



PM_{2.5} - Update

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Particulate Matter: What is It?

A complex mixture of extremely small particles and liquid droplets

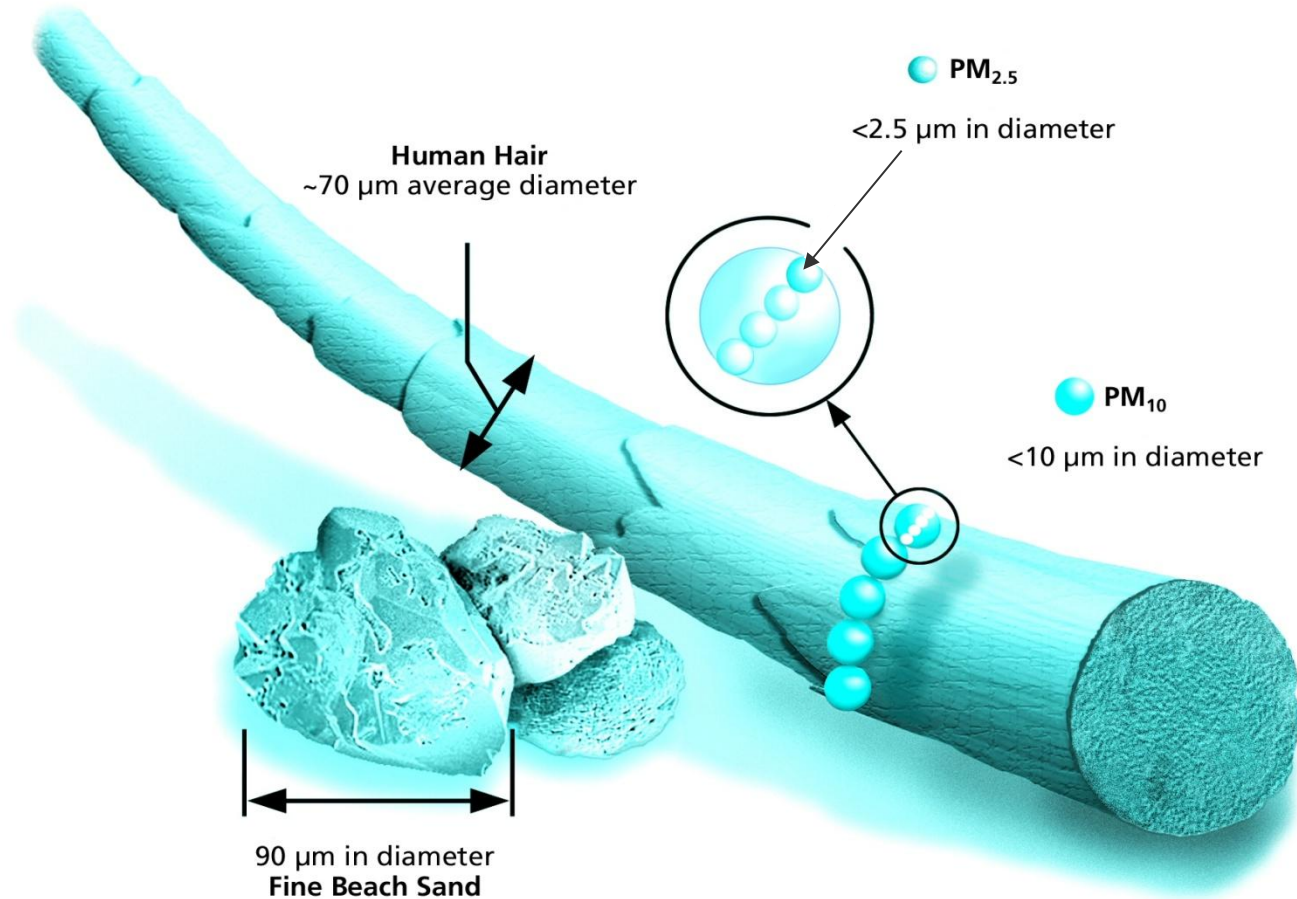


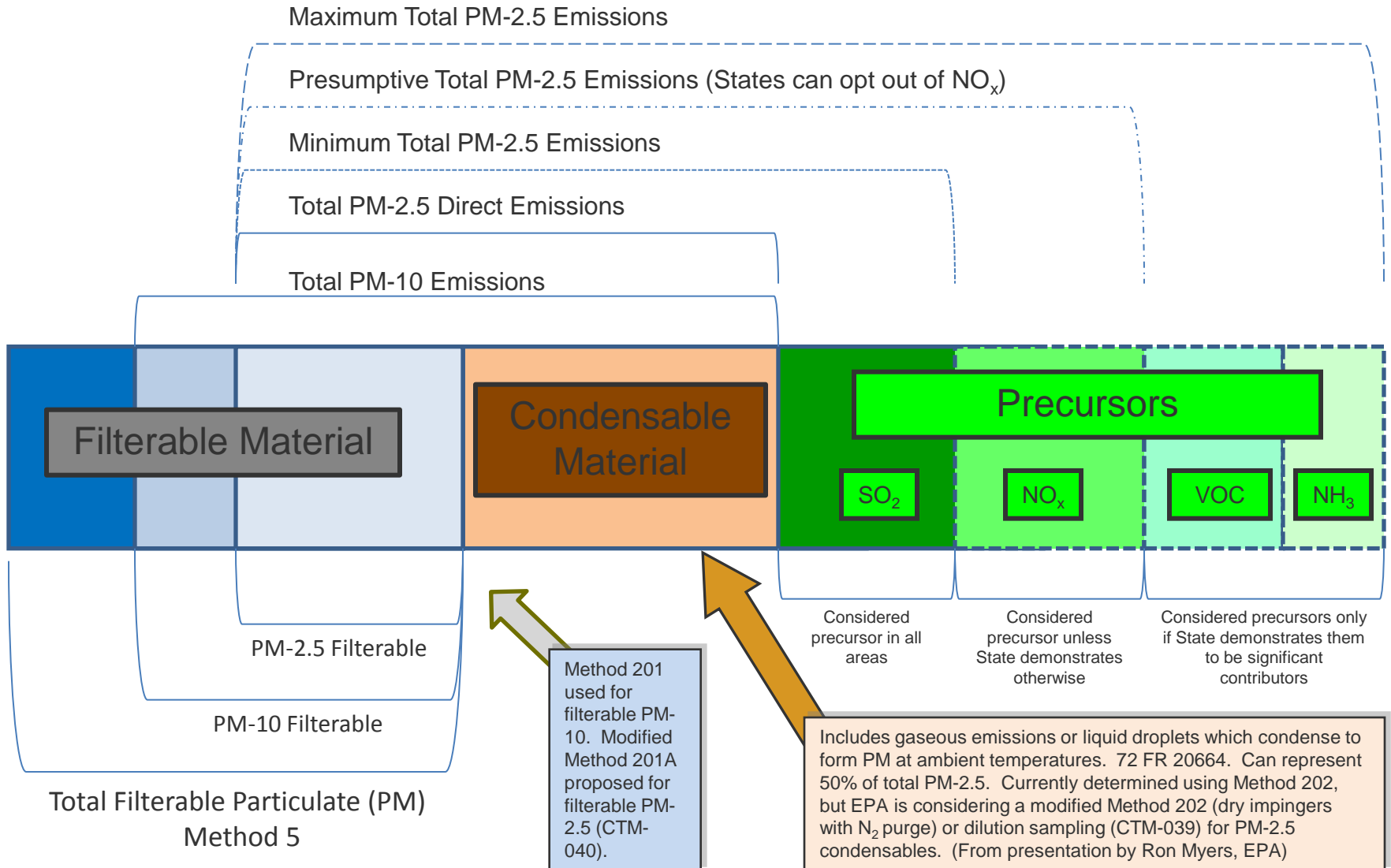
Image courtesy of EPA, Office of Research and Development

PM_{2.5} Components



- **Primary particles – emitted directly into the air**
 - Solid particles and liquids
 - Condensable organic particles
- **Secondary particles – sulfate and nitrate that form in the atmosphere from a chemical reaction**

The Many Forms of Particulate Matter Emissions[©]



PM_{2.5} Issues



- **Evolving NAAQS**
- **SIP development and RACT Standard implementation**
- **NSR implementation**
- **Test method inconsistency and data availability**

EPA's PM_{2.5} Standards: Old and New

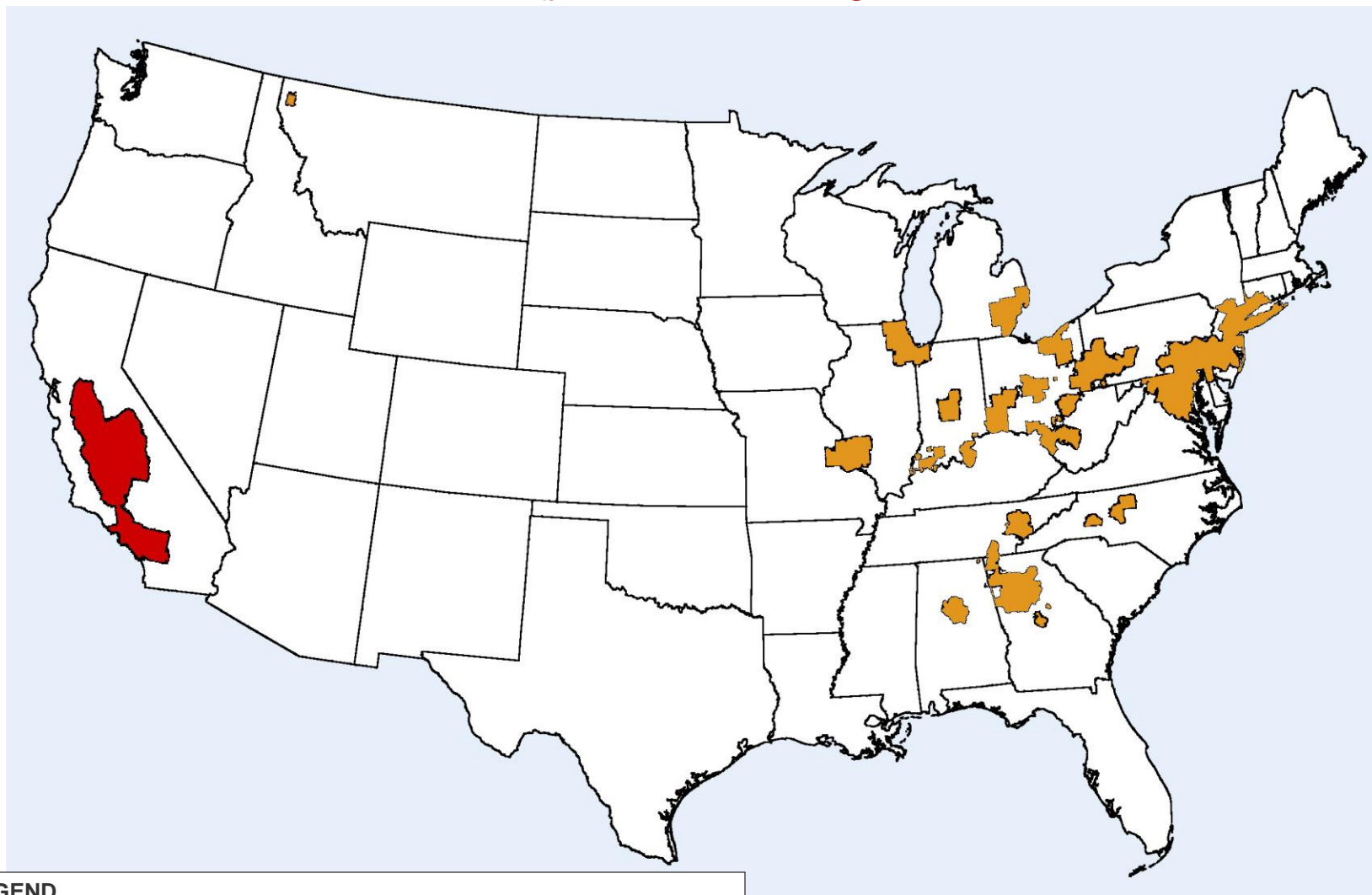
	1997 Standards		2006 Standards	
	Annual	24-hour	Annual	24-hour
PM _{2.5} (Fine Particles)	15 µg/m³ Annual arithmetic mean, averaged over 3 years	65 µg/m³ 24- hour average, 98th percentile, averaged over 3 years	15 µg/m³ Annual arithmetic mean, averaged over 3 years	35 µg/m³ 24- hour average, 98th percentile, averaged over 3 years

Timeline for PM_{2.5} NAAQS Implementation

April 2005	39 areas designated for 1997 standards
December 2006	2006 revised PM NAAQS
December 2007	States recommend designations for 2006 revised PM _{2.5} standards
April 2008	PM _{2.5} State plans due for 1997 standards
2008-9	Final designations for 2006 PM _{2.5} standards (effective date 60-90 days later; 2009-10)
April 2010-15	Attainment date for areas designated in 2005 for 1997 standards
April 2012-13	PM _{2.5} State plans due for 2006 standards
April 2014-20	Attainment date for areas designated in 2009-10

Currently Designated PM_{2.5} Nonattainment Areas - 1997 Standards

Violated annual and/or 24-hour PM_{2.5} standards with designated data (2001-2003)*

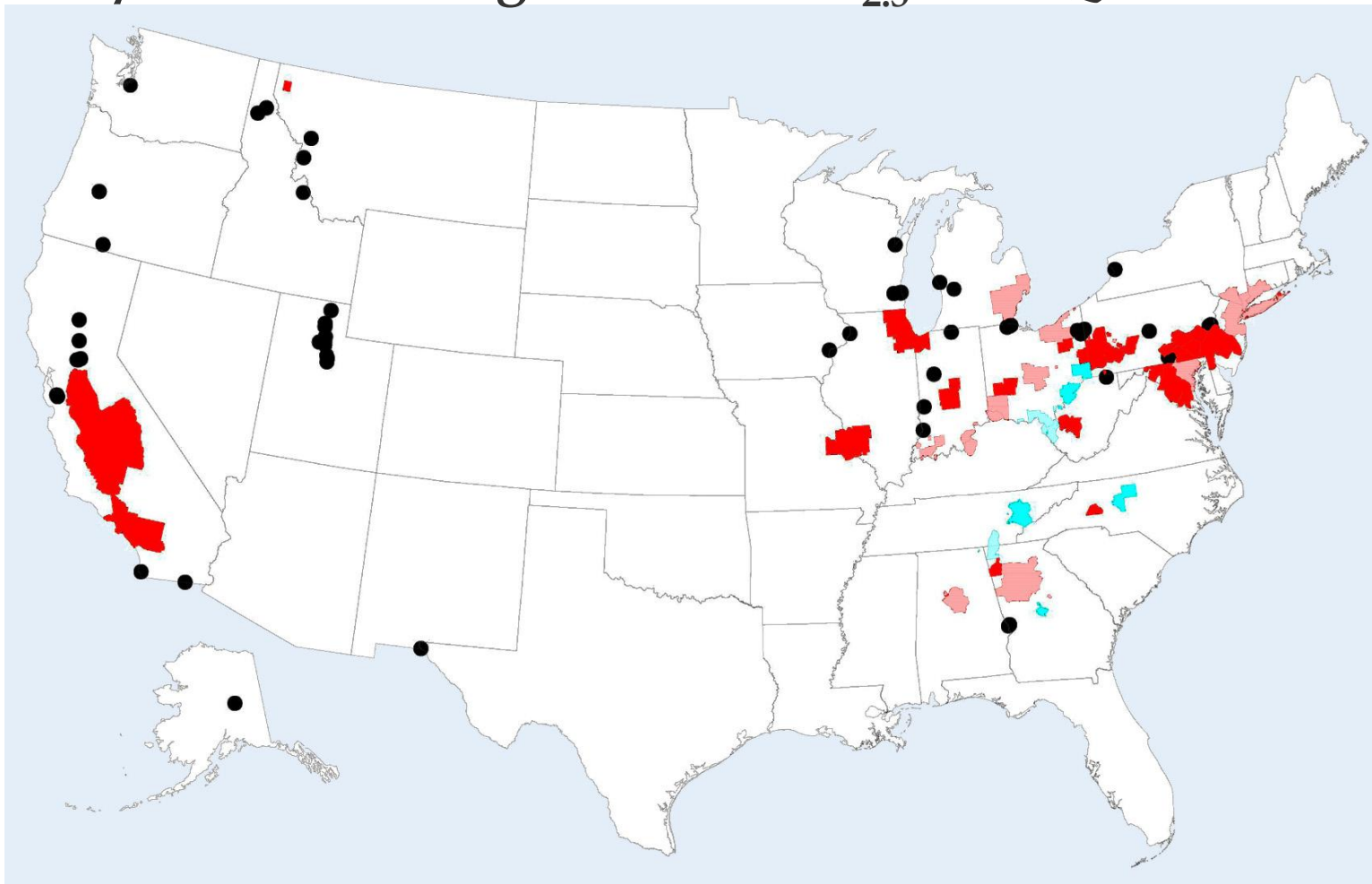


LEGEND

Nonattainment areas violating:	Number of Areas
■ both annual (15 µg/m ³) <u>and</u> 24-hour (65 µg/m ³) standards	2
■ ONLY the 24-hour standard (65 µg/m ³)	0
■ ONLY the annual standard (15 µg/m ³)	37
Total PM_{2.5} Nonattainment Areas	39

* 2002-2004 data were considered in the designation process but all nonattainment designations were based on 2001-2003 data

Areas/Sites Violating 24-Hour PM_{2.5} NAAQS – 2003-2005



- Current nonattainment area violates new 24-hr NAAQS [32 areas]
- Current nonattainment area meets new 24-hr NAAQS [7 areas]
- Sites not in a current nonattainment area violate the new 24-hr NAAQS (59 sites)

- 59 sites are violating the new 24-hr standard and are NOT located in an existing nonattainment area.
- They are located in 38 different areas (34 in metro areas, 4 not in a metro area).

RACT Impacts

- **States must develop SIPs that include all reasonably available control measures**
- **“Reasonably Available Control Technology” or RACT for Stationary Sources**
 - Mandatory for Direct PM_{2.5} and SO₂
 - NO_x unless state can show no contribution
- **No suggested size cut-offs**
- **EPA cost threshold - \$10,000/ton**

Based on what PM_{2.5} Data

PM_{2.5} NSR Implementation

- **May 16, 2008 – EPA promulgates major provisions of PM_{2.5} NSR Implementation Rule (PSD and NaNSR) addressing:**
 - Significant emissions rates
 - Precursors
 - Condensables
 - Transition
- **Remaining Issues (Promulgation not expected until March 2009)**
 - Increments
 - SILs
 - SMC



PM_{2.5} NSR Applicability

- **PSD New Source – 100/250 tpy threshold**
- **NaNSR New Source – 100 tpy threshold**
- **Significant emissions rates (apply individually)**
 - Direct PM_{2.5} – 10 tpy
 - SO₂ precursor – 40 tpy, must be regulated
 - NO_x precursor – 40 tpy, presumed* to be regulated
 - VOC – 40 tpy, presumed* not regulated
 - NH₃ – SIP specific, presumed* not regulated
- **Condensable PM_{2.5} – Included in direct PM_{2.5} after transition**

****States may differ from presumption***

Condensable PM Issues and Implementation

- **EPA will not require addressing condensable PM for either PM_{10} or $PM_{2.5}$ during a transition period**
- **January 1, 2011 – transition period expiration or an earlier date if established by rulemaking**
- **States may require condensables earlier**
- **Existing SIPs may require condensables now**

PSD PM_{2.5} Requirements

PSD Element	PM _{2.5} Implementation
BACT	<ul style="list-style-type: none"> • Direct PM_{2.5} • SO₂ precursor emissions • NO_x precursor emissions (unless exempted by state) • VOC precursor emissions only if required by state
NAAQS and Increment Demonstrations	Proposed SILs, increments and SMCs
Preconstruction Monitoring	Required but case-by-case exemptions available based on SMCs and other data

NaNSR PM_{2.5} Requirements

NANSR Element	PM _{2.5} Implementation
LAER	<ul style="list-style-type: none"> • Direct PM_{2.5} • SO₂ precursor emissions • NO_x precursor emissions (unless exempted by state) • VOC precursor emissions only if required by state
Emissions Offsets	Ratio for direct and precursor emissions
Compliance Certification	No change from existing
Alternatives Analyses	No change from existing

Emissions Offset Ratio Requirements

Pollutant(s)	Offset Ratio
Any Pollutant for the same Pollutant	1 : 1
NO _x for SO ₂	No preferred ratio – state demonstration
SO ₂ for NO _x	No preferred ratio – state demonstration
NO _x for Primary PM _{2.5}	100 : 1 Western US 200 : 1 Eastern US
Primary PM _{2.5} for NO _x	1 : 100 Western US 1 : 200 Eastern US
SO ₂ for Primary PM _{2.5}	40 : 1
PM _{2.5} for Primary SO ₂	1 : 40

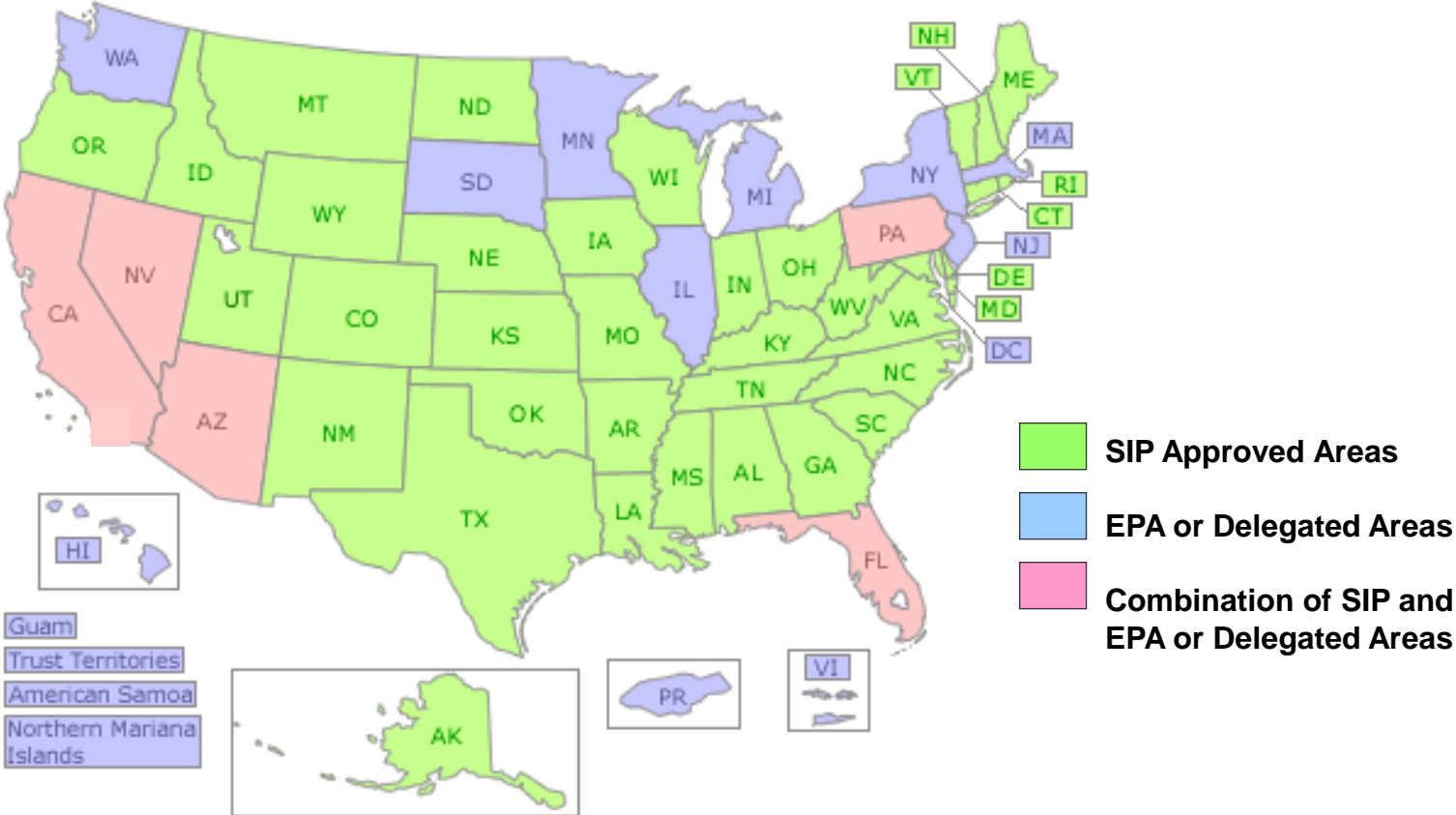
Timing and Transition Issues



- **NaNSR – Appendix S applies July 15, 2008 in all NA areas**
- **PSD – Federal rules apply July 15, 2008 in delegated states and areas where EPA issues permits**
- **PSD – Prior PM₁₀ surrogate policy applies in authorized states**

Prevention of Significant Deterioration (PSD) Permit Program Status

May 2007



Test Method Issues



- **EPA Method 202 is formal standard for condensable Particulate Matter**
- **Method 202 does not always result in reproducible results**
- **Other Test Method 28 – Method 202 with dry impingers is where EPA is headed**
- **Condensables will be regulated when OTM 28 is promulgated**

SIPs and the Data Mismatch

- **SIPs are under development based on old emissions data and old emissions factors**
- **States need accurate data to develop the SIPs which will require RACT and govern modifications**
- **How accurate is your emissions inventory?**



Recommended Path Forward



- **Update PM_{2.5} inventories and speciate filterable and condensable components**
- **Ensure state agency inventories are accurate for existing operations**
- **Ensure projects going forward consider PM_{2.5} and include sufficient resources for precursor offsets and controls, if necessary**
- **Consider testing with OTM 28 as it is finalized**

Questions

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