Revised Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS)

Overview of NAAQS Reviews

- National ambient air quality standards (NAAQS) for "criteria" pollutants
  - "Primary" standards to protect public health with an adequate margin of safety;
  - "Secondary" standards to protect public welfare and the environment
- NAAQS set for: ground-level ozone (smog), particulate matter (measured as PM_{10}), carbon monoxide, lead, nitrogen dioxide, sulfur dioxide
- The Act requires EPA to review these standards every five years, with advice from the Clean Air Scientific Advisory Committee (CASAC)

Different Considerations Used in Setting and Achieving NAAQS

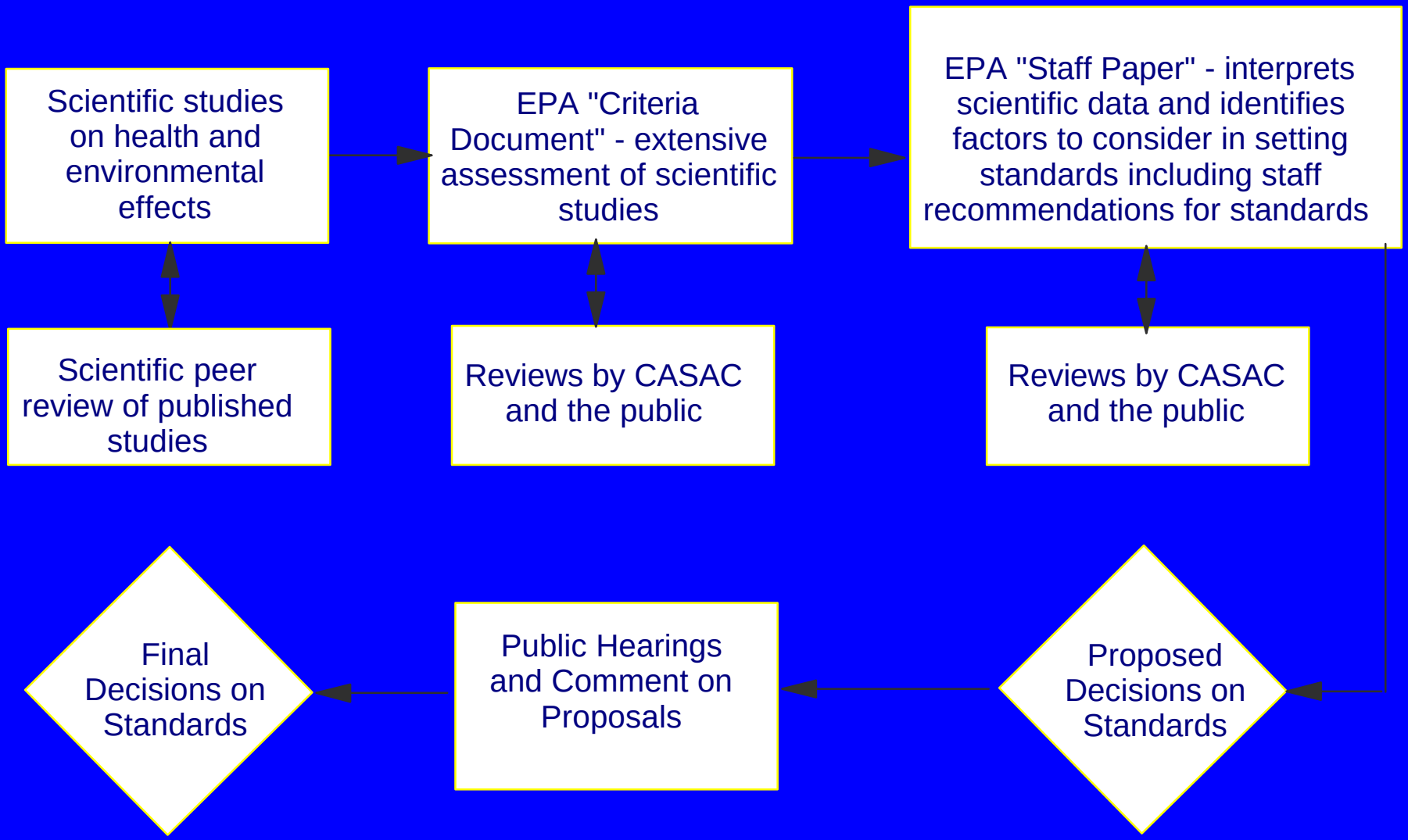
Setting the Standards

- Health Effects
- Environmental Effects

Achieving the Standards

- Costs
- Time to attain the standards

Review Process for NAAQS



Ozone-Related Health Effects of Concern

- Difficulty in breathing, shortness of breath
- Aggravated/prolonged coughing and chest pain
- Increased aggravation of asthma, susceptibility to respiratory infection resulting in increased hospital admissions and emergency room visits
- Repeated exposures could result in chronic inflammation and irreversible structural changes in the lungs, that can lead to premature aging of the lungs and illness such as bronchitis and emphysema
- Growing evidence suggests association with premature death

Populations at Risk from Exposures to Ozone

- Children active outdoors at greatest risk
- Outdoor workers (e.g., construction)
- Individuals with respiratory diseases (asthma, emphysema, chronic obstructive pulmonary disease)
- Highly sensitive healthy individuals who are more responsive to ozone exposures (5 to 20% of population)

EPA'S Revised Ozone Standard

- New 8-hour Primary NAAQS:
  - 0.08 parts per million (ppm)
  - "Concentration-based" form
  - 3-yr avg of annual 4th-highest daily maximum 8-hour concentration
- Replaces Secondary NAAQS with the level same as 8-hour Primary NAAQS
- Status of 0.12 ppm, 1-hr NAAQS:
  - Continues to apply in an area until EPA finds it has attained
  - Finding will be based on 3 consecutive years of air quality data meeting the standard
  - Retention is to ensure a smooth, legal, and practical transition

Particulate Matter-Related Health Effects of Concern

- Increased premature deaths, primarily in the elderly and those with heart or lung disease
- Aggravation of respiratory and cardiovascular illness, leading to hospitalizations and emergency room visits in individuals with heart or lung disease and children
- Lung function decrements and symptomatic effects such as those associated with chronic bronchitis, particularly in children and asthmatics
- Increased work loss days and school absences
- Changes to lung structure and natural defense mechanisms

EPA'S Revised PM Standards

- $PM_{2.5}$ standards:
  - 15 ug/m3, annual arithmetic mean, allows for average of multiple community oriented monitors (averaged over 3 years)
  - 65 ug/m3, 24-hour average, 98th percentile concentration (averaged over 3 years), maximum population oriented monitor in an area
- PM_{10} standards:
  - Retain annual standard of 50 ug/m3
  - Retain level of 24-hour standard (150 ug/m3) but revise form to 99th percentile concentration (3 year average)
- Original PM_{10} standards will remain in effect until area meets certain criteria

EPA'S Proposed Regional Haze Rules

- Fine particles -- major source of visibility impairment
- Secondary standards identical to proposed primary standards, in conjunction with proposed Regional Haze Rules to address regional visibility impairment
- Natural and current regional visibility varies significantly due to humidity, natural and anthropogenic emissions

East: Natural - 150 km Current - 23-39 km

West: Natural - 230 km Current - 50-150 km

EPA'S Proposed Regional Haze Rules

- Propose "presumptive reasonable progress targets" for improving visibility in each Class I area.
  - 1 deciview improvement every 10 to 15 years
- Improve visibility on the most impaired days (worst 20% of the days) and prevent further degradation on the least impaired days (best 20% of the days).
- States will have the option to propose alternate progress targets for approval as well.
- Every 3 years, States review progress in each Class I area.

EPA'S Proposed Regional Haze Rules

- Implementation plans due 12 months after final rules
  - Identify BART sources located in the State
  - Focus on providing for adequate future planning with other States
- Implementation plan addressing long term strategy, integration with PM and ozone NAAQS, and control measures - 5 years after rules
- SIP assessment every 3 years to review of progress and adjust long term strategy.

EPA'S Proposed Regional Haze Rules

- Proposal published on July 31, 1997
- Public Hearing in Denver on September 18, 1997
- Public Comment Period closes October 20, 1997
- Final rules to be issued in February 1998

Implementation Plan for Revised PM and Ozone Standards

- Memorandum from President Clinton to Administrator Browner - July 16, 1997
- Implementation of the standards should:
  - Maximize common sense, flexibility, and cost effectiveness
  - Ensure continued progress toward cleaner air
  - Reward States that take early actions
  - Address regional air pollution
  - Complete 5-year scientific review of PM standards prior to designations of nonattainment under the PM2.5 standards
  - Minimize paperwork burden

Implementation Plan for Ozone Standard

- 1-hour, 0.12 ppm ozone standard
  - Stays in effect until an area shows it attains the standard with 3-years of air quality data
  - All provisions of Clean Air Act (Subpart 2 of Part D) remain in effect until attainment
- "Transitional" Classification
  - Available to areas which meet the 1-hour standard but do not meet the 8-hour standards
  - Will require only minor revisions to existing NSR and transportation planning programs
  - EPA regional modeling can be "attainment demonstration" for many areas in OTAG region

Requirements for "Transitional" Classification

- Areas that attain 8-hour standard through implementation of regional NOx strategy in East
  - State submits implementation plan by 2000 including control measures for the emission reductions required by EPA's rule
  - No local modeling likely to be needed
- Areas that do not attain 8-hour standard through implementation of regional NOx strategy in East
  - State submits implementation plan by 2000 including control measures for the emission reductions required by EPA's rule and additional reductions necessary to achieve 8-hour standard
  - Attainment demonstration needed.

Implementation Timeline for Ozone Standard

- **1997** — EPA issues Final Ozone NAAQS
- **2000** — EPA designates areas
- **2003** — States submit implementation plans for meeting the 8-hour standard. For areas which haven't met the current 1-hour standard, ongoing efforts are sufficient through the current attainment dates.
- **2010 - 2012** — States have up to 10 years to meet standards plus two 1-year extensions

Implementation Timeline for Ozone Standard for Areas Classified "Transitional"

- **1997** — EPA issues Final Ozone NAAQS
- **2000** — States submit implementation plans to address transported air pollution

  EPA classifies areas as "transitional." All new nonattainment areas are eligible to be "transitional."
- **2004** — States achieve reductions from regional sources
- **2007** — States assess effectiveness of regional reductions
- **2012** — States have up to 10 years to meet standards plus two 1-year extensions

Implementation of PM_{10} Standards

- Nonattainment areas that meet previous PM_{10} standard
  - Standard will be revoked when EPA approves SIP that includes all adopted and implemented PM_{10} measures and a section 110 SIP for the revised PM_{10} standard
- Nonattainment areas that do not meet previous PM_{10} standard
  - EPA promulgates rule under section 172(e) providing for "controls which are not less stringent than the controls applicable to areas designated nonattainment before such relaxation"
  - Standard revoked for these areas when the rule is issued.

Implementation Timeline for $PM_{2.5}$ Standard

1997	EPA issues Final PM2.5 NAAQS
1999	EPA designates areas as "unclassifiable"
1998 - 2000	Monitors put in place nationwide
1998 - 2003	Collect monitoring data
2002	EPA completes 5-year scientific review of standards
2002 - 2005	EPA designates nonattainment areas
2005 - 2008	States submit implementation plans for meeting the standard
2012 - 2017	States have up to 10 years to meet standards plus two 1-year extensions

Cost-Effectiveness of Controls

- EPA will recommend States keep cost-effectiveness of control measures under $10,000/ton
- States should use market-based approaches and concepts such as Clean Air Trusts to reduce costs
- Clean Air Trust Concept
  - Sources facing costs of control greater than $10,000/ton could pay that amount annually into a fund
  - State could manage fund to purchase cheaper reductions from small sources or thru other measures