The Ins and Outs of Implementing the NAAQS

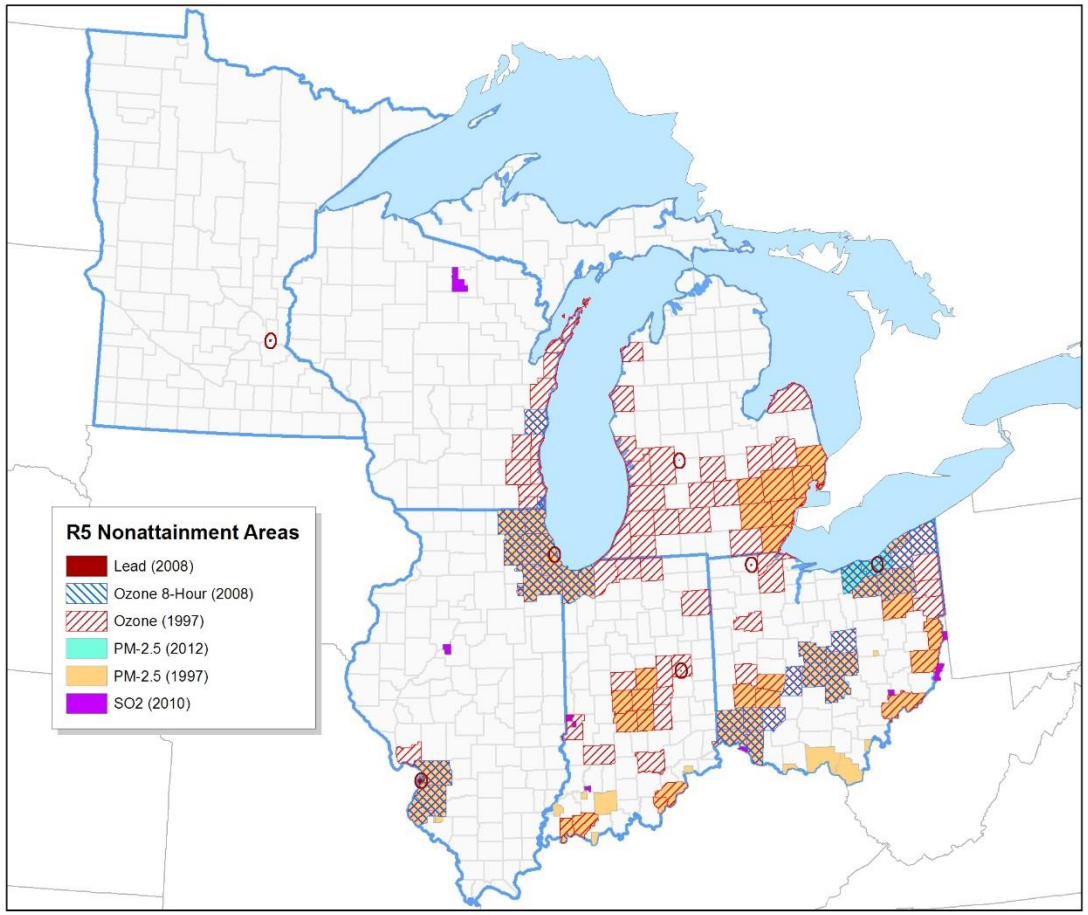
Michelle Becker, MS
US EPA Region 5
ACE Center Kick-off Meeting
September 15, 2016

Disclaimer

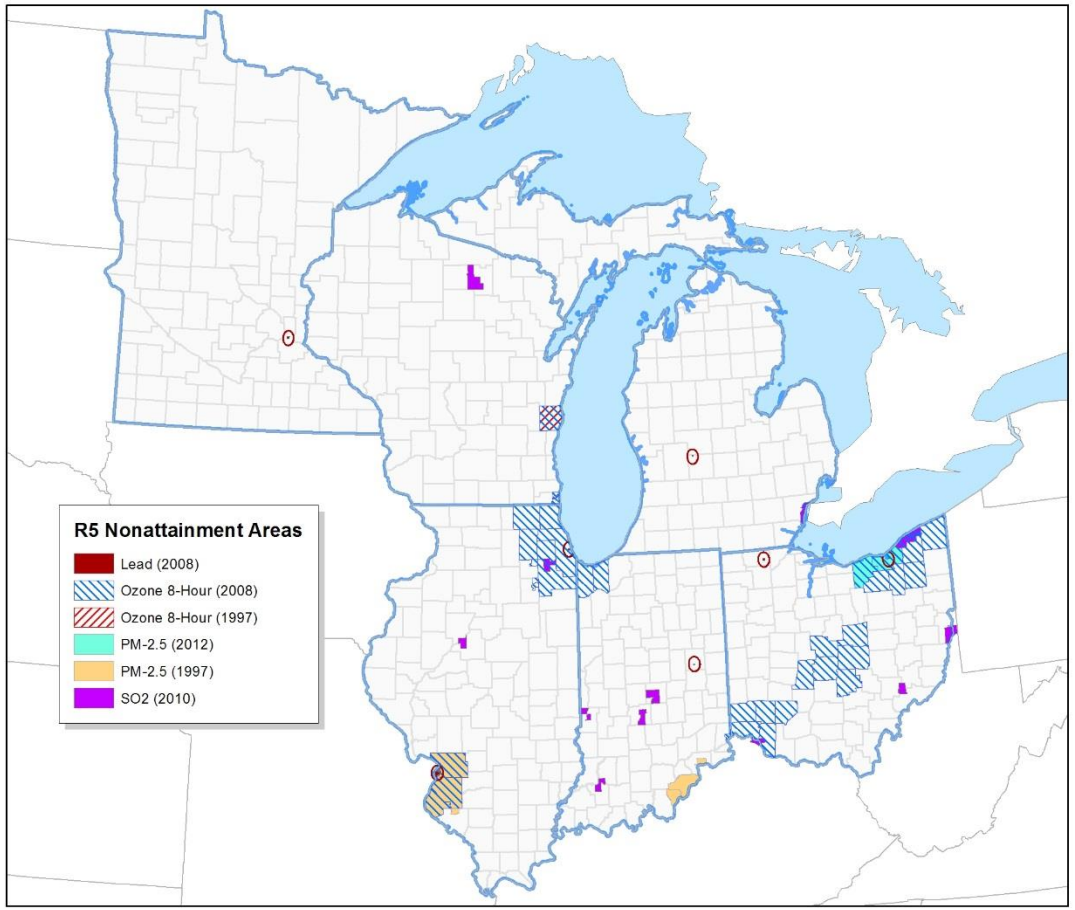
The views expressed in this presentation are those of the author and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency.

Region 5

1997-2012 Nonattainment Areas



Current Nonattainment Areas



Elements of Air Quality Management

- Setting Air Quality Standards
- Human Assessment
- Legislation, Regulation, and Implementation
- Monitoring and Emissions Measurements
- Air Quality Modeling
- Emissions Inventory
- Control Strategies
- Compliance and Enforcement

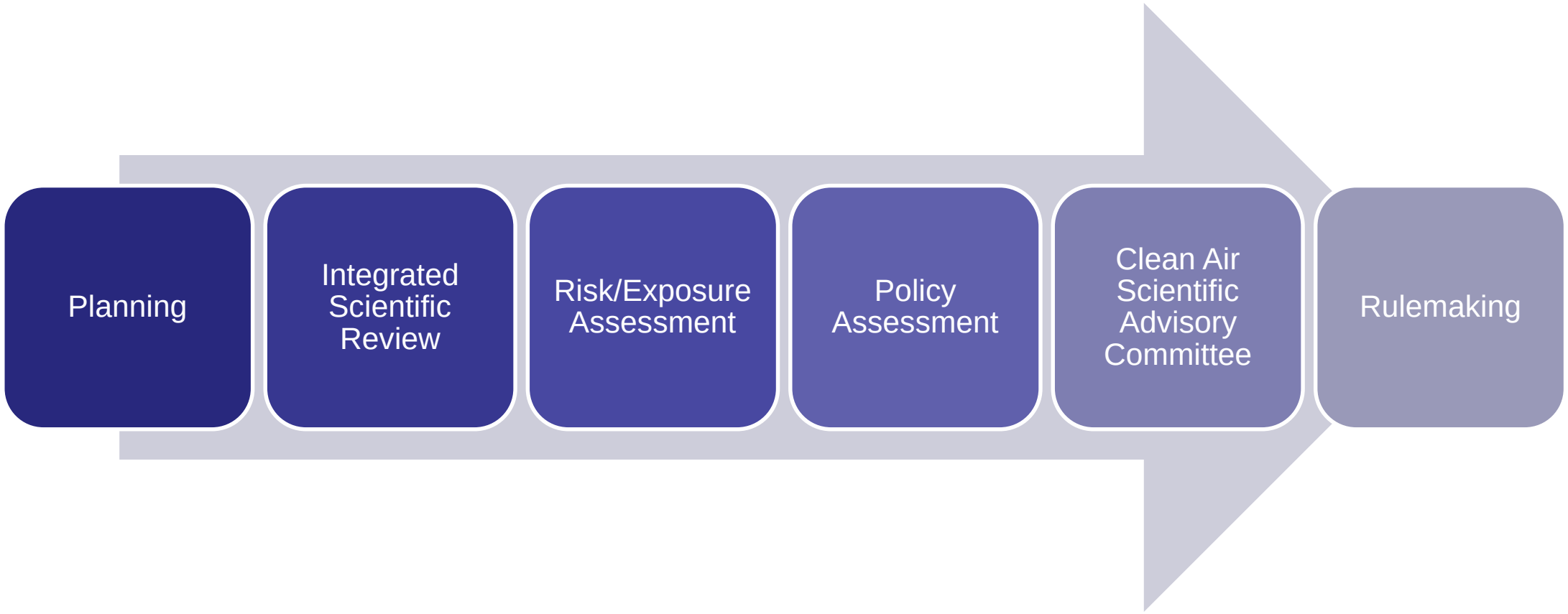
Legislation, Regulation, and Implementation

- Clean Air Act
  - Statutory Requirements
- National Laws and Rules
  - Mobile sources and fuel
  - Consumer products
- State Laws and Rules
  - Address local pollution problems
- Implementation
  - Combination of national laws and state laws in most polluted cities

Clean Air Act and NAAQS

- The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR part 50) for pollutants considered harmful to public health and the environment.
- Sections 108 and 109 of the Clean Air Act (CAA) govern the establishment, review, and revision, as appropriate, of the National Ambient Air Quality Standards (NAAQS) to provide protection for the nation's public health and the environment.

Establishing the NAAQS



Current NAAQS

Pollutant [links to historical tables of NAAQS reviews]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month period	0.15 $\mu g/m^3$ (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone (O_3)		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	$PM_{2.5}$	primary	1 year	12.0 $\mu g/m^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu g/m^3$	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 $\mu g/m^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

NAAQS Implementation Timeline

From Date of Promulgation	
2 years	With input from States and Tribes, EPA designates areas
From Date of Nonattainment Designation	
18 months	SIPs for areas designated as nonattainment for SO_2, NO_2, $PM_{2.5}$, PM_{10}, and Lead are due
3 years	SIPs for Ozone and CO nonattainment areas are due
5 years	Areas must be attaining the SO_2, NO_2, and Lead NAAQS
5-10 years	Areas must be attaining the $PM_{2.5}$ and PM_{10} NAAQS (varies on severity)
3-20 years	Areas must be attaining Ozone NAAQS (varies from Marginal – Extreme)

1997 PM2.5 Implementation Timeline

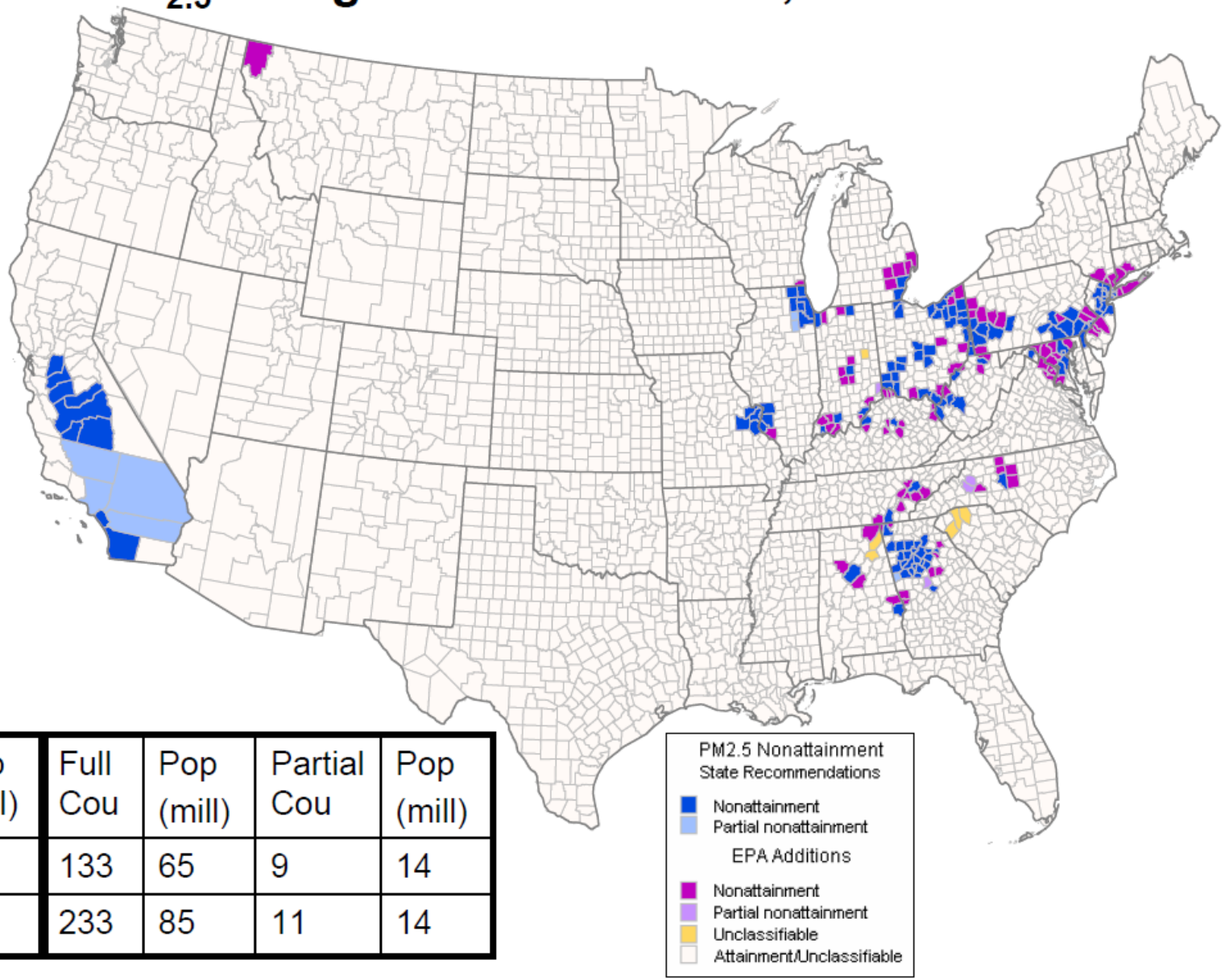
- July 1997 – EPA promulgates PM2.5 and 8-hour ozone standards
- Industry and State Organizations challenged the action in the D.C. Circuit Court
- May 1999 – Court stated the 1997 standards for PM2.5 and ozone was unconstitutional as an improper delegation of legislative authority to EPA
- December 1999 – DOJ and EPA filed a petition for the Supreme Court to appeal the decision of the D.C. Circuit
- November 2000 – Supreme Court Issued a decision to hear the case
- February 2001 – Supreme Court held EPA's approach to setting the National Ambient Air Quality Standards in accordance with the CAA did not constitute an unconstitutional delegation of authority. The Supreme Court also affirmed that the CAA requires EPA to set standards at levels necessary to protect the public health and welfare, without considering the economic costs of implementing the standards. Supreme Court remanded several other issues back to the D.C. Circuit
- December 2001 - D.C. Circuit heard arguments in this remanded case
- March 2002 - D.C. Circuit found that the Agency had "engaged in reasoned decision making," rejecting the claim that the Agency had acted arbitrarily and capriciously in setting the levels of the standards.

Timeline for Implementing the $PM_{2.5}$ Standards

Date	Action
February 2004*	State designation recommendations to EPA
June 28– 29, 2004	EPA letters to States responding to $PM_{2.5}$ designation recommendations
December 2004	EPA finalizes designations
February 2005	EPA proposes implementation rule
Early 2006	EPA finalizes $PM_{2.5}$ implementation rule
April 2008	State implementation plans due
Up to April 2010 with extension up to 2015 possible	Attainment dates for nonattainment areas (based on the previous 3 years of monitoring data)

* Consolidated Appropriations Bill of FY2004 requires designations by 12/31/04. SIP due dates for $PM_{2.5}$ and regional haze are 3 years from effective date of $PM_{2.5}$ designations.

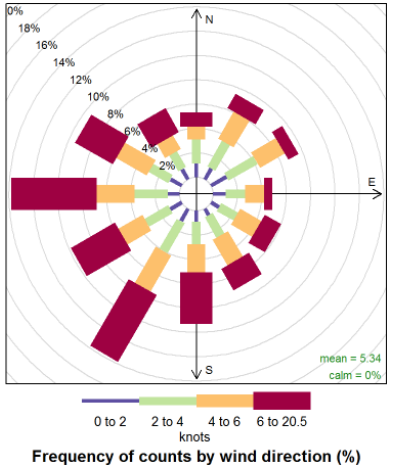
EPA Response to State Recommendations on $PM_{2.5}$ Designations – June 29, 2004

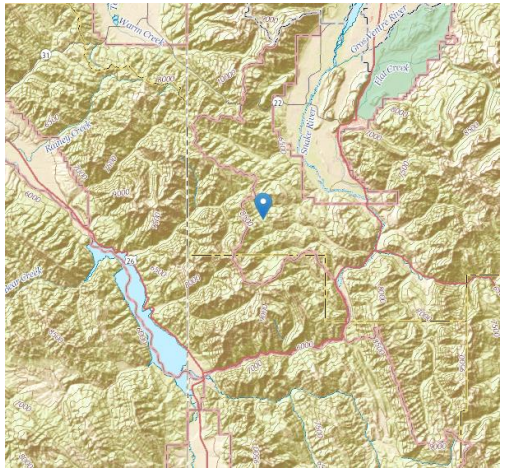


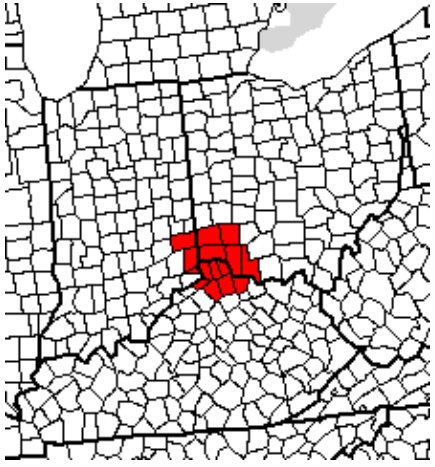
	All Cou	Pop (mill)	Full Cou	Pop (mill)	Partial Cou	Pop (mill)
ST	142	79	133	65	9	14
EPA	244	99	233	85	11	14

Five-Factor Analysis for Designating Nonattainment Areas

- Air Quality Data
- Emissions and Emissions-Related Data
- Meteorology
- Geography/Topography
- Jurisdictional Boundaries







State Implementation Plans (SIPs)

- Identify the emissions control requirements the state will rely upon to attain and/or maintain the primary and secondary NAAQS
- All states are required to submit SIPs with general infrastructure elements showing the state has the capacity to attain, maintain, and enforce a new or revised NAAQS.
- SIPs must be
  - developed with public input
  - be formally adopted by the state
  - submitted by the Governor's designee to EPA.

EPA Processing

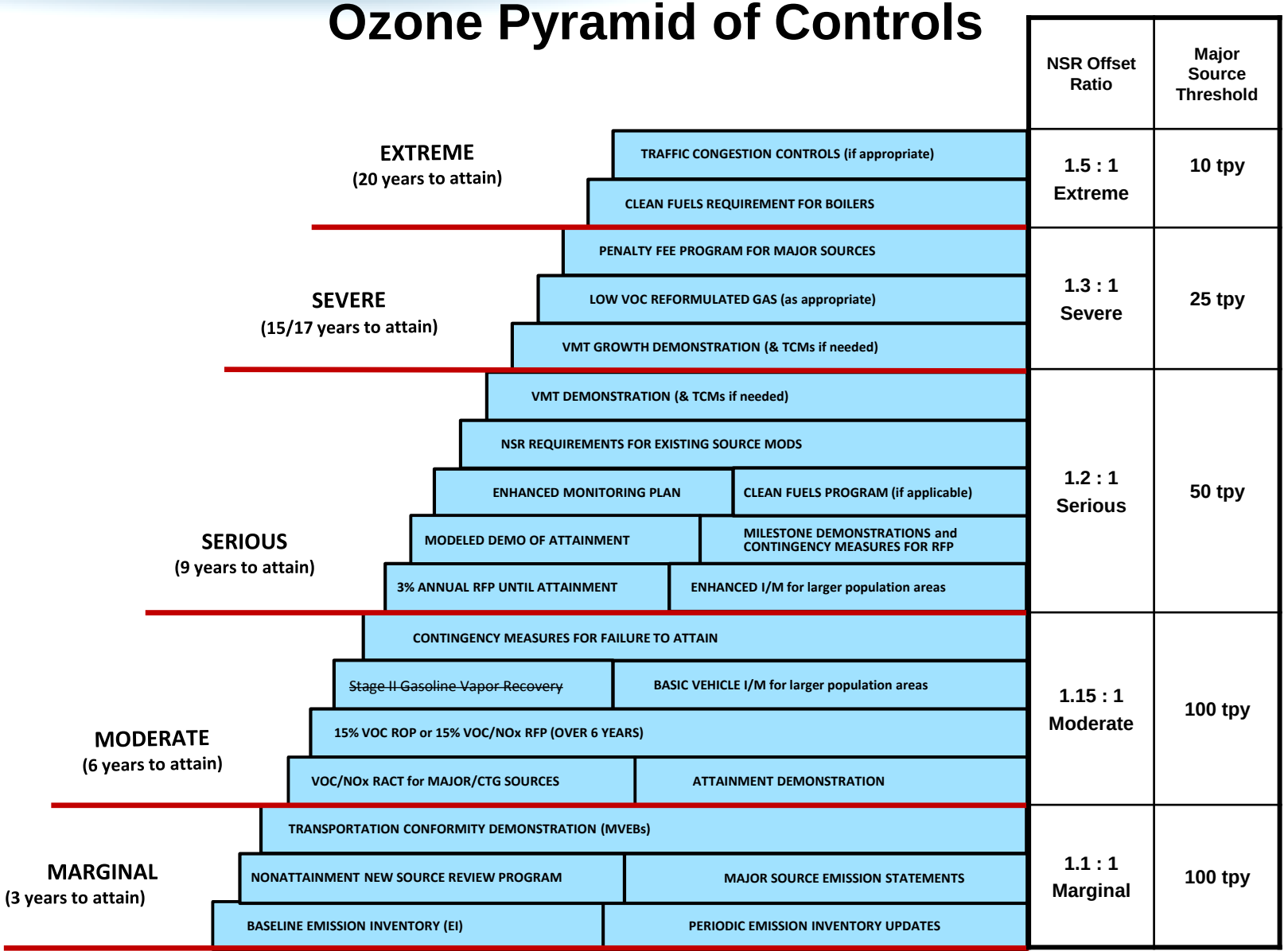
- After reviewing submitted SIPs
  - EPA proposes to approve or disapprove all or part of each plan
  - The public has an opportunity to comment on EPA's proposed action
  - EPA considers public input before taking final action on a state's plan
  - If a state fails to submit an approvable plan or if EPA disapproves a plan, EPA is required to develop a federal implementation plan (FIP).
  - Failure to submit may also result in sanctions including withholding of funding for highway projects

Requirements to Request Redesignation

- Air quality monitoring data shows the area meets the standard.
- Reductions in the area's emissions are permanent and enforceable.
- The SIP developed for the area meets the requirements of the federal Clean Air Act and receives full approval from EPA.
- EPA fully approves a 10-year Maintenance Plan for the area submitted as a revision to the SIP.
- The area meets requirements of the Clean Air Act for general SIPs and nonattainment areas.

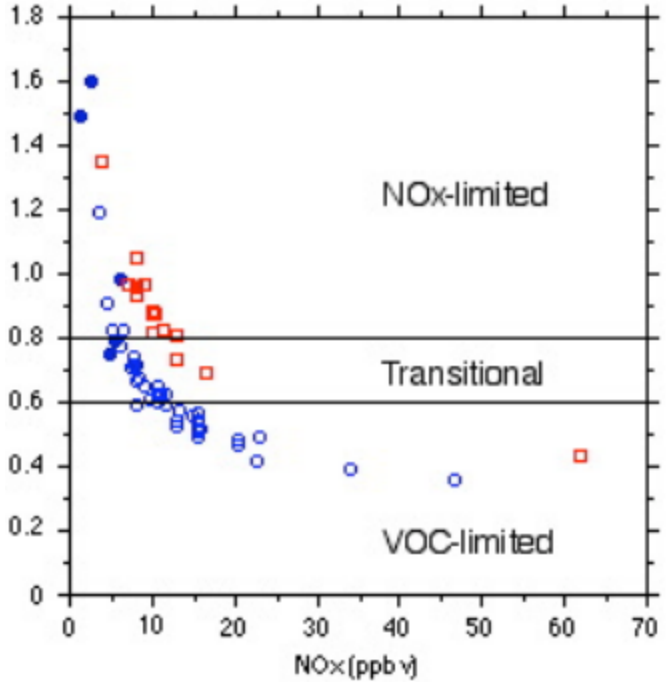
For more details look up the "Calcagni Memo" which is an often cited and heavily utilized document during the redesignation process

Ozone Pyramid of Controls



Science Supporting Solutions

- Information to inform and help determine shapes and boundaries of non-attainment areas
- Control Strategies for Regional Pollutants
  - Ozone formation –
    - NOx limited, VOC limited
    - Transitional Areas some transitional areas remain
  - PM Formation –
    - NOx, SO2, VOC, Ammonia?



Thank you