NAAQS & GHG Update

CIBO Environment Committee

June 12, 2013

NAAQS: ANTICIPATED SCHEDULES & IMPLEMENTATION UPDATE

Current Schedule for Ongoing NAAQS Reviews

(updated January 31, 2013)

MILESTONE	POLLUTANT						
	Ozone	Lead	NO_2 Primary	SO_2 Primary	NO_2/SO_2 Secondary	CO	PM
NPR	Dec 2013	Jan 2014	Feb 2016	Feb 2017	May 2017	Summer 2017	TBD
NFR	Sept 2014	Oct 2014	Nov 2016	Nov 2017	Feb 2018	Spring 2018	TBD

Ozone NAAQS

- 2014 Ozone NAAQS Review
  - o Integrated Science Assessment – Released February 15, 2013
  - o Risk and Exposure Assessment and Policy Assessment – second draft due May/June 2013
  - o Proposal – December 2013
  - o Final – September 2014

- Assessing optimal timing for engaging air agencies on implementation related issues

Background: 2012 $PM_{2.5}$ NAAQS

- December 2012: $PM_{2.5}$ primary annual standard revised to 12 µg/m^3
- o Secondary annual and 24-hr NAAQS were retained at previous levels
- o Two industry petitions for review of final PM NAAQS have been filed; industry also filed petitions for EPA to reconsider and stay rule, claiming:
- Final near-road monitoring requirements differed from proposal
- No opportunity to consider effects of recent court decisions affecting implementation
- Need final implementation rules when NAAQS is final

- EPA developing implementation rule for 2012 revision
- o Key issues include
- moderate and serious classifications
- precursor policies
- BACM/BACT for $PM_{2.5}$
- NSR issues
- Unmonitored area analysis
- o Have been working through NACAA to get early input on issues to address in rule
- o EPA objective is to finalize rule around the designations take effect
- Proposal Early 2014

Anticipated NAAQS Implementation Milestones

•(updated March 2013)

Pollutant	Final NAAQS Date (or Projection)	Infrastructure SIP Due	Designations Effective	Attainment Demonstration Due	Attainment Date
$PM_{2.5}$ (2006)	Oct 2006	Oct 2009	Dec 2009	Dec 2012	Dec 2014/2019
Pb (2008)	Oct 2008	Oct 2011	Dec 2010/2011	June 2012/2013	Dec 2015/2016
NO_2 (2010) (primary)	Jan 2010	Jan 2013	Feb 2012	none	none
SO_2 (2010) (primary)	June 2010	June 2013	August 2013 (+2 rounds)	Feb. 2015	Aug 2018
Ozone (2008)	Mar 2008	Mar 2011	July 2012	Mid 2015	2015/2032
$PM_{2.5}$ (2012)	Dec 2012	Dec 2015	Early 2015	Mid 2016	2021 (Mod) 2025 (Ser)
Ozone (2014)	2014	2017	2016	2020	2020/2037

2008 Ozone NAAQS SIP Requirements Rule

- 2008 Ozone NAAQS (8 hr/.075 ppm)

- EPA designations for the 2008 Ozone NAAQS became effective on July 20, 2012
  - EPA denied 29 petitions for reconsiderations of certain final area designations in December 2012
  - Pending litigation regarding certain final area designations
  - Pending litigation regarding level of 2008 NAAQS

- 2008 Ozone NAAQS Implementation Rule
  - Proposal published 6/6/13; 60-day public comment period
  - One hearing in Washington, D.C. – date TBD
  - Anticipated publication of final rule: early 2014
  - NA SIPs due in mid-2015

2008 Ozone NAAQS SIP Requirements Rule

- Attainment Demonstration SIPs
- Reasonable Further Progress (RFP) Requirements
- Reasonably Available Control Technology (RACT)
- Contingency Requirements
- Vehicle I/M Requirements
- Nonattainment New Source Review (NSR)
- Emissions Inventory
- Rural Transport Nonattainment Areas
- “Anti-backsliding” for Revoked 1997 NAAQS

2008 Ozone NAAQS SIP Requirements Rule

- Provide states flexibility where allowed by law
- Proposed flexibilities include *(see appendix for additional detail)*
  - Deadlines for emission inventory, RFP, RACT, RACM, and attainment demonstration SIPs
  - Flexibility in meeting RFP, including precursor pollutant substitution
  - RACT reviews and compliance deadlines
  - Contingency measure flexibility for Extreme areas
  - Baseline and periodic emissions inventory submissions
  - Defining the “MSA” criteria for Rural Transport Areas
  - Revoking 1997 NAAQS and establishing new anti-backsliding provisions

2008 Ozone NAAQS SIP Requirements Rule:

Proposed Flexibilities

- Combined SIP submittals for Moderate and above areas.
  - Proposing that emissions inventory, emissions statement, RACT SIP, RFP SIP, attainment plan, and attainment demonstration due 30 months after designation (January 20, 2015).
    - Aligning multiple SIP submissions can reduce administrative burden for states.
  - Anticipate states will support the idea, but that few will take advantage for 2008 ozone NAAQS.
- Serious and higher areas have 4 years to develop attainment plan and additional 3% RFP plans
  - Proposing to allow all areas to substitute NO_x for VOC to achieve 15% inventory reduction in first 6 years after designation.
  - CAA requires these reductions to be VOC-only.
- Eliminate “pre-1990 adjustments” calculation for RFP
  - Proposing that states no longer need to calculate and deduct emissions related to pre-1990 motor vehicle, RVP, and vehicle I/M program corrections (per CAA section 182(b)(1)(D))

Proposed Flexibilities Cont'd

- Allow areas to choose base year for RFP calculations that pre-dates 2011.
  - Allows areas that began early reductions in 2008 when standard was set to take credit for those reductions in RFP plans.
  - In exchange for flexibility, areas need to provide additional 3% per year RFP for each year that is prior to 2011 (e.g., 2008 baseline year would require 15% + 3x3% = 24% reduction for years 2009 through 2017).

- Propose to allow Extreme areas to satisfy attainment plan contingency measure requirements with commitments for future measures.
- Seeking comments on a number of issues.
  - Out-of-area RFP, alternative RFP approaches, aligning I/M SIP due date with attainment SIP, RACT flexibility, etc.

GHG PERMITTING UPDATE

GHG Permitting Activity to Date

- As of April 5, 2013, approximately 241 PSD and 29 Title V permit applications have been submitted
  - Of 241 PSD permit applications, 87 permits with GHG limits have been issued
  - Most issued permits are for EGUs and oil & gas facilities
  - Of approximately 30 Title V permit applications EPA is aware of, four final permits have been issued to date

GHG Tailoring Rule Implementation

- EPA has completed the first 3 steps phase-in for GHG
- permitting
  - PSD permitting for GHGs under the Tailoring Rule Step 1 for "anyway" sources and modifications
  - Tailoring Rule Step 2 including sources that would be major for GHG-only; 100K/75K CO_2e
  - Tailoring Rule Step 3 issued in June 2012; thresholds unchanged

- Additional work/commitments underway

GHG Five-Year Study

- As part of Tailoring Rule, EPA made an enforceable commitment to conduct and complete a study by April 30, 2015
- The study will help inform the Step 4 Rule due in April 2016
- GHG permitting activity data for both PSD and Title V programs are needed as part of the study
- In addition to the permitting data we have collected to date, EPA plans to collect data from regional, state, local and tribal permitting programs on permit processing and burden
  - The exact mechanisms and timeframes for data collection are still under discussion

Streamlining Techniques Development

- EPA is reviewing CAAAC GHG Permit Streamlining Workgroup Report (released September 14, 2012) which:
  - Provides summary of GHG permit streamlining information received either through Tailoring Rule process or workgroup's efforts to collect additional information
  - Does not offer recommendations due to resource and time constraints
  - Asks EPA to solicit stakeholder feedback through public notice and comment rulemaking

- In addition, EPA continues to review possible streamlining approaches identified in Tailoring Rule and analyzing comments received

- EPA is also exploring other potential streamlining alternatives such as the use of energy efficiency programs/approaches for GHG permitting of some sources

GHG Permitting: Additional Work Areas

- Status of GHG FIPs
  - 10 states initially received FIPs
    - Only 3 states (TX, WY, FL) currently remain with GHG FIP
  - WY has submitted its revised SIP for approval and Region is working on it
    - Continue to work with permitting authorities to ensure permitting program changes are processed in an efficient manner
- Updating Title V programs
- Treatment of Biomass CO_2 Emissions for Permitting Purposes
  - 3-year deferral expires July 2014
    - SAB completed its scientific analysis; provided EPA with report
  - EPA is analyzing the information in the SAB report in order to determine next steps

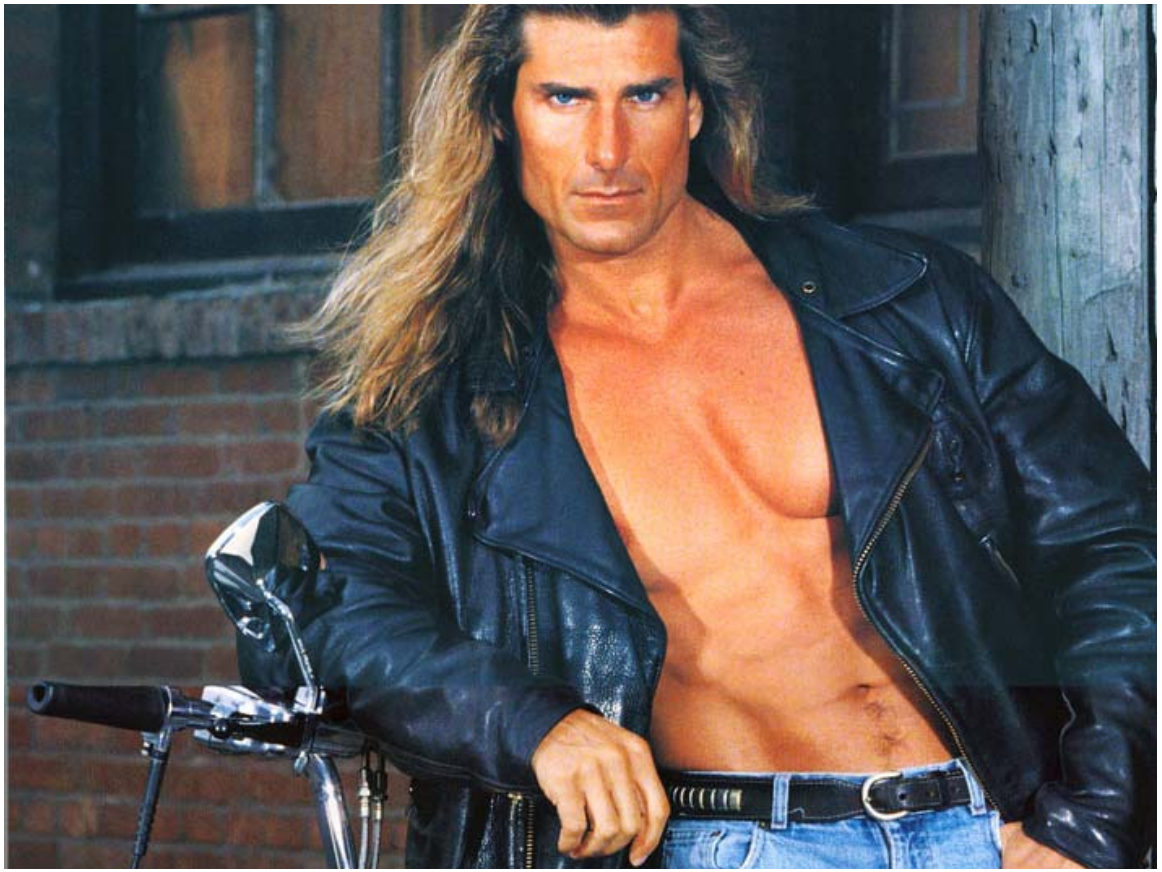
NAAQS Update—Permitting & Modeling

$PM_{2.5}$ (and other NAAQS) Modeling & Other Permitting Issues

- EPA has established new, tighter NAAQS without considering how these new standards would be implemented
- As form and level of standards have changed, EPA models have not, so EPA now in catch-up mode
- In many areas background concentrations are now close to the new NAAQS, so increment for a PSD projects emissions increase is much smaller than it used to be
- The result is that the PSD requirement to demonstrate, through modeling, that a project's emissions do not "cause or contribute to" NAAQS violations is literally stopping projects, particularly those where PM2.5 emissions are the driver
- As EPA puts it, there is "renewed tension between environmental protection & economic growth"

Is This an EPA Model?

No

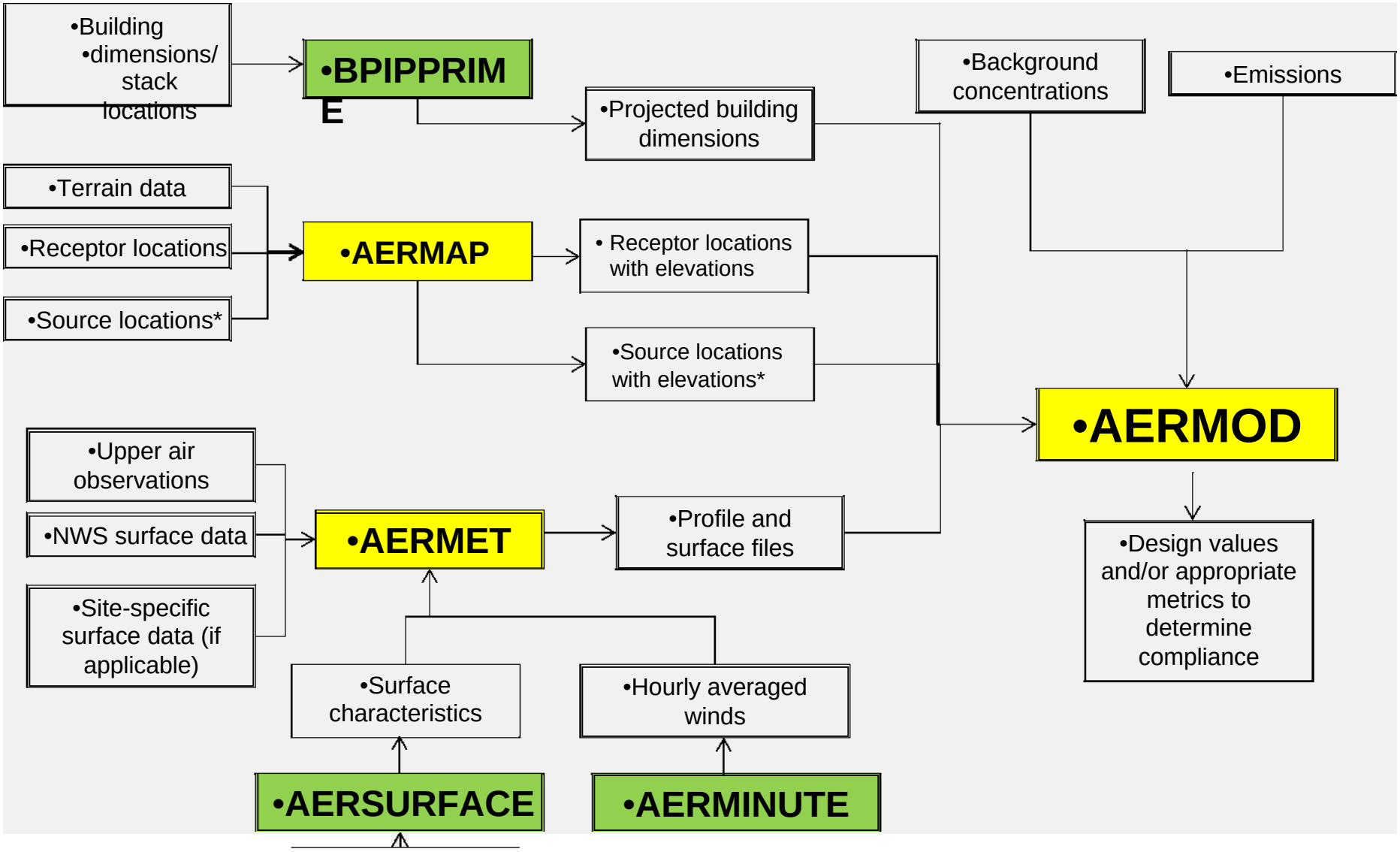


Is This an EPA model?

NO!

Is This a Messed Up EPA Model?

NO!



1992 National Land Cover data

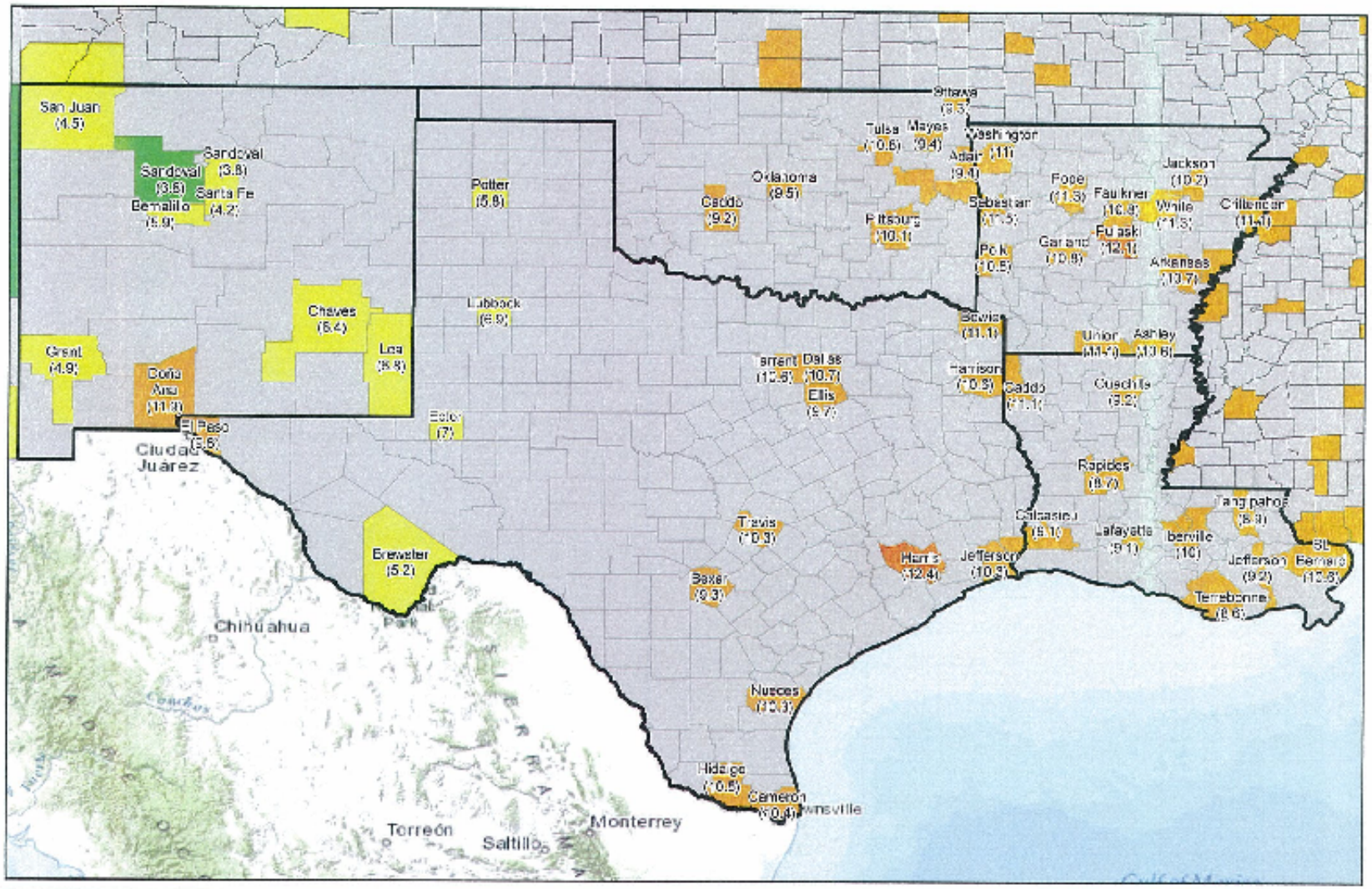
1-minute ASOS data

* AERMOD Implementation Guide recommends plant survey results for source elevations

•Unfortunately, This **Is** a Messed Up EPA Model

Specific Modeling & Permitting Concerns

- PSD modeling assumptions are inherently conservative—worst-case meteorology, allowable emissions 24/7, the definition of "ambient air", etc.
- Inclusion of both ambient background levels and impacts from nearby sources could result in double-counting; state emission inventories inherently inaccurate
- Models don't handle certain emissions/situations well—line sources, fugitives, buoyant sources, complex terrain, atmospheric chemical transformations
- Emission inputs may be flawed due to poor emission factors and test method issues
- Recent Court decisions and settlements with ENGOs have made the situation even more difficult:
  - Court decision vacating $PM_{2.5}$ SILs and SMCs
  - EPA settlement with Sierra Club requiring consideration of secondary formation of $PM_{2.5}$ and ozone
  - Court decision requiring EPA to implement $PM_{2.5}$ NAAQS under Subpart 4 of Section 107 of the CAA, which means EPA must consider all 4 $PM_{2.5}$ precursors—SO_2, NO_x, ammonia, VOCs



Annual PM2.5 2009-2011 Design Values
EPA Region 6

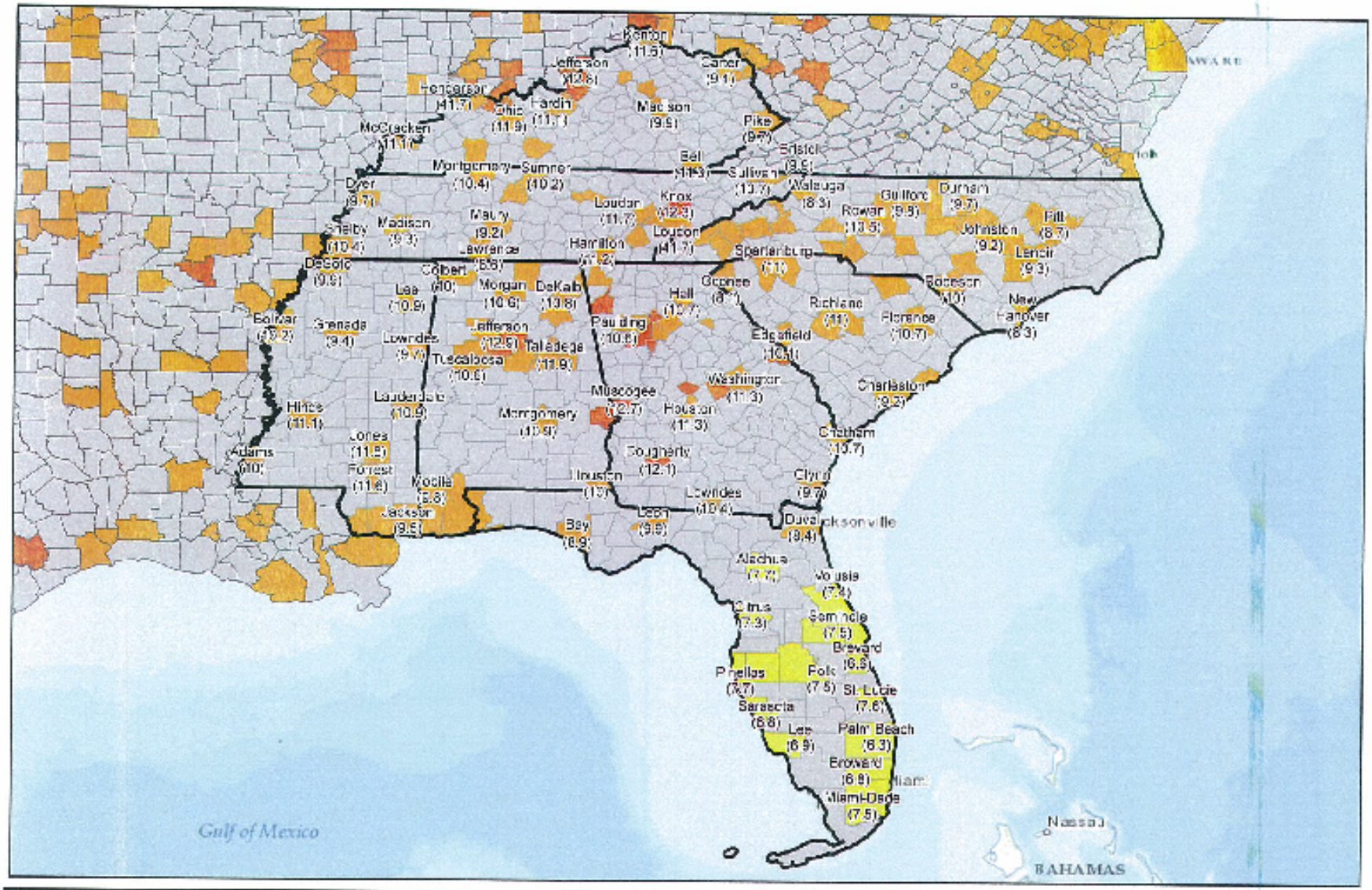
ERM analysis of EPA's PM2.5 2009-2011 Design Values (http://www.epa.gov/airtrends/values.html). Note that not all monitors are suitable for comparison to NAAQS and these values do not represent the basis for upcoming attainment designations.

County Design Values (µg/m3)

- No Data
- >0 - 4
- >4 - 8
- >8 - 12
- >12
- State Boundaries

Miles
0 45 90 180

ERM



Annual PM2.5 2009-2011 Design Values
EPA Region 4

ERM analysis of EPA's PM2.5 2009-2011 Design Values (http://www.epa.gov/air/trends/values.html). Note that not all monitors are suitable for comparison to NAAQS and these values do not represent the basis for upcoming attainment designations.

County Design Values (µg/m3)

- No Data
- >0 - 4
- >4 - 8
- >8 - 12
- >12
- State Boundaries

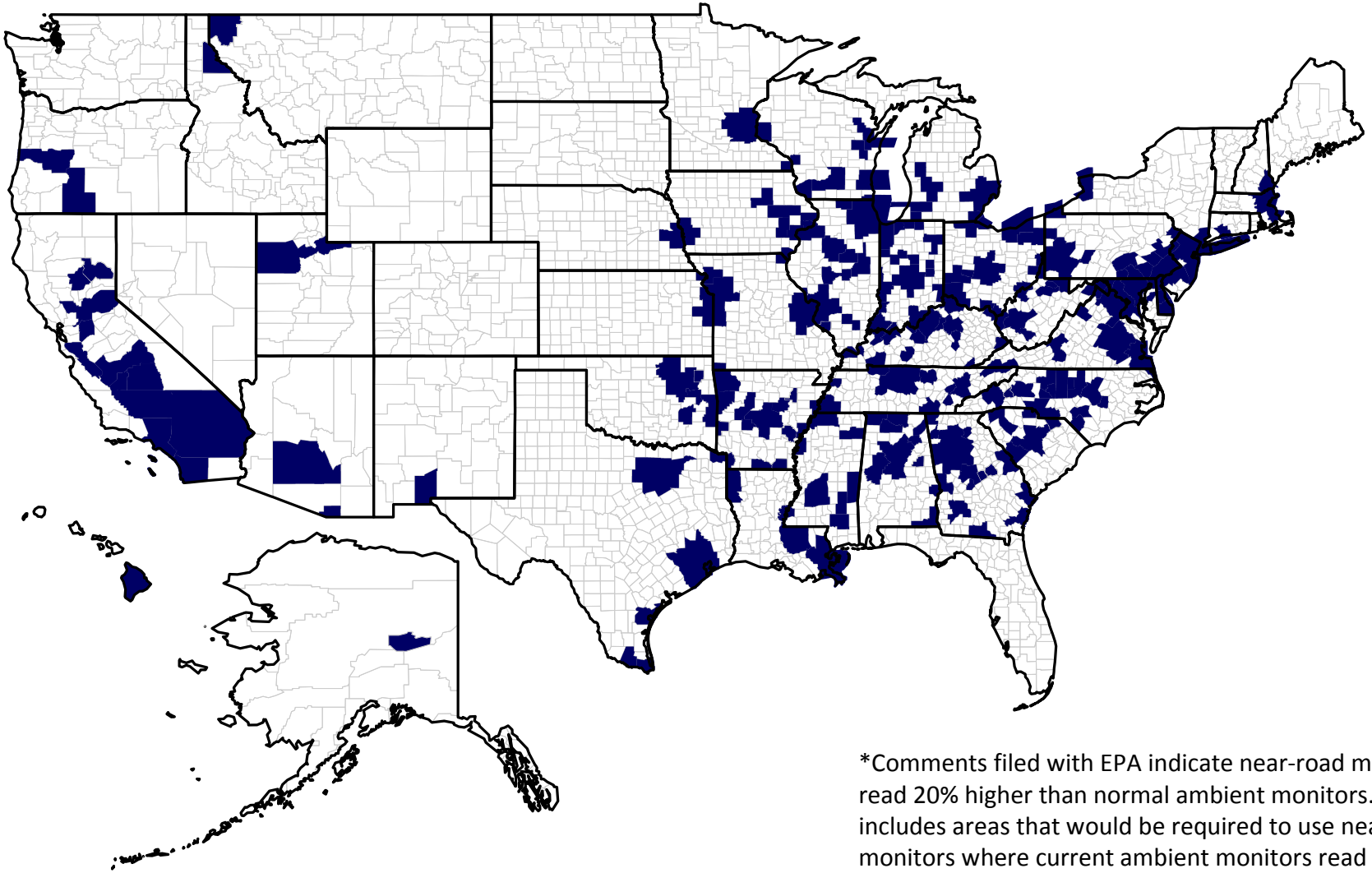
N

Miles

0 65 110 220

ERM

Non-Attainment Areas at 12 µg/m³ With Near-Road Monitors*

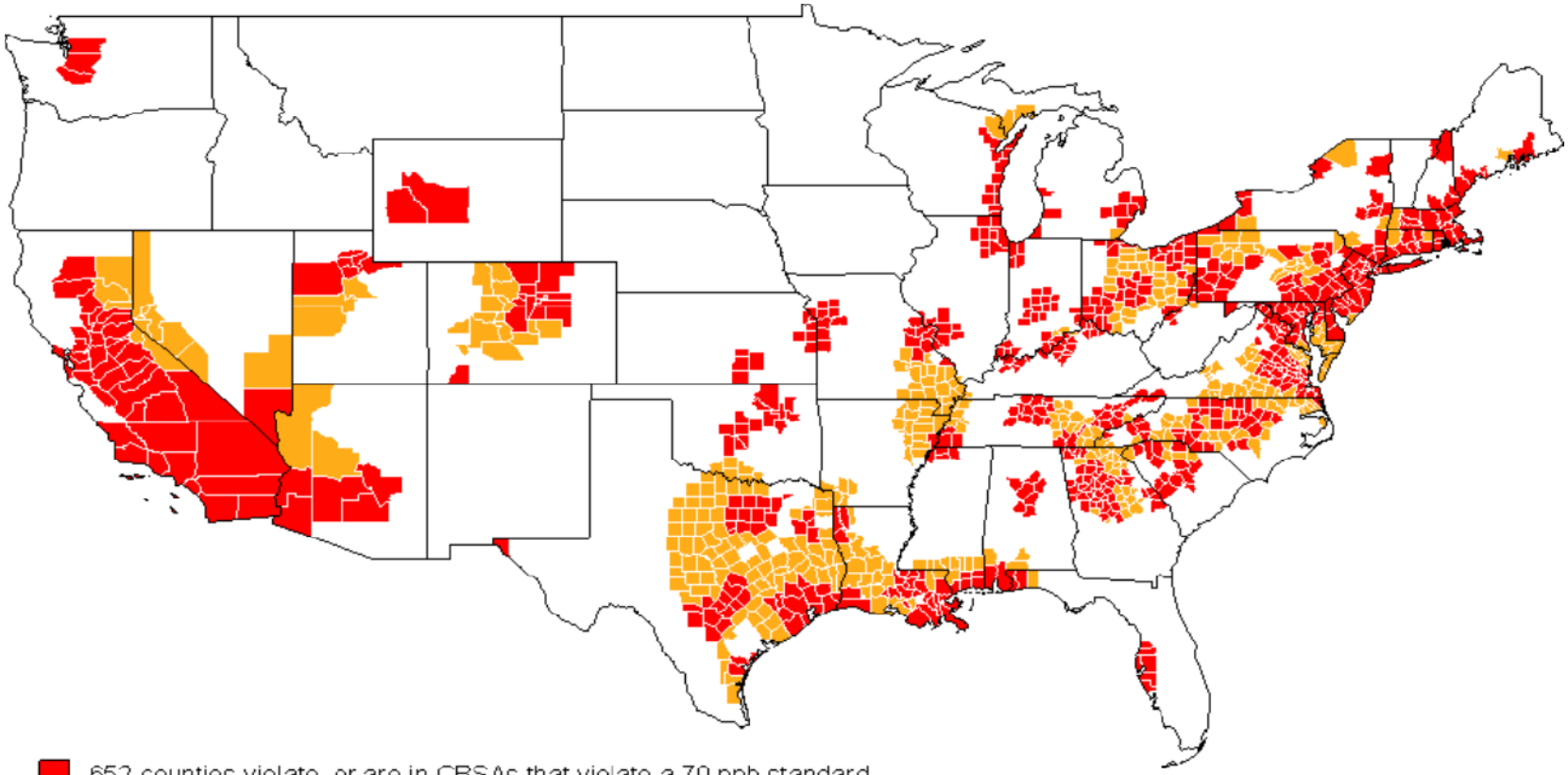


Based on 2008-2010 data accessed from http://www.epa.gov/airtrends/values.html

*Comments filed with EPA indicate near-road monitors read 20% higher than normal ambient monitors. Map includes areas that would be required to use near-road monitors where current ambient monitors read 10 µg/m³ or higher.

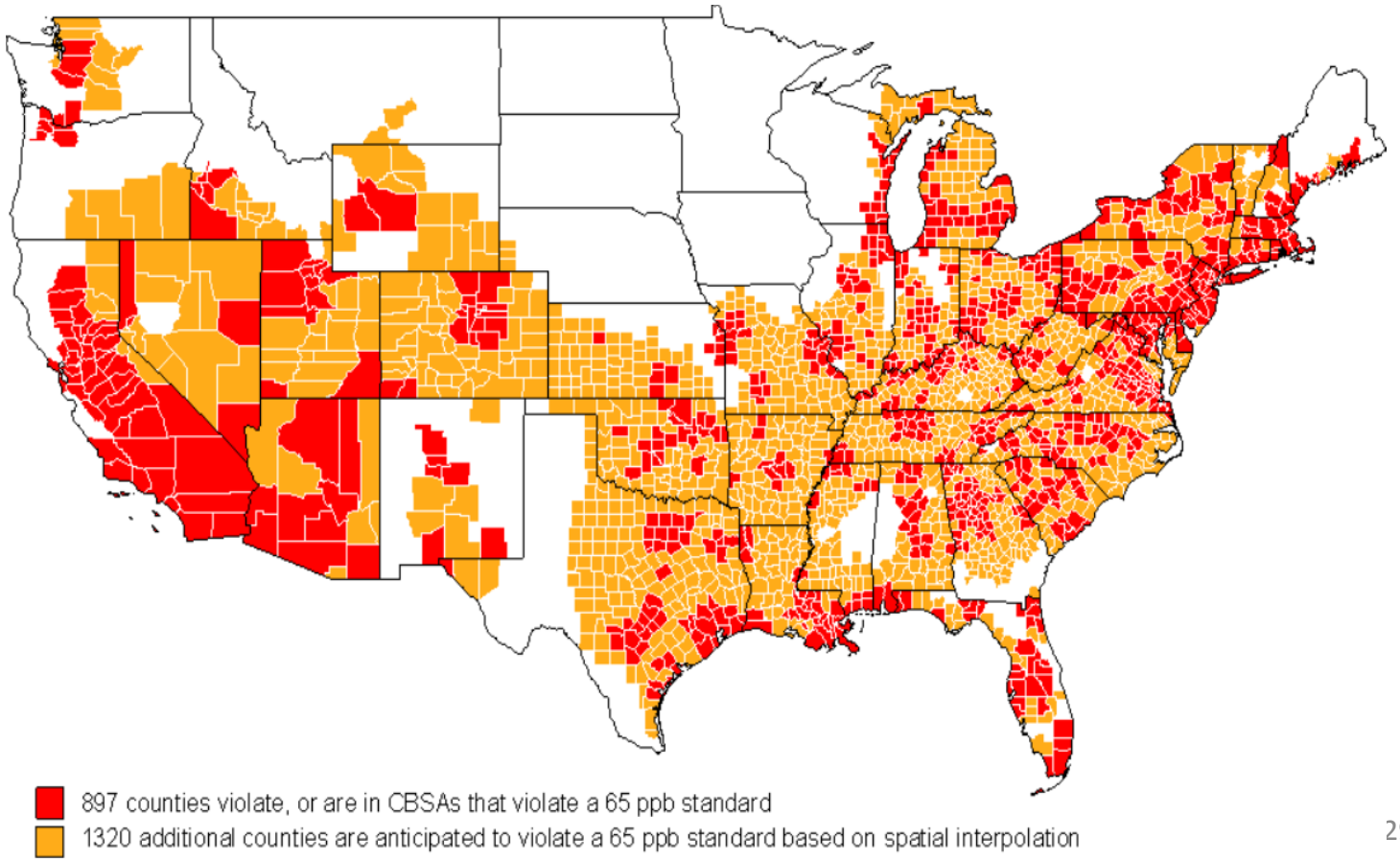
Ozone

- EPA & CASAC have recommended a new ozone standard be set between 55 and 70 ppb. The map below shows <u>extrapolated</u> nonattainment areas at 70 ppb



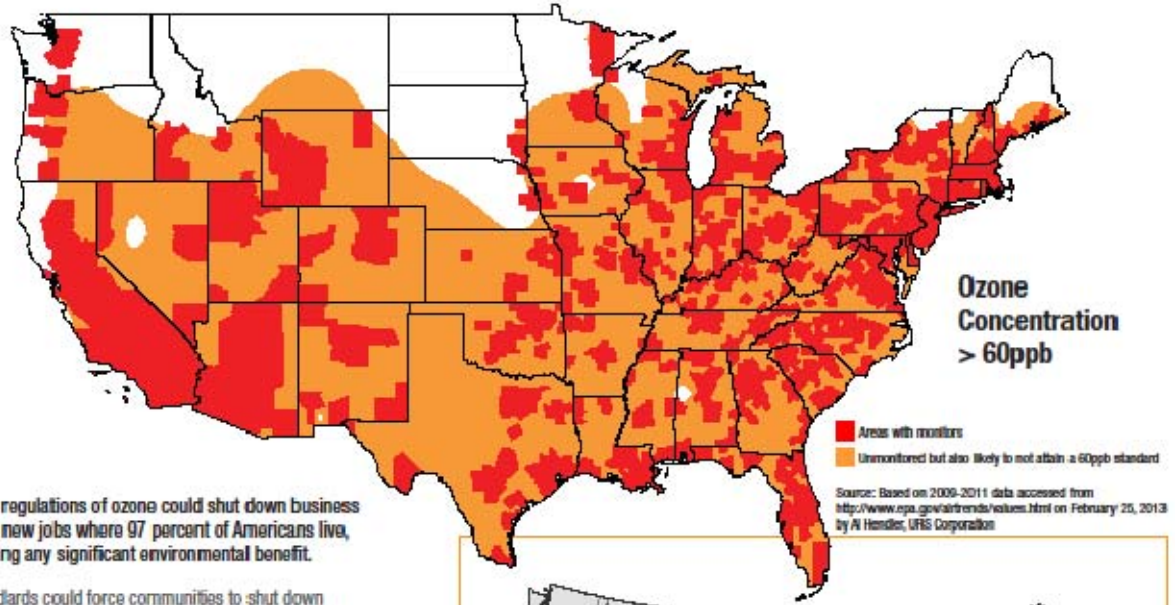
Ozone

- Projected, extrapolated n/a areas at 65 ppb



AMERICAN PETROLEUM INSTITUTE

New EPA Ozone regulations could mean America is closed for business.

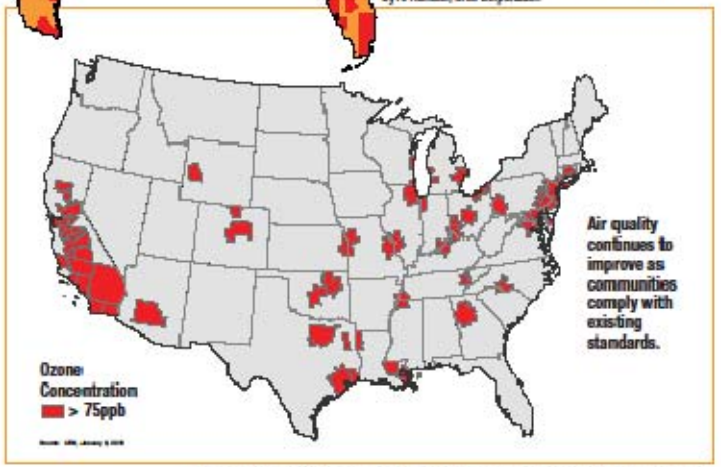


Upcoming EPA regulations of ozone could shut down business expansion and new jobs where 97 percent of Americans live, without providing any significant environmental benefit.

Strict new standards could force communities to shut down business activity in a futile attempt to force ozone levels below background levels. Needless to say, operating under such stringent requirements could stifle new investment necessary to create jobs and could slow the economy or even nudge it back into recession.

Meanwhile, air quality continues to improve under the existing standards. The health data being used to justify tightening the standard is not compelling and EPA and the states have not even begun to implement the stringent 2008 ozone standard.

EPA should consider keeping the current standards—the most stringent ever—before closing America for business.



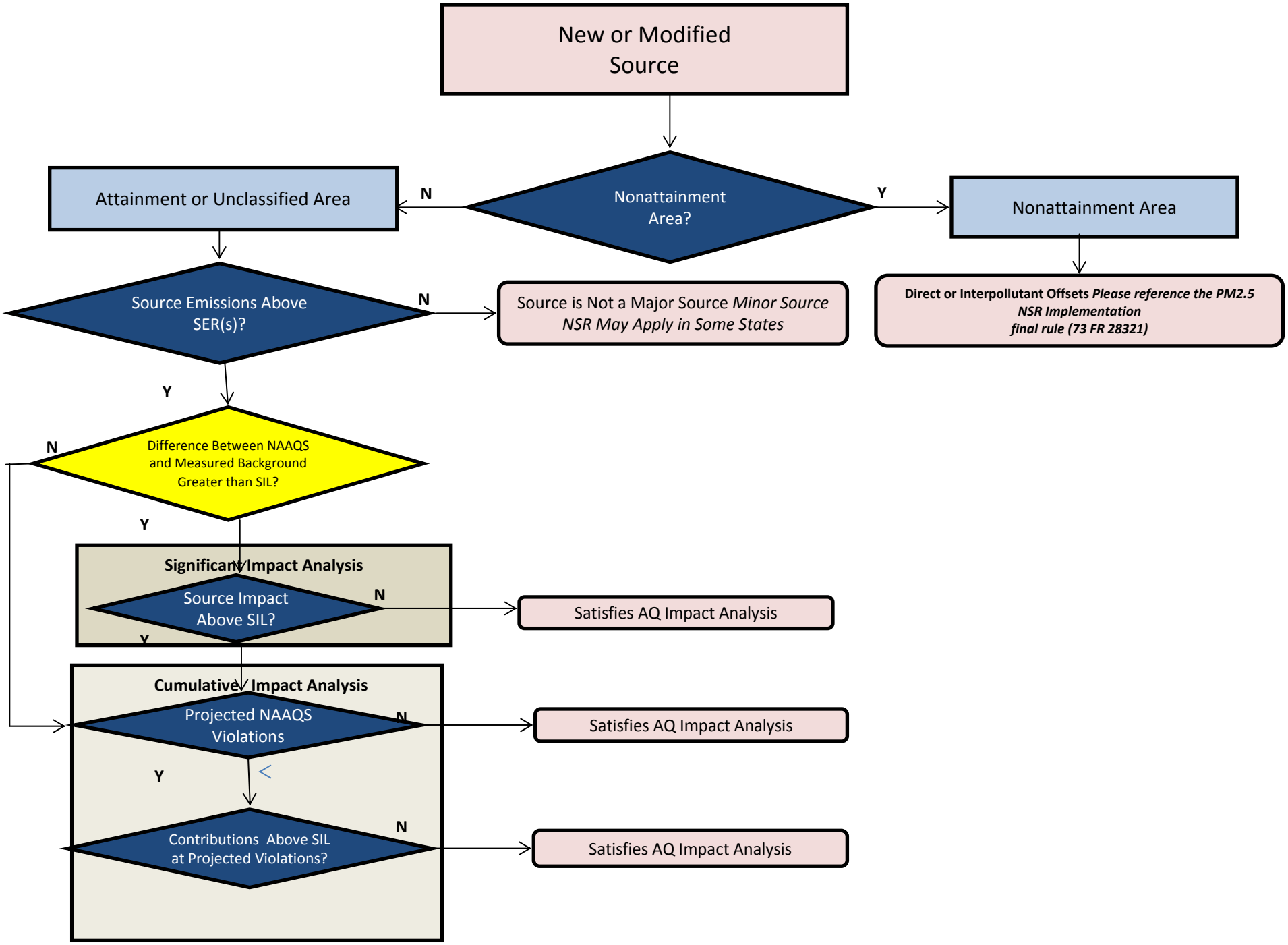
To find out more, visit API.org

What Are We Doing About It?

- Formed new Hunton & Williams NAAQS Implementation Coalition and have energized our trades and coalitions
- Had lots of meetings with EPA at all levels, from Gina McCarthy to OAQPS staff; we have their attention
- Suggested a wide variety of modeling & permitting flexibility options, many of which EPA has tentatively embraced—post-construction monitoring in lieu of modeling

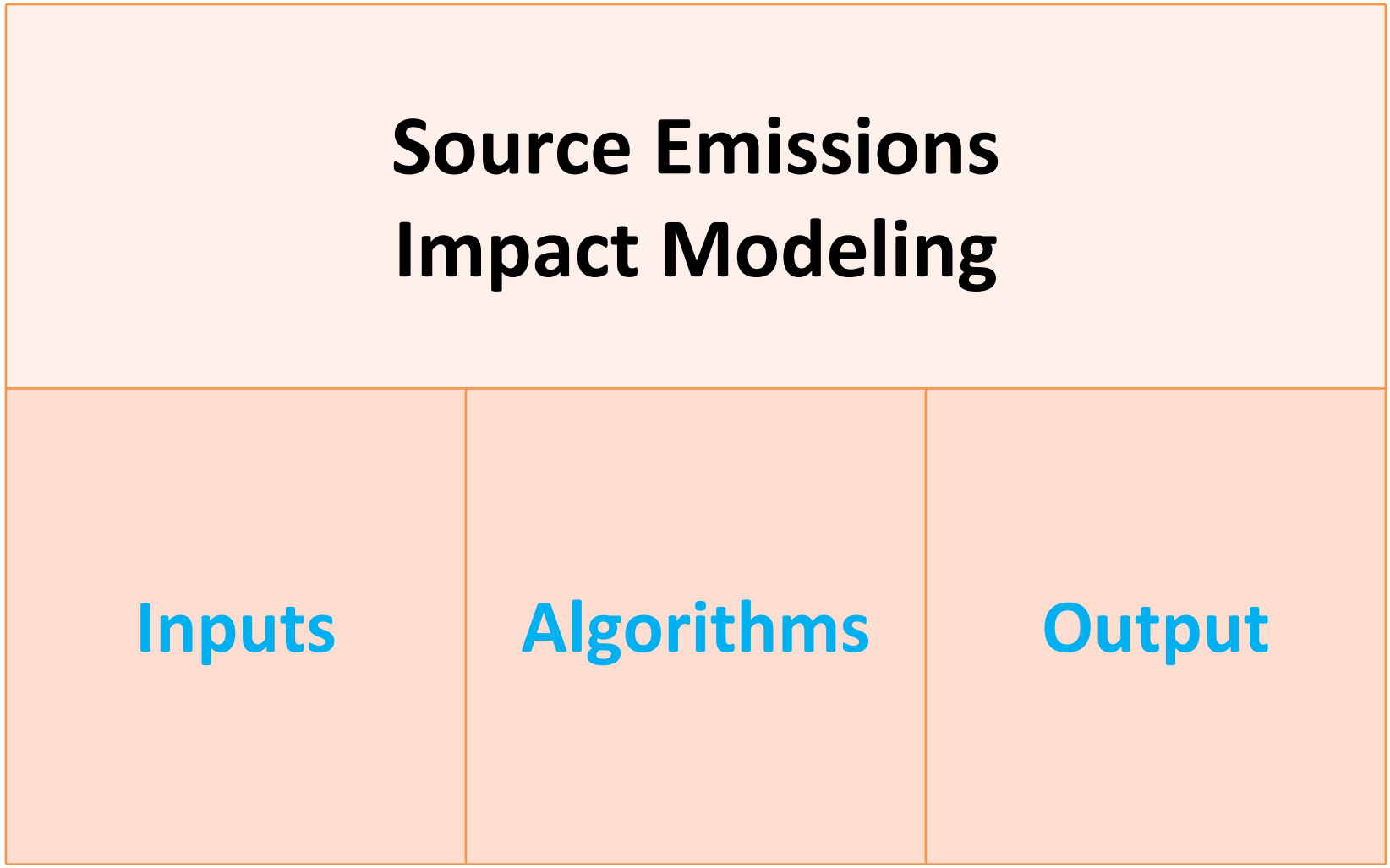
EPA Actions

- **EPA has, or is considering, a number of steps to address modeling and permitting issues:**
  - **Guidance on monitoring vs. modeling (Spring 2013)**
  - **Low wind-speed model fixes (out now in beta)**
  - **Matrix of prioritized model fixes, rules and guidance (out for comment very soon)**
  - **$PM_{2.5}$ SILs/SMCs/SERs rule (timing TBD)**
  - **Ozone SILs and SERs rule (creating former, setting latter for ozone precursors)**
  - **Rule to respond to Subpart 4 Court decision (secondary formation of $PM_{2.5}$, PSD permitting**
  - **Draft guidance for $PM_{2.5}$ modeling (out for informal comment, final this Fall)**
  - **New rule to update Appendix W (NPRM Spring 2015)**
  - **AERMOD updates addressing line sources, downwash and building characterization (FY2013+)**
  - **New methods for tracking and communicating model changes and bug fixes**
  - **CALPUFF update (under FLM review—Spring 2013)**
  - **Possible CALPUFF replacement (FY2013+)**
  - **Work with EPA-ORD—wind tunnel work on downwash, buoyant sources, ozone screening model**
  - **Ambient ratio method (ARM2) updates for NO_2 (Summer 2013)**
  - **Tier 3 NO_2 model updates (2014)**
  - **Guidance on modeling domain and inventory of modeled sources (Spring 2013)**


New or Modified Source
Nonattainment Area?
N
Y
Attainment or Unclassified Area
Nonattainment Area
Source Emissions Above SER(s)?
N
Source is Not a Major Source *Minor Source NSR May Apply in Some States*
Direct or Interpollutant Offsets *Please reference the PM2.5 NSR Implementation final rule (73 FR 28321)*
Y
N
Difference Between NAAQS and Measured Background Greater than SIL?
Y
Significant Impact Analysis
Source Impact Above SIL?
N
Satisfies AQ Impact Analysis
Y
Cumulative Impact Analysis
Projected NAAQS Violations
N
Satisfies AQ Impact Analysis
Y
<
Contributions Above SIL at Projected Violations?
N
Satisfies AQ Impact Analysis

Our Response

- All of this is great, and helpful, but it isn't enough
- EPA agrees; as Chet Wayland put it, there are a number of "smoking guns" that need to be fixed, and addressing one (or even several) doesn't really address the problem
- How are we currently presenting these issues to EPA?


Source Emissions
Impact Modeling
Inputs
Algorithms
Output

Measurement Methods and Model Input Issues

Short-Term (within 6 mos.)	Medium Term (6-24 months)	Long-Term (2 to 4 years)
• Allow appropriate train blanks adjustments (Methods 201A and 202) • Grant OTM status for API method for filterable $PM_{2.5}$ on wet sources • Allow use of alternate inputs representative of "prevalent" emissions as opposed to "maximum permitted" emissions	• Promulgate API wet source method development to broaden use by permitting agencies • Review data from alternative methods for condensable PM (OTM 39 or equivalent) for source categories prone to bias • Improve emission inventories and AP-42 factors	• Develop better methods for Fugitive measurement

Modeling/Algorithms

Short-Term	Medium Term	Long-Term
• **Use Variable Emissions (EMVAP/Monte Carlo)** • Adopt Low wind speed (move from beta) • Make ARM2 refinements • Improve CALPUFF	•**Rely on better models (CAMx)** • Apply Tier 3 modeling for NO2 chemistry •Consider CALPUFF replacement •Improve communications; consider ways to get out information on successful modeling	• Longer-term modeling improvements and tools • Continue Technical Modeling Workgroup for input • Plan for 11th Modeling Conference • Revise other conservative defaults

Output and Policy Issues

Short-Term	Medium Term	Long-Term
• **Defer NAAQS effectiveness (including PM 2013)** • **Temporal and Spatial Pairing such as "Paired Sums"** • **Ambient air definition** •**Update SERs for PM2.5 precursors** • Rely on monitoring and clarify duration and requirements for calendar year • Bias of near-road monitors • Establish thresholds (SO2) – population/tonnage • Permitting when background close or exceeds NAAQS • Issue Noranda monitoring guidance	• **Reinstate PM10 surrogacy policy (if no deferral)** • Conflicts between CAPs controls (PM and NOx) • PM precursor coverage under Subpart 4 • Retain SMC/SILs concepts such as SERs • Address lack of Offsets in rural areas • **Use Hot Spot guidance to exclude receptors with short term exposures (roads, railways, rivers)**	• **Always issue implementation guidance with new NAAQS OR defer effective date until necessary tools and test methods in place** • **Make further improvements to Variable Emissions (EMVAP/Monte Carlo)**

Some Interim Ideas EPA Has Floated

- Consider pre-construction monitoring to avoid potential double-counting when adding background to source's modeled impacts
- Should be relatively simple to justify post-construction monitoring for $PM_{2.5}$-driven sources since models don't handle secondary formation well
- Consider "PSD offsets" if traditional modeling isn't working—these are air quality offsets, not emissions offsets, so some modeling required
- EPA acknowledges many emission factors are severely outdated and overly conservative, so time permitting consider some source characterization studies (with EPA involvement)
- EPA/OAQPS modeling staff is willing to act as a "facilitator" with states and EPA Regional Offices if problems continue; EPA is also willing to work with individual companies to consider project "work-arounds"

What's Next?

- Plans are afoot to elevate these issues again, with the following messages:
  - EPA needs to rethink its current policies of considering NAAQS and NAAQS implementation separately; the current policy is an example of bad management
  - The "fixes" that EPA currently has on the table are insufficient to address the problem; need more focus on model inputs
  - EPA needs to deploy discretionary resources to these issues since they represent a major drag on potential economic growth
  - PSD permitting is only part of the problem; a massive new set of nonattainment areas, whether ozone or $PM_{2.5}$, will also have significant economic impacts