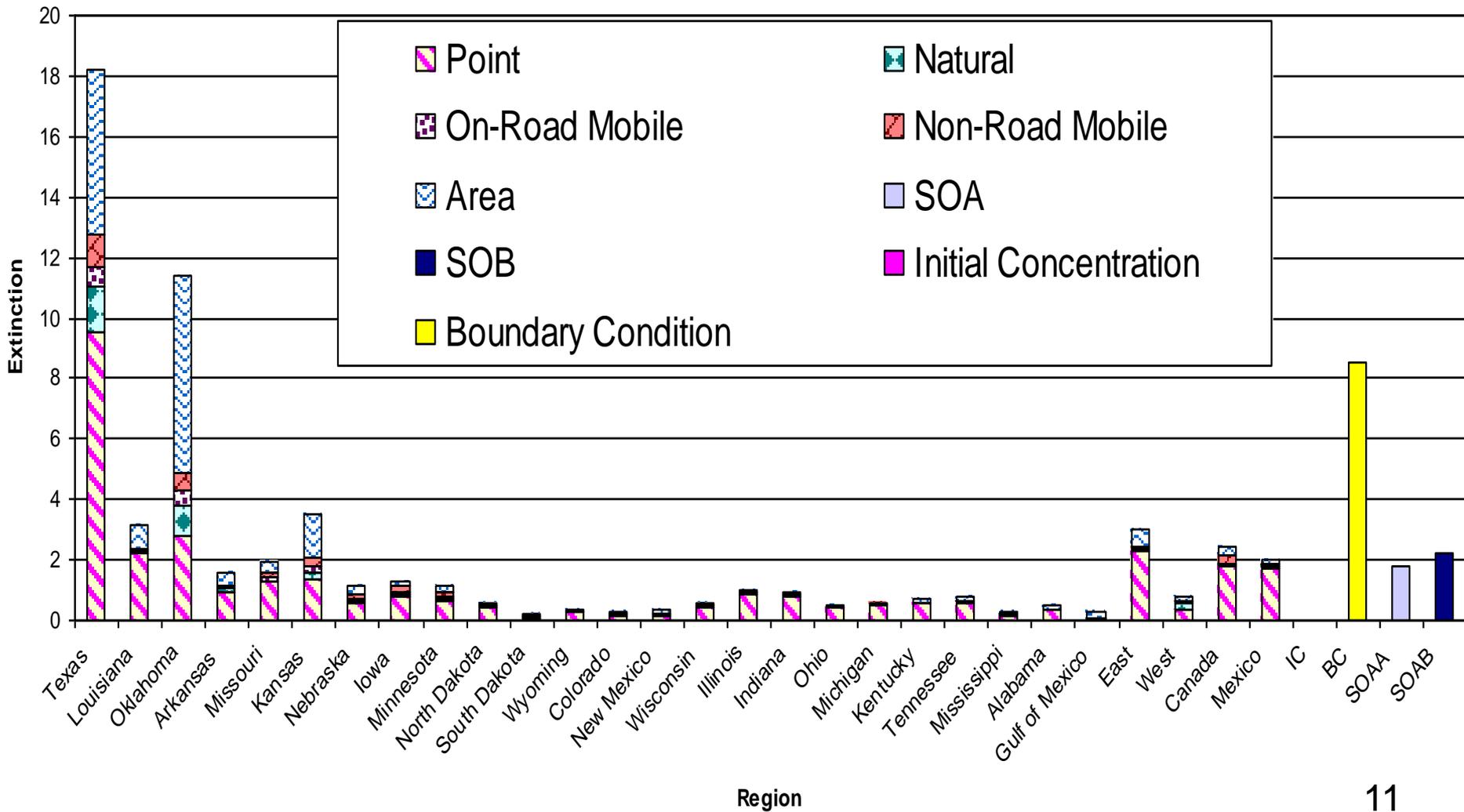
2002 Anthropogenic Projected Contributions to Worst 20% Days



Particulate Source Apportionment for Wichita Mountains Projected Extinction Coefficient on Worst 20% Days in 2002 [Total= 92.12/Mm]

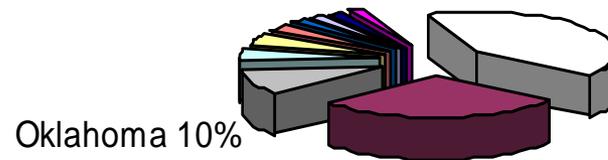


Particulate Source Apportionment for Wichita Mountains Projected Extinction Coefficient on Worst 20% Days in 2018 [Total= 72.01/Mm]



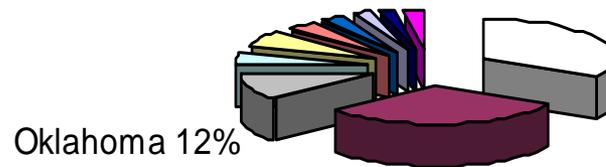
Contributions by State: 2002

CENRAP PSAT Modeled W20% 2002 Impact Contributions at Site
WIMO1



Contributions by State: 2018

CENRAP PSAT Modeled W20% 2018 Projected Impact Contributions at Site WMO1



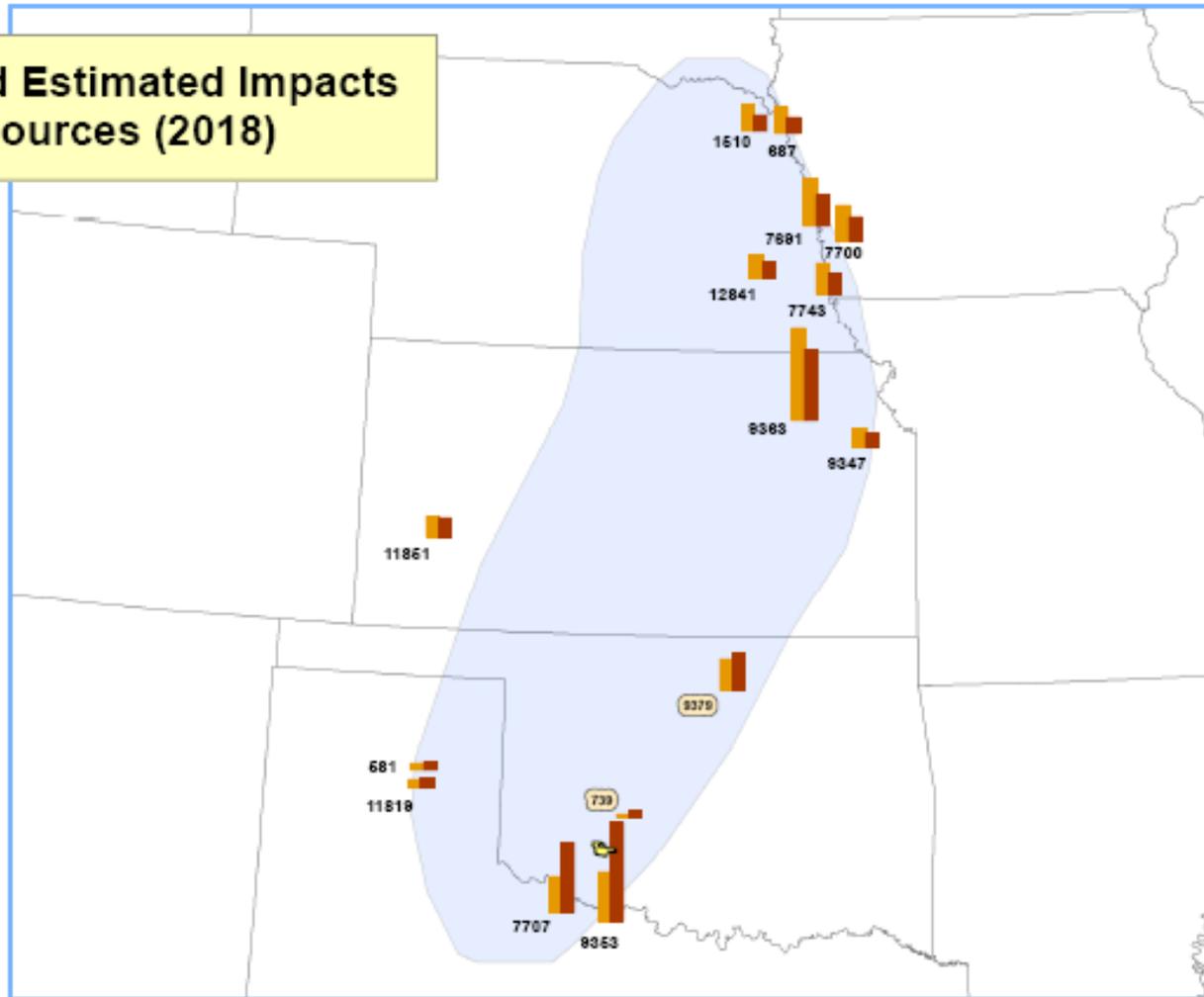
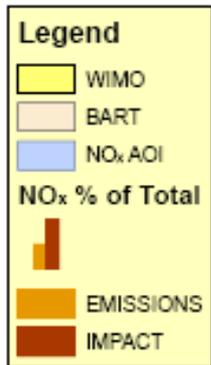
□ All Other Regions 33%	■ Texas 30%	■ Oklahoma 12%	□ Kansas 5%
■ Louisiana 6%	■ Missouri 4%	■ Arkansas 3%	■ Minnesota 2%
■ Nebraska 2%	■ Iowa 2%		

Wichita Mountain

(green=NO₃; red=SO₄/EC/OC; blue=CM/FS)



Emissions and Estimated Impacts of NO_x Sources (2018)



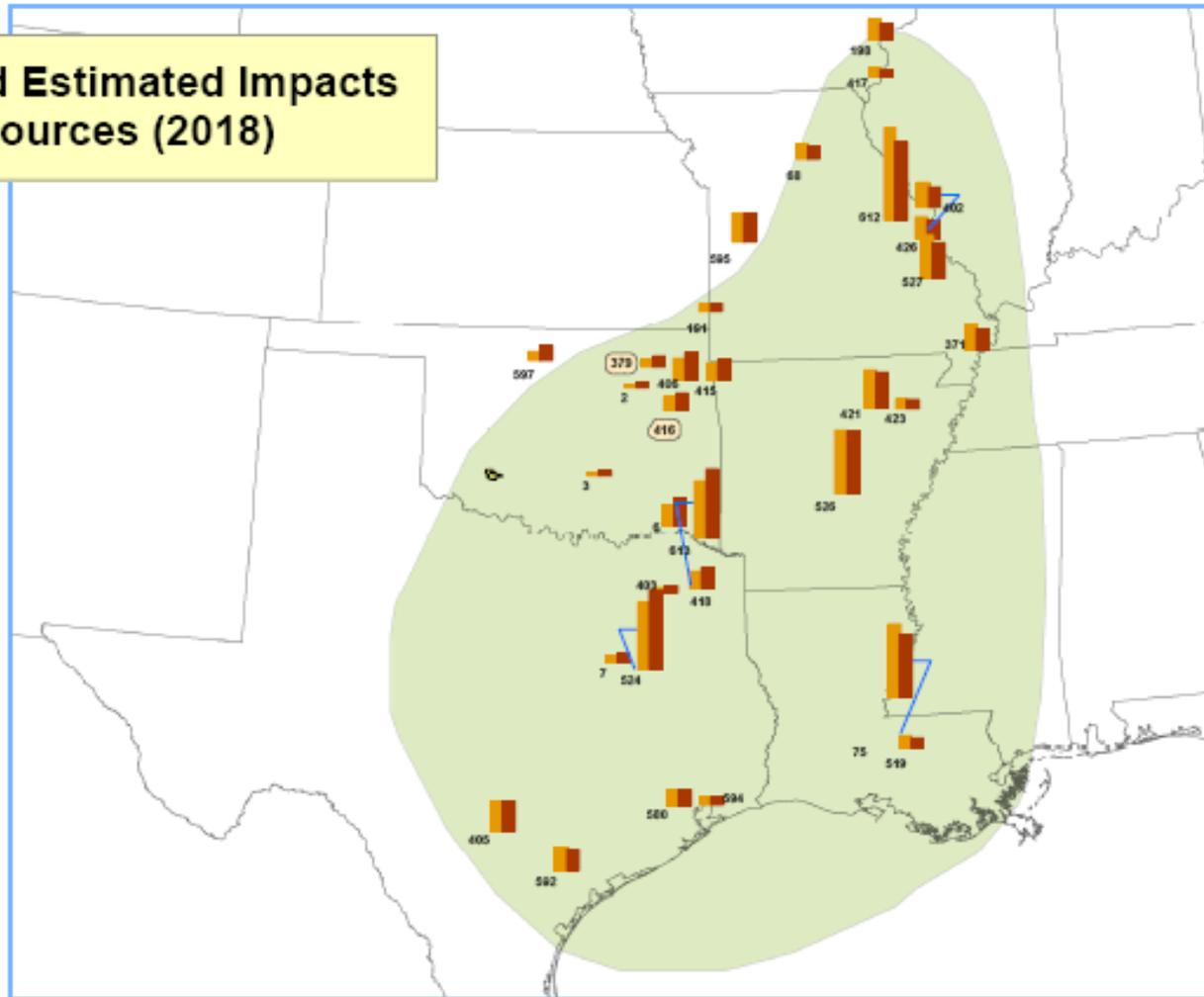
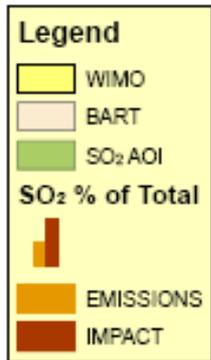
June 13, 2007

*AOI provided by Alpine Geophysics

NOx Sources in AOI-1 (2018)

ID	State	County	Plant Name	Industrial Code Description
687	Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL SOU	Electric Services
1510	Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL NOR	Electric Services
7700	Iowa	Pottawattamie	MIDAMERICAN ENERGY CO. - COUNCIL BLUFFS	Electric Services
9347	Kansas	Douglas	WESTAR ENERGY, INC.	Electric Services
9363	Kansas	Pottawatomie	WESTAR ENERGY, INC.	Electric Services
11851	Kansas	Finney	SUNFLOWER ELECTRIC POWER CORPORATION	Electric Services
7691	Nebraska	Douglas	OMAHA PUBLIC POWER DISTRICT - NORTH OMAH	Electric Services
7743	Nebraska	Otoe	OPPD NEBRASKA CITY STATION	Electric Services
12841	Nebraska	Lancaster	NPPD Sheldon Station	Electric Services
739	Oklahoma	Caddo	PUBLIC SVC CO OF OK	Electric Services
9379	Oklahoma	Noble	OG&E	Electric Services
581	Texas	Gray	PAMPA PLANT	Carbon Black
7707	Texas	Wilbarger	OKLAUNION POWER STATION	Electric Services
9353	Texas	Wichita	WORKS NO 4	Flat Glass
11819	Texas	Gray	CHEMICAL MANUFACTURING	Industrial Organic Chemicals, NEC

Emissions and Estimated Impacts of SO₂ Sources (2018)



June 13, 2007

*AOI provided by Alpine Geophysics

SO₂ Sources in AOI-1 (2018)

ID	State	County	Plant Name	Industrial Code Description
415	Arkansas	Benton	SWEPCO-FLINT CREEK POWER PLANT	Electric Services
421	Arkansas	Independence	ENTERGY ARK-INDEPENDENCE	Electric Services
423	Arkansas	Independence	EASTMAN CHEMICAL COMPANY-ARK EASTMAN DIV	Industrial Organic Chemicals, NEC
526	Arkansas	Jefferson	ENTERGY ARK-WHITE BLUFF	Electric Services
198	Iowa	Louisa	MIDAMERICAN ENERGY CO. - LOUISA STATION	Electric Services
417	Iowa	Des Moines	IPL - BURLINGTON GENERATING STATION	Electric Services
75	Louisiana	Pointe Coupee	LA GENERATING LLC/BIG CAJUN 2 PWR PLNT	Electric Services
519	Louisiana	E Baton Rouge	RHODIA INC/BR FAC	Industrial Organic Chemicals, NEC
68	Missouri	Randolph	ASSOCIATED ELECTRIC COOPERATIVE INC-THOM	Electric Services
191	Missouri	Jasper	EMPIRE DISTRICT ELECTRIC CO-ASBURY PLANT	Electric Services
371	Missouri	New Madrid	ASSOCIATED ELECTRIC COOPERATIVE INC-NEW	Electric Services
402	Missouri	St. Louis	AMERENUE-MERAMEC PLANT	Electric Services
426	Missouri	Jefferson	DOE RUN COMPANY-HERCULANEUM SMELTER	Primary Smelting and Refining of Nonferrous Metals, Except Copper
527	Missouri	Jefferson	AMERENUE-RUSH ISLAND PLANT	Electric Services
595	Missouri	Henry	KANSAS CITY POWER & LIGHT CO-MONTROSE GE	Electric Services
612	Missouri	Franklin	AMERENUE-LABADIE PLANT	Electric Services
2	Oklahoma	Tulsa	SINCLAIR OIL CORP	Petroleum Refining
3	Oklahoma	Pontotoc	HOLCIM US INC	Cement, Hydraulic
6	Oklahoma	Choctaw	WESTERN FARMERS ELEC COOP	Electric Services

SO₂ continued:

SO₂ Sources in AOI-1 (2018)

ID	State	County	Plant Name	Industrial Code Description
379	Oklahoma	Rogers	PUBLIC SVC CO OF OK	Electric Services
406	Oklahoma	Mayes	GRAND RIVER DAM AUTH	Electric Services
416	Oklahoma	Muskogee	OG&E	Electric Services
597	Oklahoma	Garfield	GREAT LAKES CARBON CORP	Products of Petroleum and Coal, NEC
7	Texas	Navarro	STREETMAN PLANT	Minerals and Earths, Ground or Otherwise Treated
403	Texas	Hopkins	COMO PLT	Natural Gas Liquids
405	Texas	Bexar	SOMMERS DEELY SPRUCE PWR	Electric Services
418	Texas	Titus	WELSH POWER PLANT	Electric Services
524	Texas	Freestone	BIG BROWN	Electric Services
580	Texas	Harris	HOUSTON PLANT	Industrial Inorganic Chemicals, NEC
592	Texas	Goliad	COLETO CREEK PLANT	Electric Services
594	Texas	Harris	DEER PARK PLANT	Petroleum Refining
613	Texas	Titus	MONTICELLO STM ELE STN	Electric Services

Best Available Retrofit Technology (BART) Source

Oklahoma has identified 6 BART-affected sources

Source	Submittal
OG&E Seminole	3/30/2007
OG&E Sooner	3/30/2007
OG&E Muskogee	3/30/2007
PSO Comanche Power	3/30/2007
PSO Northeast	3/30/2007
PSO Southwestern	3/30/2007

Regional Haze

Important Dates

SIP Submittal Deadline: December 17, 2007

Oklahoma BART rules became effective October 6, 2006

**BART Controls Required to be Enacted
5 Years After SIP Approval by EPA**



Consultation Process

Prior to SIP submittal, the DEQ will

1. Hold Consultations with Oklahoma Tribes, Federal Land Managers, and Contributing States
2. Submit Plan to Federal Land Managers 60 days prior to any public hearing

Other Stakeholders

- Other stakeholders such as industry will not be participants in the consultations.
- Minutes of the consultations and other support documents will be posted on the AQD and CENRAP websites.
- Industry and members of the public may comment on the draft SIP.

States in Consultation on WIMO



- Arkansas
- Iowa
- Kansas
- Louisiana
- Minnesota
- Missouri
- Nebraska
- Texas

Reasonable Progress Goals



- Provide for an improvement in visibility for the most impaired (i.e. 20%) days over the period of the implementation plan.
- Ensure no degradation in visibility for least impaired (20% best) days over same period.
- Glide path is not a presumptive target.

Reasonable Progress Goals

(continued)

- States may establish RPG that provides for greater, lesser, or equivalent visibility improvement as described by the glide path.
- SIP will include four-factor analysis to justify RPG

Four Factors for Analyses

- Costs of compliance
- Time necessary for compliance
- Energy & non-air quality environmental impacts of compliance
- Remaining useful life of existing sources that contribute to visibility impairment.

Future Consultation Dates

- **August 16 – 10 am**
 - **August 30 – 10 am**
 - **September 13 – 10 am**
 - **Via phone conferences**
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Access Regional Haze Documents:

<http://www.deq.state.ok.us/AQDnew/whatsnew/index.htm>



Or contact:

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