

SOUTHWEST AND NORTHERN OHIO CHAPTERS OF A&WMA

Fall 2007 Technical Conference

PM2.5, Regional Haze and SIP Development Issues in Ohio:

Present and Future

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Overview

December 2007: Ohio Regional Haze SIP Due

April 2008: Ohio PM_{2.5} SIP Due

April 2010: Annual PM_{2.5} NAAQS Attainment

April 2013: Ohio SIP Revision to Attain
the New 24-Hour PM_{2.5} NAAQS

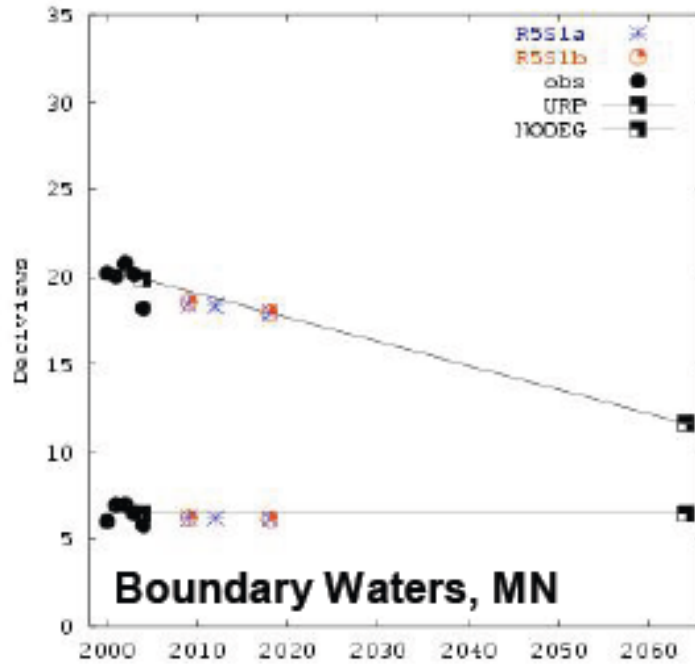
April 2015: New 24-Hour PM_{2.5} NAAQS Attainment

I. Regional Haze

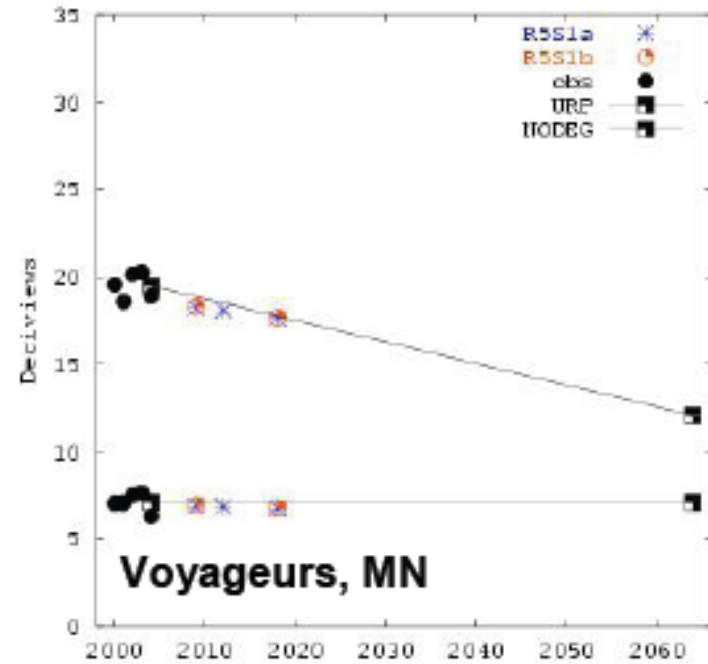
Regional Haze Requirements

- Section 169A sets as a national goal “the prevention of any future and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution”
- States are required to “make reasonable progress toward meeting the national goal”
 - Improvement in visibility for most impaired days (20% worst)
 - No degradation in visibility for least impaired days (20% best)
- In determining reasonable progress, states shall consider:
 - costs of compliance,
 - time necessary for compliance,
 - energy and non-air quality environmental impacts of compliance,
 - remaining useful life of existing sources subject to such requirements
- Also, states must consider (EPA’s 1999 visibility rule):
 - uniform rate of visibility improvement (needed to attain natural visibility conditions by 2064) – i.e., “glide path”

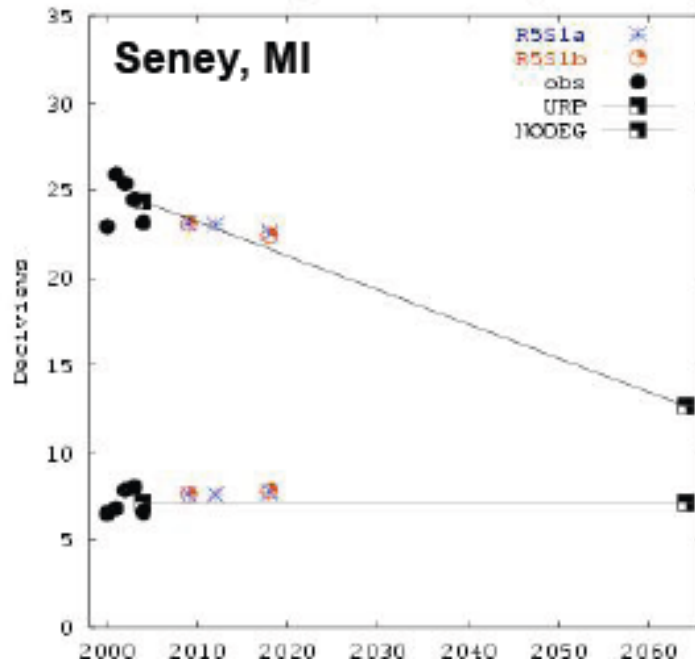
Reasonable Progress - BONAI - [MRPO/LADCO]



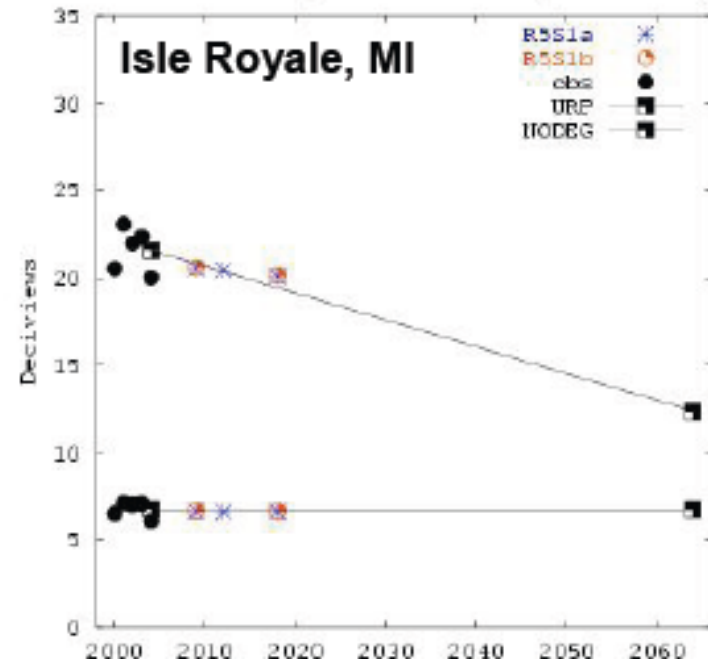
Reasonable Progress - VOYA2 - [MRPO/LADCO]

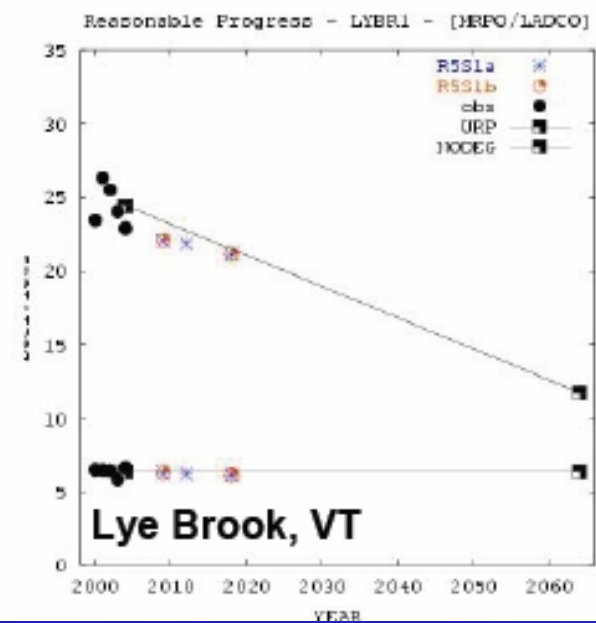
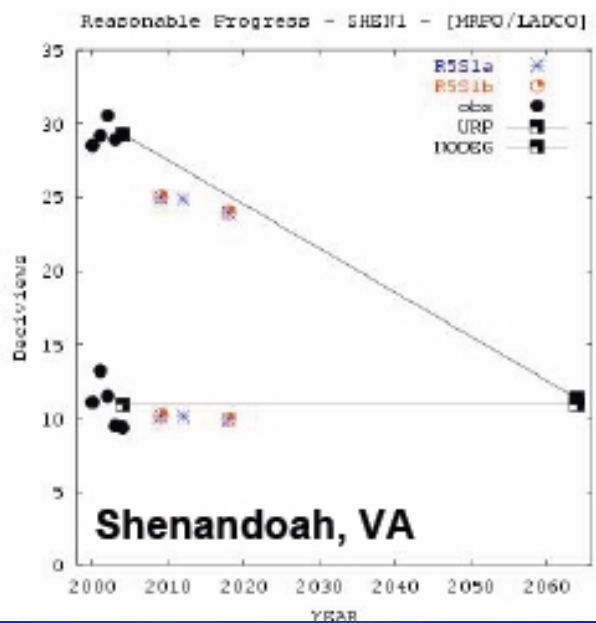
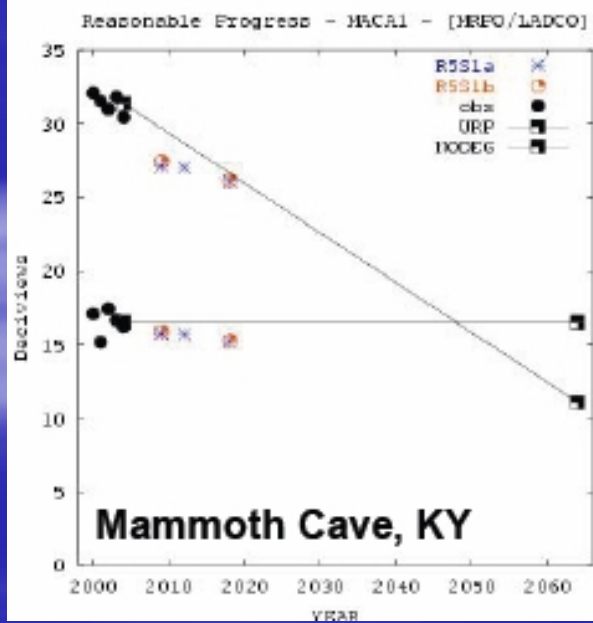
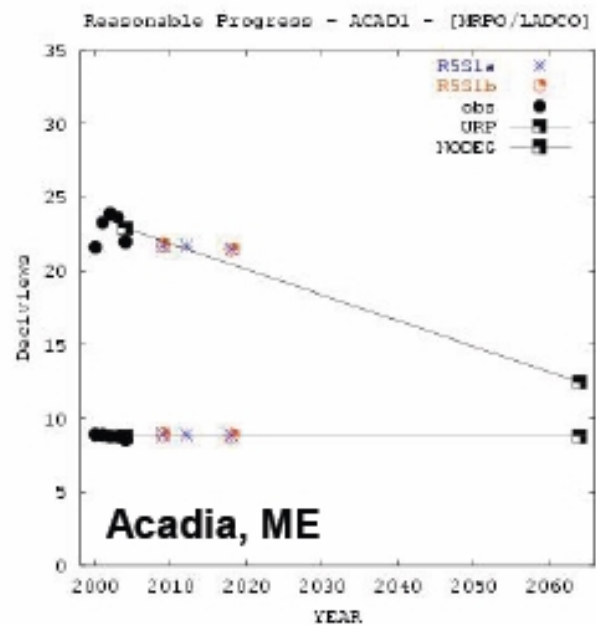
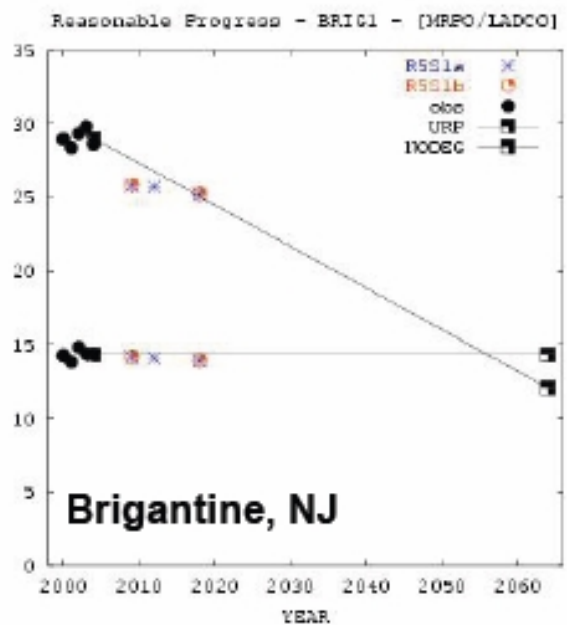
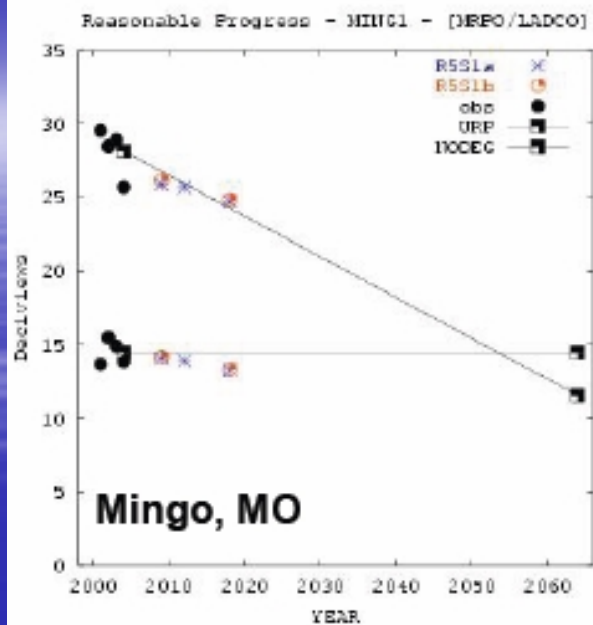


Reasonable Progress - SENIE1 - [MRPO/LADCO]



Reasonable Progress - ISLE1 - [MRPO/LADCO]





Regional Haze

Observation: It is likely that Ohio EPA will make a successful Reasonable Further Progress Demonstration for Regional Haze without additional controls beyond On-the-Books Controls plus BART for the one eligible BART source in the state.

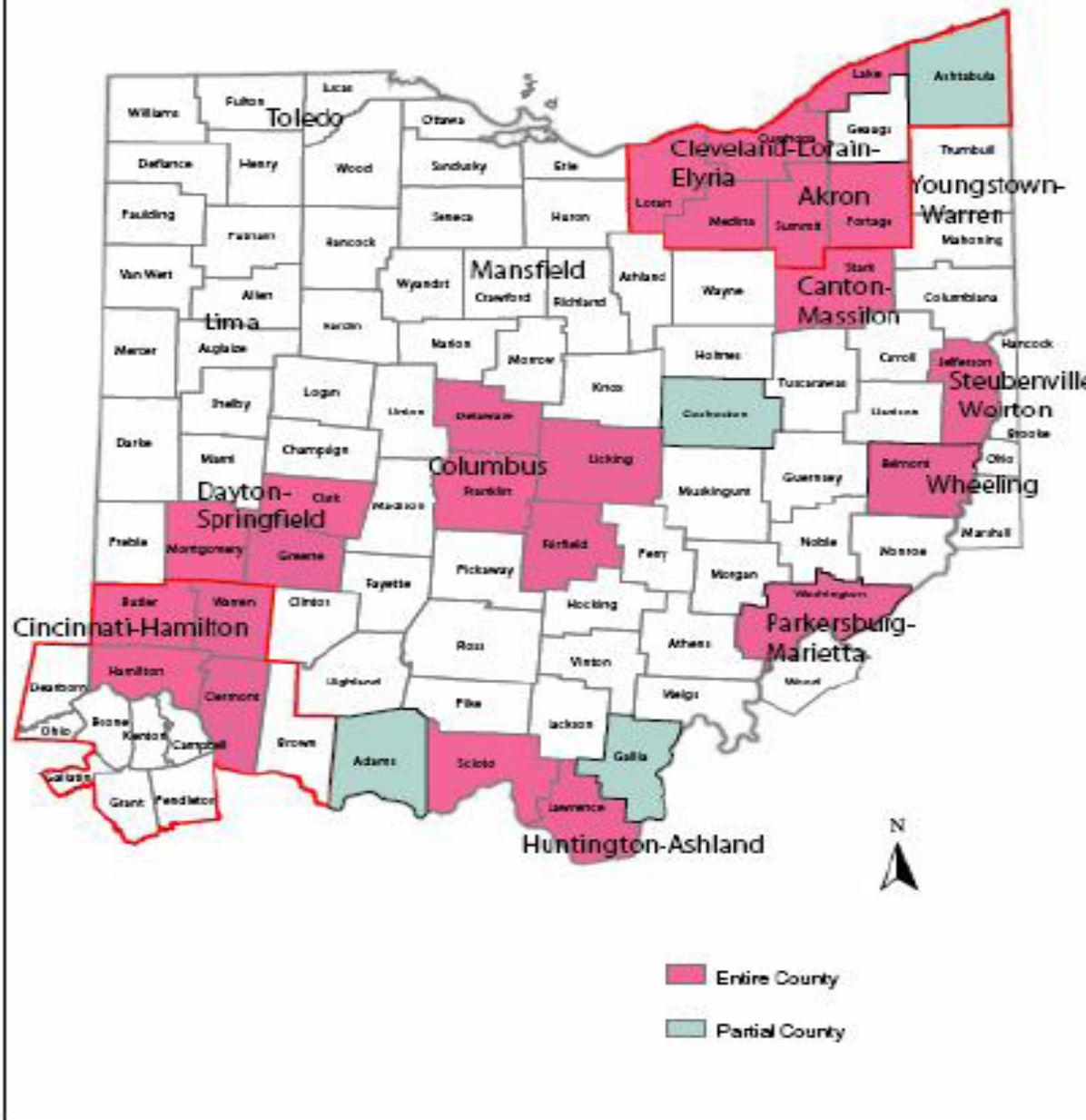
II. PM_{2.5} SIP Due in 2008

- Attainment Status
- 2005-2007 PM_{2.5} Monitoring Data To Date
- PM_{2.5} Regional Modeling Results and Caveats

PM2.5 SIP

- Areas Requiring Hot Spot Analysis Modeling of Local Sources
- PM2.5 Control Scenarios Under Consideration by Ohio EPA
- Issues of Concern to Ohio Sources of PM2.5 Emissions

PM 2.5 Nonattainment 04/12/05



PM2.5 Nonattainment Areas

In addition to the existing PM2.5 Nonattainment Areas, Ohio EPA is considering designating the Toledo and Youngstown Areas as Nonattainment.

**PM2.5 ANNUAL AVERAGE
CONCENTRATIONS EXCEEDING THE
NAAQS FOR 2005-2007 (through
8/31/07)**

Monitor Site	3 Year Average Design Values 2005 - 2007
<u>Canton-Massillon, OH: Stark Co.</u>	
391510017	16
<u>Cincinnati-Hamilton, OH-KY-IN</u>	
390170003	16
390170016	16
390170017	17
<u>Cleveland-Akron-Lorain, OH</u>	
390350038	16
390350045	16
390350060	16
<u>Dayton-Springfield, OH</u>	
391130032	16

PM2.5 Regional Modeling Results

The **regional** modeling of annual average PM2.5 concentrations modeling in Ohio just completed by LADCO shows only one monitor site violating the NAAQS in 2009:

15.1 ug/m³ at 2547 St. Tikhon St., Cleveland

PM2.5 Regional Modeling Results

Caveats

- Emissions inventories underestimate the organic carbon PM2.5 emissions especially from mobile sources
- Results are for regional modeling only. Need to include **Hot Spot Analysis** modeling of local sources with U.S. EPA's AERMOD Model.

Areas Requiring PM_{2.5} Hot Spot Analysis Modeling of Local Sources

- Core Areas of **Cleveland, Cincinnati and Steubenville** will be subject to Hot Spot Analysis modeling with AERMOD using detailed local emissions inventories being developed by Ohio EPA

PM2.5 Control Scenarios Under Consideration by Ohio EPA to Attain the NAAQS

Local Area PM2.5 Controls

- Strategies not currently in regional modeling
- Local major point sources
- Congested roadways
- Diesel fleets
- Restaurants (California)
- Other nearby or regional small sources

Issues of Concern to Ohio Sources of PM_{2.5} Emissions and Precursors

1. Accuracy of the emissions inventories used in the PM_{2.5} modeling of your facility:

There may be differences between the emissions information you submit and the model ready input data files generated by the LADCO Emissions Processor unless you compare the two data sets

Issues of Concern to Ohio Sources of PM_{2.5} Emissions and Precursors

- Modeling will demonstrate that the PM_{2.5} NAAQS are attained for a given set of PM_{2.5} emission rates from yours and other sources

Issues of Concern to Ohio Sources of PM2.5 Emissions and Precursors

- If the modeled emission rates for your sources are not the same as your correct PM2.5 emission rates with agreed controls, then PM2.5 compliance stack tests may not result in compliance with your PM2.5 emission standards

Issues of Concern to Ohio Sources of PM_{2.5} Emissions and Precursors

2. U.S. EPA Compliance Stack Test Method taking effect in 2011 that measures the total condensable plus filterable PM_{2.5} emissions

Issues of Concern to Ohio Sources of PM2.5 Emissions and Precursors

- U.S. EPA is developing a stack test method for total PM2.5 emissions including condensables (CTM-039)
- Starting in 2011, the new PM2.5 Implementation Rule will require that all **new** emission limits for PM2.5 require the use of this new stack test method for total PM2.5 including condensables

PM2.5 Implementation Rule

40 CFR Part 50.1002 (c)

“After January 1, 2011, for purposes of establishing emissions limits under 51.1009 and 51.1010, States must establish such limits taking into consideration the condensable fraction of direct PM2.5 emissions.

Prior to this date, States are not prohibited from establishing source emission limits that include the condensable fraction of direct PM2.5. “

Issues of Concern to Ohio Sources of PM_{2.5} Emissions and Precursors

- Many of the emission factors in U.S. EPA's Compilation of Emission Factors either do not include or inaccurately represent the condensable portion of the PM_{2.5} emissions

Issues of Concern to Ohio Sources of PM_{2.5} Emissions

- Concern: If the emission rates you have been reporting and the emission factors you use are based on AP-42, the actual PM_{2.5} emissions with this new compliance method will result in different emission rates than previously reported and included in your emission standards

III. Ohio SIP Revision to Attain the New 24-Hour PM_{2.5} NAAQS

Ohio SIP Revision to Attain the New 24-Hour PM_{2.5} NAAQS

In September 2006, U.S. EPA revised the 24-hour PM_{2.5} NAAQS from 65 ug/m³ to 35 ug/m³.

Ohio SIP Revision to Attain the New 24-Hour PM_{2.5} NAAQS

Form of the 24-hour PM_{2.5} NAAQS:

The 98th percentile of 24-hour PM_{2.5} concentrations in a year, averaged over three years, must be less than or equal to 35 $\mu\text{g}/\text{m}^3$

Implementation Schedule for the New 24-Hour PM_{2.5} NAAQS

Milestone	2006 PM _{2.5} Primary NAAQS (24-Hour)
Promulgation of Standard	Sep. 2006
State Recommendations to EPA	Dec. 2007 (based on 2004-2006 monitoring data)
Final Designations Signature	Dec. 2009
Effective Date of Designations	April 2010
SIPs Due	April 2013
Attainment Date	April 2015 (based on 2012-2014 monitoring data)
Attainment Date with Extension	April 2020

Ohio SIP Revision to Attain the New 24-Hour PM_{2.5} NAAQS

Key LADCO Modeling Results:

“Regional modeling also shows that the new PM_{2.5} NAAQS (of 35 ug/m³) will not be met even by 2018 (with On-the-Books Controls)”

Ohio SIP Revision to Attain the New 24-Hour PM2.5 NAAQS

This means that a whole new round of PM2.5 emissions and precursor reductions will have to take place by 2013 to attain the new 24-hour PM2.5 NAAQS

Will We Be Finished with New PM_{2.5} Emission Standards After 2013?

- In 2006, the EPA's Clean Air Scientific Advisory Committee recommended that the annual PM_{2.5} NAAQS be lowered to a range of 12 to 14 ug/m³

Will We Be Finished with New PM_{2.5} Emission Standards After 2013?

- The U.S. EPA Administrator rejected the CASAC recommendations by keeping the annual NAAQS at 15 ug/m³

Will We Be Finished with New PM2.5 Emission Standards After 2013?

- Under the Clean Air Act, NAAQS are reviewed and revised as needed every five years
- In 2011, the annual average PM2.5 NAAQS will be subject to review again and may be lowered to the 12 to 14 ug/m³ range

Will We Be Finished with New PM_{2.5} Emission Standards After 2013?

- If the annual PM_{2.5} NAAQS is lowered to a range of 12 to 14 ug/m³, it may have a profound impact on further lowering the PM_{2.5} emission standards for sources throughout Ohio and the LADCO Region

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