

# PM<sub>2.5</sub> National Ambient Air Quality Standards: Final SIP Requirements Rule

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CLEAR THE AIR: PATHS TO  
ATTAINMENT  
CONFERENCE AND EXPO

SEPTEMBER 26, 2016



# preOverview

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- Presentation originally developed for state/local/tribal air quality agencies
- Importance – This document interprets the Clean Air Act requirements so that air quality agencies can develop and implement plans to reduce particulate matter levels in their communities.
- Overall goal – To learn a little more about the new rule and how it applies here in Fairbanks, Alaska.

# Overview

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- Background
- Key Topics
  1. Classifications, attainment plan due dates, attainment dates and reclassifications
  2. Optional PM<sub>2.5</sub> precursor demonstrations
  3. Moderate area attainment plan requirements
  4. Serious area attainment plan requirements
  5. Serious area that fails to attain
  6. Nonattainment NSR program requirements
- Next steps
- Appendix

# Background

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- Final rule provides the framework for planning requirements for 2012 and future PM<sub>2.5</sub> NAAQS, and will inform implementation for areas still violating 1997 and/or 2006 PM<sub>2.5</sub> NAAQS
  - 2012 primary annual PM<sub>2.5</sub> standard: 12 µg/m<sup>3</sup>
  - **2006 primary 24-hour PM<sub>2.5</sub> standard: 35 µg/m<sup>3</sup>**
  - 1997 primary annual PM<sub>2.5</sub> standard: 15 µg/m<sup>3</sup>; 24-hour PM<sub>2.5</sub> standard: 65 µg/m<sup>3</sup>
- January 2013 US Court of Appeals for the DC Circuit decision regarding the 2007 PM<sub>2.5</sub> implementation rule and 2008 NSR rule for PM<sub>2.5</sub>
  - Court held that EPA must implement PM<sub>2.5</sub> NAAQS under subpart 4 (Clean Air Act sections 188-190)
  - Presumptively required to address all PM<sub>2.5</sub> precursors (SO<sub>2</sub>, NO<sub>x</sub>, VOC, ammonia) in SIPs

# Background (continued)

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- Proposed rule issued in March 2015
  - Engaged with states early in the development process through NACAA-EPA workgroup
  - Started with existing guidance on subpart 4 (e.g. 1992 General Preamble and 1994 Serious Area Addendum) and regulatory actions and court decisions related to PM<sub>10</sub>
  - Received about 50 substantive comments
- Implementation schedule for 2006 PM<sub>2.5</sub> NAAQS areas
  - December 2015: Moderate area outermost attainment date (end of 6<sup>th</sup> calendar year after designations)
  - Serious Area attainment plan due 18 months after reclassification.
  - December 2019: Serious area outermost attainment date (end of 10<sup>th</sup> calendar year after designations)

# 1. Classifications, attainment plan due dates, attainment dates and reclassifications

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- Two-tier classification system (Moderate and Serious)
- Moderate areas
  - All nonattainment areas are initially classified as “Moderate”
  - Attainment plan is due in 18 months
  - Attain “as expeditiously as practicable,” but no later than end of 6<sup>th</sup> calendar year after designation
  - EPA may extend the attainment date for no more than two one-year extensions if:
    - Certified air quality data for most recent year is below the level of the standard; and
    - The state has complied with all area SIP requirements and commitments
- Fairbanks Moderate Area attainment plan submitted in December 2014 and February 2015.

# 1. Classifications, attainment plan due dates, attainment dates and reclassifications (continued)

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- Mandatory reclassification to Serious for areas that fail to attain by the attainment date
  - EPA is required to determine that an area failed to attain within 6 months of the applicable attainment date; reclassification then occurs by operation of law
  - All Serious area plan elements are due within 18 months (about 8 years after designation)
- Once reclassified, all Serious areas must attain “as expeditiously as practicable,” but no later than end of 10<sup>th</sup> calendar year after designation

## 2. Optional PM<sub>2.5</sub> precursor demonstrations

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- Statute requires states to evaluate and adopt control measures for direct PM<sub>2.5</sub> and all four PM<sub>2.5</sub> precursors from stationary, mobile and area sources
  - Section 189(e) provides exemption from “control requirements” for major sources of a precursor where EPA “determines that such sources do not contribute significantly” to PM<sub>2.5</sub> levels which exceed the standard in the area
- Final rule provides 3 optional and independent types of “precursor demonstrations” to demonstrate that contribution of a precursor is insignificant. If EPA approves the demonstration, the plan may exclude certain sources from certain requirements for the identified precursor, depending on the specific demonstration submitted

## 2. Optional PM<sub>2.5</sub> precursor demonstrations (continued)

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- If an area has an approved precursor exemption and has another SIP due (e.g. area is reclassified to Serious), the state must provide an updated precursor demonstration with the new SIP submission
- The final rule does not contain a bright line threshold for defining whether a precursor demonstration is approvable. The EPA expects to issue guidance recommending technical approaches for conducting precursor demonstrations to assess whether a particular air quality concentration threshold can be considered to be insignificant in a given area

## 2. Optional PM<sub>2.5</sub> precursor demonstrations (continued)

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### Three Independent Precursor Demonstrations

#### 1. Comprehensive Demonstration

- Evaluate precursor emissions from all existing sources in the area
- Concentration-based analysis (total contribution to PM<sub>2.5</sub> levels) and possible sensitivity analysis (assess how changes in precursor emissions contribute to modeled PM<sub>2.5</sub> levels) to evaluate whether the area is sensitive to precursor emission decreases
- If approved by the EPA, the state will not be required to control emissions of the relevant precursor from existing sources in the current attainment plan. Requirements that would not apply to the precursor include RACM/RACT (or, if Serious, BACM/BACT), RFP, quantitative milestones and contingency measures

## 2. Optional PM<sub>2.5</sub> precursor demonstrations (continued)

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### 2. Major Stationary Source Demonstration

- Evaluate precursor emissions from existing major stationary sources only
- Concentration-based analysis (total contribution to PM<sub>2.5</sub> levels) and possible sensitivity analysis (assess the effect of changes in precursor emissions on modeled PM<sub>2.5</sub> levels) to evaluate whether the area is sensitive to precursor emission decreases
- If approved by the EPA, the state will not be required to control emissions of the relevant precursor from existing major stationary sources in the current attainment plan. Requirements that would not apply to the precursor include RACT/RACM for major sources (or, if Serious, BACT/BACM for major sources), RFP, quantitative milestones and contingency measures

## 2. Optional PM<sub>2.5</sub> precursor demonstrations (continued)

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### 3. NNSR Demonstration

- Evaluate an increase in precursor emissions from potential new/modified major stationary source(s)
- Must be a sensitivity-based analysis, looking at precursor emissions increases
- If approved by the EPA, the state may exempt new and modified major stationary sources of the particular precursor from NNSR control requirements. Requirements that would not apply to the precursor include Lowest Achievable Emissions Rate (LAER) and emissions offset requirements

# 3. Moderate area attainment plan requirements

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- Emissions inventories
- Control measures
  - Reasonably available control measures (RACM), including RACT
  - Additional reasonable measures
- Attainment demonstration, modeling and unmonitored area analysis
- Reasonable further progress (RFP) and quantitative milestones (QM)
- Contingency measures

# 3. Moderate area attainment plan requirements (continued)

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## Emission inventories

- Requires base year and projected attainment year inventories for the nonattainment area
  - Recommend base year is one of three “air quality years” used for designations
  - Establish motor vehicle emissions budgets for the attainment year
- Condensable emissions required
- Seasonal inventories can be used, if appropriate
- Use most recent models for onroad and nonroad mobile emissions

# 3. Moderate area attainment plan requirements (continued)

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## Control measures

- Identify potential control measures for area, mobile and stationary sources in area, and evaluate technological and economic feasibility of controls
- No *de minimis* source category concept
- Adopt control measures needed to attain “as expeditiously as practicable” in SIP due at 18 months
- Implement RACM/RACT no later than 4 years from designation, and implement those “additional reasonable measures” that can be implemented beyond 4 years from designation
- For areas that cannot demonstrate attainment by the Moderate area attainment date, the state must implement all reasonable measures

# 3. Moderate area attainment plan requirements (continued)

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## Attainment demonstration, modeling and unmonitored area analysis

- CAA language regarding where in a nonattainment area to demonstrate attainment is ambiguous, and the prior implementation rule did not contain clear requirements regarding “unmonitored areas” (instead, it referred to the modeling guidance)
- Final rule requires attainment demonstration to include modeling of future control measures and adoption of controls to eliminate potential violations at existing air quality monitor locations
- EPA recommends that states conduct an *optional* unmonitored area analysis
  - Potential violations in unmonitored areas may be addressed through changes to the ambient monitoring network, or case-by-case adoption of control measures

# 3. Moderate area attainment plan requirements (continued)

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## Reasonable Further Progress (RFP)

- All RFP plans must include projected emissions reductions for milestone years (see next slide) based upon the control measure implementation schedule. Reductions can be “generally linear” and/or “stepwise”
  - Establish motor vehicle emissions budgets for each milestone year
- State can also provide an optional analysis identifying air quality targets associated with the projected emissions reductions

# 3. Moderate area attainment plan requirements (continued)

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## Quantitative Milestones (QM)

- Plan must include QM to demonstrate implementation of control measures to achieve RFP
- QM are to be established every 3 years from Moderate area SIP due date (“milestone years”)
  - For Moderate areas, QM needed for 4.5 and 7.5 years
  - For Serious areas, QM needed for 7.5 and 10.5 years (and more if applicable)
- If the optional air quality target analysis was provided in RFP plan, the QM should include air quality-based milestones for relevant years
- Milestone reports are due to the EPA within 90 days of milestone date

# 3. Moderate area attainment plan requirements (continued)

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## Contingency Measures

- Required if area fails to attain by the attainment date (does not apply to an area that demonstrated attainment was impracticable) or fails to demonstrate RFP
- To be implemented with minimal further action by the state
- EPA recommends that contingency measures provide approximately one-year's worth of progress toward attainment
- An area that can demonstrate attainment by the attainment date may have “excess emission reductions” that can be relied on for contingency measures
  - However, an area that demonstrates it *cannot* practicably attain by the attainment date cannot rely on “excess emissions reductions”

# 4. Serious area attainment plan requirements

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- Emissions inventories\*
- Control measures
  - Best available control measures (BACM), including BACT
  - Additional feasible measures
- Attainment demonstration, modeling, and unmonitored area analysis
- Reasonable further progress and quantitative milestones\*
- Contingency measures\*

\* For these items, the requirements for Serious areas do not differ significantly from those for Moderate areas and are not repeated here

# 4. Serious area attainment plan requirements (continued)

## Control Measures

- Identify potential control measures for stationary, mobile and area sources, and evaluate technological and economic feasibility
- BACM/BACT are considered generally independent of attainment needs for area (consistent with the CAA and 1994 Serious area Addendum to General Preamble)
- As with Moderate areas, rule does not include provisions for identifying *de minimis* source categories based on estimated ambient impact to PM<sub>2.5</sub> levels
- Adopt best available control measures (BACM) and best available control technology (BACT), and “additional feasible measures” within 18 months of reclassification
- Implement BACM/BACT by no later than 4 years from reclassification

# 4. Serious area attainment plan requirements (continued)

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## Attainment Demonstration

- Attainment demonstration for a Serious area must demonstrate attainment of the  $PM_{2.5}$  NAAQS as expeditiously as practicable, but no later than the end of the 10<sup>th</sup> calendar year following designation
- *Criteria for a potential attainment date extension [section 188(e)]*: A state can request to extend the attainment date by up to an additional five years if:
  - A demonstration that attainment by the Serious area attainment date is impracticable
  - A revised SIP showing that the plan includes the “most stringent measures” included in the plan of any other state or achieved in practice; and
  - The state has complied with all area SIP requirements and commitments

## 5. Serious area that fails to attain

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- *Failure to attain [section 189(d)]*: If a Serious area fails to attain the NAAQS by the applicable attainment date, then the state must submit a new attainment plan within 1 year that will:
  - Achieve at least 5% annual reductions in direct PM<sub>2.5</sub> or any PM<sub>2.5</sub> plan precursor; and
  - Include additional reductions needed to demonstrate expeditious attainment by no later than 5 years; extension of up to 5 additional years is possible

## 6. Nonattainment NSR requirements

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- Defines “major source” and “major stationary source” for sources of PM<sub>2.5</sub> and PM<sub>2.5</sub> precursors for both Moderate and Serious nonattainment areas
  - Moderate: 100 tons per year (potential to emit)
  - Serious: 70 tons per year (potential to emit)
- Includes significant emissions rates (SERs) for PM<sub>2.5</sub> and three PM<sub>2.5</sub> precursors (SO<sub>2</sub>, NO<sub>x</sub>, VOC) that would apply for modifications at existing major sources. State must develop an area-specific SER for ammonia where there is no EPA-approved NNSR insignificance demonstration for ammonia

## 6. Nonattainment NSR requirements (continued)

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- Updates provisions for the Appendix S program for a state that does not yet have an approved NNSR program for PM<sub>2.5</sub>, including provisions for regulating precursors
- Establishes a “phase-in” approach to the regulation of PM<sub>2.5</sub> precursors in areas relying on Appendix S. For new nonattainment areas, only SO<sub>2</sub> and NO<sub>x</sub> are initially regulated. Regulation of VOC and Ammonia is phased in as follows:
  - April 15, 2017 for 2012 (and earlier) PM<sub>2.5</sub> NAAQS
  - Two years after designation for areas designated nonattainment after April 15, 2016
  - Phase-in does not automatically occur if state submits precursor demonstration. If EPA disapproves NNSR SIP and precursor demonstration, phase-in occurs under Appendix S on April 15, 2017 or date of disapproval, whichever occurs later
- When ammonia must be controlled for NNSR under Appendix S, state must define SER for each permit application

# Next Steps and Contact

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- Pre-publication version and fact sheet posted on EPA website:  
<https://www.epa.gov/pm-pollution/implementation-national-ambient-air-quality-standards-naaqs-fine-particulate-matter>
- Publication date: August 24, 2016
- Effective date: October 24, 2016

Questions?

Justin Spenillo: [spenillo.justin@epa.gov](mailto:spenillo.justin@epa.gov) or 206-553-6125

Patrick Lessard: [lessard.patrick@epa.gov](mailto:lessard.patrick@epa.gov) or 919-541-5383

Rich Damberg: [damberg.rich@epa.gov](mailto:damberg.rich@epa.gov) or 919-541-5592

# List of current nonattainment areas by PM<sub>2.5</sub> standard

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- Allegheny County, PA (2012)
- Cache Valley, ID-UT (2006)
- Chico, CA (2006)
- Cleveland, OH (2012)
- Delaware County, PA (2012)
- Fairbanks, AK (2006)
- Imperial County, CA (2006, 2012)
- Klamath Falls, OR (2006)
- Knoxville, TN (1997, 2006)
- LA-South Coast Air Basin, CA (1997, 2006, 2012)
- Lebanon County, PA (2012)
- Libby, MT (1997)
- Liberty-Clairton, PA (1997, 2006)
- Louisville, KY-IN (1997)
- Nogales, AZ (2006)
- Oakridge, OR (2006)
- Plumas County, CA (2012)
- Provo, UT (2006)
- Sacramento, CA (2006)
- Salt Lake City, UT (2006)
- San Francisco, CA (2006)
- San Joaquin Valley, CA (1997, 2006, 2012)
- St. Louis, MO (1997)
- West Central Pinal, AZ (2006)
- West Silver Valley, ID (2012)