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NAAQS Update – PM2.5 and SO2

March 3, 2015

CIBO EE Meeting

Where are the nonattainment areas?

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Counties Designated Nonattainment for Lead 2008 Standard

Nonattainment Areas (2008 Standard)

The portions of a county designated nonattainment are indicated by color on this national map. The counties with nonattainment areas are circled. The double circles indicate that there are two nonattainment areas within the same county. The State maps provide details of the smaller nonattainment areas within the county boundaries.

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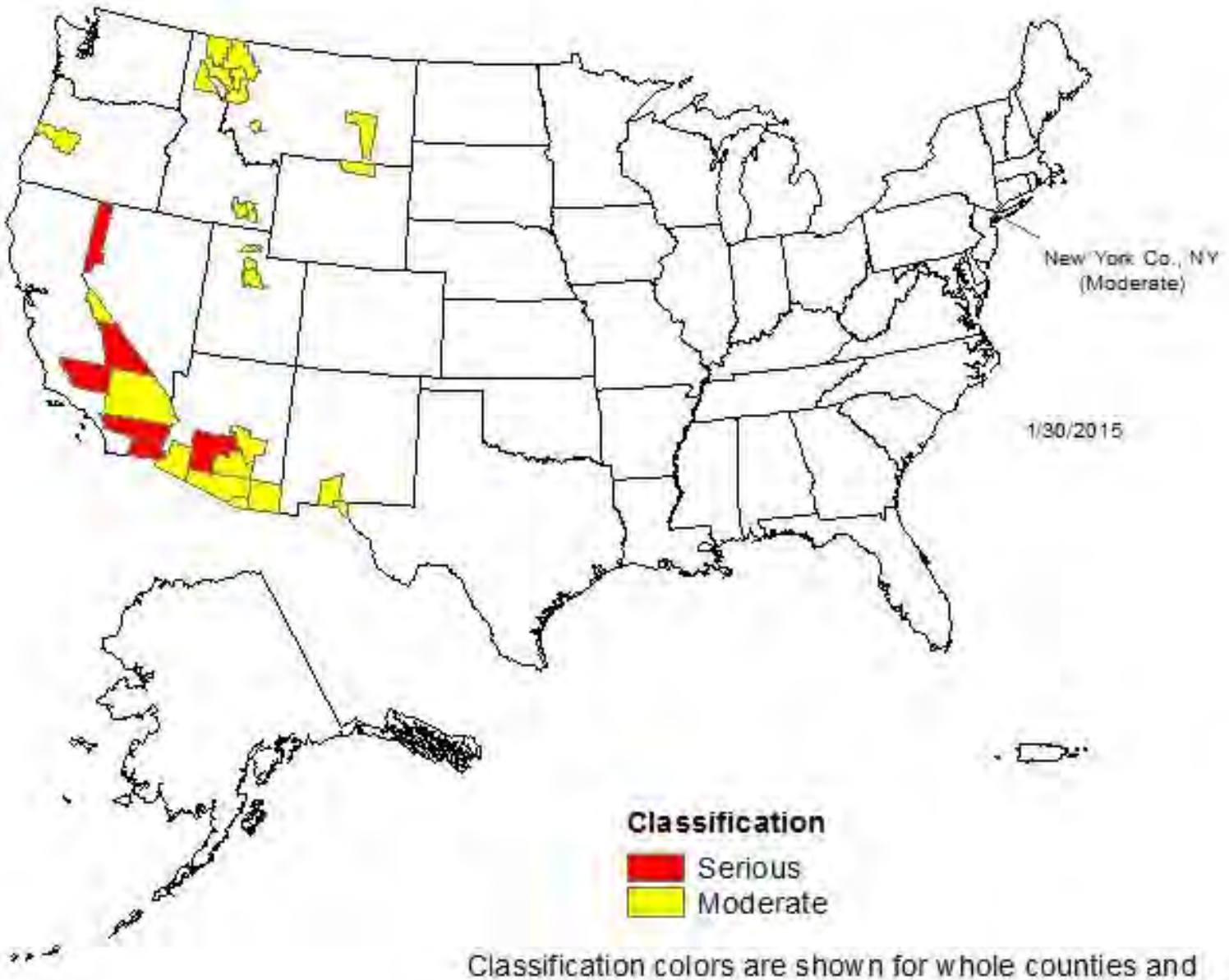
Counties Designated Nonattainment for PM-10



Classification colors are shown for whole counties and denote the highest area classification that the county is in

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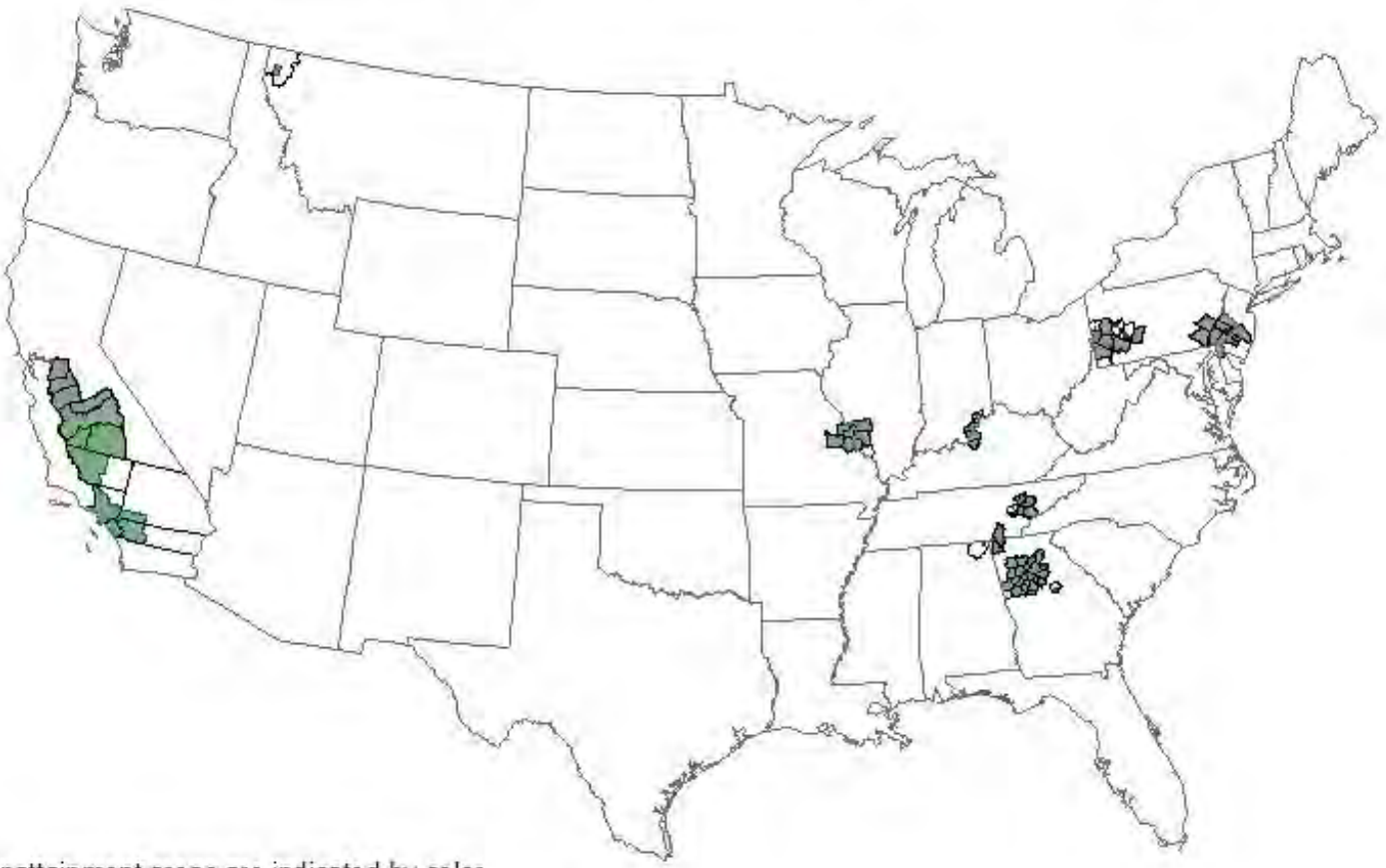
PM-2.5 Nonattainment Areas (1997 Standard)



Nonattainment areas are indicated by color.
When only a portion of a county is shown in color,
it indicates that only that part of the county is within
a nonattainment area boundary.

1/30/2015

For PM-2.5 (1997 Standard) Philadelphia-Wilmington, PA-NJ-DE nonattainment area, the New Jersey portion was redesignated on September 4, 2013 and the Delaware portion was redesignated a year later on September 4, 2014. The Pennsylvania portion has not been redesignated. The entire area is not considered in maintenance until all states in a multi-state area are redesignated.

For PM-2.5 (1997 Standard) Chattanooga TN-GA-AL nonattainment area, the Georgia portion was redesignated on December 19, 2014 and the Alabama portion was redesignated a year later on December 22, 2014. The Tennessee portion has not been redesignated. The entire area is not considered in maintenance until all states in a multi-state area are redesignated.

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8-Hour Ozone Nonattainment Areas (2008 Standard)

Nonattainment areas are indicated by color. When only a portion of a county is shown in color, it indicates that only that part of the county is within a nonattainment area boundary.

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8-Hour Ozone Nonattainment Areas (1997 Standard)

Nonattainment areas are indicated by color.
When only a portion of a county is shown in color, it indicates that only that part of the county is within a nonattainment area boundary.

The Illinois portion of the St. Louis, MO-IL 8-hr Ozone (1997 Standard) nonattainment area was redesignated on June 12, 2012, while the Missouri portion has not. The entire area is not considered in maintenance until all states in a multi-state area are redesignated.

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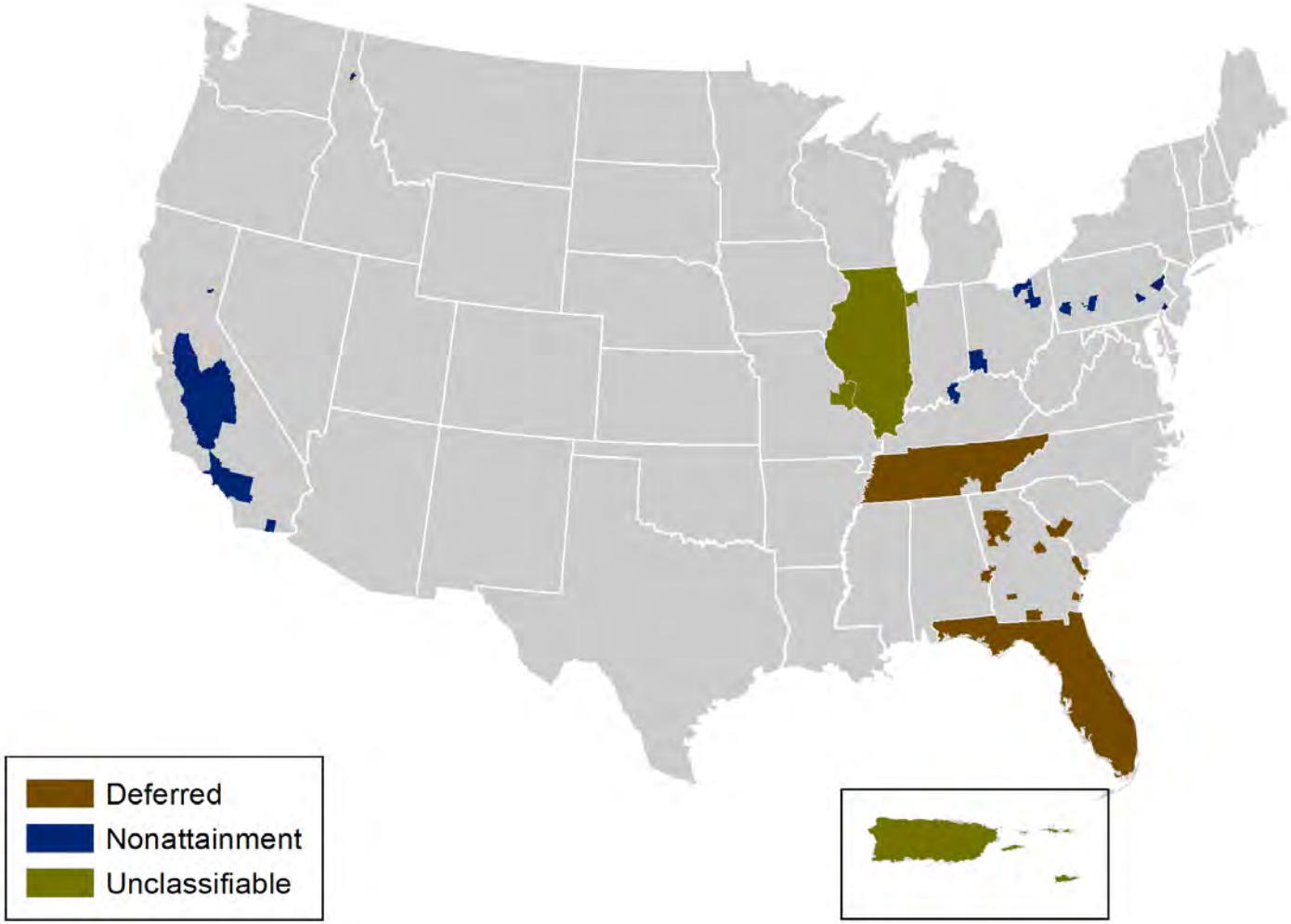
2012 Annual PM2.5 Designations



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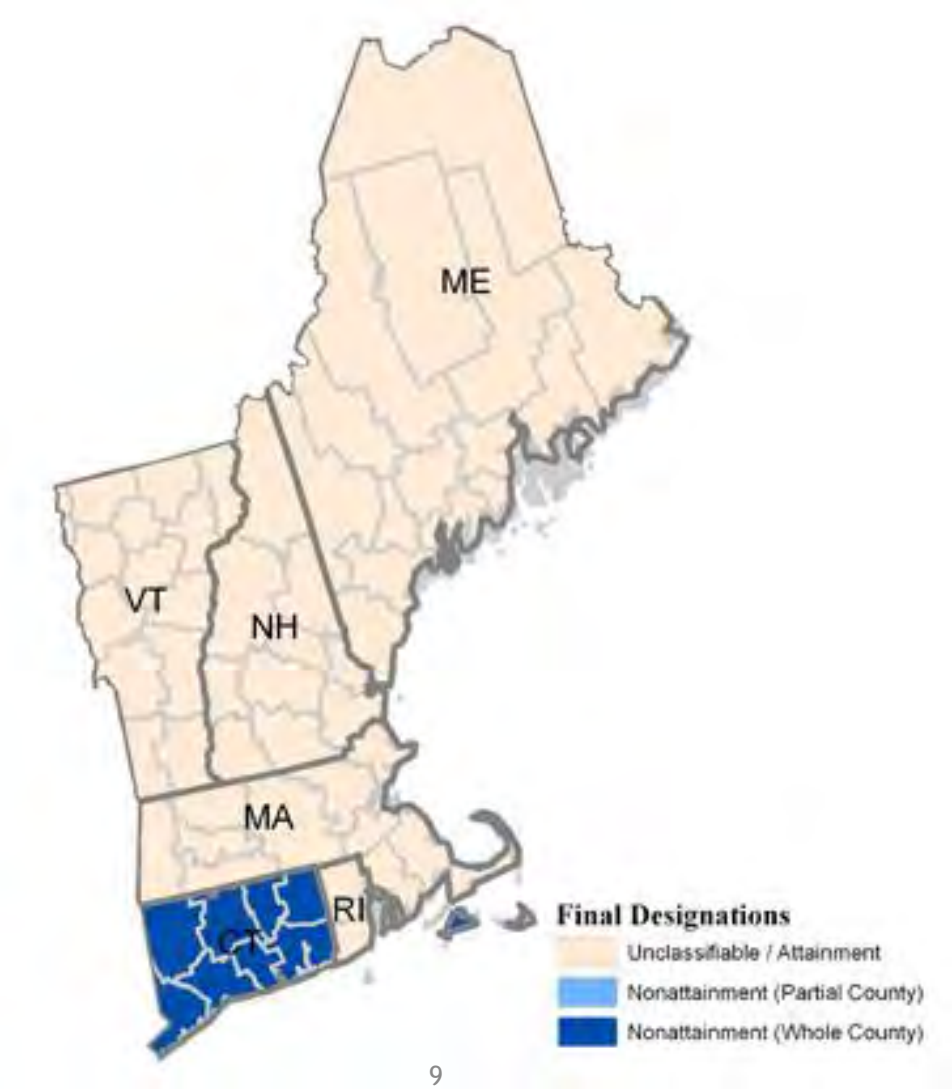
2008 Ground Level Ozone Standards – Region 1



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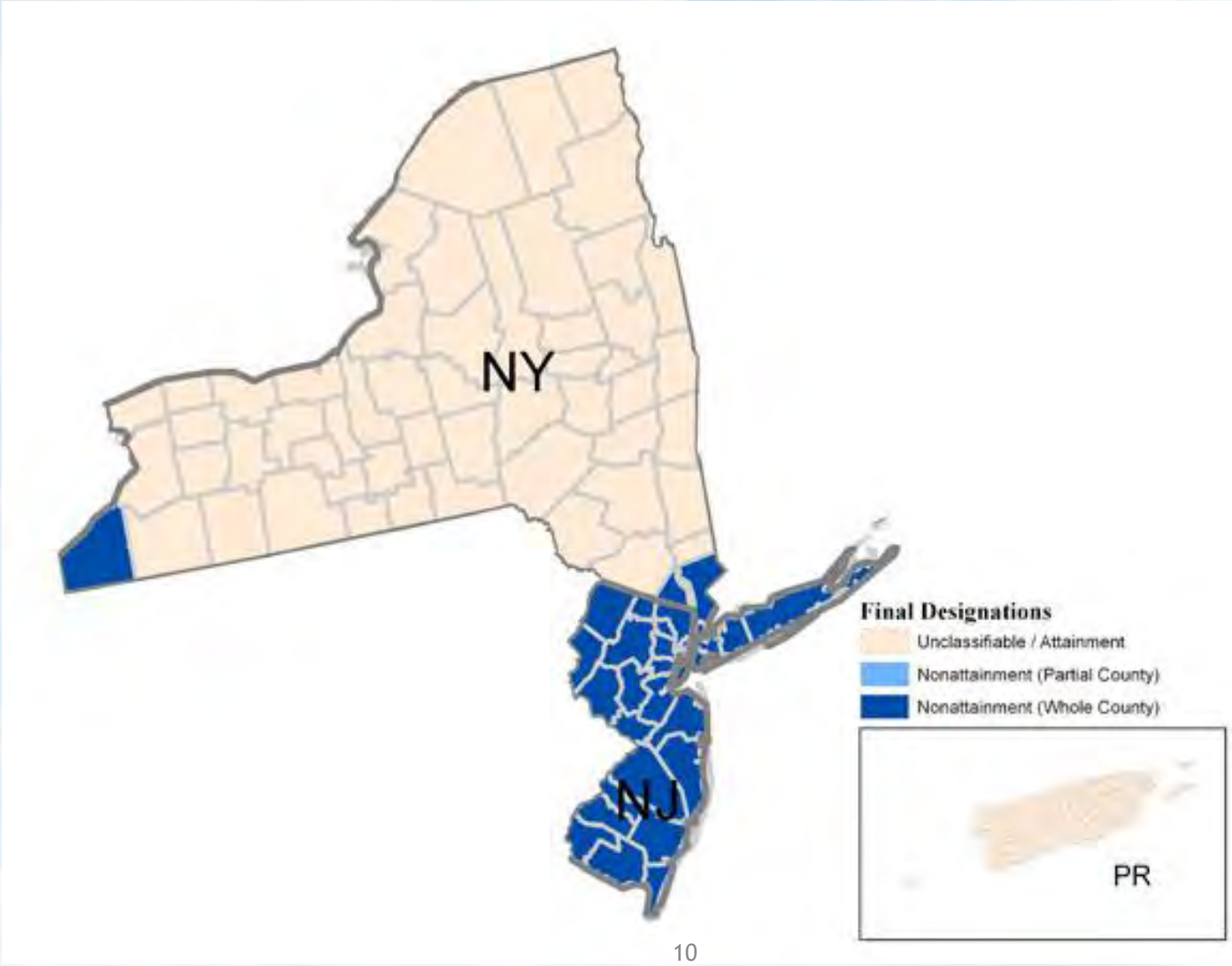
2008 Ground Level Ozone Standards – Region 2



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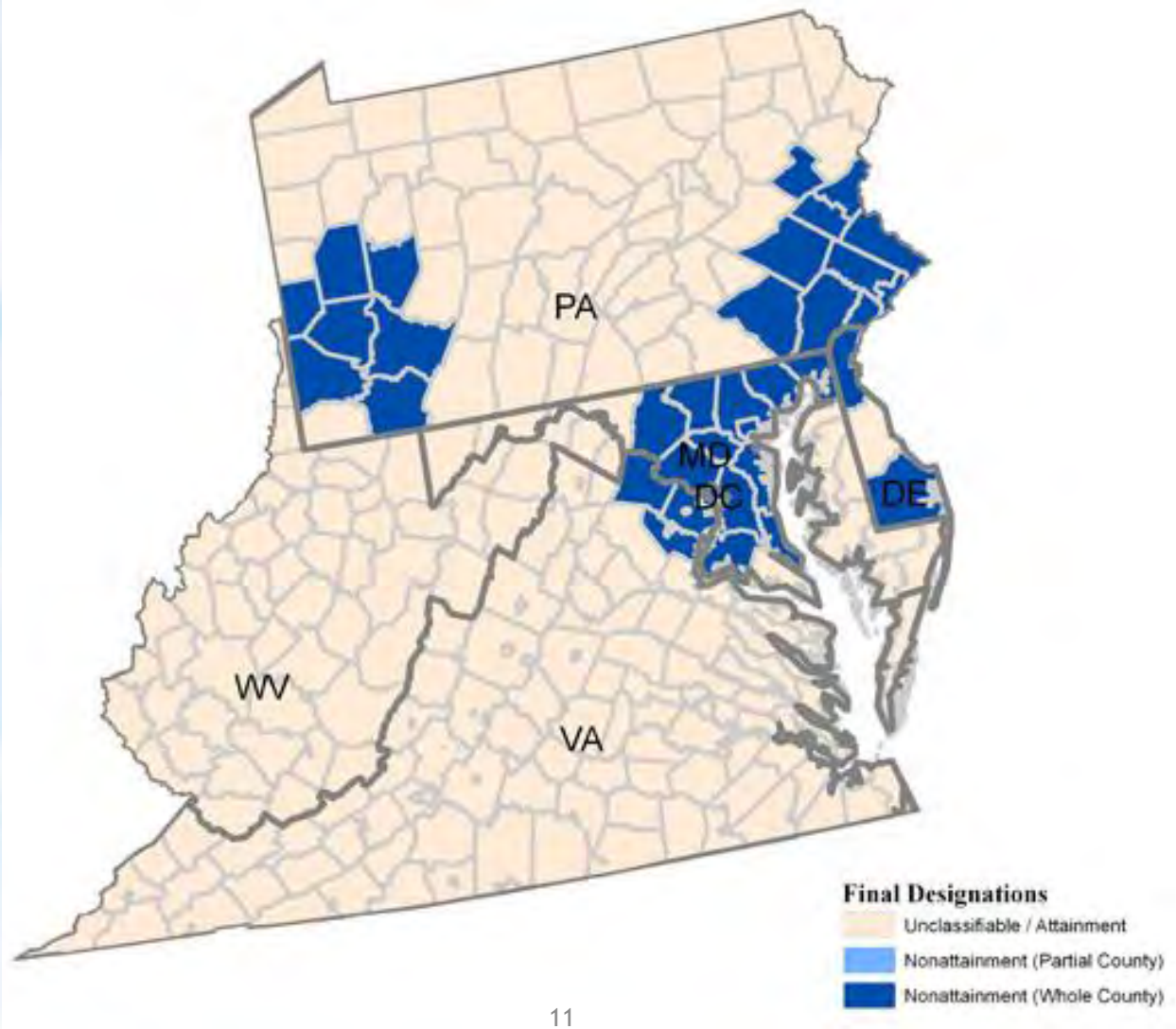
2008 Ground Level Ozone Standards – Region 3



2008 Ground Level Ozone Standards – Region 4

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2008 Ground Level Ozone Standards – Region 5

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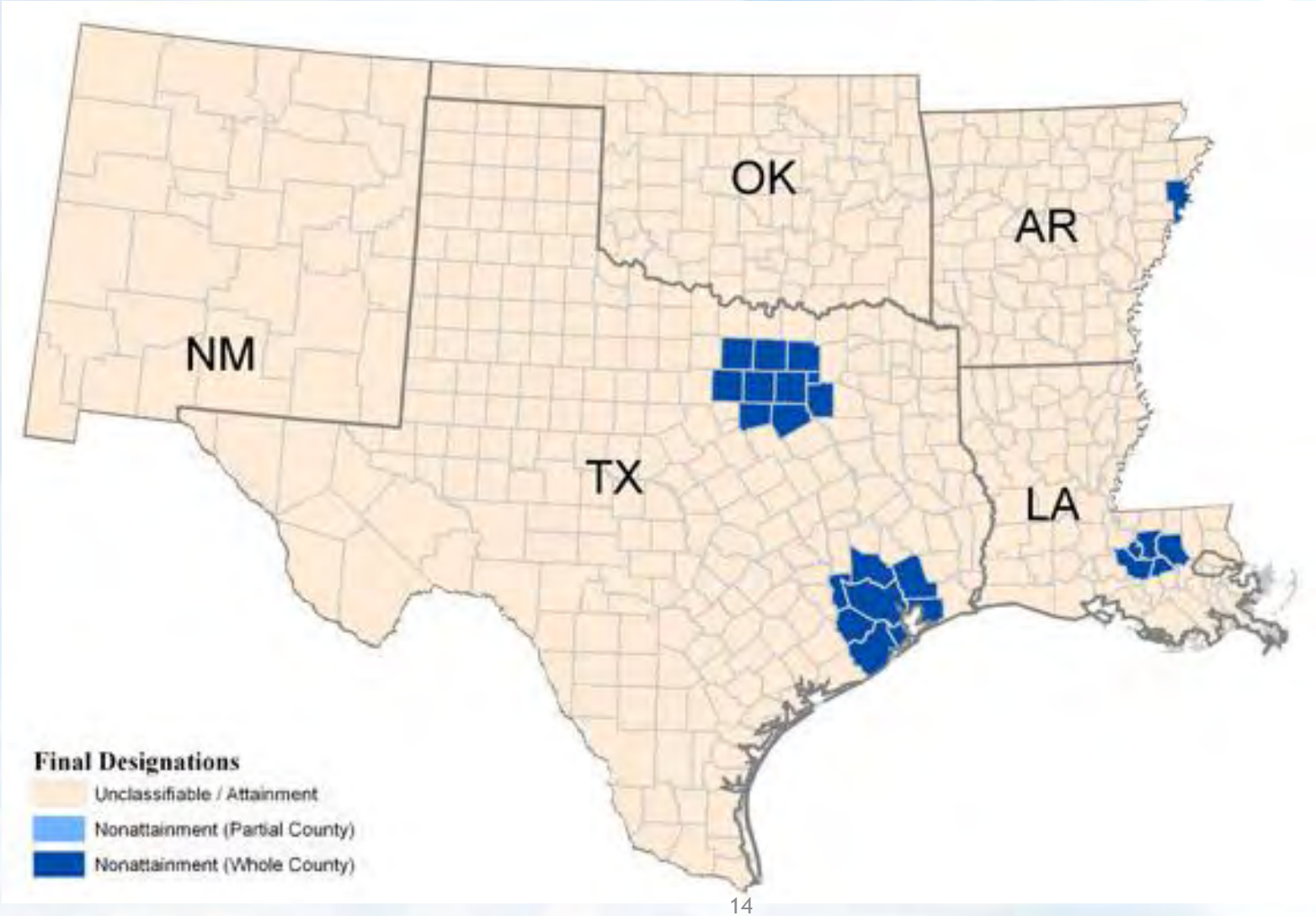
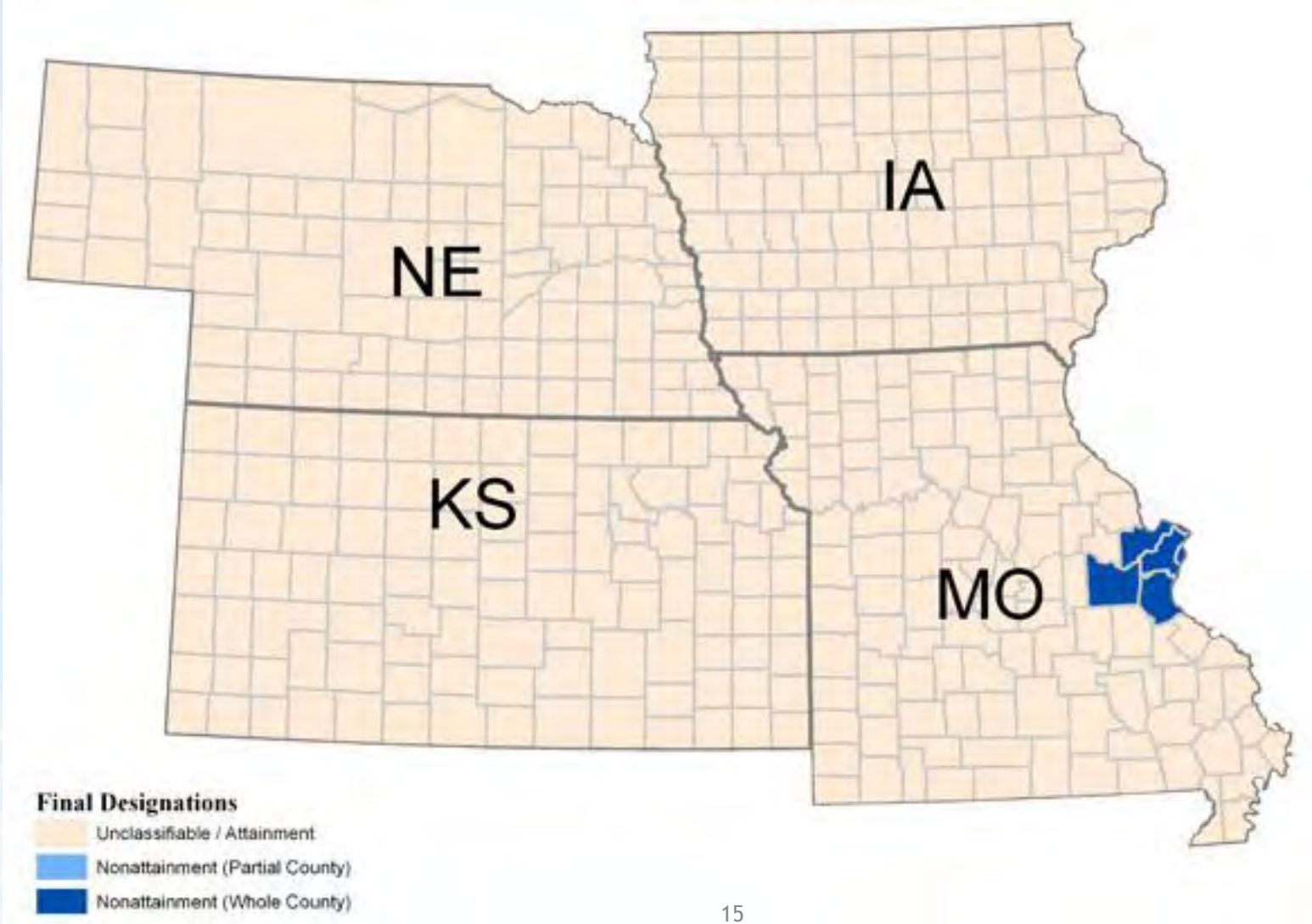
2008 Ground Level Ozone Standards – Region 6



2008 Ground Level Ozone Standards – Region 7



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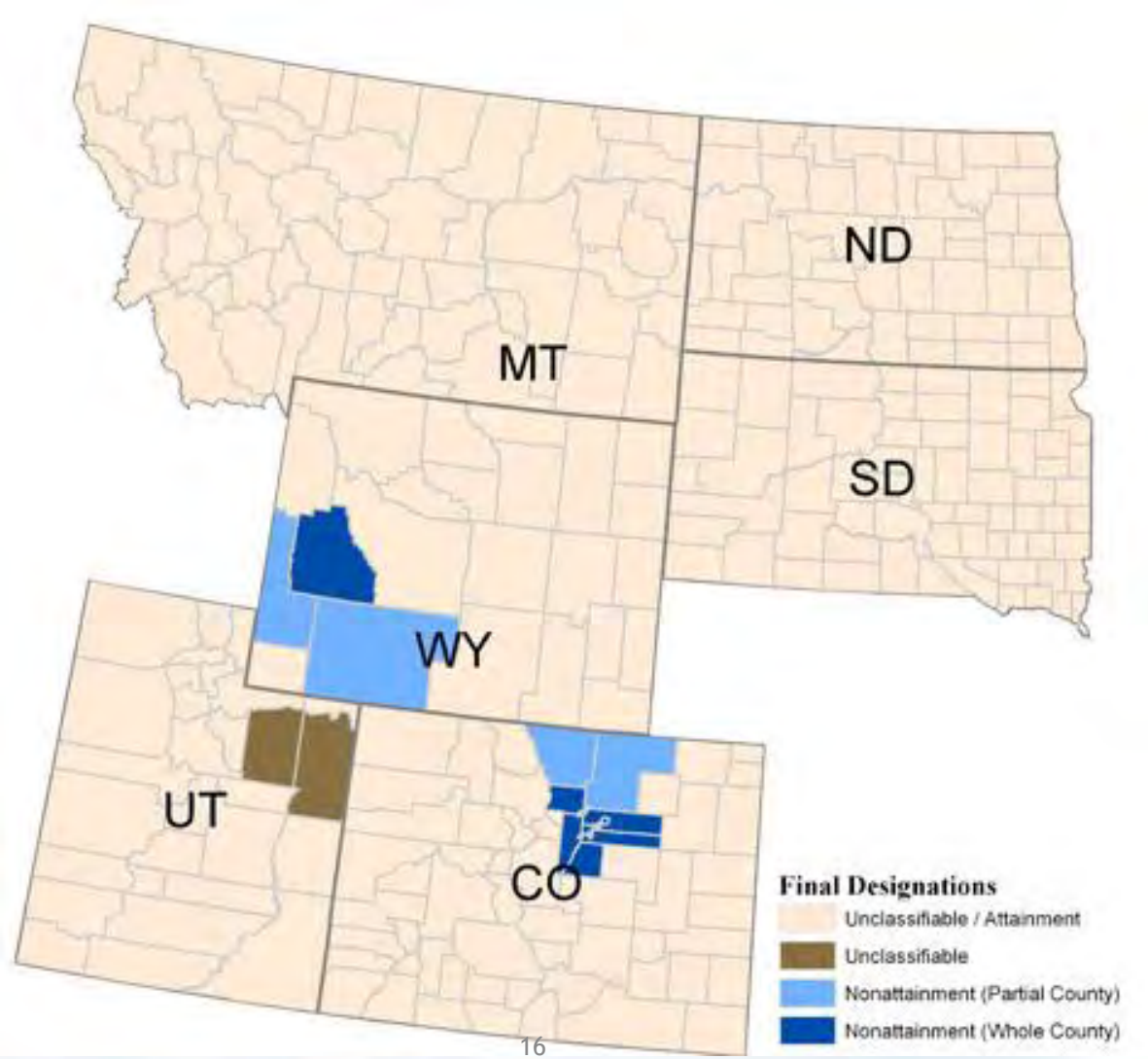
2008 Ground Level Ozone Standards – Region 8



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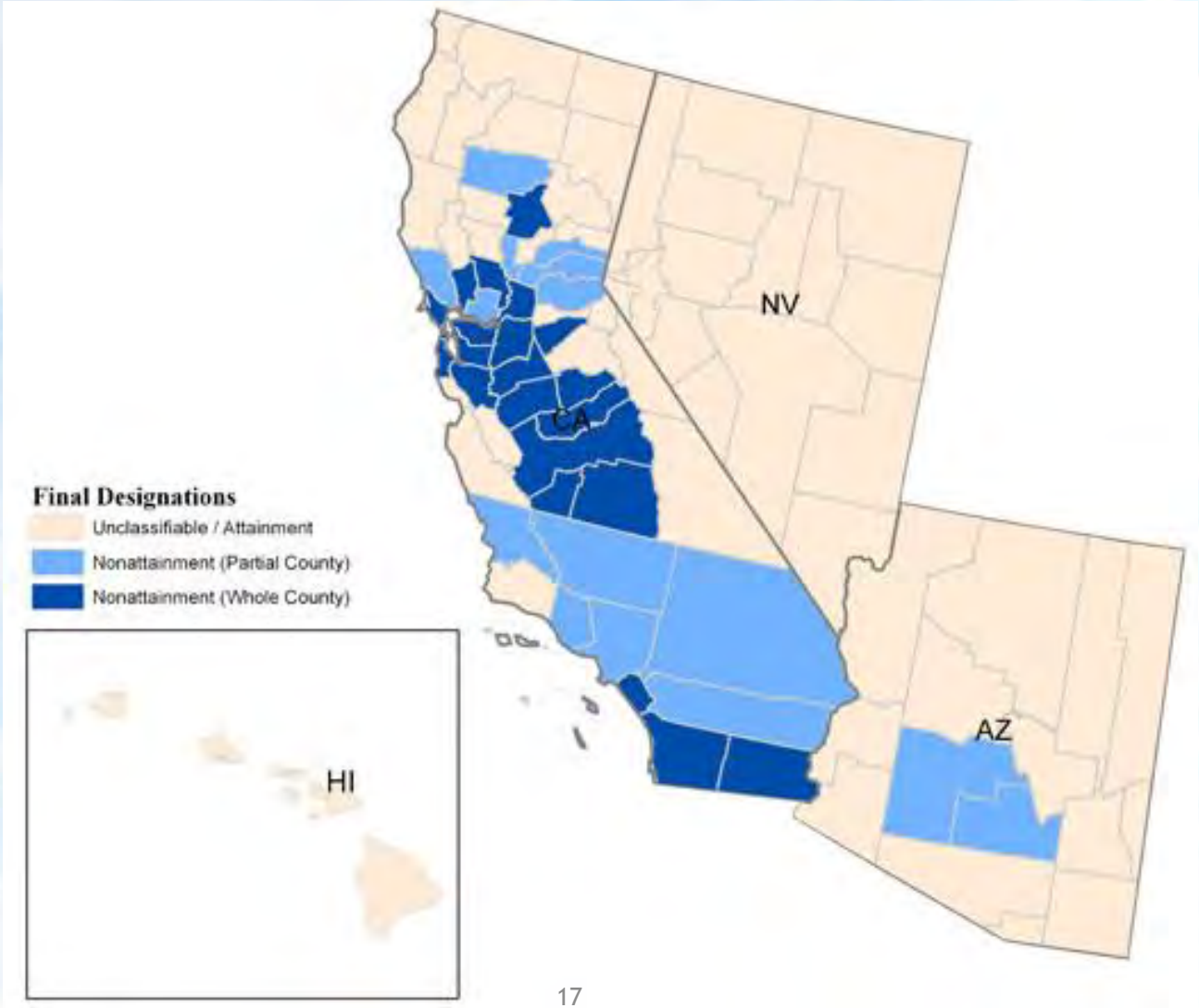
2008 Ground Level Ozone Standards – Region 9



2008 Ground Level Ozone Standards – Region 10

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North Carolina PM2.5 Design Values

State	County	Local site name	2011-2013 Annual Design Value (µg/m3)	2011-2013 24-hr Design Value (µg/m3)
North Carolina	Alamance	Hopedale	8.9	20
North Carolina	Buncombe	Board Of Ed. Bldg.	8.6	17
North Carolina	Caswell	Cherry Grove	8.3	18
North Carolina	Catawba	Hickory Water Tower	9.5	19
North Carolina	Chatham	Pittsboro	7.6	18
North Carolina	Cumberland	William Owen School	9.1	19
North Carolina	Davidson	Lexington water tower	10.1	20
North Carolina	Duplin	Kenansville	8.1	19
North Carolina	Durham	Durham Armory	8.4	18
North Carolina	Edgecombe	Rocky Mount	8.3	19
North Carolina	Forsyth		8.9	19
North Carolina	Forsyth		8.8	18
North Carolina	Gaston	Grier School	9.4	21
North Carolina	Guilford	Mendenhall School	8.7	20
North Carolina	Guilford	Colfax	8.7	18
North Carolina	Haywood	Waynesville Rec Center	9.1	20
North Carolina	Jackson	PM2.5 COLOCATED MONITORS LOCATED ON TOP OF BUILDING	8.3	16
North Carolina	Johnston	West Johnston Co.	8.1	18
North Carolina	Lenoir	Lenoir Co. Comm. Coll.	8.3	21
North Carolina	McDowell	Marion Sch.	9.0	18
North Carolina	Martin	Jamesville School	7.7	22
North Carolina	Mecklenburg	Garinger High School	9.6	20
North Carolina	Mecklenburg	Montclaire Elementary School	9.8	22
North Carolina	Mecklenburg	OAKDALE	9.1	19
North Carolina	Mitchell	Spruce Pine Town Hall	8.5	18
North Carolina	Montgomery	Candor: EPA CASTNet Site	8.5	19
North Carolina	New Hanover	Castle Hayne	7.3	21
North Carolina	Pitt	Pitt Agri. Center	7.8	19
North Carolina	Robeson	Linkhaw	8.9	19
North Carolina	Rowan	Rockwell	9.4	19
North Carolina	Swain	Bryson City	8.8	19
North Carolina	Wake	Millbrook School	10.1	22
North Carolina	Wake	Finley Farm	8.7	20
North Carolina	Watauga	Boone (School)	7.6	16
North Carolina	Wayne	Dillard School	9.0	20

Florida PM2.5 Design Values

County	2011-2013 Annual Design Value ($\mu g/m^3$)	2011-2013 24-hour Design Value ($\mu g/m^3$)
Alachua	7.4	20
Brevard	6.1	16
Citrus	7	17
Duval	7.5	20
Escambia	8.4	19
Hillsborough	7.1	16
Lee	6.5	14
Leon	8.9	22
Miami-Dade	7.1	15
Orange	6.5	15
Palm Beach	5.7	15
Pinellas	6.8	15
Polk	7	15
Sarasota	6.6	16
Seminole	7	17
Volusia	6.8	16

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South Carolina PM2.5 Design Values

State	County	Local site name	2011-2013 Annual Design Value (µg/m3)	2011-2013 24-hr Design Value (µg/m3)
South Carolina	Charleston	FAA Tower	8.9	21
South Carolina	Charleston	CHARLESTON PUBLIC WORKS	8.2	20
South Carolina	Chesterfield	CHESTERFIELD	8.4	19
South Carolina	Edgefield	TRENTON	9.3	20
South Carolina	Florence	Williams Middle School	9.6	20
South Carolina	Greenville	TAYLORS		
South Carolina	Greenville	Greenville ESC	10.0	22
South Carolina	Greenville	Hillcrest Middle School	9.5	19
South Carolina	Lexington	IRMO	10.3	22
South Carolina	Richland	PARKLANE	9.4	20
South Carolina	Richland	BATES HOUSE	10.1	22
South Carolina	Spartanburg	T.K. Gregg	9.9	20

Virginia PM2.5 Design Values

State	County	Local site name	2011-2013 Annual Design Value (µg/m3)	2011-2013 24-hr Design Value (µg/m3)
Virginia	Albemarle	Albemarle High School	7.9	18
Virginia	Arlington	Aurora Hills Visitors Center		
Virginia	Charles	Shirley Plantation	8.2	20
Virginia	Chesterfield	Bensley Armory		
Virginia	Fairfax	Lee District Park	8.8	22
Virginia	Frederick	Rest	9.5	23
Virginia	Henrico	MathScience Innovation Center	8.7	21
Virginia	Henrico	DEQ Piedmont Regional Office	8.3	18
Virginia	Loudoun	Broad Run High School, Ashburn	8.9	20
Virginia	Page	Luray Caverns Airport	8.1	19
Virginia	Roanoke	East Vinton Elementary School		
Virginia	Rockingham	ROCKINGHAM CO. VDOT	8.9	21
Virginia	Alexandria City	Alexandria Health Dept.		
Virginia	Bristol City	Highland View Elementary School	9.0	18
Virginia	Hampton City	NASA Langley Research Center	7.9	21
Virginia	Lynchburg City	LYNCHBURG CITY WATER TOWER	7.8	17
Virginia	Norfolk City	NOAA	8.5	21
Virginia	Roanoke City	ROUND HILL MONTESSORI SCHOOL		
Virginia	Salem City	Salem High School	9.1	19
Virginia	Virginia Beach City	DEQ Tidewater Regional Office	8.5	22

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Georgia PM2.5 Design Values

County	2011-2013 Annual Design Value ($\mu g/m^3$)	2011-2013 24-hour Design Value ($\mu g/m^3$)
Bibb	11.8	25
Clarke	9.9	23
Clayton	11.1	
DeKalb [7]	10.5	21
Dougherty		26
Floyd	10.8	
Hall	9.5	19
Houston	9.9	20
Walker	10.5	22
Wilkinson	11.2	23

Other Important Documents and Links

- Clean Air Act itself:
  - Title I (Air Pollution Control and Prevention), Part D
- Title I Implementation Documents
  - April 16, 1992 (57 FR 13498)
  - November 25, 1992 (57 FR 55620)
  - 1997 Ozone 8-hour NAAQS (Phase 1 and Phase 2) – See Appendix C3 – EPA still dealing with vacated rules and remands
  - 1997 $PM_{2.5}$ (Phase 1) – See Appendix C4 (including NSR) – EPA still dealing with vacated rules and remands
- EPA's "Clean Data Policy" (Ozone and PM2.5)
  - www.epa.gov/air/urbanair/sipstatus/policy_details.html
  - www.epa.gov/air/urbanair/sipstatus/docs/clean_data_policy_signed_05101995.pdf
  - www.epa.gov/air/urbanair/sipstatus/docs/pm25_clean_data_policy_14dec2004.pdf
- 2006 PM2.5 (24-hour) NAAQS
  - www.epa.gov/pmdesignations/2006standards/index.htm
  - www.epa.gov/pmdesignations/2006standards/documents/2011-01/finaltable.htm
  - www.epa.gov/pm/2013/20131115fr.pdf

Other Important Documents and Links

- 2012 PM2.5 (Annual) NAAQS
  - www.epa.gov/airquality/particlepollution/designations/2012standards/index.htm
  - www.gpo.gov/fdsys/pkg/FR-2012-06-29/pdf/2012-15017.pdf
  - www.gpo.gov/fdsys/pkg/FR-2013-01-15/pdf/2012-30946.pdf
- 2008 Ozone 8-hour NAAQS
  - www.epa.gov/ozonedesignations/2008standards/state.htm
  - www.epa.gov/ozonedesignations/2008standards/final/finaldes.htm
  - www.gpo.gov/fdsys/pkg/FR-2013-06-06/pdf/2013-13233.pdf
- 2008 Lead NAAQS
  - www.epa.gov/leaddesignations/2008standards/regs.html#4
  - www.epa.gov/airquality/lead/designations/2008standards/state.html
  - www.epa.gov/leaddesignations/
  - www.epa.gov/airquality/lead/pdfs/20110708QAguidance.pdf

Other Important Documents and Links

- 2012 PM2.5 (Annual) NAAQS
  - www.epa.gov/airquality/particlepollution/designations/2012standards/index.htm
  - www.gpo.gov/fdsys/pkg/FR-2012-06-29/pdf/2012-15017.pdf
  - www.gpo.gov/fdsys/pkg/FR-2013-01-15/pdf/2012-30946.pdf
- January 15, 2015 (80FR 2206) - Air Quality Designations for the 2012 Primary Annual Fine Particle (PM2.5) NAAQS – Effective date is April 15, 2015
  - 14 areas in 6 states designated non-attainment
  - 12 tribal areas designated non-attainment
  - Some areas were deferred - EPA expects that additional monitoring data collected after 2013 will provide the requisite amount of valid data needed for designations.

Relationship between Regional Rules and Local NA Area Rules – PM and Ozone

- 2008: United States Court of Appeals for the District of Columbia Circuit (*NRDC v. EPA*) remanded the provision of the Phase 2 Ozone Implementation Rule determining that the NOx SIP Call satisfies NOx RACT for EGUs
  - EPA had failed to show that compliance with the NOx SIP Call would achieve at least RACT-level reductions in each nonattainment area.
- The issue as to whether the CAIR satisfies NOx RACT for EGUs was not addressed by the court in the *NRDC v. EPA* case.
  - However, the EPA decided that it would be appropriate to reconsider this determination also in light of the earlier decision in *NRDC v. EPA*.
- On April 25, 2011, the EPA granted the petition for reconsideration of the presumption that compliance with the CAIR could satisfy RACT/RACM requirements for the 1997 PM2.5 NAAQS.
- Proposed rule June 9, 2014 (79FR 32892) – "Withdrawal of the Prior Determination or Presumption That Compliance With the CAIR or the NOX SIP Call Constitutes RACT or RACM for the 1997 8-Hour Ozone and 1997 Fine Particle NAAQS"

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1-Hour SO_2 NAAQS Designations and SIPs

March 3, 2015

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Overview

- Background
- Designation Process
  - Typical Designation Process
  - "Original" SO_2 Designation Process
  - "Revised" SO_2 Designation Process
- SIP Process for Various Designations
  - Nonattainment areas
  - Attainment Areas
  - Unclassifiable Areas

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SO_2 1-hr NAAQS Background (1/2)

- June 2010 – EPA promulgated the 1-hr SO_2 primary NAAQS as a replacement for the existing annual and 24 hour primary NAAQS

  75 ppb as the 3 year average of the 99th percentile of the annual distributions of the daily maximum 1-hour concentrations

- August 2010 – The 1-hr SO_2 NAAQS went into effect

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SO_2 1-hr NAAQS Background (2/2)

- The promulgation of a new NAAQS set in motion a series of steps required by CAA
  - Designating areas as meeting or not meeting the standard
  - Developing State Implementation Plans (SIPs) for implementation of the standard
- EPA is relying on what most consider to be a non-traditional approach to the designation and SIP process

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SO_2 Transport and Dispersion

- SO_2 is not involved in photochemical reactions
- SO_2 impacts are primarily local
- EPA says the focus for the designations should be on areas with the highest SO_2 concentrations
- EPA says the existing monitoring network does not adequately capture these areas

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Existing SO_2 Monitoring Network

- EPA analyzed the approximately 488 monitoring sites across the country
- EPA determined that ~35% of the monitors were located near sources of high SO_2 emissions and that ~46% were located to assess the general population exposure to SO_2
- EPA concluded the network was not adequate to support the implementation and proposed to add 348 new monitors
- Some air agencies commented on resource limitations based on the number of proposed monitors

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Future SO_2 Monitoring Network (Minimum Requirements)

- Add monitors in urban areas >10,000 people (a Core Based Statistical Area, or CBSA) where there is a higher coincidence of population and emissions using a Population Weighted Emission Index (PWEI)
  - >1,000,000 -> 3 SO_2 monitors
  - 100,000 < PWEI < 1,000,000 -> 2 SO_2 monitors
  - 5,000 < PWEI < 100,000 -> 1 SO_2 monitor
- EPA estimates the addition of 163 monitors in 131 CBSAs (a reduction from 348 in the proposed rule)

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EPA's General SO_2 NAAQS Designation Approach

- EPA addressed the reduction in the number of monitors from the proposed rule to the final rule by adding a new concept into the final rule… MODELING as a tool for designations
- EPA is requiring a hybrid approach of monitoring and dispersion modeling
- A hybrid approach was laid out in the 2010 final rule preamble but has evolved

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Designating SO_2 Attainment – 2010 Final Rule Preamble (1/3)

"This revised approach would better address: 1) the unique source-specific impacts of SO_2 emissions; 2) the special challenges SO_2 emissions present in terms of monitoring short-term SO_2 levels for comparison with the NAAQS in many situations; **3) the superior utility that modeling offers for assessing SO_2 concentrations**; and 4) the most appropriate method for ensuring that areas attain and maintain the new 1-hour SO_2 NAAQS in a manner that is as expeditious as practicable, taking into account the potential for substantial SO_2 emissions reductions from forthcoming national and regional rules that are currently underway."

Preamble to SO_2 NAAQS final rule, Section III, pg 113

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Designating SO_2 Attainment – 2010 Final Rule Preamble (2/3)

"Instead, in areas without currently operating monitors but with sources that might have the potential to cause or contribute to violations of the NAAQS, we anticipate that the identification of NAAQS violations and compliance with the 1-hour SO_2 NAAQS would primarily be done through refined, source-oriented air quality dispersion modeling analyses, supplemented with a new, limited network of ambient air quality monitors."

Preamble to SO_2 NAAQS final rule, Section III, pg 116-117

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Designating SO_2 Attainment – 2010 Final Rule Preamble (3/3)

"We expect that states would initially focus performance of **attainment demonstration modeling on larger sources (e.g., those > 100 tons per year (tpy) of SO_2)**, and that states would also identify and eventually conduct refined modeling of any other sources that may be anticipated to cause or contribute to a violation to determine compliance with the new SO_2 NAAQS."

Preamble to SO_2 NAAQS final rule, Section VI.C, pg 198

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Role of Modeling in Initial Designations

- Initial designations will be based on monitoring data **and, if provided by states, "appropriate" MODELING**
- Areas with no monitoring data will be designated ***unclassifiable***
- Area designated ***attainment*** if monitoring **and** modeling show no violations
- Area designated ***nonattainment*** if monitoring data **or** modeling results violate the standard
- No areas will be designated attainment unless attainment is demonstrated by monitoring **and** appropriate modeling data

Modeling Requirement for Infrastructure SIP (1/3)

- Infrastructure SIPs for unclassifiable and attainment areas
  - States must include the traditional elements in the SIPs
  - EPA anticipated that the SIPs would also serve as substantive attainment SIPs
  - What does the above comment from EPA mean? How does the hybrid approach impact the Infrastructure SIPs?

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Modeling Requirement for Infrastructure SIP (2/3)

- The draft 9/11 SIP guidance clarifies the role of the model and documents modeling methods
- The draft 9/11 SIP guidance indicates that the Infrastructure SIPs should include an attainment demonstration for portions of the state that were not being designated nonattainment based on monitor data

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Modeling Requirement for Infrastructure SIP (3/3)

- Significant public interest in the guidance
- Opinions on modeling vs monitoring were varied
- EPA engaged in stakeholder outreach to strategize on a path forward
- EPA decided to eliminate modeling as a requirement of the Infrastructure SIPs while EPA worked through stakeholder process
- April 2012 – EPA sent letters to each state and tribe leader

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Path Forward as a Result of Stakeholder Outreach

- February 2013 – EPA released a "Next Steps" guidance document
  - Modeling still on the table
  - Allow monitor and model-based approaches
  - No requirement to model in areas with monitors
  - Source-oriented monitoring is an option
- May 2013 – EPA released draft Technical Analysis Documents (TADs) for public comment
  - SO2 NAAQS Designations Modeling TAD
  - SO2 NAAQS Designations Source-Oriented Monitoring TAD
- August 5, 2013 (78FR 47191) – EPA published the initial set of SO2 (1-hour) Nonattainment areas (effective October 4, 2013)
- December 2013 - EPA released final draft TADs

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Path Forward as a Result of Stakeholder Outreach

- May 13, 2014 (79FR 27446) – EPA published the proposed SO2 “Data Requirements Rule” (DRR)
- Final DRR is expected later in 2015

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Forthcoming Data Requirements Rule

- All of the above documents make reference to and are a prelude to final guidance that will be contained in a forthcoming Data Requirements Rule
- States are anxiously awaiting the Data Requirements Rule to move forward with the next two rounds of the designation process

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NAAQS Implementation Approach for SO2 Designations

Round 1:
Nonattainment Designations Based on 2009-2011/12 Monitoring

Round 2:
Nonattainment/Attainment Designations Based on Modeling of Larger Sources

Round 3:
Nonattainment/Attainment Designations Based on Ambient Monitoring near Larger Sources

Round 3:
Unclassifiable Designations Based on No Monitoring/Modeling

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Timing for Round 1 Designations

- June 2013 – EPA promulgated the initial nonattainment designations
- April 2015 – State SIPs demonstrating attainment for areas designated nonattainment are due

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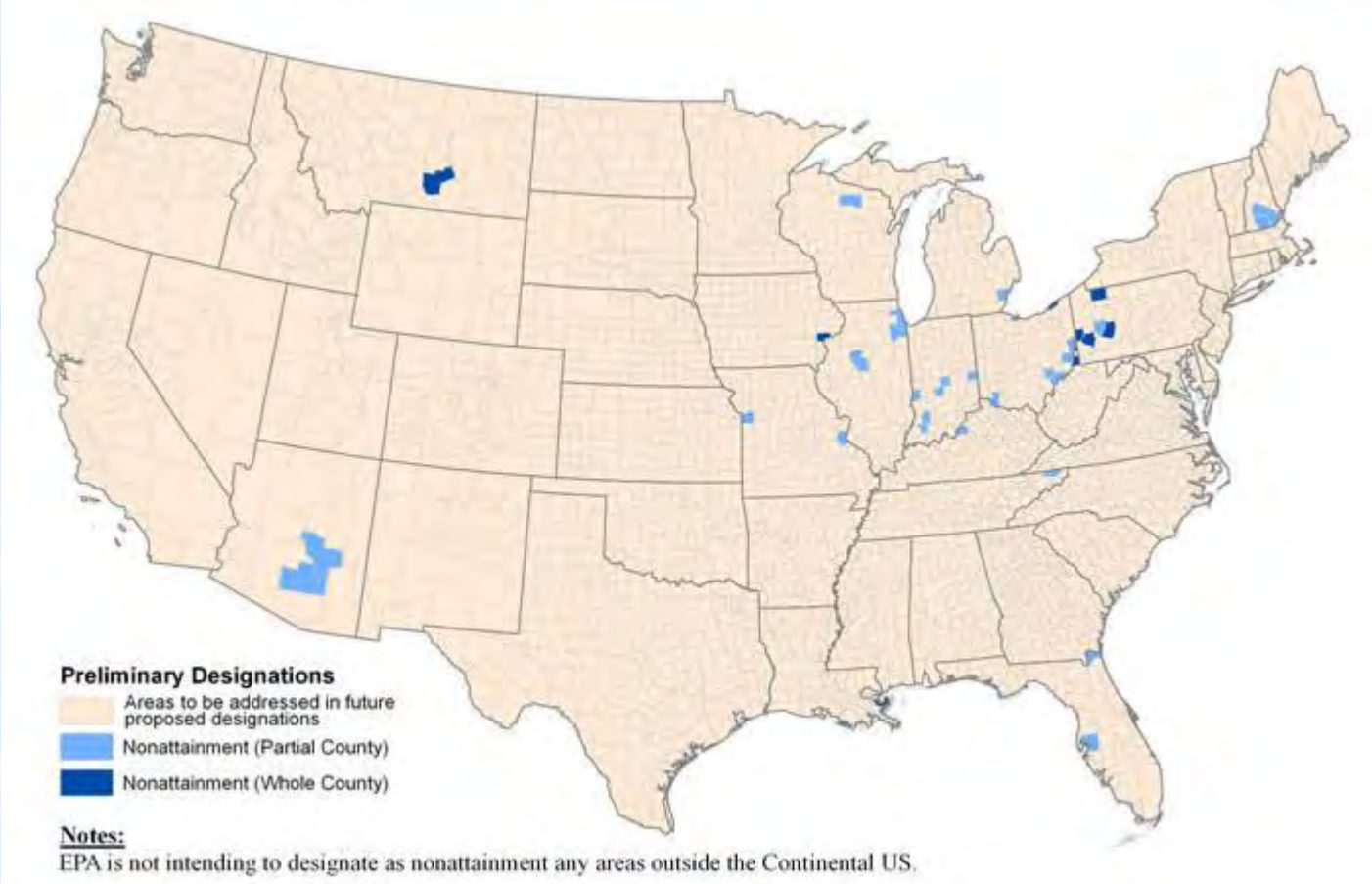
Initial (Round 1) SO2 NA Designations



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Future Round 2 and 3 Designations

- EPA to clarify areas that will require an attainment or nonattainment designation based on source-oriented monitoring or dispersion modeling results
- EPA's Next Steps guidance indicates focus will be on characterizing air quality in areas with larger sources
  - E.g., >2,000-3,000 tpy of SO_2 in populated areas
  - E.g., >5,000-10,000 tpy of SO_2 in rural areas

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Timing for Future Designations

- Now until January 15, 2016 – States must provide:
  - Listings of SO2 sources to be specifically addressed due to EPA regional administrators
  - A determination of its election to monitor versus model each source/area
  - Modeling protocols
- July 2016 – Annual monitoring network plans due to regional administrators. Some areas will have new SO2 monitors. Some existing monitors will be relocated
- January 1, 2017 – New/relocated ambient monitors must be operational.
- January 13, 2017:
  - Modeling analyses due to EPA regional administrators.
  - State's modeling to show attainment or nonattainment (with recommended nonattainment area boundaries)

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Timing for Future Model-Based Designations

- August 2017 – EPA issues "120 day" letters to states – provides states with opportunity to review any modifications made by EPA to state's January 13, 2017 submittal.
- December 2017 – EPA issues final designations for modeled areas (effective February 2018). EPA expects to be able to designate the majority of the country at this point. Only areas subject to ongoing ambient monitoring to be designated later
- August 2019 – Nonattainment SIPs due for modeled nonattainment areas (18 months after the effective date of designations)

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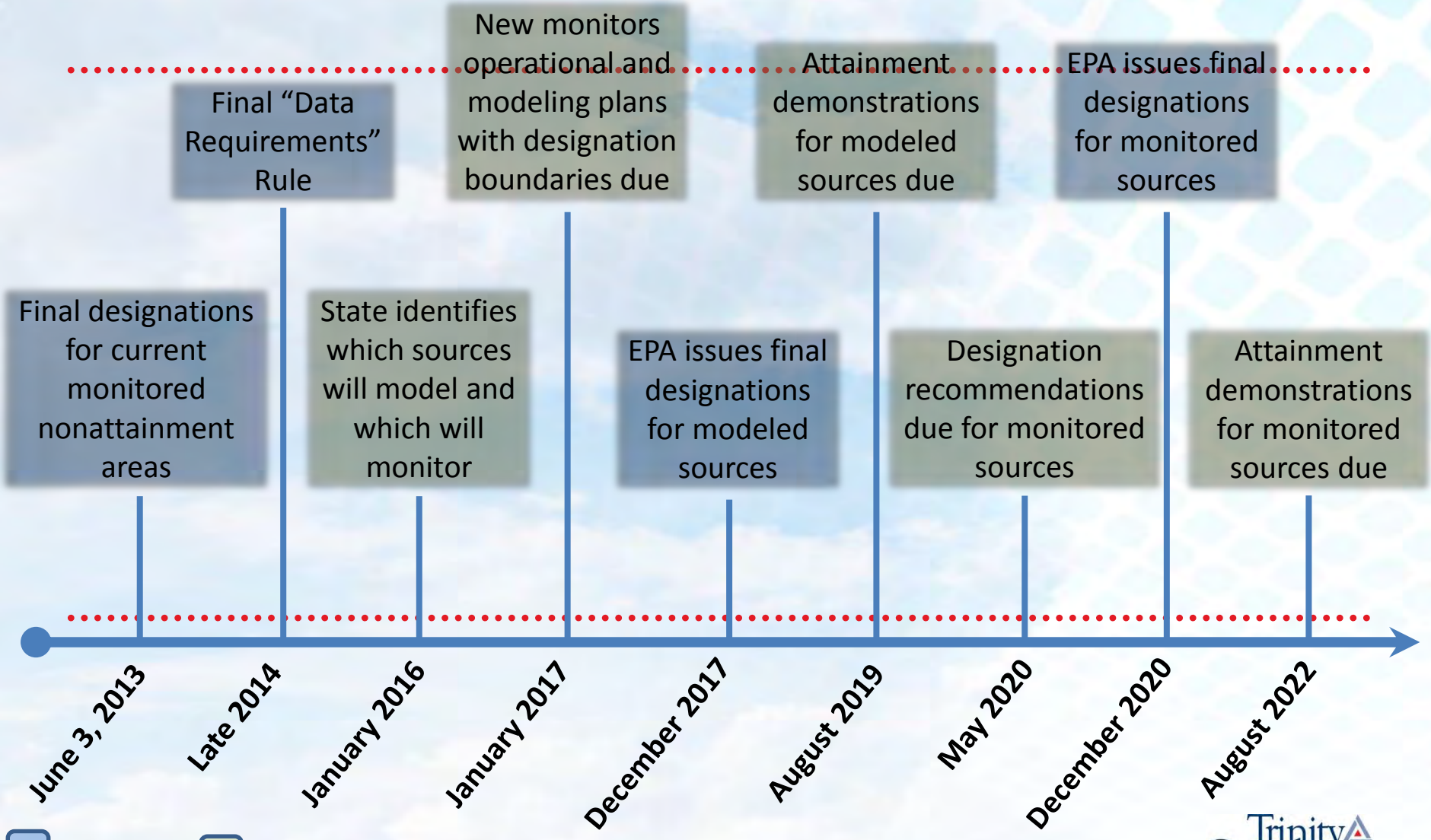
Timing for Future Monitor-Based Designations

- January 1, 2017 – States have new monitors deployed and operational.
- May 2020 – States certify monitoring data and submit data that shows attainment or data that shows nonattainment with recommended nonattainment area boundaries (3-years of ambient data – 2017 – 2019)
- August 2020 – EPA issues "120 day" letter to states
- December 2020 – EPA issues final designations for monitored areas (effective February 2021). EPA expects this round will address all remaining areas.
- August 2022 – Nonattainment SIPs due for monitored nonattainment areas (18 months after the effective date of designations)

EPA's Revised 2010 SO_2 NAAQS Implementation Timeline



Source: EPA

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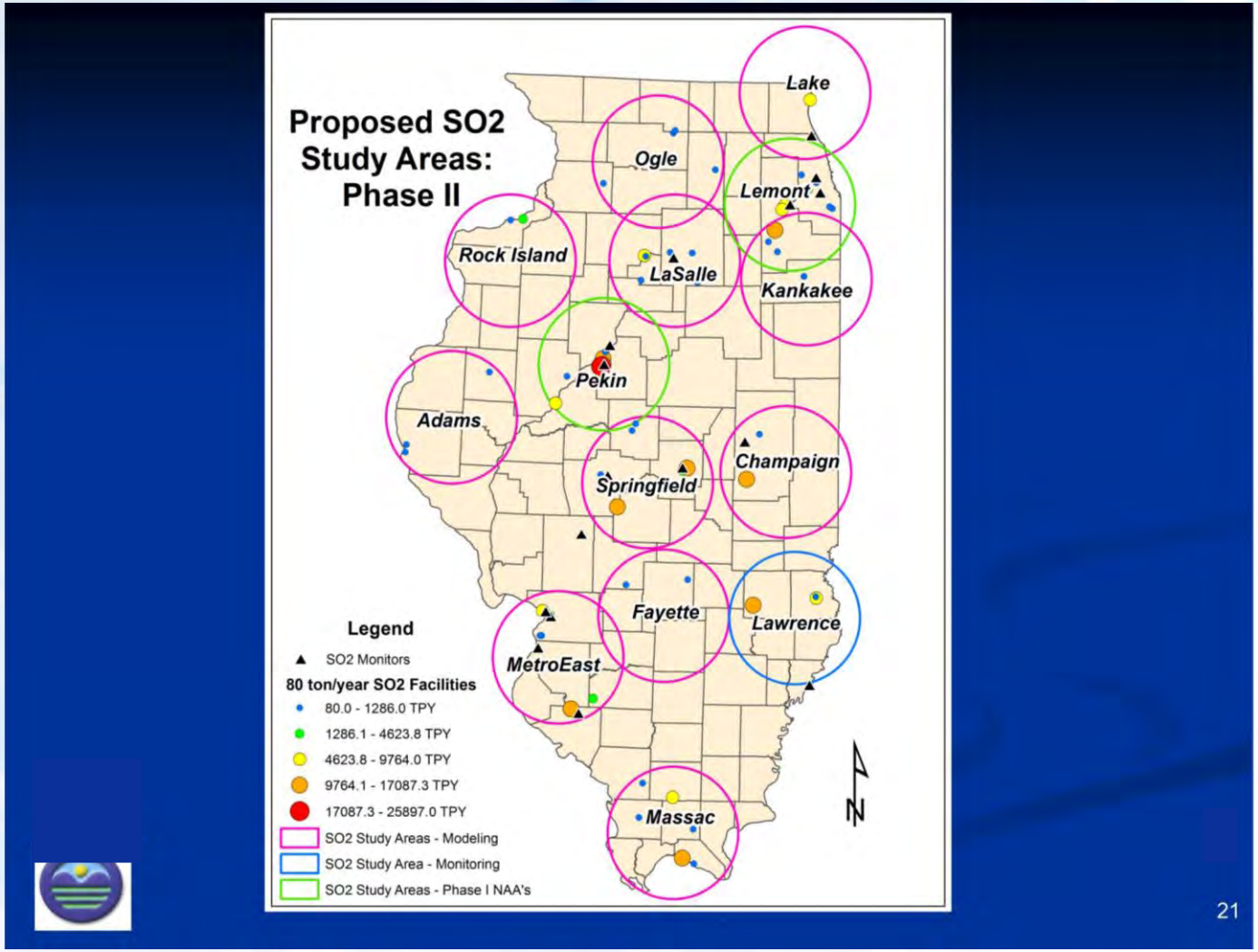
Illinois SO2 modeling/monitoring NAAQS Assessment



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Selecting Sites for Monitoring vs. Modeling

- Focus is on characterizing air quality around larger sources
- Sources to be identified by
  - Annual emissions
  - Proximity to population
- Consideration should be given to:
  - Existing air quality data
  - Existing modeling
  - Meteorological data
  - Geographic influences

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EPA's SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD) - December 2013 Draft

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Narrowing In on Monitoring Location(s)

- Once states decide what areas to use monitoring for an area (instead of modeling), state must site the specific monitor location(s)
- Location(s) should capture peak 1-hour concentrations
- Use historical data (past monitoring, past modeling, other)
- Could conduct new modeling
- Could conduct exploratory monitoring
- Source oriented monitoring to be summarized in state's future annual monitoring plans

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EPA's SO_2 NAAQS Designations Modeling Technical Assistance Document (TAD) – December 2013 Draft

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Modeling TAD

- Use most recent 3 years of **actual emissions** instead of maximum allowable emissions
- Use **3 years of meteorological data**, instead of one (onsite) to five (offsite) years of data
- Use **actual stack heights**, instead of GEP stack heights as required for modeling for NSR/PSD (unless state opts to use allowable rather than actual emissions, then the GEP height should be used)
- Can **exclude intermittent sources** such as emergency generators if can demonstrate the generator operation will not contribute to the form of the standard

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Modeling TAD and Use of Actual Emissions (1/2)

- Emissions input to model should reflect emissions that occurred during the three year meteorological record selected for the modeling
- Clear cut when have 3 years of SO_2 CEMS data
- Absent CEMS data, states must develop an approach for estimating emissions and addressing emissions variability

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Modeling TAD and Use of Actual Emissions (2/2)

- Use the best information available from which to calculate temporally varying emissions
  - Production logs
  - Fuel usage logs
  - Sulfur in fuels and raw materials
- Possible approaches
  - AP-42 factor multiplied times variable throughput rate
  - Distribute annual emissions based on know ratio (e.g. monthly coal usage/annual coal usage)
  - Other (e.g. Spare Matrix Operator Kernel Emissions Model [SMOKE])
- Ensure conservation of mass (the sum of the hourly emissions should equal the annual total

Updated EPA Modeling Guideline and Model?

- A proposed update to the Guideline on Air Quality Models is due out in early May
- A new version of AERMOD is due out soon.

Nonattainment SIPs

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Modeling Attainment Demonstration

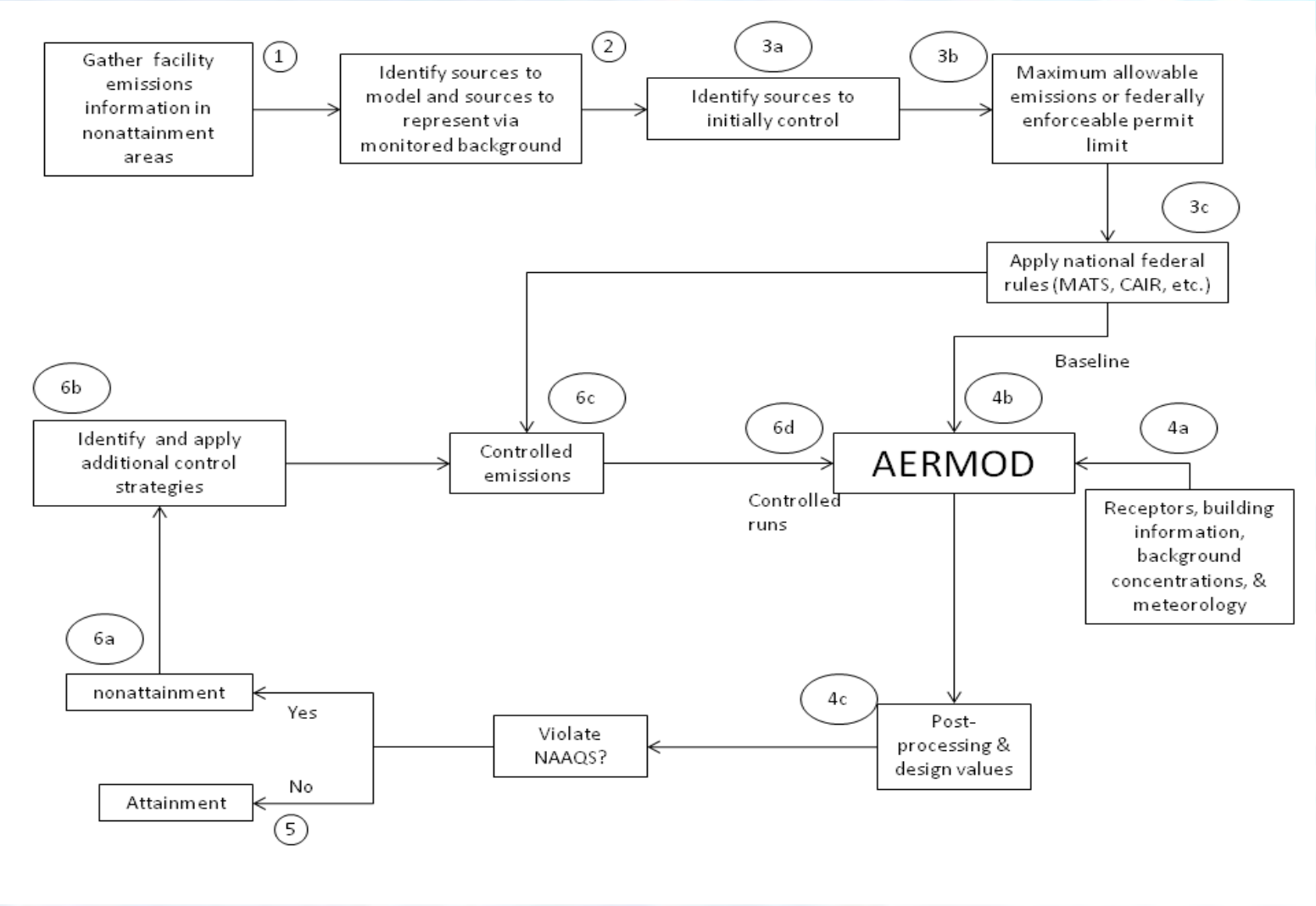

Image taken from: EPA's Guidance for 1-Hour SO2 Nonattainment Area SIP Submissions (October 2013 - Draft)

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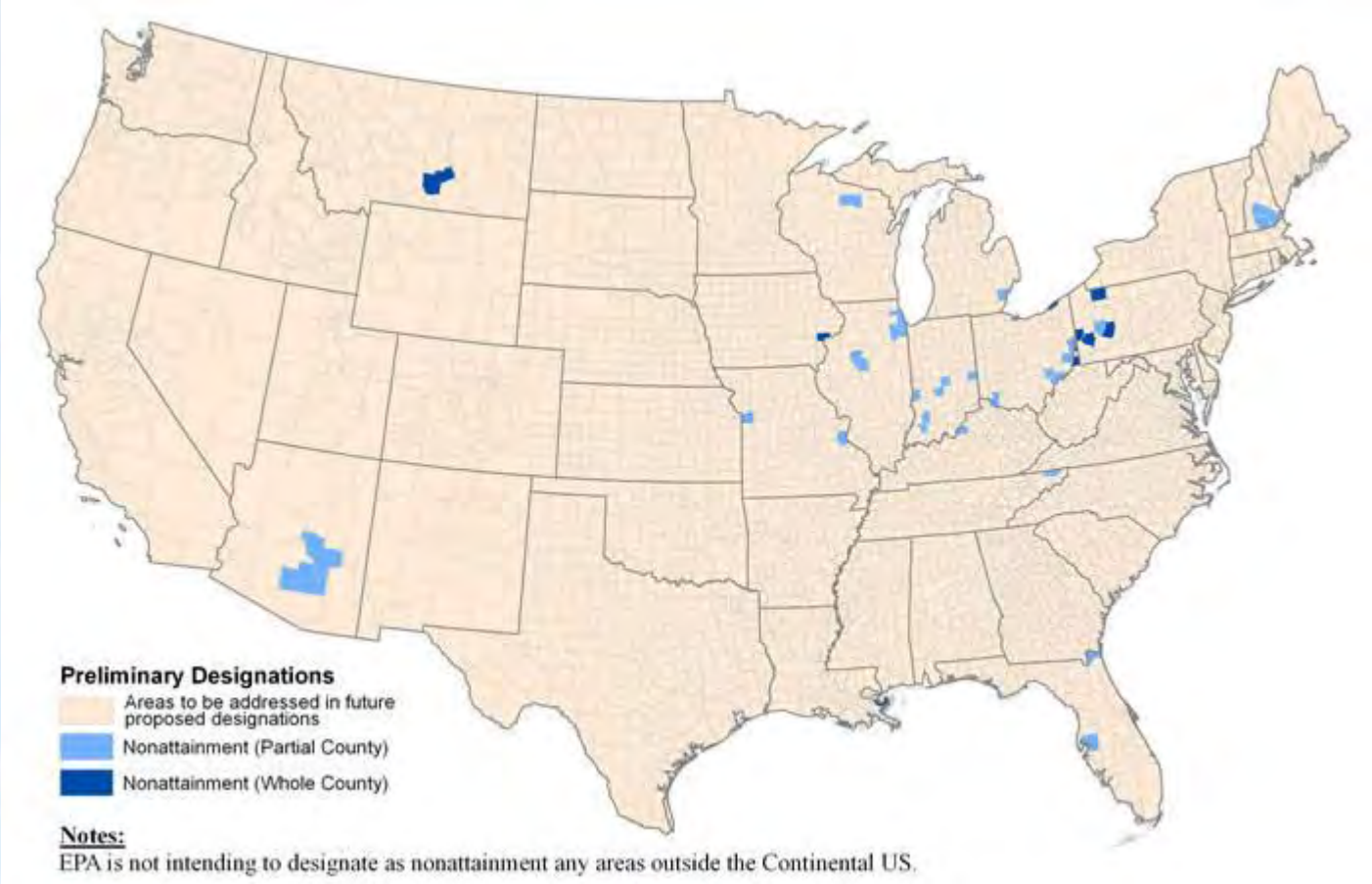
Initial (Round 1) SO2 NA Designations



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"Round 1" Nonattainment SIP

- States developing SIPs to address areas of the state that currently have nonattainment designations
- States looking at EPA's October 2013 draft guidance: Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions
- States looking at control strategies/limits
- Modeling is the tool driving the SIP process
- Modeling for attainment demonstrations is different than the modeling that resulted in the nonattainment designation
  - Designation modeling – use actual emissions
  - Attainment demonstration modeling – use allowable

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Emission Limits in Nonattainment SIPs (1/6)

- EPA's draft SIP guidance uses the term critical value to refer to the source-specific hourly emission rate that would result in the 99th percentile of the daily maximum hourly SO_2 concentrations at the 1-hr NAAQS
- EPA's draft SIP guidance indicates "*EPA believes that appropriately developed SO_2 emissions limits with averaging times from 1 hour to 30 days could in specific cases be shown to suffice to ensure attainment of the NAAQS*"

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Emission Limits in Nonattainment SIPs (2/6)

- EPA's draft SIP guidance indicates "*the EPA would expect that any emission limit with an averaging period longer than 1-hr would need to reflect a downward adjustment to compensate for the loss of stringency inherent in applying a longer term average limit*"
- EPA's draft SIP guidance indicates "*Since shorter averaging times, such as 24 hours, provide less allowance of emissions spikes than would longer averaging periods, such as 30 days, the EPA expects the length of the averaging time would be a factor in determining the level of adjustment to provide comparable stringency to the baseline 1-hour emission limits*"

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Emission Limits in Nonattainment SIPs (3/6)

- EPA gives an example for determining an appropriately adjusted allowable 30-day average from an hourly mass emission rate determined via dispersion modeling to demonstrate NAAQS compliance
- Follow steps to determine the percentage by which the 1-hour rate should be adjusted downward to determine a comparable stringent 30-day average limit

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Emission Limits in Nonattainment SIPs (4/6)

- Step 1: Determine 1-hour limit (modeling)
  - Example = 600 lb/hr
- Step 2: Compile emission data to develop a representative post-control emissions distribution (assumes CEMs)
  - Consider impact of control technology on distribution
  - Consider using data from other sources already controlled to establish distribution profile

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Emission Limits in Nonattainment SIPs (5/6)

- Step 3: Use the distribution of the hourly values and 30 day average values from the Step 2 data set
  - Example uses the 99th percentile of the hourly values (800 lb/hr) and the 99th percentile of the 30-day average values (720 lb/hr)
- Step 4: Compute the ratio of the two 99th percentile values
  - Example = 720/800 = 90%

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Emission Limits in Nonattainment SIPs (6/6)

- Step 5: Multiply the ratio from Step 4 times the 1-hour emission limit that modeling found to provide for attainment
  - Example = 600 lb/hr * 90% = 540 lb/hr

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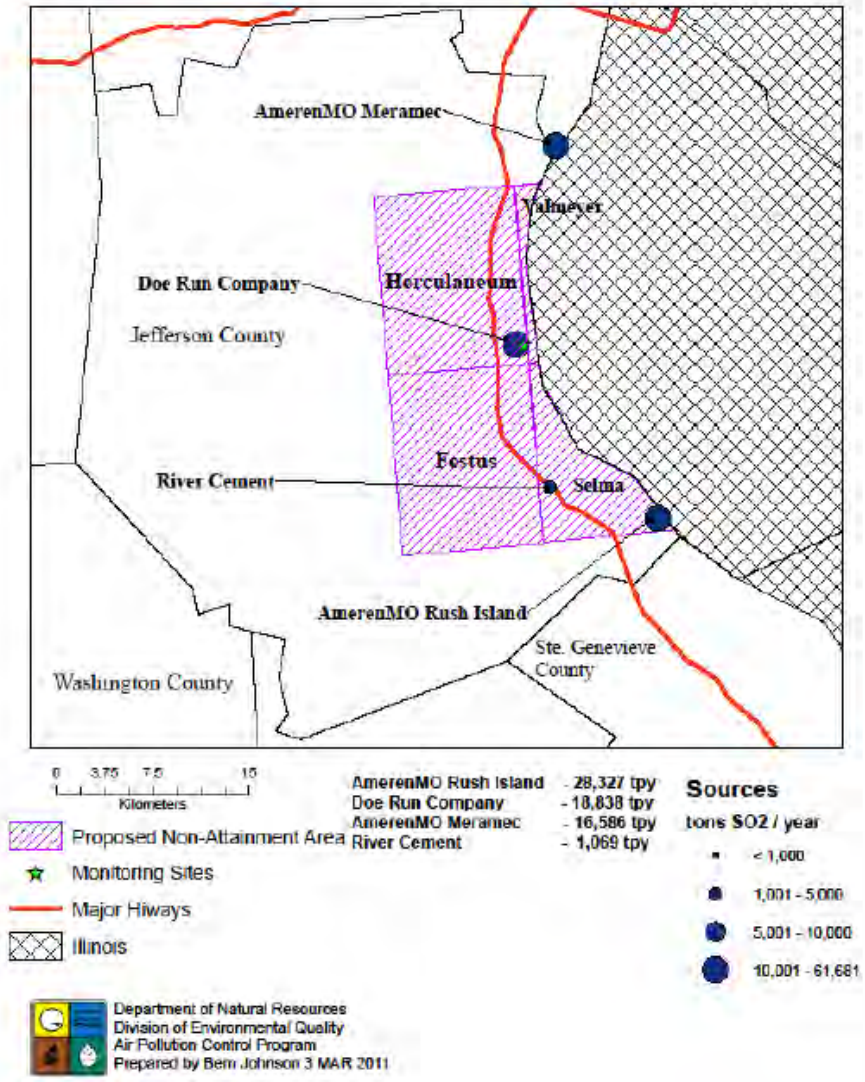
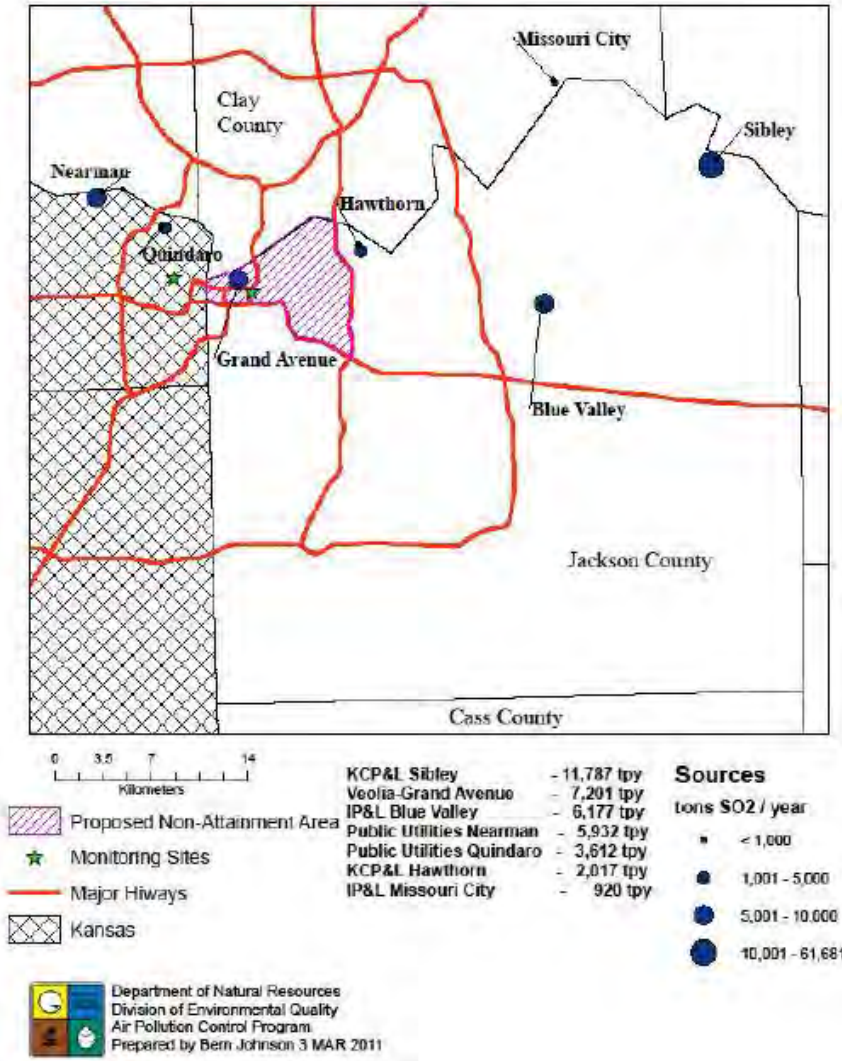
Nonattainment Areas in Missouri

Figure 1. Recommended SO_2 Nonattainment Area for Jefferson County, Missouri



Department of Natural Resources
Division of Environmental Quality
Air Pollution Control Program
Prepared by Bern Johnson 3 MAR 2011

Figure 2. Recommended SO_2 Nonattainment Area for Jackson County, Missouri



Department of Natural Resources
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Prepared by Bern Johnson 3 MAR 2011

Images taken from MDNR's 2011 Letter to Mr. Karl Brooks containing MDNR's designation recommendations.

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Missouri "Round 1" Nonattainment SIP (1/2)

- Larger SO_2 sources in and around the nonattainment areas include a number of different sources.
- Many of the sources have no form of SO_2 control.
- Some industrial and utility boilers will be adding HCl/SO_2 controls (or switching to natural gas) in the 2015/2016 timeframe
  - Utility MACT
  - Industrial Boiler MACT
- SO_2 reductions from on the books controls are not enough to result in attainment

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Missouri "Round 1" Nonattainment SIP (2/2)

- MDNR is focused on what 1-hour rate is needed for each source such that the collective impacts from all sources, as predicted by the model, are less than the NAAQS
- MDNR anticipates imposing limits based on the modeled rates and applying future guidance related to statistical analyses that may allow for a limit based on a longer averaging period.

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Round 2 and 3 SIPs

- Likely to have additional nonattainment areas associated with the Round 2 and 3 designations.
- Approach for Round 2 and 3 SIPs likely to be similar to the approach for the Round 1 SIP

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$PM_{2.5}$ and 2008 Ozone NAAQS Implementation

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2006 (24-hour) PM2.5 Implementation Timeline

- **Timeline for Implementing the 2006 24-hour PM2.5 Standard**
- Promulgation of Standard - Sep. 21, 2006
- Effective Date of Standard - Dec. 18, 2006
- State Recommendations to EPA - 1 year after new standard – Dec. 18, 2007 (based on 2004 - 2006 monitoring data)
- **Final Designations** - 2 years after new standard – Dec. 22, 2008 (based on 2005 - 2007 monitoring data). This notice never became effective and was reviewed by the Obama Administration – Finally released by EPA in October, 2009 (based on 2006 - 2008 monitoring data) - **Published in FR on November 13, 2009 – 74FR 58688**
- **Effective Date of Designations** - December 14, 2009. SIPs due 3 years after effective date of designations – December, 2012 (delayed areas in AZ and CA – March, 2014).
- **Attainment Date** - No later than 5 years after effective date of designations - December, 2014. However, under subpart 4, the deadline is December 31, 2015.

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2006 (24-hour) PM2.5 Implementation Timeline

- January 4, 2013 – NRDC and Sierra Club v. EPA (US Court of Appeals – DC District) – Court remanded the 2007 and 2008 fine particulate implementation rules (1997 PM NAAQS). EPA must regulate PM2.5 under the Clean Air Act, Title I, Part D, Subpart 4
- Final PM2.5 "fix" issued on June 2, 2014 (79FR 31566). All PM2.5 NA areas (1997 and 2006 NAAQS) identified as moderate (Subpart 4 based area designations).

Recent PM2.5 Activity

- Latest round of PM2.5 NAAQS development effort has started.
  - See Docket - EPA-HQ-ORD-2014-0859
  - www.regulations.gov
- Situation in GA/TN/AL (as of November 4, 2014):
  - Requests made by each state to redesignate as attainment (1997 PM2.5 annual standard) the Chattanooga area and Macon.
  - EPA has agreed.
  - Georgia has proposed amendments to its rules as a result.
    - "Rules no longer require nonattainment new source review for these areas and it is being removed from the Georgia rules."
- Situation in Ohio (as of February 11, 2015):
  - Ohio EPA is asking EPA to reconsider the attainment status for two PM2.5 areas (new annual standard).
  - Canton and Cincinnati areas potentially impacted.

Ohio PM2.5 Data – Letter Dated 2/11/2015

Site	County	Year				Design Value	
		2011	2012	2013	2014	'11-'13	'12-'14
39-017-0003	Butler, OH	12.7	11.2	11.1	11.3	11.7	11.2
39-017-0016	Butler, OH	12.4	10.8	10.7	10.7	11.3	10.7
39-017-0019	Butler, OH	12.7[2]	11.4	11.0	11.2	11.7	11.2
39-061-0006	Hamilton, OH	11.7	10.3	10.1	10.3	10.7	10.2
39-061-0010	Hamilton, OH	11.8[3]	10.6[4]	10.5	10.4	11.0	10.5
39-061-0014	Hamilton, OH	13.2	12.1	11.6	11.3	12.3	11.7
39-061-0040	Hamilton, OH	12.4	12.6	11.5	10.4	12.1	10.5
39-061-0042	Hamilton, OH	13.3	11.7	11.5	11.2	12.2	11.5
21-037-3002	Campbell, KY	10.3	9.7	9.6	9.7	9.9	9.6
39-151-0017	Stark, OH	12.8	11.9	11.6	11.7	12.1	11.7

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