

National Air Quality Conference – 2012
Denver, CO



NAAQS Updates and Monitoring Networks

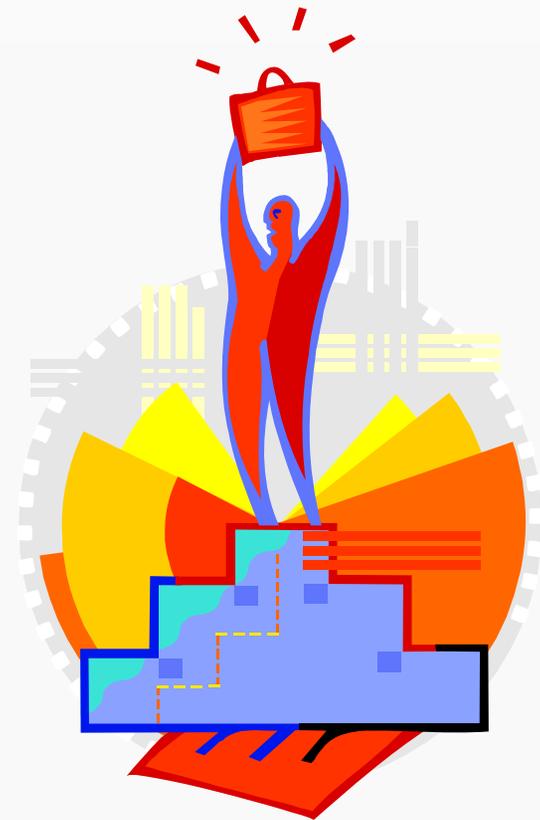
Lewis Weinstock
Office of Air Quality Planning and Standards





Outline

- NAAQS Accomplishments
- Notable monitoring program issues



NAAQS Summary Table



Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m ³ (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution [71 FR 61144, Oct 17, 2006]	PM _{2.5}	primary and secondary	Annual	15 µg/m ³	annual mean, averaged over 3 years
			24-hour	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Monitoring Changes
Near-road 2015, 2017
0.5/1.0 TPY sites Airport study Added at NCore
Near-road Area-wide S/V sites 2013+/TBD
Under Review
Waiting on NAAQS proposal
None
PWEI - 2013 Stakeholder process
Pilot Study Sox/NOx

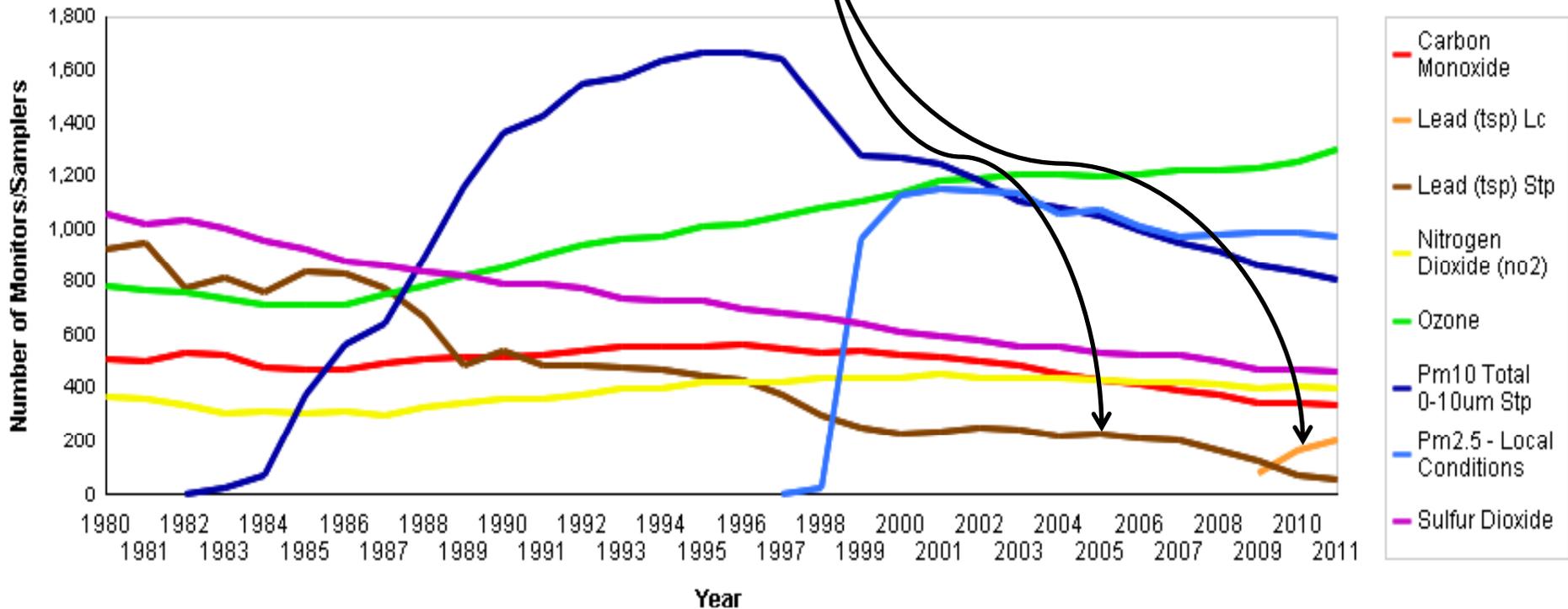
as of October 2011

[Link to Key Footnotes](#)



Lead

Number of Monitoring Stations by Pollutant 1980 - 2011



Lead Network (1 of 2)



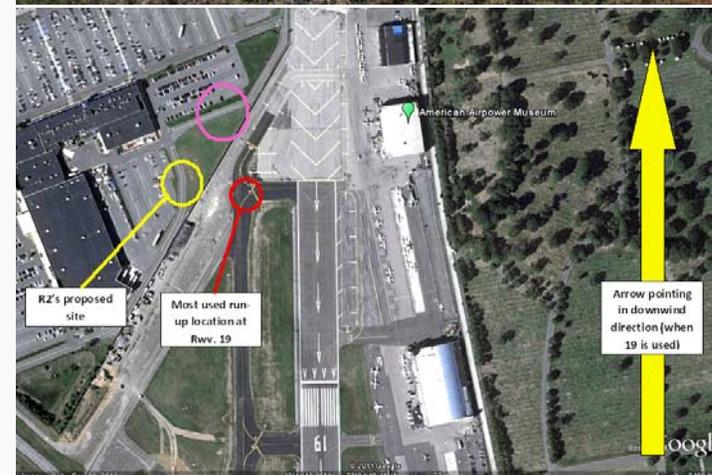
- Required source-oriented monitors at locations of estimated maximum concentration (or waivers)
 - For sources (other than airports) estimated to emit 0.5 tpy or more
 - Sites near sources emitting ≥ 1.0 tpy required to be operational by January 1, 2010
 - Sites near sources emitting ≥ 0.50 tpy but < 1.0 tpy required to be operational by December 27, 2011
 - For airports estimated to emit 1.0 tpy or more
 - Identified 4 sites required to be operational by January 1, 2010



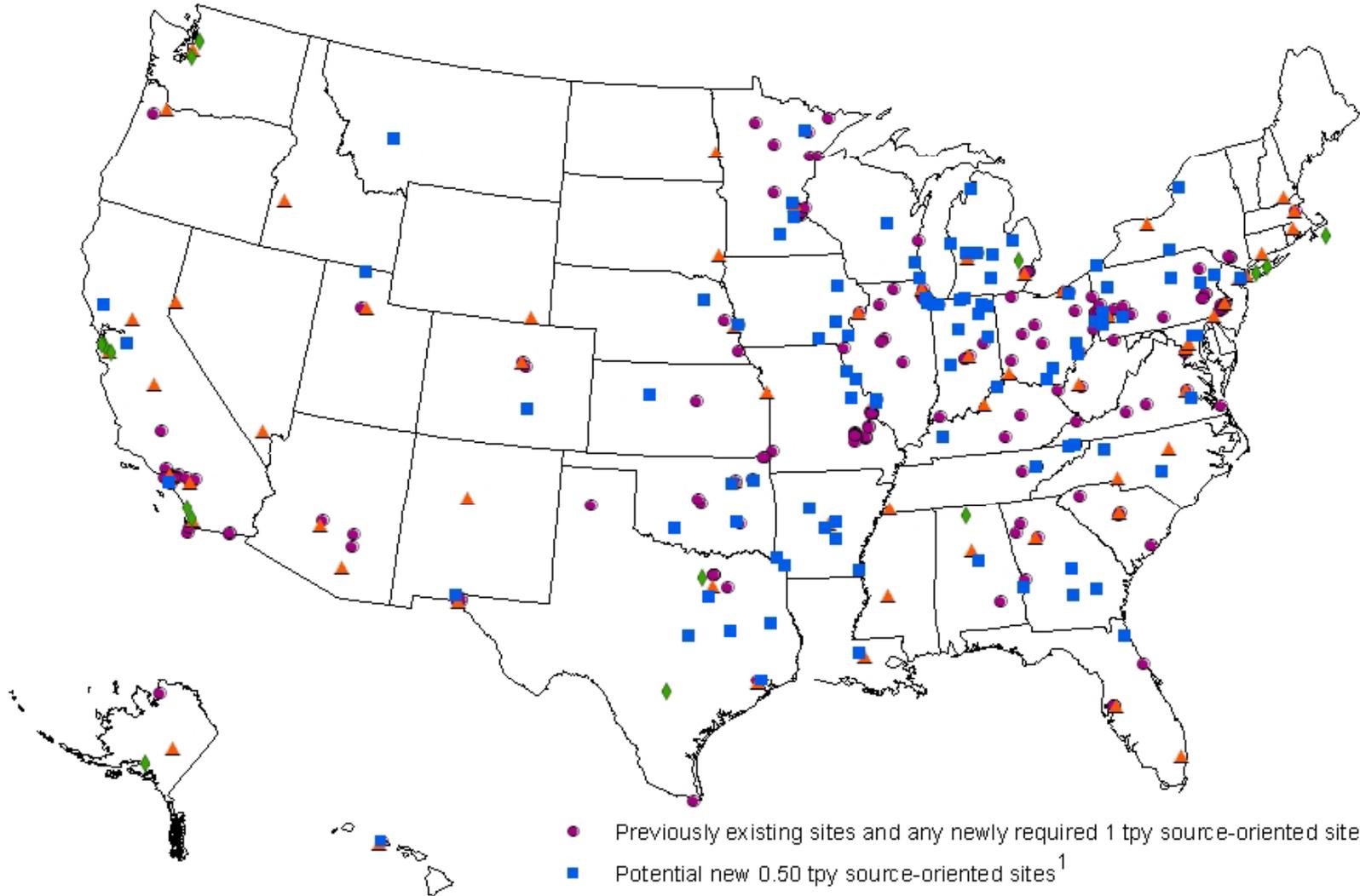
Lead Network (2 of 2)



- Required non-source-oriented monitors at NCore sites in Core Based Statistical Areas (CBSA) with a population of 500K or more
 - Approximately 60 sites required to be operational by December 27, 2011
- Require one year of monitoring at 15 specific airports emitting 0.5 – 1.0 tpy
 - Sites required to be operational by December 27, 2011
 - Sites with concentrations > 50% of the NAAQS required to remain beyond 1-year period



Lead NAAQS Monitoring Network



- Previously existing sites and any newly required 1 tpy source-oriented sites
- Potential new 0.50 tpy source-oriented sites¹
- ▲ NCORE (non-source-oriented) sites
- ◆ Airport Study Sites

¹Based on 2005 National Emission Inventory lead emission estimates

Lead – Key Messages



- Consider use of new FEM's
 - Criteria pollutant methods session (Wed, 3:30 pm)
 - [National contract \(ICP-MS for TSP, XRF for PM₁₀\)](#)
- Check that AQS data are coded properly (local conditions, correct method)
- Participate in QA performance program
 - QA session (Wed, 1:00 pm)
- Agencies with special study airport monitors should be discussing end of sampling issues with their regions before 12 months are up





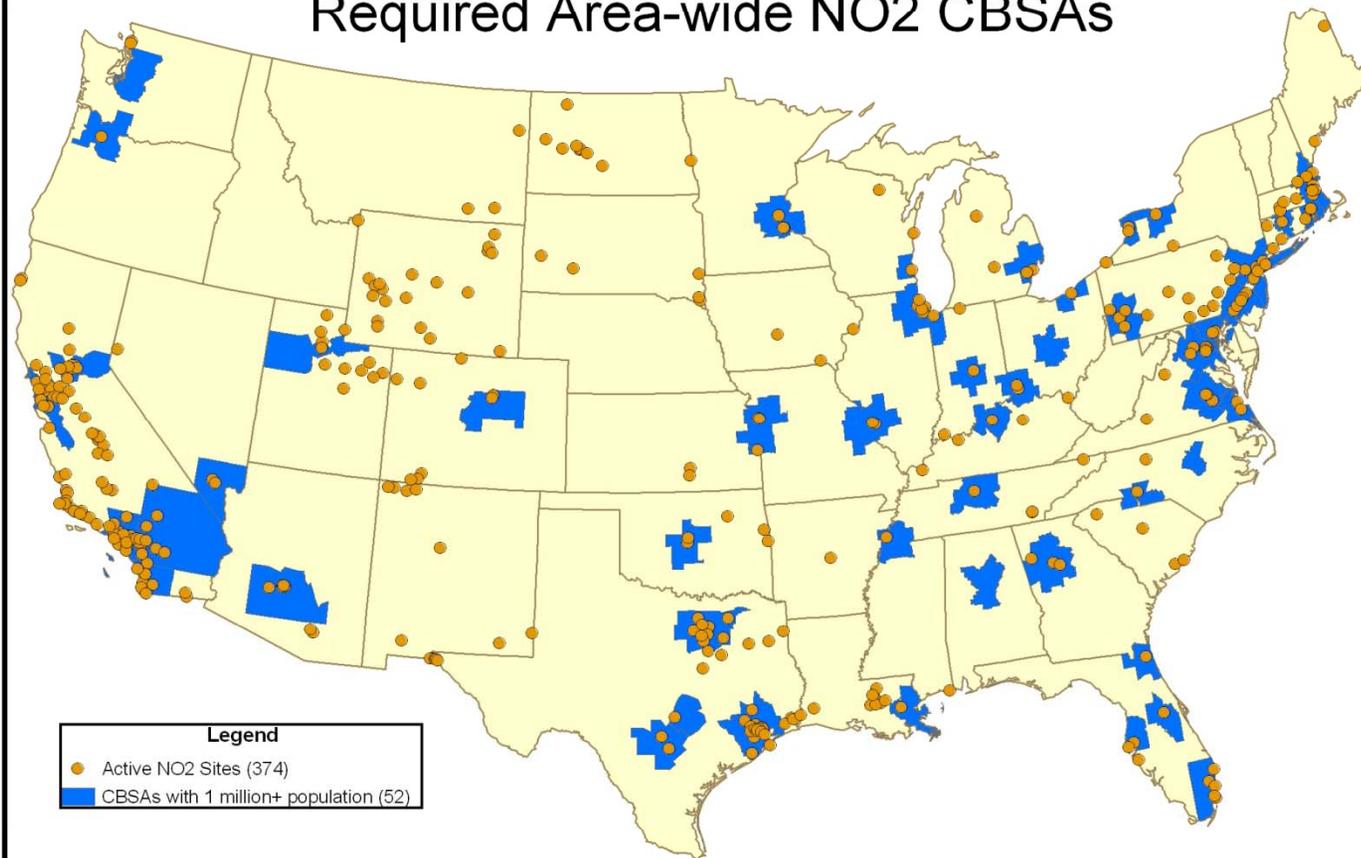
Nitrogen Dioxide



NO₂ – Area Wide Monitors



Active NO₂ Monitors & Required Area-wide NO₂ CBSAs



Legend	
●	Active NO ₂ Sites (374)
■	CBSAs with 1 million+ population (52)

Note: Hawaii (not shown) has 2 active NO₂ monitors.
San Juan, PR CBSA not shown.

Based on April 2012 AQS data

Need 52 on national basis in CBSA's > 1M

Network size
374

Referenced in network plans due July 1, 2012

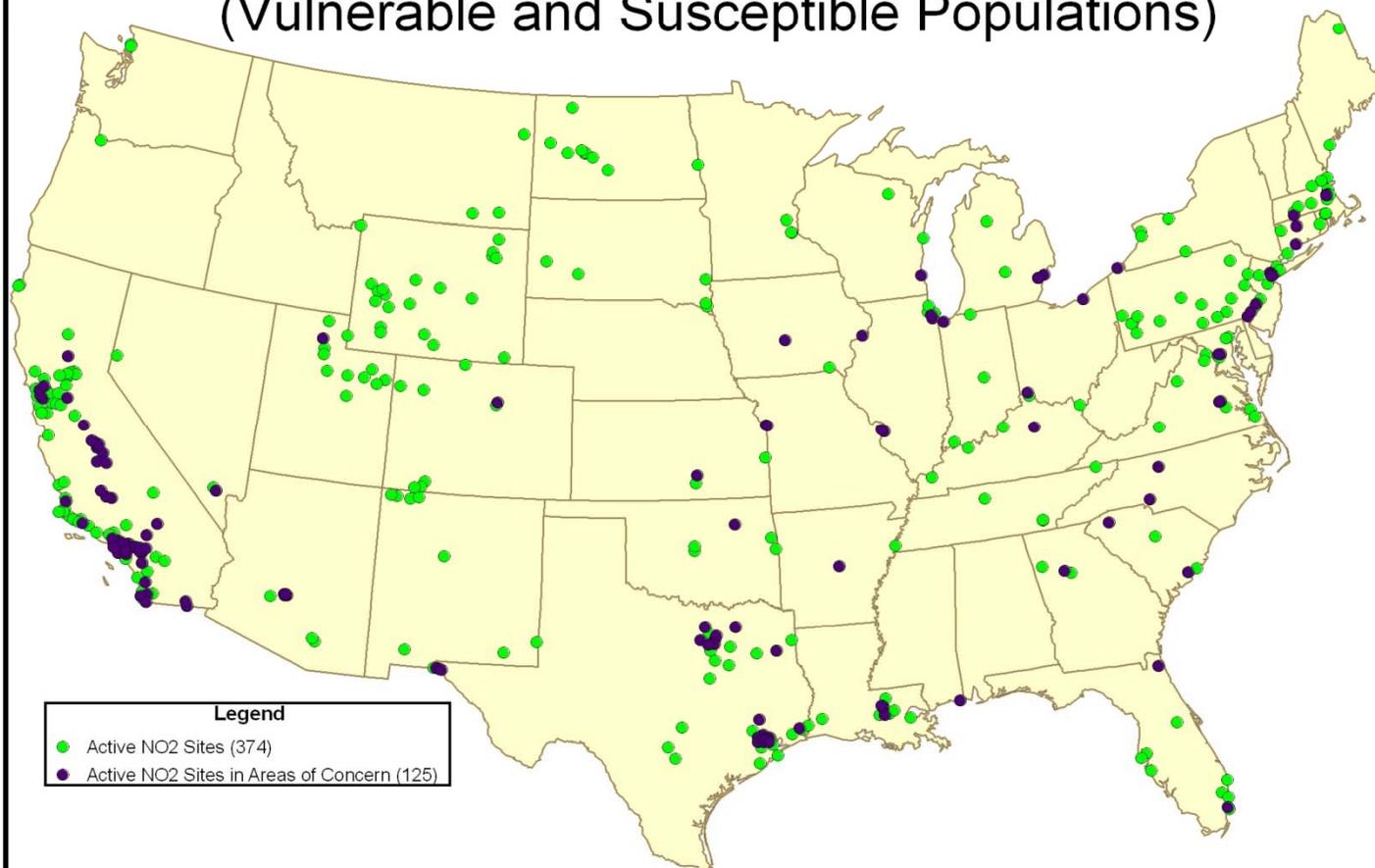
Operational by January 1, 2013

Supports trends, health studies, gradient work, annual NAAQS

NO₂ – Vulnerable & Sensitive Populations



Active NO₂ Sites & Areas of Concern (Vulnerable and Susceptible Populations)



Legend

- Active NO₂ Sites (374)
- Active NO₂ Sites in Areas of Concern (125)

Based upon April 2012 AQS data and EPA OAQPS' CenRANK tool -
CenRANK is an unofficial EPA tool used to evaluate environmental justice information.
There were no NO₂ monitors identified in Areas of Concern in AK, HI, PR, or VI.

Need 40 on national basis as recommended by RA's

125 potentially available based on CenRANK

Referenced in network plans due July 1, 2012

Operational by January 1, 2013

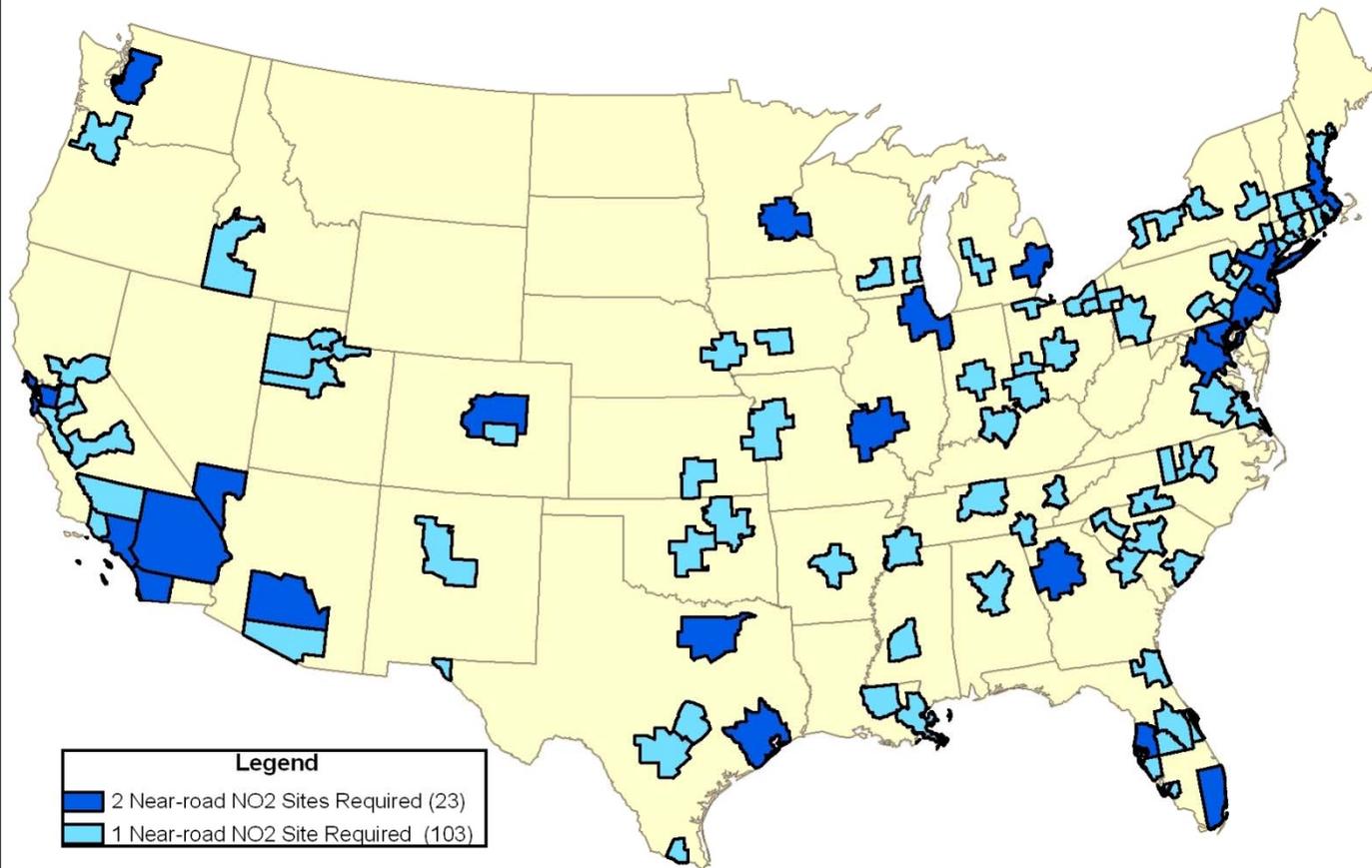
Region 9 working with other Regions to recommend monitors

Administration priority to protect communities

NO₂ – Near-road requirement



CBSAs with Required Near-road NO₂ Sites



Note that Honolulu, HI (not shown) has 1 required near-road NO₂ site and San Juan, PR (not shown) has 2 required near-road NO₂ sites.

126 monitors in
102 CBSA's w/
population $\geq 500k$

2nd site in CBSA's
w/ population
 $\geq 2.5M$ or very high
AADT $\geq 250k$

Referenced in
network plans due
July 1, 2012

Operational by
January 1, 2013

EPA is working
with NACAA and
the states to
implement a
common-sense
plan to phase in
these sites

NO₂ – Near-road rulemaking



- OAQPS has developed a draft proposal that would phase in the near-road monitoring deadlines over a longer term period. Our current thinking is as follows (annual monitoring network plans due 6 months earlier):
 - CBSA's \geq 1M (52 sites): **January 1, 2014**
 - CBSA's \geq 2.5M or AADT \geq 250K (23 sites): **January 1, 2015**
 - CBSA's \geq 500K (51 sites): **January 1, 2017**
- Please work with your regions on the submittal and review of the 2012 annual monitoring network plans



NO₂ – Key messages

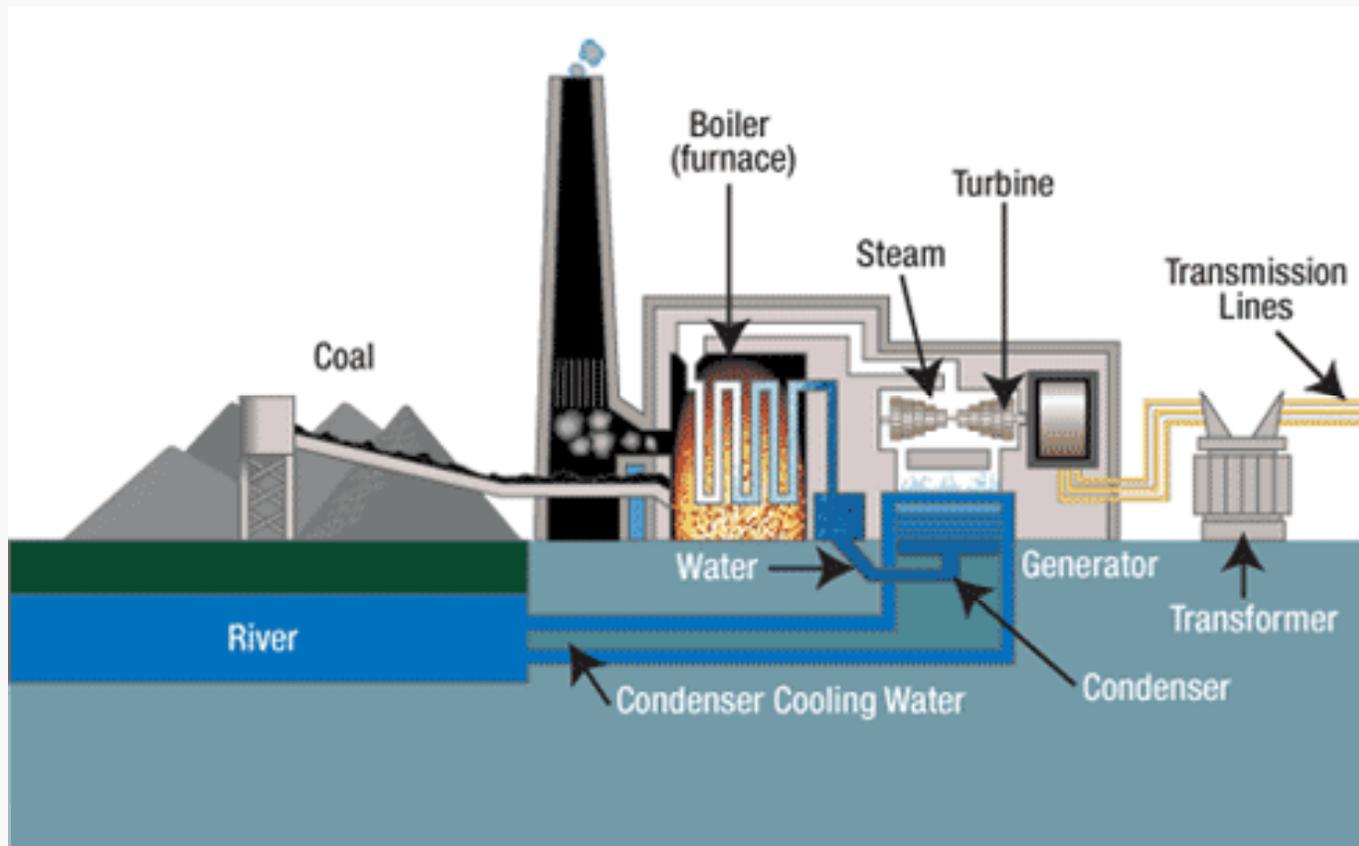


- EPA has provided training and a [Technical Assistance Document](#) on near-road siting
- Monitoring agencies have done **a great job** identifying candidate site locations
 - Keep it up! Work closely with your regions to complete the process
- More details this afternoon in the “Lessons Learned” session
 - Nealson Watkins and key pilot study partners



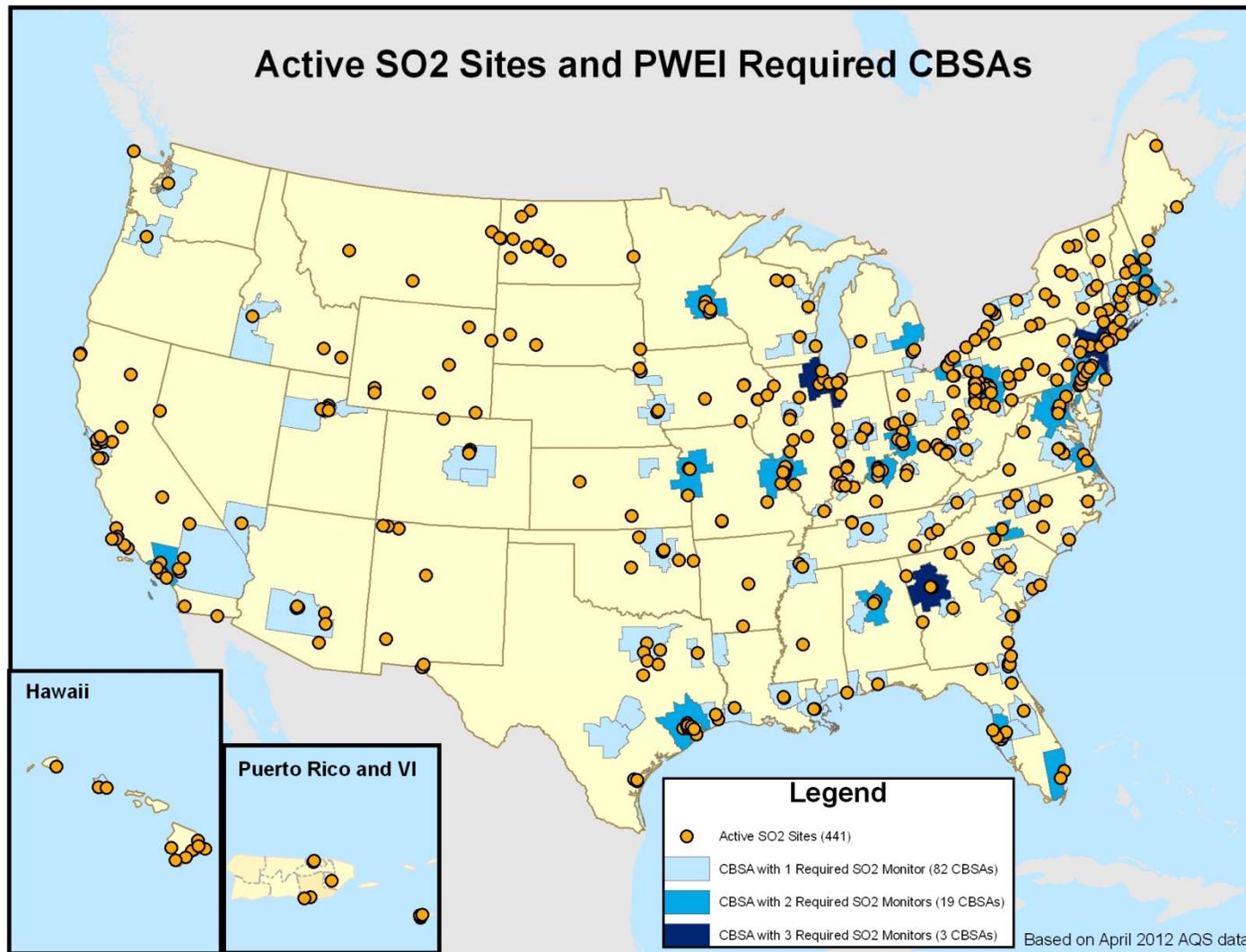


Sulfur Dioxide



National Air Quality Conference - 2012

SO₂ – PWEI Monitors



Need 129 on national basis in CBSA's

Network size 441

Referenced in network plans due July 1, 2012

Operational by January 1, 2013

Most areas covered by existing sites

SO₂ – Stakeholder Process



Stakeholder Outreach

EPA is planning to seek additional input from states, tribes, and other interested parties to refine the agency's approach for implementing the SO₂ standard. We have set up an outreach process that allows for focused discussion of monitoring, modeling and implementation issues. This effort will ensure that the agency has the information it needs to protect public health from unhealthy levels of SO₂ in the outdoor air.

EPA provided letters to states and tribes to notify them of these plans. Samples of the state and tribal letters are included below.

- [Sample letter to state environmental commissioners \(PDF\)](#) (3pp, 807k)
- [Sample letter to tribal Leaders \(PDF\)](#) (2pp, 1.1 MB)

EPA is convening three small group meetings with stakeholders to discuss issues associated with implementation of the SO₂ standard. These issues will be outlined in a white paper that will be provided here in mid-May 2012.

Schedule for stakeholder discussions

- Session 1: Environmental and Public Health Organization Representatives
May 30, 2012, Washington, DC
- Session 2: State and Tribal Representatives
May 31, 2012, Research Triangle Park, NC
- Session 3: Industry Representatives
June 1, 2012, Research Triangle Park, NC

For more information about these meetings, please contact Carolyn Childers at (919) 541-5604.

A summary of key comments from the stakeholder meetings will be provided here following the conclusion of all three meetings.

Draft Implementation Guidance for the Primary National Ambient Air Quality Standard for Sulfur Dioxide

- [Draft Guidance \(PDF\)](#) (94pp, 1.0 MB)
- [Fact Sheet \(PDF\)](#) (2pp, 89 kb)
- [Notice of Availability \(PDF\)](#) (3pp, 160 kb) – Federal Register – Oct 3, 2011
- [Comment Period Extension to December 2, 2011 \(PDF\)](#) (3pp, 157k) – Federal Register – Oct 28, 2011

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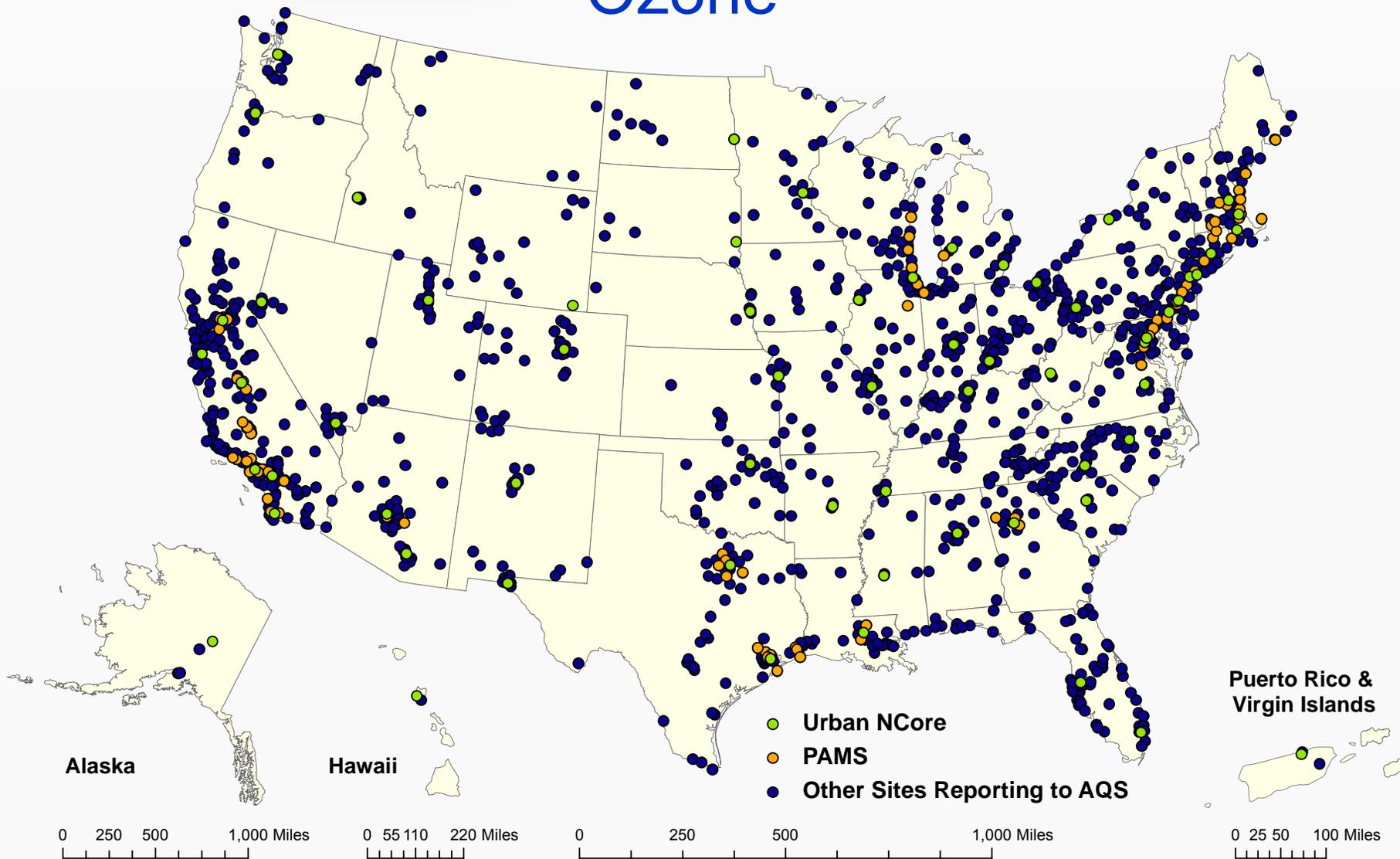
Session 3: Industry Representatives

June 1, 2012, Research Triangle Park, NC

<http://www.epa.gov/oaqps001/sulfurdioxide/implement.html>



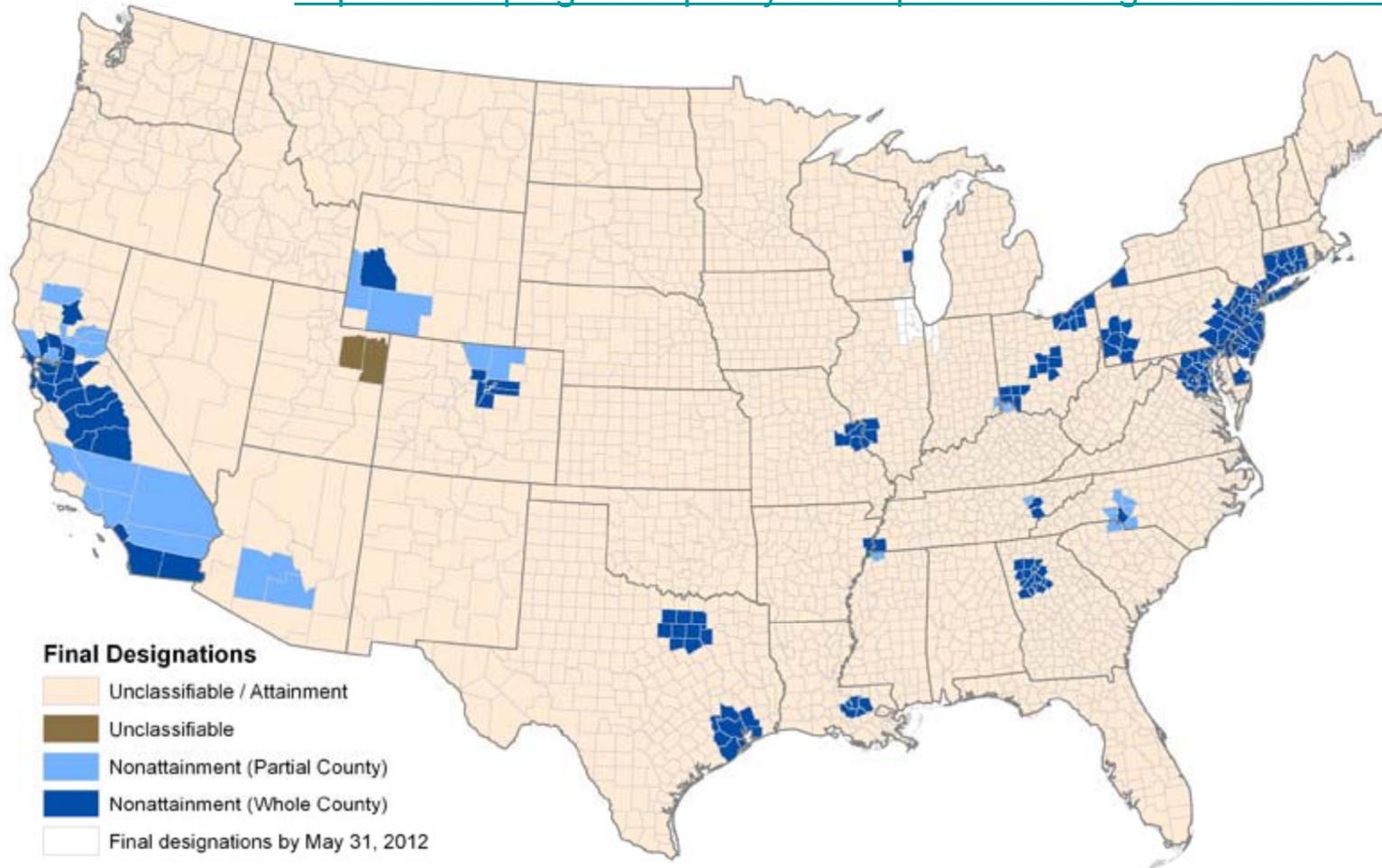
Ozone



Final Nonattainment Areas for the 2008 Ozone Standards



<http://www.epa.gov/airquality/ozonepollution/designations/index.htm>



Notes:

EPA does not intend to designate as nonattainment any areas outside the Continental US.

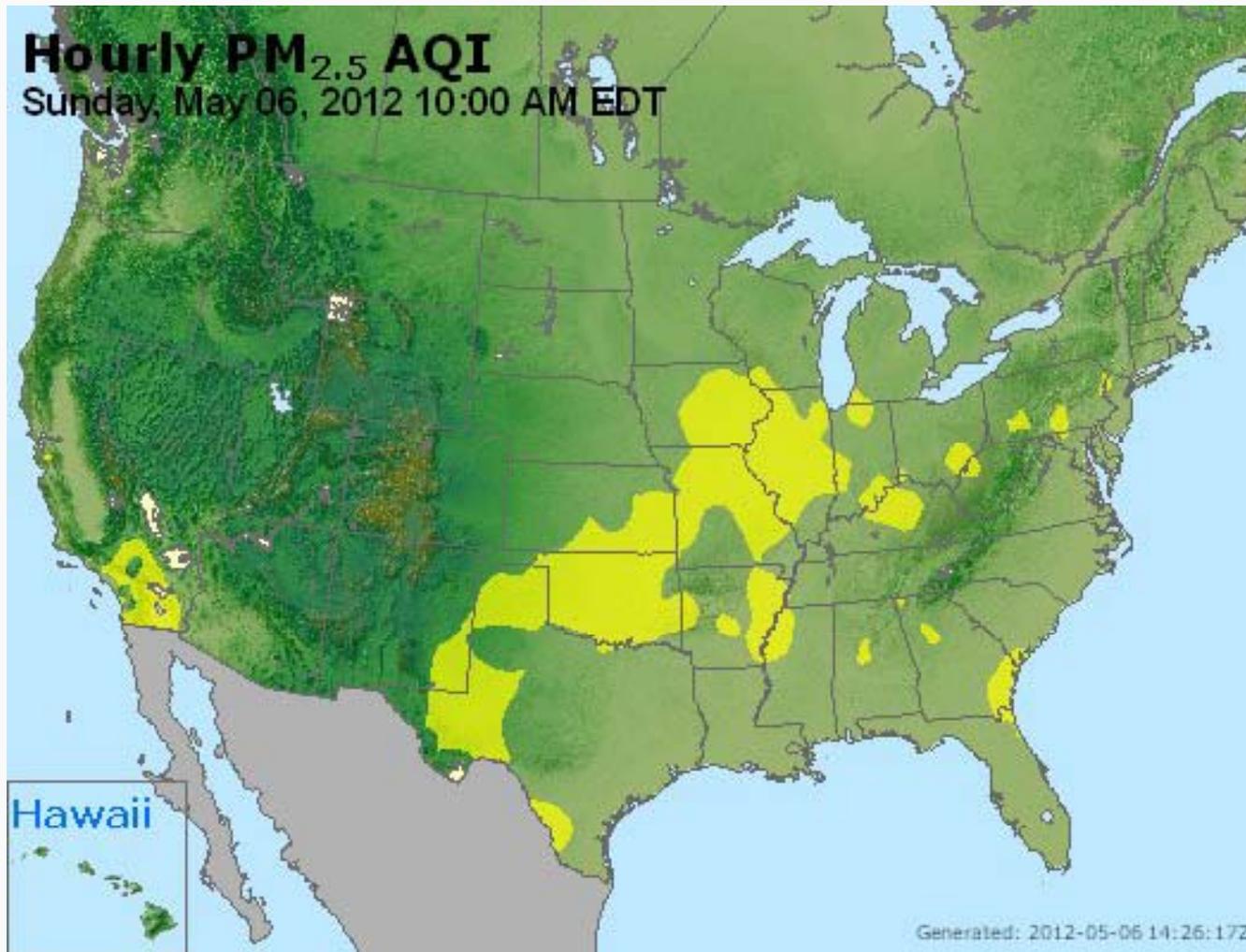
O₃ – NAAQS Review Update



- Milestones
 - Second draft of the Ozone ISA released September 30, 2011
 - Second draft reviewed by CASAC January 9-10, 2012
 - CASAC Letter to the Administrator provided March 13, 2012
 - CASAC recommended development of a third draft of the ISA
 - **Third draft of ISA expected early June 2012**
 - First drafts of REA and PA will follow
 - CASAC review of third draft ISA and first drafts of REA and PA is planned for September 2012
 - NPRM (proposal) expected 2013
 - Final rule expected 2014
- Monitoring issues under consideration for NPRM
 - Ozone seasons and other network design requirements
 - PAMS (Data workshop on Wed and Re-engineering panel on Thu)
 - Methods (with ORD)
 - Data handling



Particulate Matter



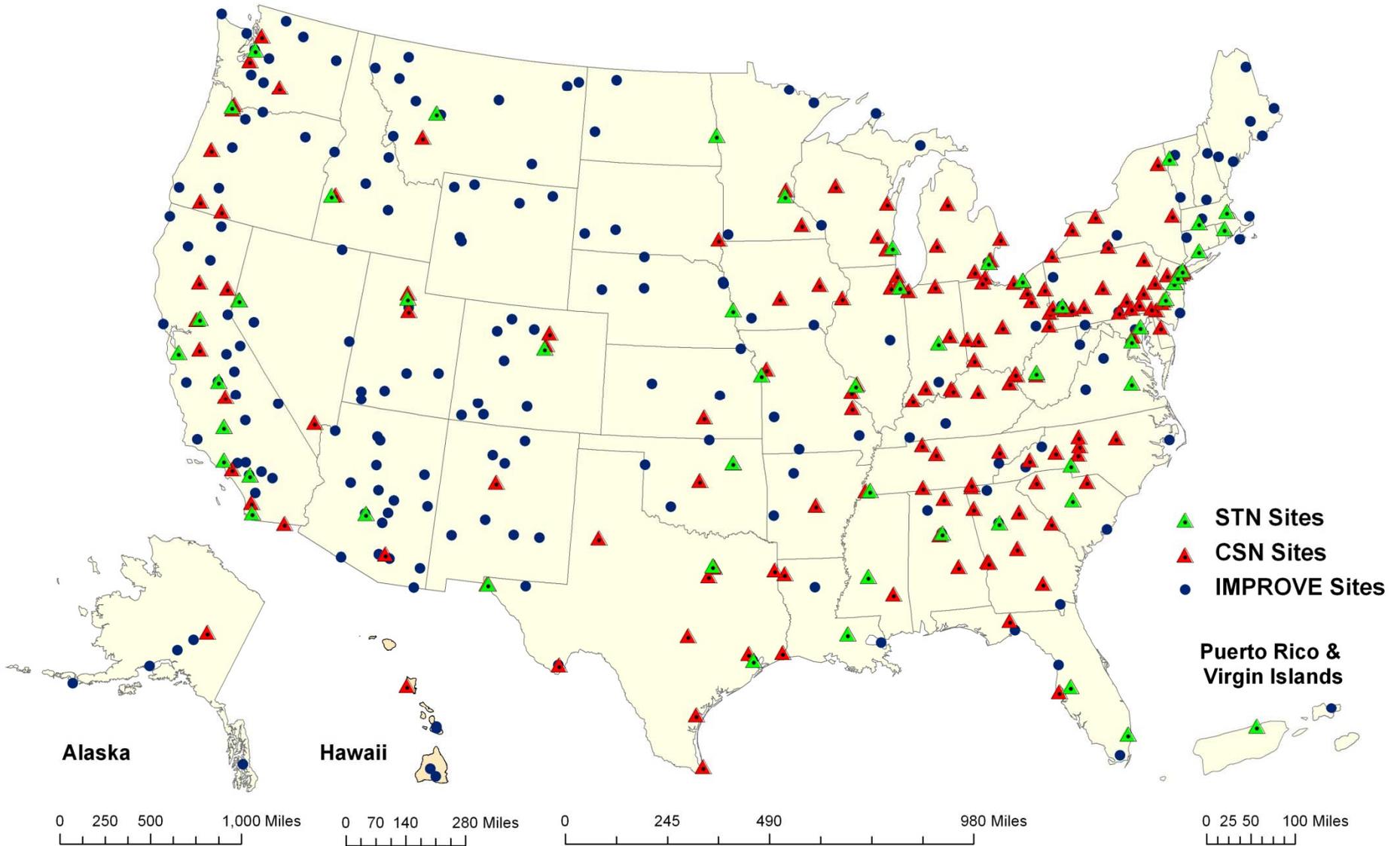
PM_{2.5} Key Monitoring Issues



PM_{2.5} Monitoring Topics under consideration in draft of PM NAAQS Proposal

- Align monitoring definitions and policies with other NAAQS and long standing practices
 - Consider requiring PM_{2.5} monitoring in near-road locations
 - Clarify applicability of monitors in Middle and Micro Scale Environments to the Annual PM_{2.5} NAAQS.
 - PM_{2.5} Methods – State EPA position on FRM and use of continuous FEM data
 - Use of CSN/IMPROVE data to support a potential secondary standard for visibility impairment
 - Additional monitoring and data handling topics.
- ✓ No changes to PM₁₀

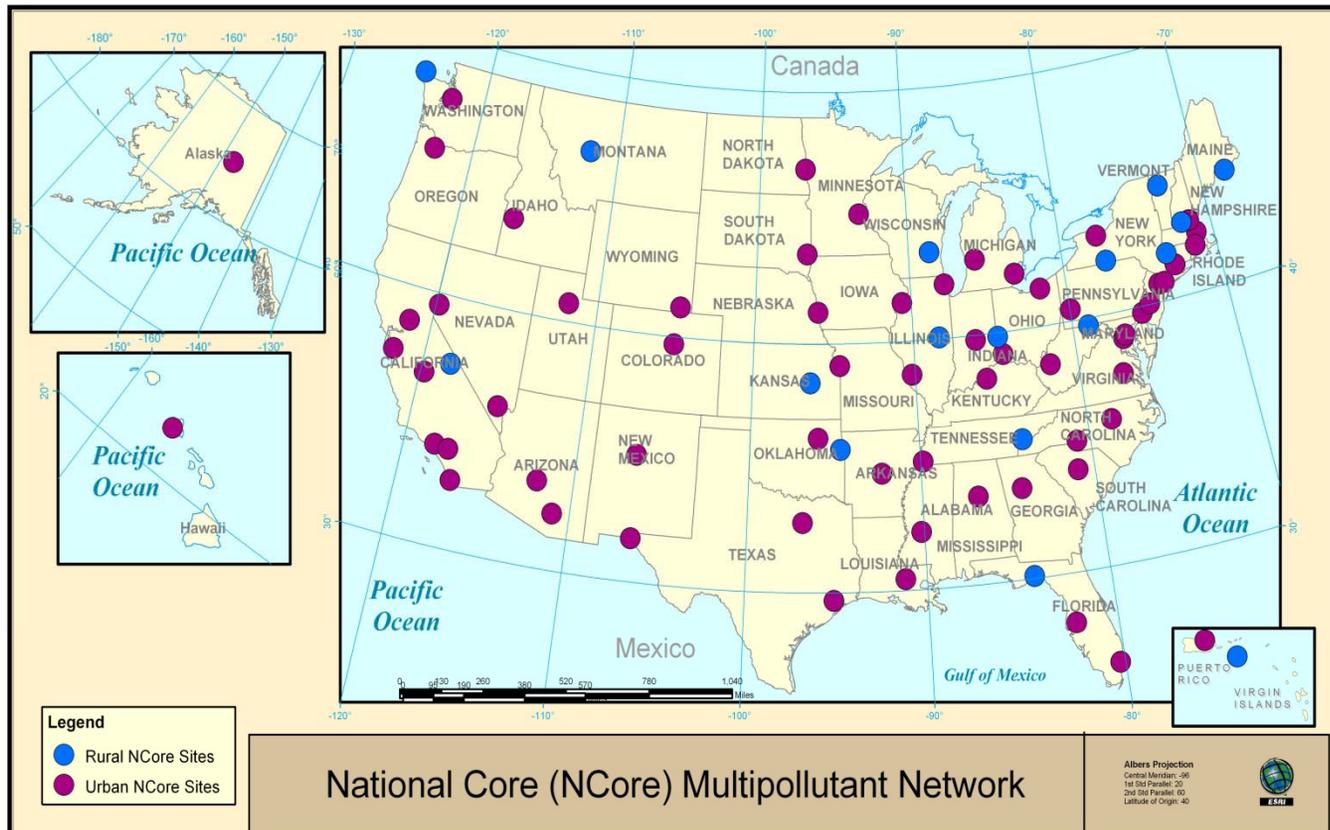
PM_{2.5} Speciation Sites



Notable monitoring program issues

- ✓ NCore
- ✓ NATTS
- ✓ PAMS
- ✓ PM_{10-2.5} speciation
- ✓ Carbon measurements

NCore Update



Most sites are operational and reporting data

Developing national contract to complete remaining urban and rural sites

Working through some method and QA issues

Additional leveraging (NO_x/SO_x, PAMS)

AirData

You are here: [EPA Home](#) » [AirData](#) » Interactive Map

Interactive Map

Select which layers to display on the map, zoom in, find monitor locations, and download data from popup balloons. The monitoring site information is also available in [spreadsheet format](#). For more information regarding the map layers, read the [complete documentation](#) (PDF, 1.63 KB). In 2009, lead began being measured and reported in TSP (Total Suspended Particulates) and PM10 in "Local Conditions" (LC). Layers for those parameters are provided on this page. For more information regarding lead, see this [technical note on lead data reporting](#).



Go

Zoom to a city, county, address, zip code, or lat/lon

Monitoring Networks

Click a check box to display a network on the map.

Click the network name to save or open the kmz file.

Note: These layers display all monitors (active or inactive) with data since 1990.

- CO
- Lead
- Lead-TSP(LC)
- Lead-PM10(LC)
- NO2
- Ozone
- PM10
- PM2.5
- SO2
- PM2.5 Chemical Speciation Network
- IMPROVE (Interagency Monitoring of Protected Visual Environments)
- NATTS (National Air Toxics Trends Stations)
- NCORE Multipollutant Monitoring Network

<http://www.epa.gov/airdata/>

The files below are spreadsheet versions of the map layers.

Environmental Manager (AWMA) – May 2012

Air Quality Measurements for Science & Policy



em • feature

This article appears in the May 2012 issue of EM Magazine, a publication of the Air & Waste Management Association (A&WMA; www.awma.org). To obtain copies and reprints, please contact A&WMA directly at 1-412-232-3444.

Putting Multipollutant Monitoring Into Practice

EPA's NCore Network

by Lewis Weinstock

Lewis Weinstock is the group leader for ambient air monitoring in the Air Quality Assessment Division of the U.S. Environmental Protection Agency's Office of Air Quality Planning and Standards in Research Triangle Park, NC. E-mail: Weinstock.Lewis@epa.gov.

In 2006, the U.S. Environmental Protection Agency (EPA) finalized requirements for the National Core ("NCore") network, a new national air quality monitoring network comprised of 80 stations where multiple pollutants are measured. This network is intended to support long-term multiple science and policy objectives by providing data from the latest gaseous and particulate monitoring technology across a broad array of representative urban and rural locations. The NCore network became operational on January 1, 2011, following a multi-year implementation effort coordinated by EPA and closely supported by state, local, and tribal monitoring agency partners. This article provides an overview of the NCore monitoring program, including details about measurements, technical challenges, data availability, and lessons learned that are applicable to the entire ambient monitoring community.

Evolution of the NCore Program

EPA's national ambient air monitoring networks are a vital resource that plays a critical role in evaluating the impact of national air quality standards and the success of emission control strategies to improve

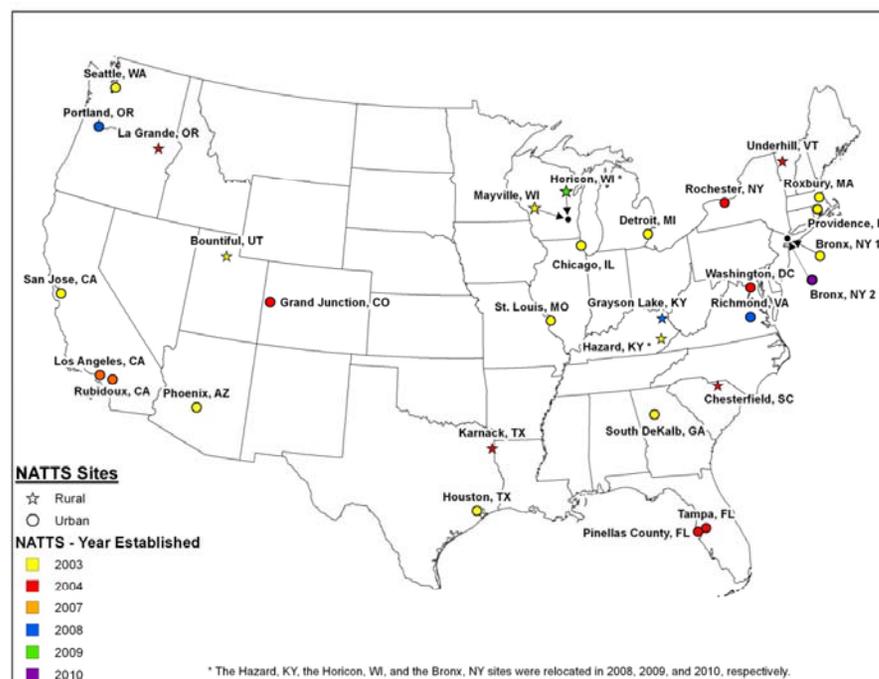
human health and welfare. Within these macro level goals, multiple objectives are supported by ambient monitoring data, including atmospheric chemistry and modeling studies, epidemiological research, trends analysis, and method evaluation studies.



NATTS Network Assessment



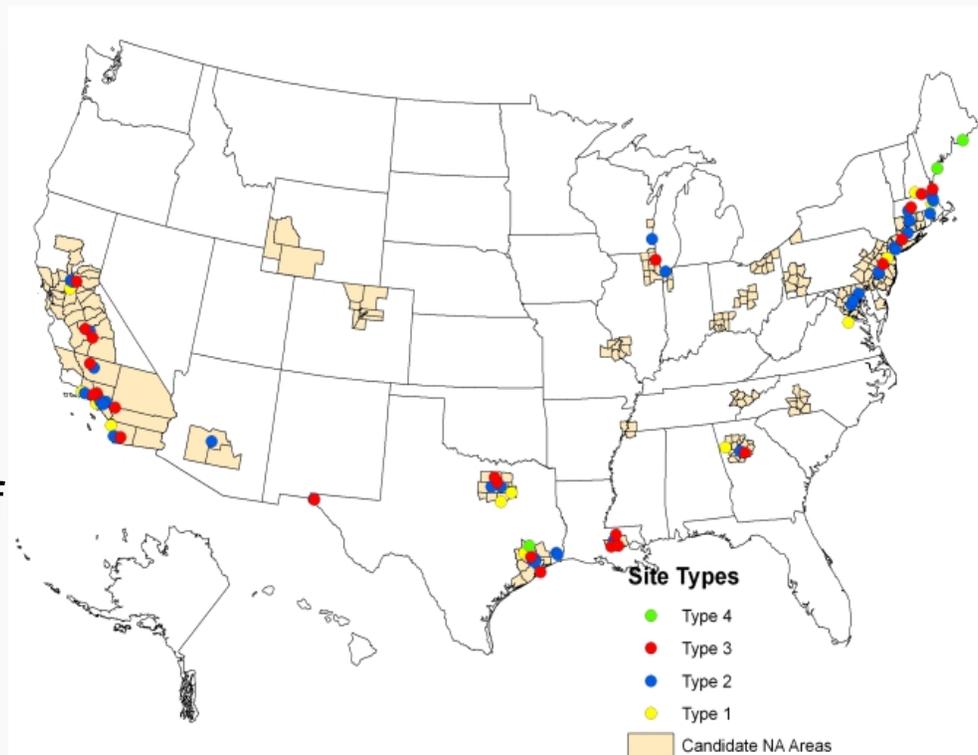
- Completed First 6-year Review of the NATTS Network
 - Program Older than 6-years, however initial sites were not sampling consistently until 2005
 - Today, Network Consists of 27 Sites (20 Urban / 7 Rural) Required to Sample for 19 Analytes (VOCs, Carbonyls, PAHs, PM₁₀ Metals & TSP Hexavalent Chromium)
 - Report Includes National and Site Level Statistics, Urban vs. Rural Statistics, Inter-Comparison of Sites Close in Proximity (e.g. LA & Rubidoux) and Trends Analysis for Require NATTS Analytes (data from 2006-2010)
- **Draft NATTS network assessment will be discussed in more detail during Wednesday's 8am-10am technical session on Air Toxics NATTS**



PAMS Re-Engineering: Rationale



- Changes have occurred since PAMS program first started
 - Ozone standard has been revised to a level of 0.075 ppm based on 3-year average of the annual 4th highest 8-hour average
 - Ozone concentrations have decreased in many areas of the country
- Equipment is old and in need of replacement
 - New technologies available that should be considered
- Concerns about data not being used enough
 - Improvements may make data more useful



PAMS Re-Engineering: Objectives



- Network Design
 - Consider flexibility by reducing # of required sites in an area
 - Broaden geographical applicability as needed
 - Extend period to match O₃ season
 - Support regional focus
- Sharpen VOC target list
- Improve carbonyl methods
- Flexible and more affordable meteorological requirements
- Attend technical session (Wed, 3:30 pm) and Thu re-engineering overview in plenary
 - [Kevin Cavender](#) and panel



PM_{10-2.5} Speciation Pilot Study Objectives



- The primary pilot study objectives are to support long-term routine PM_{10-2.5} speciation monitoring by:
 - developing the target species list (what species need to be measured);
 - evaluating and defining analysis methods and the necessary standard operating procedures (SOPs);
 - evaluating the use of sequential dichot samplers; and
 - learning about sampling and operational issues regarding the use of dichots and FRMs in a routine monitoring setting.
- Contact: Joann Rice (rice.joann@epa.gov)
- Partners
 - Ben Davis and staff at Maricopa County Air Quality Department; Phoenix, AZ
 - Jay Turner's group at Washington University at St. Louis, WUSTL
 - Barbara Zielenska, Desert Research Institute

PM_{10-2.5} Speciation Pilot Study



- Small scale pilot study
May 2010 to May 2011
 - Every 3rd day sampling in Phoenix and St. Louis
 - Two dichots (PM_f/PM_c) and one FRM pair (PM_{10-2.5} difference method)
 - Teflon/nylon for mass, elements, ions, and biological analysis
 - Quartz/quartz for carbon, carbon speciation, and carbonate

Status



- Field sampling completed in May 2011
 - Collected over 5000 filters
 - 50% analyzed and 50% archived
- Routine sample analysis completed September 30, 2011
 - All routine data is loaded into AQS
- Specialized sample analyses ongoing
 - Organic speciation, Carbonate carbon, ICP-MS, and microscopy
- Data analysis in progress
 - Interim data analysis report available at: <http://epa.gov/ttn/amtic/pm10pilot.html>
 - Expect final report on results and recommendations October 2012

Sunset Carbon Evaluation Project



- OAQPS Committed to Evaluation of New Continuous Monitoring Technologies in an Effort to:
 - Move Towards Continuous, Higher Time Resolution Samples
 - Reduce Need for Expensive, Time Consuming, Filter Based Sampling & Subsequent Lab Analysis
- Semi-Continuous OC/EC Instrument is Field Deployable Alternative
- Eight Sunset Instruments Have/Will be Deployed Throughout United States to Evaluate the Instrumentation in Routine Monitoring Settings
 - AIRS (RTP, NC) - October 2010 & January 2011
 - Blair Street (St. Louis, MO) - December 2011
 - Deer Park (Houston, TX) - December 2011
 - McMillan Reservoir (DC) - January 2012
 - Rubidoux (Los Angeles, CA) - February 2012 (Temporarily at HWY 710)
 - Com Ed (Chicago, IL) - June, 2012
 - Jerome Mack Middle School (Las Vegas, NV) - Spring/Summer 2012
- Sunset data will be compared with URG 3000N 24-hr filters & Aethalometers (where present)
- Contact: Beth Landis(landis.elizabeth@epa.gov)



Update on URG 3000N Issues



- Instruments Failing Leak Checks
 - Suspect Aging O-Rings Causing Leaks, as Some Cartridges ~5 Years Old
 - Work Assignment with RTI to Replace O-Rings in All Cartridges in their Inventory by Sept. 30, 2012
- Mass Flow Controller Issues
 - URG Identified Power Supply as the Cause
 - Sites with Chronic MFC Issues Supplied a “Power Supply Fix Kit”
 - Sites Experiencing this Problem Going Forward Should Contact URG to Determine if Power Supply Fix Kit is Necessary



URG 3000N Software Modifications



- Sequential Schedule Option* - Modification to Address Missed Samples due to Weekend/Holiday Site Visit Issue (***Must Have a SuperSASS to Utilize the Sequential Sampling Option**)
- Flexible Schedule Option - Modification to Allow Operators to Select the Start Date, Start Time & Duration (up to 24 hrs) for 1-3 Filters during Special Studies
- Elapsed Time Modification – Two New Values will be Recorded, Reported and Displayed:
 - Elapsed Time (in Minutes) from when the Filter was Installed into the Sampler until Pickup
 - Elapsed Time (in Minutes) from when the Sample Collection was Completed until Pickup
- Filter Change Prompt – To Address Issue Where Sampling Begins Automatically When an Operator Changes the Cartridge on a *Regularly Scheduled Sampling Day*. Modification to Prompt with the Following Options:
 - Continue with Today's Scheduled Sample
 - Abort Today's Sample and Wait until Next Scheduled Sampling Day
 - Abort Today's Sample and Set an Alternate Sampling Day

Completion of Software Modifications Expected by June, 2012

Software Tested at EPA in Summer 2012

Distribution of New Software beginning Fall 2012

National Air Quality Conference - 2012

Questions?

