

# Clean Air & Climate Change

Environmental Law Institute Summer School  
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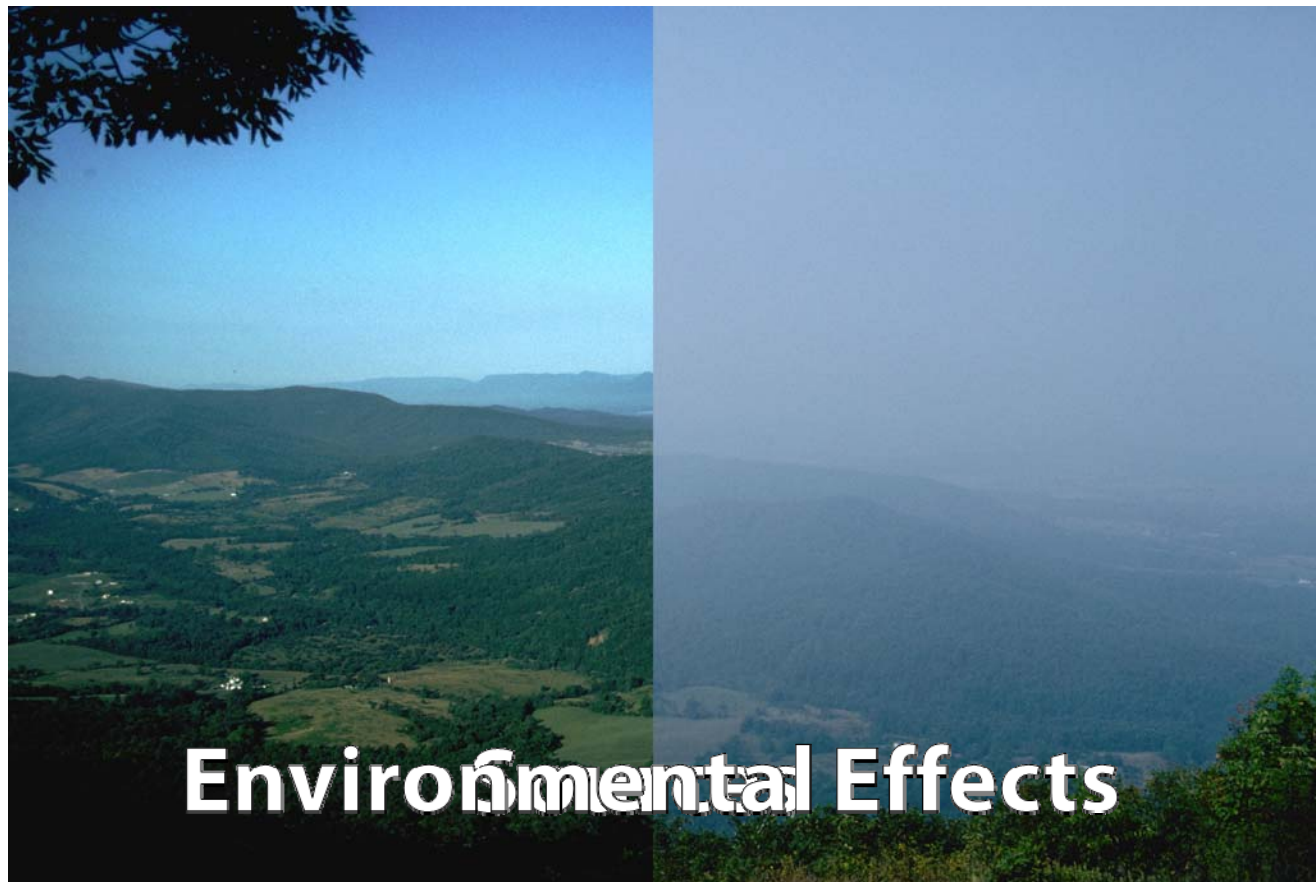
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# Introduction to Air Pollution—Criteria Pollutants

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Particulate matter (PM/PM<sub>10</sub>/PM<sub>2.5</sub>)



# Introduction to Air Pollution—Criteria Pollutants

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## Carbon monoxide (CO)



Resources

# Introduction to Air Pollution—Criteria Pollutants

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Nitrogen dioxide (NO<sub>2</sub>) and Ozone (O<sub>3</sub>)





# Introduction to Air Pollution—Criteria Pollutants

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Sulfur dioxide (SO<sub>2</sub>)





# Introduction to Air Pollution—Criteria Pollutants

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## Lead



Resources

# National Ambient Air Quality Standards (NAAQS)

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- National numerical air quality standard for each “criteria pollutant” (designated in CAA § 107) adequate to protect public health and allowing an adequate margin of safety
- Consideration of uncertain science is required, but costs of control may not be considered
- Standards are expressed as maximum acceptable mass (micrograms per cubic meter) for a period of time (e.g., 1 hour; 24 hours) or a concentration based limit (parts per million)

# National Ambient Air Quality Standards (NAAQS)

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- Primary vs. Secondary NAAQS
- Attainment/Maintenance vs. Nonattainment
- To have been met nationwide by 1975
- To be reviewed every five years, but often takes longer



# Achieving NAAQS through Air Quality Planning

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- The basic geographical unit of air pollution control is the Air Quality Control Region (AQCR) (CAA § 107)
- Each state is to develop a State Implementation Plan (SIP) designed so that each AQCR attains and maintains the federally-set NAAQS (CAA § 110)
- Based on cooperative federalism principles
  - Cooperative federalism aspect of Clean Air Act reaffirmed by recent decisions (e.g., *EME Homer City Generation v. EPA*, (Aug. 21, 2012))

# Achieving NAAQS through Air Quality Planning

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- The states submit their SIPs to EPA for approval
- If the SIP meets the Section 110 requirements, EPA approves it
- If the SIP fails to meet the Section 110 requirements, EPA may approve it in part, or reject it and create a Federal Implementation Plan (FIP)
- EPA has one year to approve of a SIP, but that deadline may slip
- EPA has overfiling authority to enforce SIP provisions once they are approved

# Achieving NAAQS through Air Quality Planning: Section 110

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- Enforceable emission limitations or other control measures, and schedules for compliance
- Collect air quality data
- Enforcement provisions
- Prohibits sources from contributing to nonattainment or interfering with maintenance of NAAQS
- Source emission monitoring and reporting
- Periodically revise SIP



## Nonattainment Example: Ozone

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- Marginal nonattainment (§ 182(a)): Emission inventory; RACT; new source review; reformulated gasoline opt-in
- Moderate nonattainment (§ 182(b)): 15% reduction in emissions; Stage II vapor recovery; basic I&M; NSR offset ratio
- Serious nonattainment (§ 182(c)): Enhanced I&M; clean-fuel vehicle program; vapor recovery; transportation controls; reformulated gasoline
- Severe/Extreme (§ 182(d-e)): Enhanced offsets; reduced vehicle miles traveled; new technologies

# Prevention of Significant Deterioration (PSD)

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- Applies to attainment areas
- AQCR designated as Class I, Class II, or Class III
- Designed to maintain attainment status by setting an “increment” above the current ambient concentrations of criteria pollutants that can be “consumed” by new emissions
- Requires preconstruction review of new/modified sources
- Requires use of the Best Available Control Technology (“BACT”) for all pollutants emitted in a “significant” amount
- Requires air quality monitoring and modeling

# Best Available Control Technology (BACT)

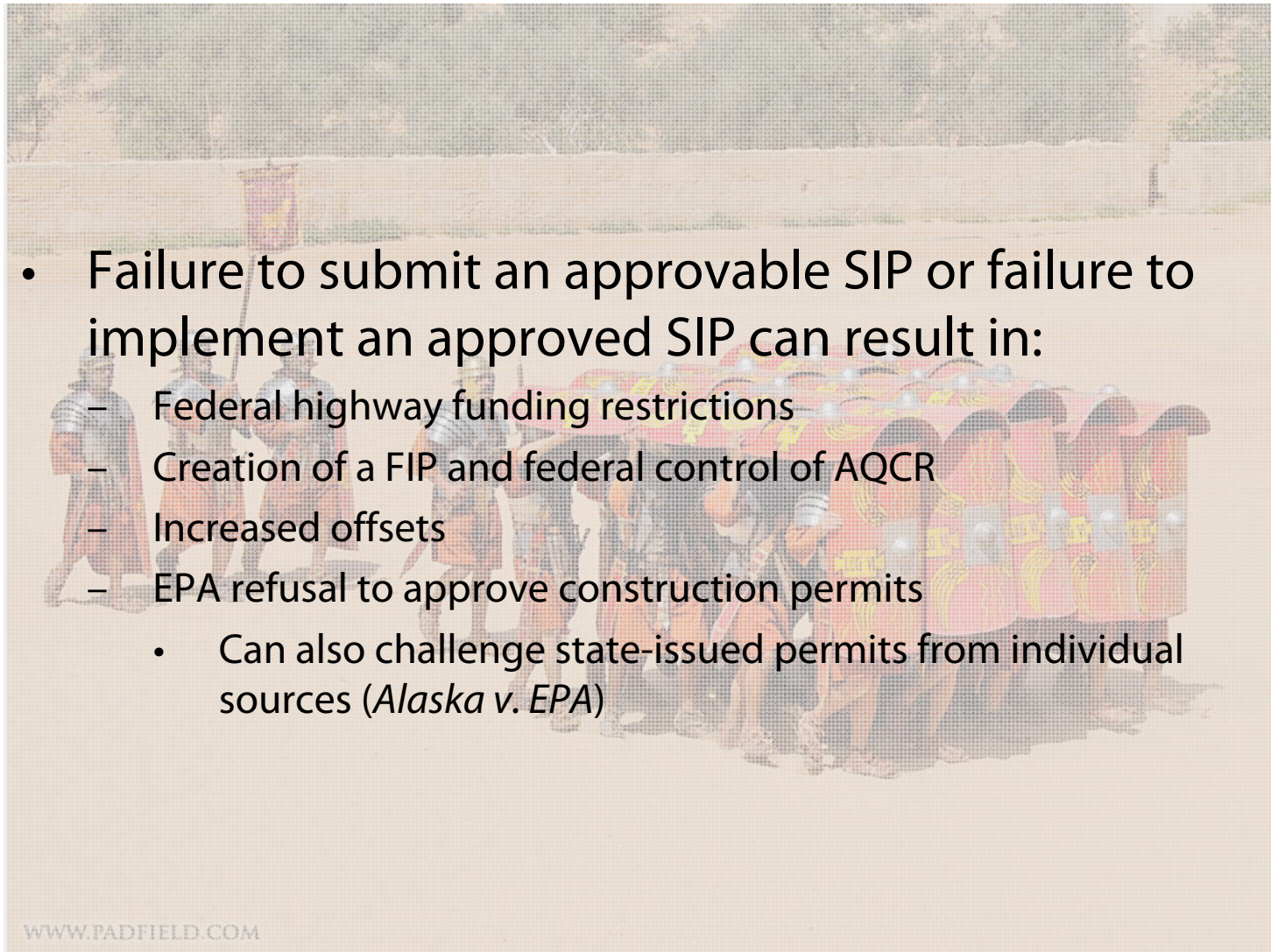
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- Step 1 – Identify all control technologies
  - Don't have to consider options that "redefine" the source
- Step 2 – Eliminate technically infeasible options
  - Carbon, capture, and sequestration
- Step 3 – Rank remaining control technologies
- Step 4 – Evaluate most effective controls
  - Case-by-case consideration of energy, environmental, and economic impacts
- Step 5 – Select BACT



# NAAQS: You and what army?

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- Failure to submit an approvable SIP or failure to implement an approved SIP can result in:
  - Federal highway funding restrictions
  - Creation of a FIP and federal control of AQCR
  - Increased offsets
  - EPA refusal to approve construction permits
    - Can also challenge state-issued permits from individual sources (*Alaska v. EPA*)

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# Review of Air Quality Planning

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- Section 108: List criteria pollutants
- Section 109: Set NAAQS for criteria pollutants
- Section 107: Designate AQCRs
- Section 110: Creation and adoption of SIPs
- Sections 160-169: Attainment area requirements
- Sections 171-193: Nonattainment area requirements

# The Big Picture

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|            |   |
|------------|---|
| Title I    | Air Quality Planning; Air Toxics; New Source Performance Standards; Enforcement; Nonattainment; PSD |
| Title II   | Mobile Sources  |
| Title III  | General Provisions  |
| Title IV   | Noise Pollution   |
| Title IV-A | Acid Rain Program   |
| Title V    | Operating Permits   |
| Title VI   | Stratospheric Ozone Protection  |



# Regulation of Greenhouse Gases

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# ***Massachusetts v. EPA, 549 U.S. 497 (2007)***

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- Background
  - 1998 Cannon memorandum: “CO<sub>2</sub> emissions are within the scope of EPA’s authority to regulate”
  - 1999 Int’l Center for Tech. Assessment CO<sub>2</sub> petition
  - 2003 EPA denial of ICTA petition (and reversing the 1998 Cannon memorandum)
  - 2007 Supreme Court opinion remanding EPA’s denial decision
- Essential elements of the decision
  - GHGs are an “air pollutant” under Section 302(g)
  - EPA lacks the discretion to decide whether to exercise its judgment under Section 202(a)(1) to determine whether GHGs “cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.”
  - Ordered EPA to express its judgment on the endangerment question

# Endangerment Finding (2009)

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- Summarizes scientific evidence to date in support of anthropogenic climate change
  - Human activity has increased GHGs in the atmosphere
  - The climate is warming
  - Anthropogenic GHG emissions are causing climate change
  - Climate change is projected to continue during this century
- Describes human health effects of climate change
  - Temperature
  - Air quality (particularly ground-level ozone concentrations)
  - Climate-sensitive diseases and aeroallergens
  - Environmental justice
  - Extreme events

# Endangerment Finding (2009)

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- Welfare effects of climate change
  - Sea level rise
  - Implications for water use
  - Agriculture and forestry impacts
  - Energy and infrastructure impacts
  - Ecosystem impacts

# Light-duty Vehicle GHG Emission Standards (2010)

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- Establishes carbon dioxide emission standards for light duty trucks and cars, commencing MY2012 (October 1, 2011)
- Result of a deal struck between the automobile industry and the White House coordinating CAFE, EPA, and state GHG standards into a single, federal GHG standard for light duty trucks and cars
- Essentially a fuel efficiency standard, which will increase from 30.1 to 35.5 MPG in 2012-2016
- Expected to reduce CO<sub>2</sub> emissions by 950 million metric tons over the lifetime of the MY2012-2016 vehicles and save 1.8 billion barrels of oil
- GHG emissions standards for MYs 2017-2025 finalized in October 2012
  - Incentivizes production of electric and fuel cell vehicles
  - Requirement of 54.5 mpg by 2025



# Timing Rule (2010)

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- Finds that GHGs are not currently “subject to regulation”
- GHGs will be “subject to regulation” on January 2, 2011
- As of January 2, 2011, pending PSD permits will be subject to GHG BACT
- States must implement a PSD program for GHGs by January 2, 2011
- PSD is triggered based on GHG emissions alone (that is, GHG emissions can cause a source to be a major source)

# Tailoring Rule (2010)

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- The Problem
  - The Tailpipe Rule impact on PSD and Title V permitting (100/250 tpy thresholds)
    - Would increase Title V sources from 15,000 to six million
    - Would increase PSD permits from 300 per year to 40,000 per year
- The Solution
  - “Absurd results,” “administrative necessity,” and “one-step-at-a-time”
  - Lower regulatory threshold levels in phases:
    - Phase I (January 2011-June 2011): 75,000 tpy CO<sub>2</sub>e and otherwise subject to PSD
    - Phase II (July 2011-June 30, 2013): Phase I sources plus 100,000 tpy CO<sub>2</sub>e new sources or 75,000 tpy CO<sub>2</sub> net emission increase sources
    - Phase III (July 1, 2012): Consider permanent exclusion of small sources
    - Phase IV (April 30, 2016): Final implementation rule

# ***Coalition for Responsible Regulations, Inc. v. EPA*** (D.C. Cir. June 26, 2012)

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- Involved challenges to the Endangerment Finding, Tailpipe Rule, Timing Rule, and Tailoring Rule
- D.C Circuit upholds all of the rules



- Rehearing denied by D.C. Circuit on December 20, 2012
  - Two dissents
- Petitions for certiorari filed by several parties

# ***Coalition for Responsible Regulations, Inc. v. EPA*** (D.C. Cir. June 26, 2012)

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- Challenges to the Endangerment Finding
  - Petitioners challenged EPA’s failure to consider public policy considerations and the scientific basis of EPA’s endangerment finding
    - D.C. Circuit held that EPA could not consider policy decisions when making an endangerment finding and deferred to EPA’s reliance on scientific evidence developed by third parties
- Challenges to the Tailpipe Rule
  - Petitioners—relying on CAA Section 202(a)(2)—argued that EPA acted arbitrarily and capriciously in failing to consider the full consequences of the regulation (*e.g.*, the Tailpipe Rule triggered regulation of GHGs under the PSD and Title V programs)
    - D.C. Circuit held that the cost considerations under Section 202(a)(2) pertain only to the motor-vehicle industry

# ***Coalition for Responsible Regulations, Inc. v. EPA*** (D.C. Cir. June 26, 2012)

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- Challenges to the Timing and Tailoring Rules
  - Petitioners challenged EPA’s conclusion that regulation of GHGs from motor vehicles required regulation of GHGs under the PSD and Title V programs
    - D.C. Circuit agreed with EPA that the CAA unambiguously required EPA to regulate GHGs under the PSD program, because the requirements of the PSD program apply to “each pollutant subject to regulation under [the CAA].”
  - Petitioners argued that the Tailoring Rule violated the plain text of the CAA
    - The merits were never reached on this issue, as the D.C. Circuit found that none of the petitioners had standing to challenge the Tailoring Rule



# ***Coalition for Responsible Regulations, Inc. v. EPA*** (D.C. Cir. June 26, 2012)

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- Implications Moving Forward
  - D.C. Circuit has endorsed EPA's current regulation of GHG (subject to Supreme Court review)
  - The merits of the Tailoring Rule may never be judicially reviewed
  - EPA may rely on the "absurd results," "administrative necessity," and "one-step-at-a-time" arguments in future rulemakings
  - States that have yet to adopt GHG rules in their state air permitting programs (e.g., Texas) have less of a justification for not yet doing so

# GHG NSPS

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- In 2011, EPA entered into two settlement agreements requiring it to promulgate New Source Performance Standards (“NSPS”) to address GHG emissions from electric generating units (“EGUs”) and refineries
- EGUs
  - Committed to issue proposed rules for new, modified, and existing EGU’s by July 26, 2011, and to promulgate final rules by May 26, 2012.
- Refineries
  - Agreed to issue proposed rules to regulate GHG emissions by December 10, 2011, and finalize new rules by November 10, 2012.
- These deadlines have not been met

# EGU GHG NSPS

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- EPA proposed a controversial NSPS for CO<sub>2</sub> emissions from new EGUs on April 13, 2012
- Output-based emission standard of 1,000 pounds of CO<sub>2</sub> per MW hour (lb CO<sub>2</sub>/MWh) over a rolling 12-month period
- Standard based on the performance of natural gas combined-cycle technology
- Standard cannot be achieved today by any coal-fired power plant without carbon, capture, and sequestration technology
- EPA missed April 2013 deadline
- Existing sources may be regulated under CAA § 111(d)

# Additional Regulation of GHGs

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- What else can EPA do under its existing CAA authority?
  - Recent Institute for Policy Integrity petition requests innovative, market-based regulation of GHGs
    - CAA § 115
      - Can require regulations of pollutants that endanger foreign countries if the foreign country has given the U.S. essentially the same rights
    - CAA § 615
      - Requires regulation of pollutants that affect the stratosphere in a way that endangers the public
    - Increased regulation under Title I
      - NSPS for other GHG emitting sources (e.g., landfills, natural gas and petroleum systems, agriculture, and coal mines)
    - Increased regulation under Title II
      - Regulate other mobile sources such as motorcycles and the trailers of heavy-duty trucks

# Case Study – Review of Recent CAA Case

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- Currently applicable GHG requirements: Prevention of Significant Deterioration for major emitting facilities (BACT)
  - CAA §165(a): No major emitting facility on which construction is commenced after August 7, 1977, may be constructed in any area to which this part applies unless . . . . (4) the proposed facility is subject to the best available control technology for each pollutant subject to regulation under this chapter emitted from, or which results from, such facility
  - CAA §169(1): The term “major emitting facility” means any of the following stationary sources of air pollutants which emit, or have the potential to emit, [threshold amounts] of any air pollutant
- Applicable to GHG-emitting facilities once GHGs became an “air pollutant” subject to regulation under the CAA – January 2, 2011 (Timing Rule)



# Case Study – Review of Recent CAA Case

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- The Problem:
  - Disconnect between CAA PSD requirements and the § 110 SIP provision
  - States with approved SIPs that don't provide authority to issue PSD permits addressing GHGs (13 states)
  - EPA cannot issue permits in such states unless there's a FIP
  - Therefore, no construction of GHG-emitting facilities in those states
- The Solution:
  - Call for revision of SIPs to address GHGs under CAA §110(k)(5) based on determination of "substantial inadequacy" to comply with CAA requirements – GHG SIP Call (December 2010)

# Case Study – Review of Recent CAA Case

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- The Twist:
  - SIP call still does not give EPA authority to issue PSD permits – you need a FIP
  - Authority to issue FIPs triggered by SIP disapproval or failure to submit a required SIP revision
  - EPA: What we need here is a failure to submit
  - SIP call deadline (by consent of states) of December 22, 2010
  - Failure to submit determination on December 23, 2010, and immediate promulgation of FIP
- The Suit:
  - Industry groups, Texas, and Wyoming
  - PSD is not immediately applicable in states with approved SIPs – “grace period” of three years to revise SIP to address GHGs

# Case Study – Review of Recent CAA Case

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- The Next Problem:
  - Texas does not consent to the December 22, 2010 deadline
  - Default deadline of December 1, 2011
  - No construction in Texas for a year?
- The Next Solution:
  - Error correction authority under CAA §110(k)(6): Whenever the Administrator determines that the Administrator's action approving . . . any plan . . . was in error, the Administrator may in the same manner as the approval . . . revise such action as appropriate without requiring any further submission from the State – Error Correction Rule (Dec. 30, 2010)
  - Allows immediate partial disapproval of Texas's PSD SIP, and promulgation of GHG FIP

# Case Study – Review of Recent CAA Case

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- The Suit:
  - Texas PSD SIP approved in 1992; outside EPA’s discretion to “correct” approval 20 years later
  - Correction authority limited to minor, typographical/clerical errors
  - 1992 approval was not in error – GHGs not subject to regulation at the time



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