

Update on Ozone and PM_{2.5} Programs

Alison Simcox, PhD
Air Programs Branch
US EPA Region 1

AWMA-NES Fall 2009 Conference
Westborough, MA
November 6, 2009

Overview

- ◆ EPA's ozone standard
 - 1997 ozone standard
 - 2004 nonattainment areas
 - Progress in achieving the 1997 standard
 - 2008 revisions to ozone standard
 - Expected ozone (reconsidered) NAAQS schedule
- ◆ EPA's fine-particle standard
 - 1997 PM standards
 - 2004 annual nonattainment areas
 - 2006 revisions to fine-particle standards
 - 2009 24-hour PM_{2.5} Nonattainment Areas
 - CAIR & CAIR replacement rule
 - Expected 2006 PM_{2.5} NAAQS schedule
 - Expected 2011 PM_{2.5} (accelerated review) NAAQS schedule

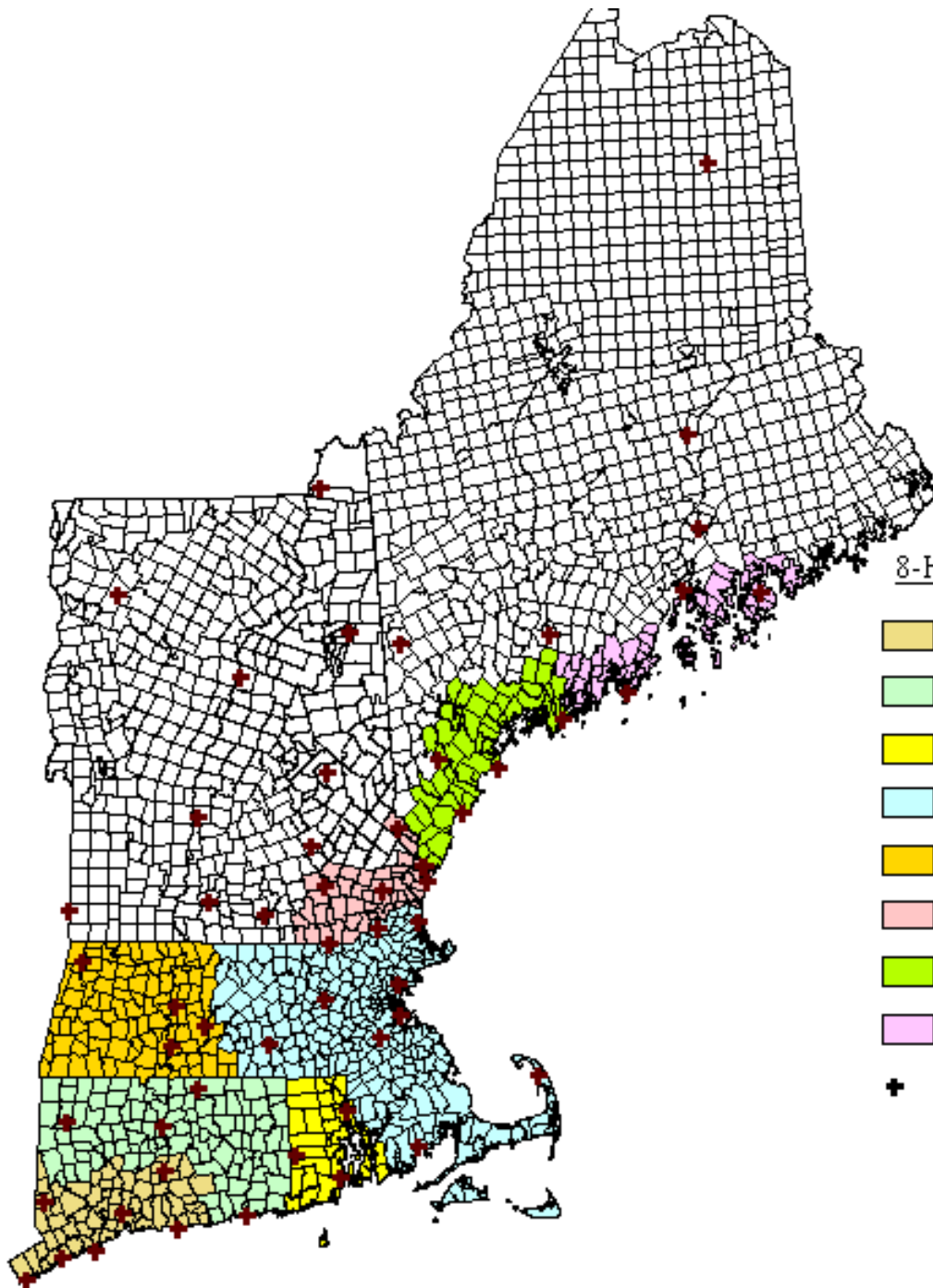
Air-Quality Standards for Criteria Pollutants

- ◆ Law requires EPA to review scientific information and National Ambient Air Quality Standards (NAAQS) for each criteria pollutant *every 5 years*, with advice from Clean Air Scientific Advisory Committee (CASAC)
- ◆ Two types of NAAQS:
 - *Primary standards* to protect public health
 - *Secondary standards* to protect public welfare and the environment










EPA's Ozone Standard - background

- ◆ In 1997, EPA changed the averaging period of the standard from 1 to 8 hours to address health effects from prolonged exposures
- ◆ 8-hour standard set at 0.08 ppm
- ◆ Compliance with the standard based on 3-yr average of 4th highest ozone level at each monitor
- ◆ Implementation delayed by litigation

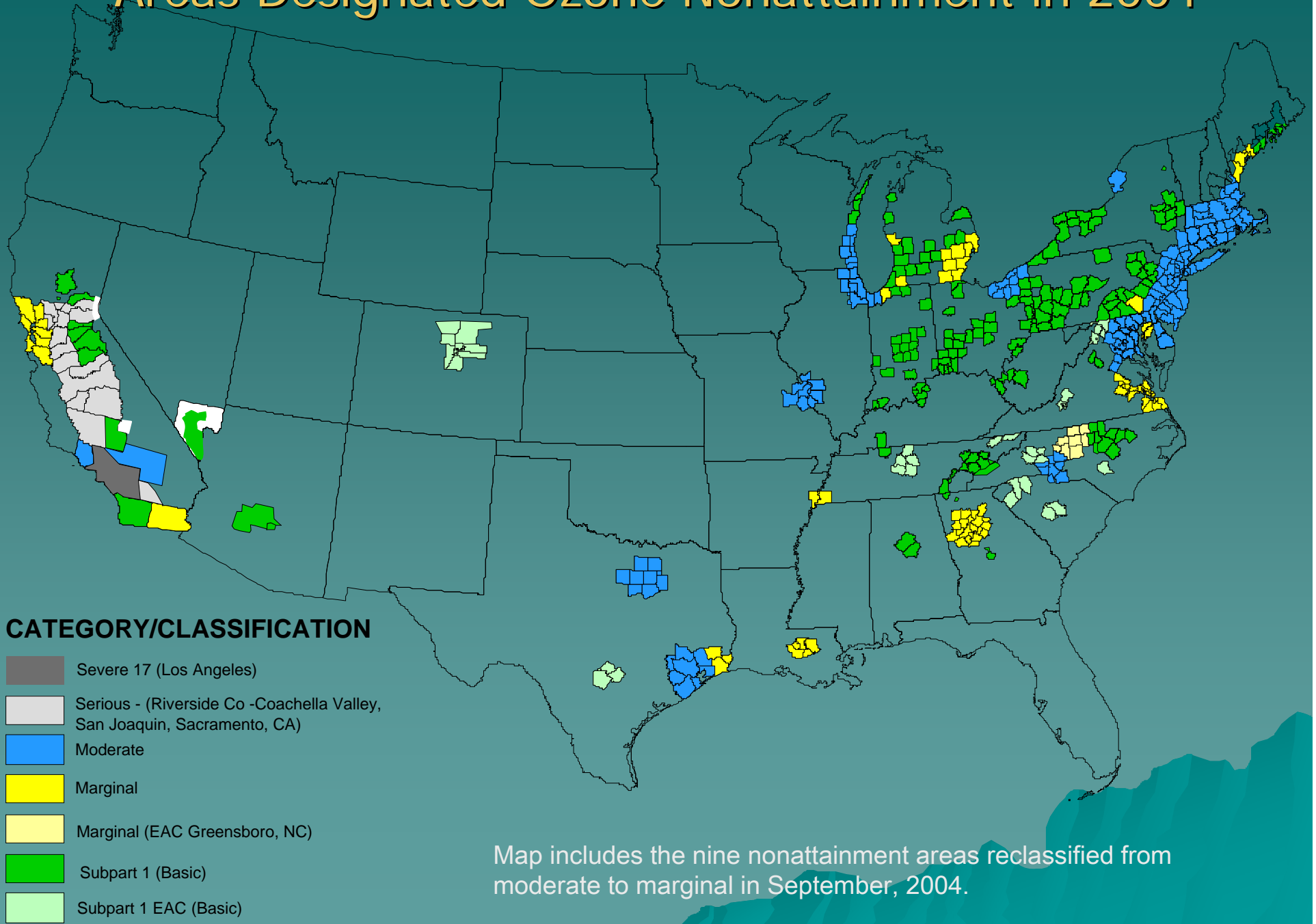
8-Hour Nonattainment Areas in New England (effective June 15, 2004)



8-HOUR OZONE NON-ATTAINMENT AREAS

-  NEW YORK-N. NEW JERSEY-LONG ISLAND, NY-NJ-CT
-  GREATER CONNECTICUT, CT
-  PROVIDENCE (ALL RI), RI
-  BOSTON-LAWRENCE-WORCESTER (E. MA), MA
-  SPRINGFIELD (W. MA), MA
-  BOSTON-MANCHESTER-PORTSMOUTH (SE), NH
-  PORTLAND, ME
-  HANCOCK, KNOX, LINCOLN AND WALDO COS, ME
-  2003 OZONE MONITORING STATION

Areas Designated Ozone Nonattainment in 2004



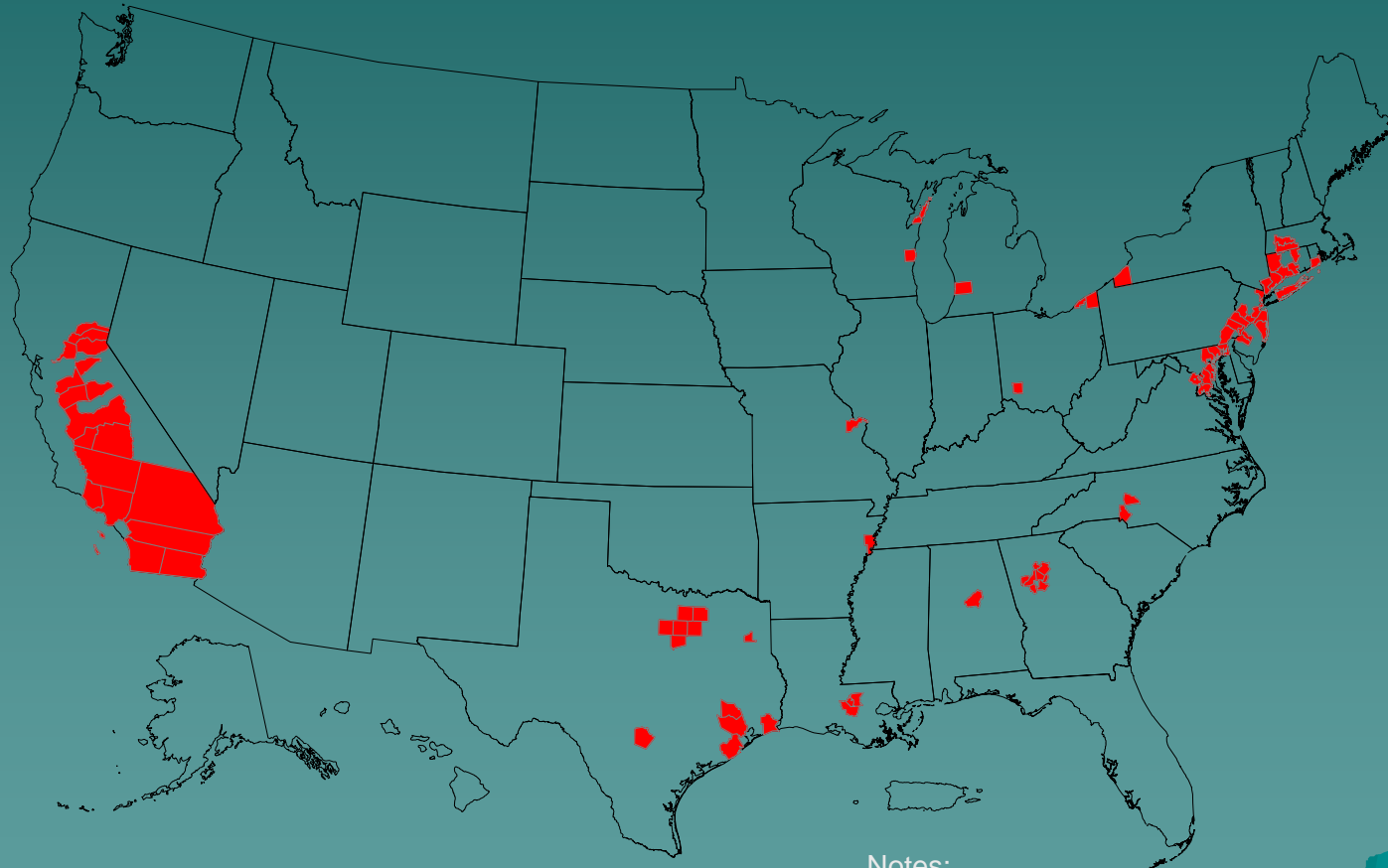
Progress in Achieving the 1997 Ozone Standard in New England

- ◆ All of New England is attaining the 1997 8-hour ozone standard based on preliminary 2007-2009 data
- ◆ ME has been redesignated as in attainment with the 1997 8-hour ozone standard

Revisions to Ozone Standard

- ◆ June 2007: EPA proposed revisions to ozone standards
- ◆ In March 2008, EPA strengthened the 8-hour primary ozone standard from 0.08 to 0.075 ppm
- ◆ EPA also set 8-hour secondary ozone standard at 0.075 ppm

Counties with Monitors Violating 1997 8-Hr Ozone Standard (0.08 ppm) (based on 2004-06 AQ data)



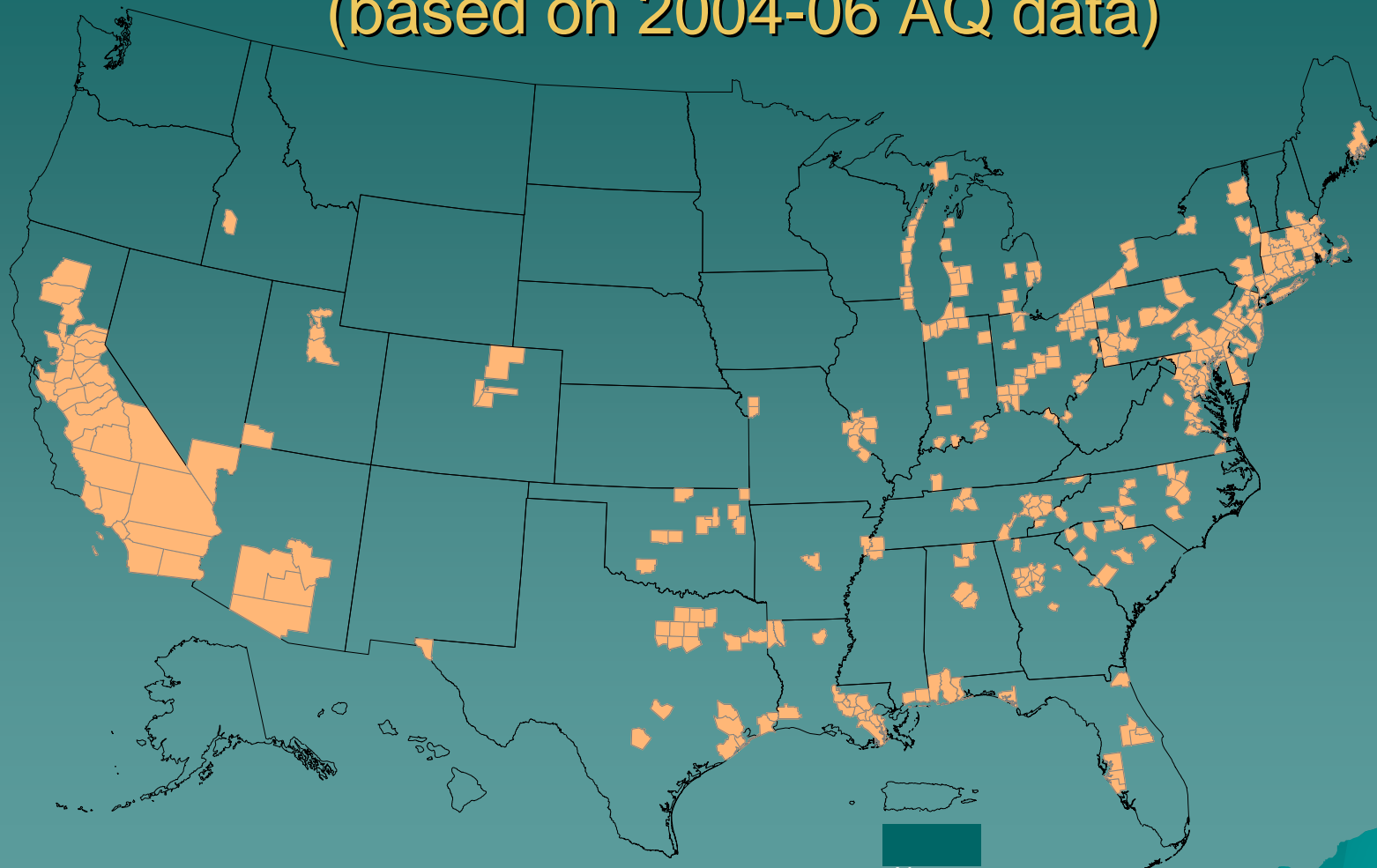
Notes:

¹ 85 monitored counties violate.

² Monitored air quality data can be obtained from the AQS system at <http://www.epa.gov/ttn/airsaqs/>

³ The 1997 national ambient air quality standard (NAAQS) for ozone of 0.08 ppm is effectively expressed as 0.084 ppm when data handling conventions are applied.

Counties with Monitors Violating 2008 8-Hour Ozone Standard (0.075 ppm) (based on 2004-06 AQ data)



Notes:

¹ 345 monitored counties violate the 2008 8-hour ozone standard of 0.075 parts per million (ppm).

² Monitored air quality data can be obtained from the AQS system at <http://www.epa.gov/ttn/airsaqs/>

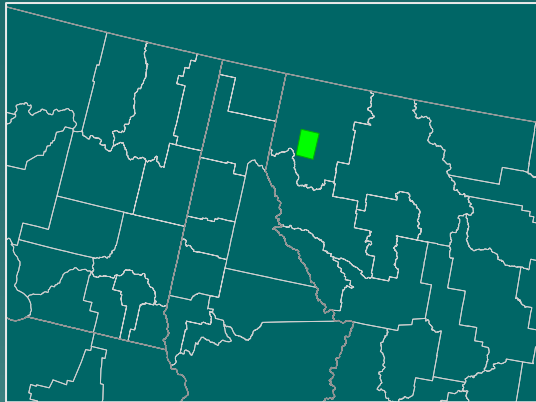
Expected NAAQS Schedule Ozone (reconsidered)

- ◆ On September 16, 2009, EPA announced it would reconsider the 2008 ozone standard
- ◆ NAAQS NPR: Dec 2009
- ◆ NAAQS promulgation (NFR): Aug 2010
- ◆ Designations effective: Aug 2011
- ◆ Attainment demo due: Dec 2013
- ◆ Attainment date (moderate): Aug 2017

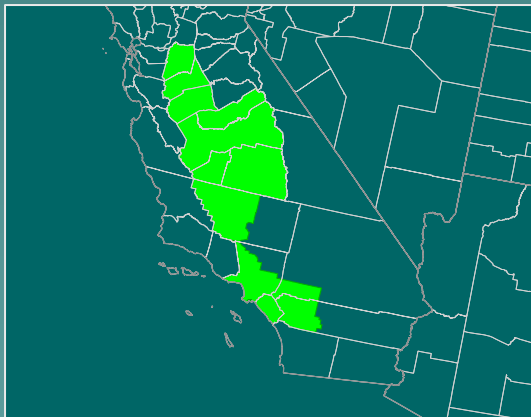
EPA's Fine-Particle Standards (1997)

- ◆ July 1997: EPA set PM_{2.5} standards:
 - Annual standard: 15 µg/m³ based on 3-yr average of annual mean
 - 24-hour standard: 65 µg/m³ based on 98-percentile of 24-hr concs in yr (averaged over 3 yrs)
- ◆ 1999: Nationwide monitoring began
- ◆ Dec 2004: EPA issued designations (effective Ap 05)
- ◆ April 2008: PM_{2.5} SIPs due (many submitted – EPA planning actions, including Findings of Failure to Submit, SIP approval decisions, and Clean Data Determinations based on 2006-08 data)

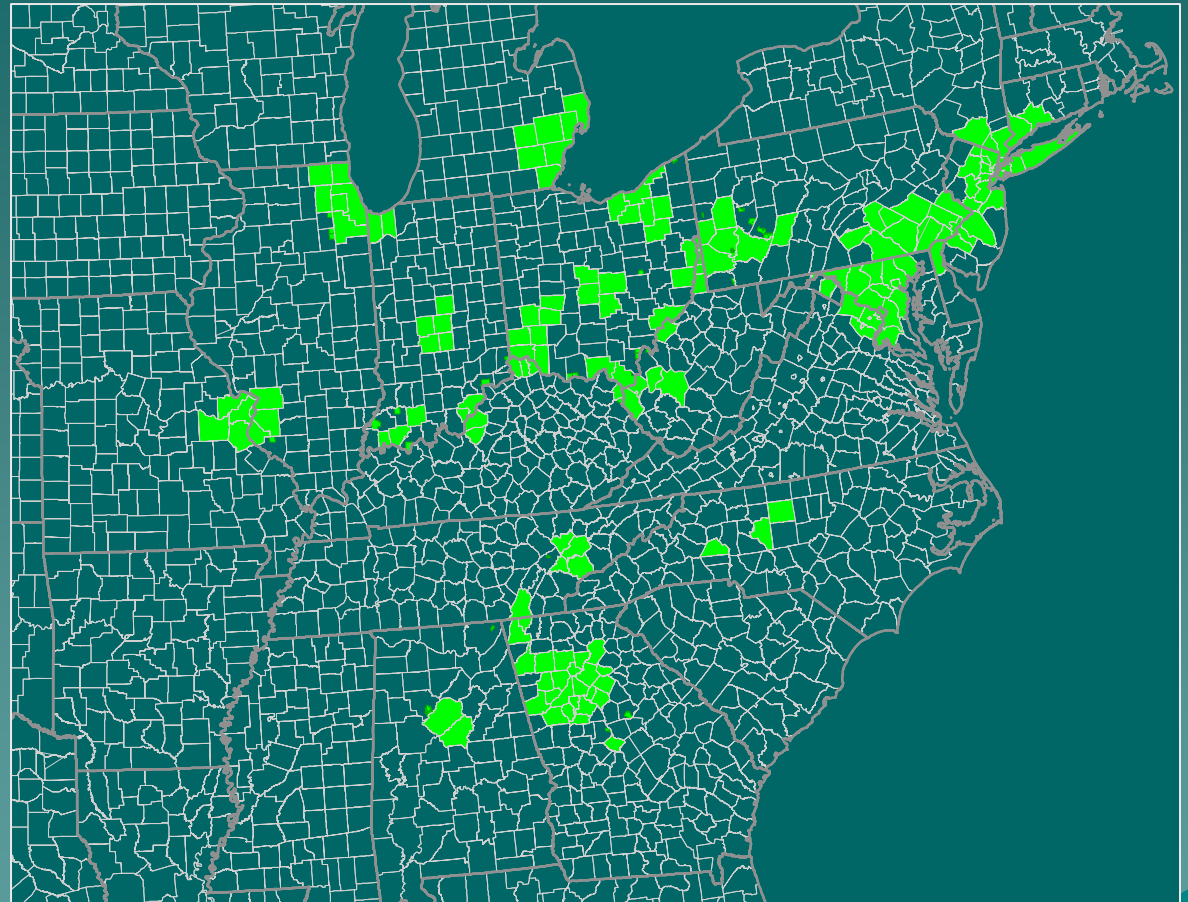
2004 (current) Annual PM_{2.5} Nonattainment Areas



Libby, Montana



San Joaquin Valley
and Los Angeles

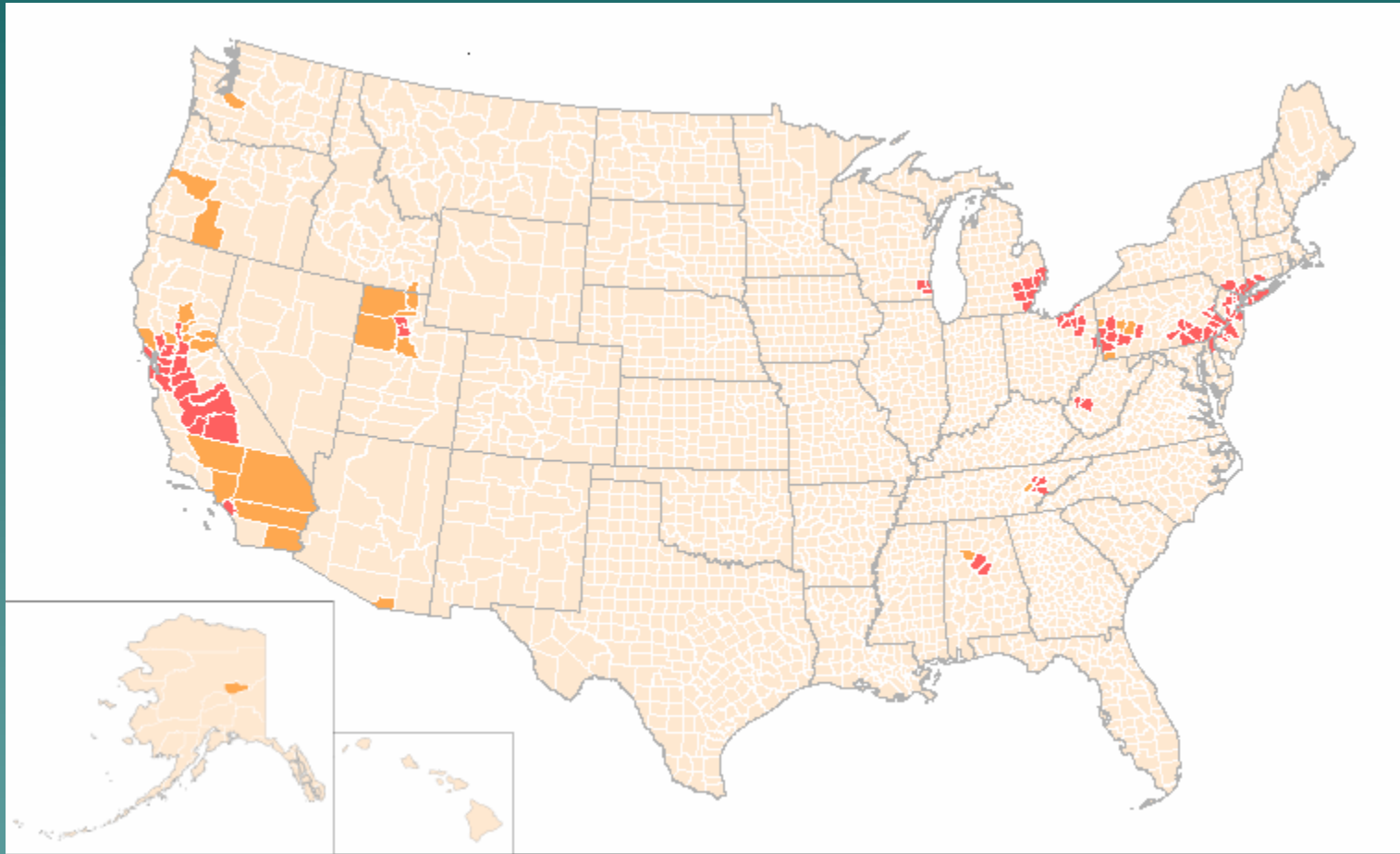


Eastern U.S.

EPA's Fine-Particle Standards (2006)

- ◆ Dec 18, 2006: EPA revises PM_{2.5} standards:
 - Annual standard: 15 µg/m³ (3-yr average of annual mean)
 - 24-hour standard: 35 µg/m³ (98-percentile of 24-hr concs in yr, averaged over 3 yrs)
 - (Annual PM₁₀ standard revoked; 24-hr PM₁₀ standard of 150 µg/m³ retained)
- ◆ Dec 18, 2008: designations signed by Admin Johnson based on 2005-07 data ...*but didn't become effective*
- ◆ Oct 8, 2009: final designations, based on 2006-08 data, published. In New England, only SW CT not attaining 24-hr standard - included in NY-NJ-CT PM_{2.5} NA area

2009 24-hour PM_{2.5} Nonattainment Areas



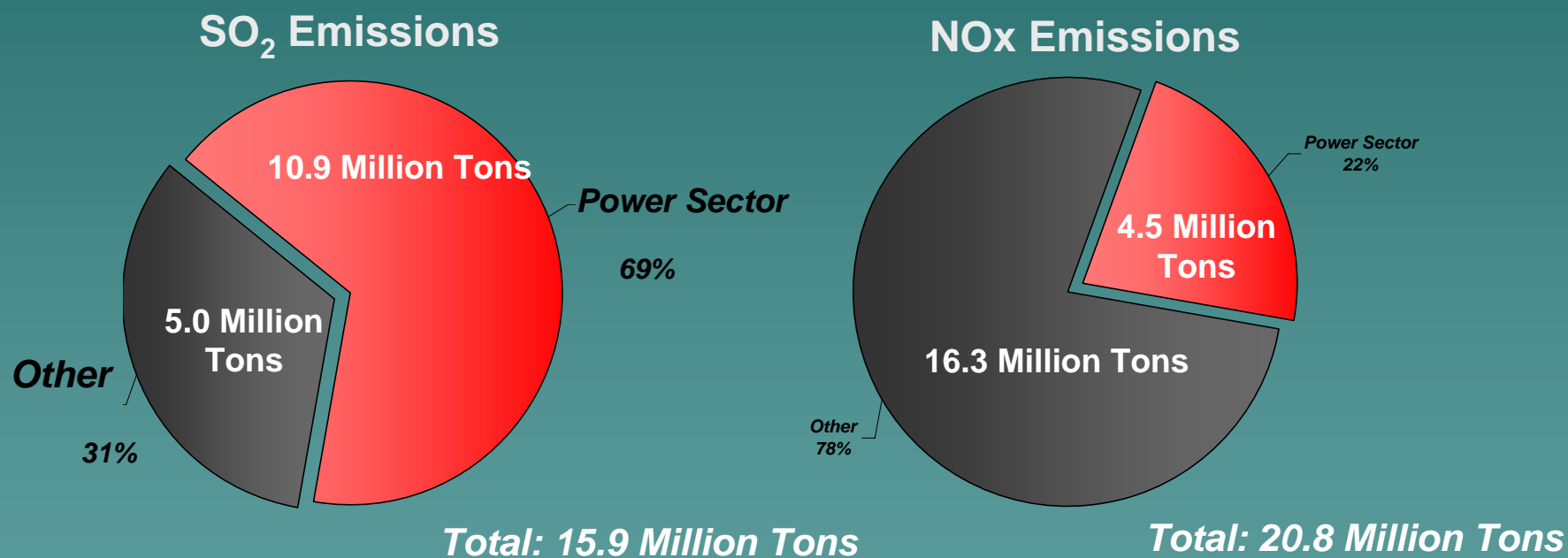
EPA Designation

- Attainment/Unclassifiable
- Nonattainment - Whole County
- Nonattainment - Partial County

Addressing Interstate Transport: CAIR

- ◆ CAIR in effect since *June 2006*
- ◆ Intended to be EPA-administered cap-and-trade program to permanently cap emissions of SO₂ and NO_x in eastern US
- ◆ Applies to power plants (EGUs) producing > 25 MW electricity
- ◆ Program provides air quality benefits for ozone, PM_{2.5} and regional haze

Electric Power Generation: A Major Source of Emissions

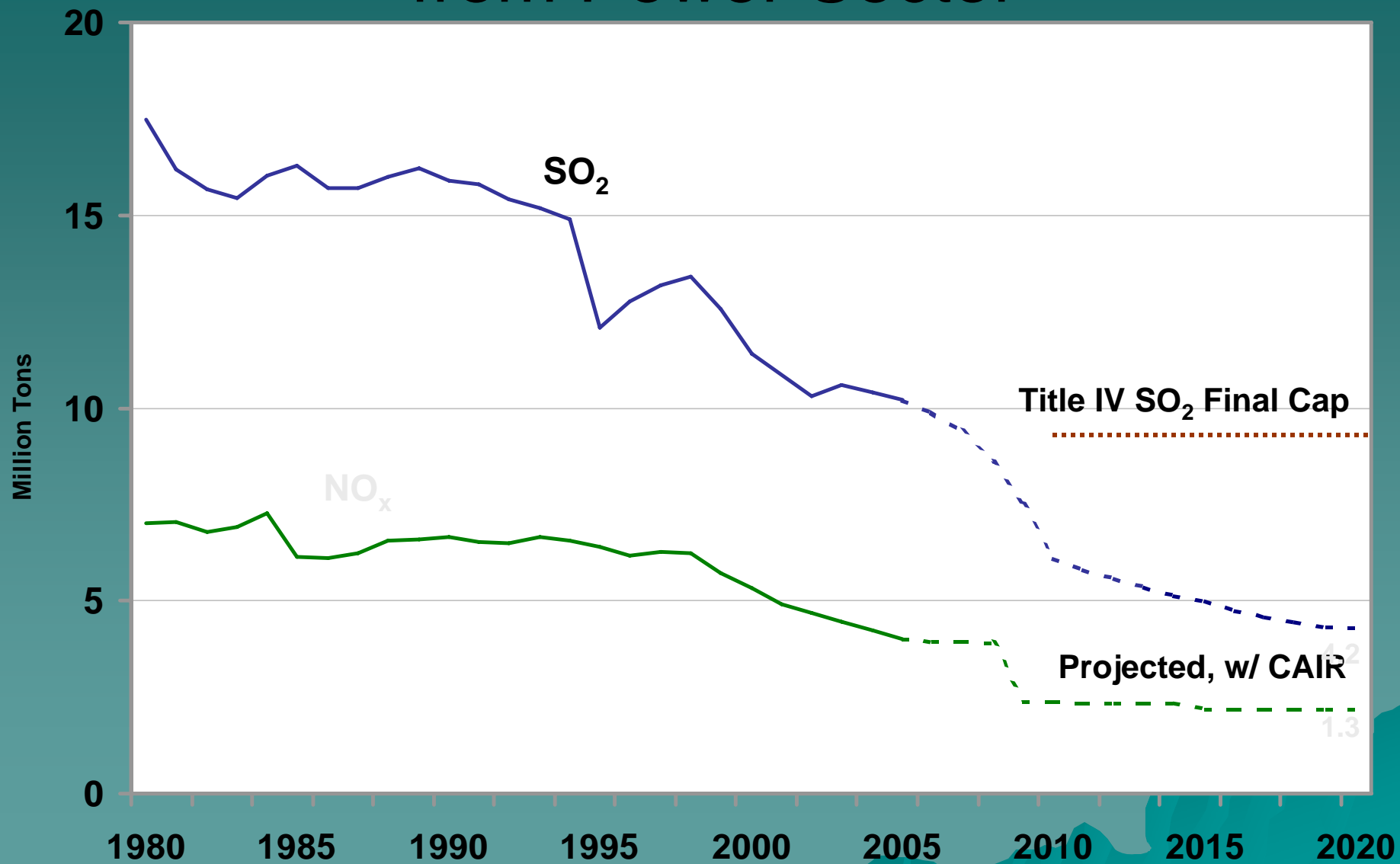


Source: SO₂ and NO_x data is from EPA's 2003 National Emissions Inventory. "Other" sources of pollutants include transportation and other mobile sources and industrial sources.

CAIR – current program

- ◆ SO₂ allowances already distributed at program outset
- ◆ Most sources have NO_x allowances for 2009 and 2010 and for additional years
- ◆ Many states have EPA-approved SIPs; others have SIPs that cover NO_x allocations only; some chose FIP program
- ◆ Power industry committed billions in add-on pollution control tech to meet SO₂ and NO_x caps

Nationwide SO₂ & NO_x Emissions from Power Sector



Source: EPA

But... EPA was sued (NC v EPA)

- ◆ Sued by 1 state, some power companies, 2 trade assoc.
- ◆ July 11, 2008: DC Circuit Court issued decision vacating and remanding CAIR
- ◆ Dec 23, 2008, Court granted rehearing only to the extent that it remanded the rules to EPA without vacating them
- ◆ Key Issues:
 - CAIR didn't adequately quantify/eliminate each state's "Significant Contribution"
 - EPA lacks authority to terminate/limit Title IV (Acid Rain Program) allowances through CAIR
 - Remedy: trading program alone may not be sufficient

CAIR: Where are we now?

- ◆ Developing replacement rule: will take about 2 years
- ◆ Rule will be consistent with Court opinions
- ◆ Rule will retain some level of trading (interstate, intrastate, hybrid?) to provide cost-effective emissions reductions
- ◆ Doing analyses; developing options
 - Redoing “linkage analysis” – which state contributes to which state??
 - Which states in/out??
 - SO₂ predictions uncertain because of big pool of banked allowances
- ◆ Will have more discussions with regulated community

Expected NAAQS Schedule 2006 PM_{2.5}

- ◆ NAAQS promulgation (NFR): Sept 2006
- ◆ Designations effective: Dec 2009
- ◆ Attainment demos due: Dec 2012
- ◆ Attainment dates: Dec 2014/2019

Expected NAAQS Schedule 2011 PM_{2.5} (accelerated review)

- ◆ NAAQS promulgation (NFR): Oct 2011
- ◆ Designations effective: Nov 2013
- ◆ Attainment demos due: Nov 2016
- ◆ Attainment dates: Nov 2018/2023

EPA Region 1 Contacts

PM:

Alison Simcox

617-918-1684

simcox.alison@epa.gov

Ozone:

Richard Burkhart

617-918-1664

burkhart.richard@epa.gov