Update on U.S. Air Quality Management Policies

Fifty-second Session of the Working Group on Strategies and Review
Geneva, Switzerland
June 30 - July 3, 2014
Overview

- Ozone National Ambient Air Quality Standard (NAAQS) Review
  - Statutory requirements
  - Current standards
  - Non-attainment areas
  - General overview of NAAQS review process
  - Status of ozone review

- Clean Power Plan – Reducing carbon pollution from existing power plants
  - Clean Power Plan
  - Summary of proposal
  - Specifics on the proposal
  - Next steps
  - Proposed implementation timeline
National Ambient Air Quality Standards (NAAQS)

The **Clean Air Act** requires EPA to set National Ambient Air Quality Standards (NAAQS) for wide-spread pollutants from numerous and diverse sources considered harmful to public health and the environment.
Primary vs. Secondary Standards

- The **Clean Air Act** established two types of NAAQS
  
  - **Primary standards** set limits to protect **public health**, including the health of "sensitive" populations such as asthmatics, children, and the elderly
  
  - **Secondary standards** set limits to protect **public welfare**, including protection against visibility impairment and damage to animals, crops, vegetation, and buildings
<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary/Secondary</th>
<th>Averaging Time</th>
<th>Level</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>primary</td>
<td>8-hour</td>
<td>9 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-hour</td>
<td>35 ppm</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>primary and secondary</td>
<td>Rolling 3 month average</td>
<td>0.15 μg/m³</td>
<td>Not to be exceeded</td>
</tr>
<tr>
<td>NO₂</td>
<td>primary and secondary</td>
<td>Annual</td>
<td>53 ppb</td>
<td>Annual mean</td>
</tr>
<tr>
<td></td>
<td>primary</td>
<td>1-hour</td>
<td>100 ppb</td>
<td>98th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td>O₃</td>
<td>primary and secondary</td>
<td>8-hour</td>
<td>0.075 ppm</td>
<td>Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>primary</td>
<td>Annual</td>
<td>12.0 μg/m³</td>
<td>annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>secondary</td>
<td></td>
<td>15.0 μg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>24-hour</td>
<td>35 μg/m³</td>
<td>98th percentile, averaged over 3 years</td>
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<tr>
<td>PM₁₀</td>
<td>primary and secondary</td>
<td>24-hour</td>
<td>150 μg/m³</td>
<td>Not to be exceeded more than once per year on average over 3 years</td>
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<tr>
<td>SO₂</td>
<td>primary</td>
<td>1-hour</td>
<td>75 ppb</td>
<td>99th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
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<tr>
<td></td>
<td>secondary</td>
<td>3-hour</td>
<td>0.5 ppm</td>
<td>Not to be exceeded more than once per year</td>
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</table>

Primary (health-based) and secondary (welfare-based) standards. Units of measure are parts per million (ppm), parts per billion (ppb) or micrograms per cubic meter of air (μg/m³). For more information about the standards, visit [http://www.epa.gov/ttn/naaqs/](http://www.epa.gov/ttn/naaqs/).
Nonattainment areas are indicated by color. When only a portion of a county is shown in color, it indicates that only that part of the county is within a nonattainment area boundary.
NAAQS Review Process

Integrated Review Plan (IRP): timeline and key policy-relevant issues and scientific questions

Integrated Science Assessment (ISA): evaluation and synthesis of most policy-relevant studies

Risk/Exposure Assessment (REA): quantitative assessment, as warranted, focused on key results, observations, and uncertainties

Policy Assessment (PA): staff analysis of policy options based on integration and interpretation of information in the ISA and REA

Clean Air Scientific Advisory Committee (CASAC) review

Public comment

Interagency review

Agency decision making and draft proposal notice

Agency decision making and draft final notice

Interagency review

Interagency review

EPA final decisions on standards

EPA proposed decisions on standards

Public hearings and comments on proposal
Status of Ozone NAAQS Review

- In February 2013, EPA completed the Integrated Science Assessment for Ozone (ISA)
- In January 2014, EPA completed the second drafts of the health and welfare Risk and Exposure Assessments (REA) and Policy Assessment (PA)
- The Clean Air Scientific Advisory Committee (CASAC) has met to review the health and welfare REA and PA documents.
- EPA anticipates a final letter from CASAC with their advice on the documents shortly.
- EPA will then update and finalize the REA and the PA in July based on the feedback received from CASAC.
- After considering the final ISA, the REAs, the PA, and CASAC advice, the Administrator will propose a rule for public comment
  - Pursuant to a court order, the EPA intends to issue a proposal by December 1, 2014 and a final rulemaking by October 1, 2015.
Clean Power Plan - Reducing Carbon Pollution from Existing Power Plants
Clean Power Plan

• On June 2, 2014, the U.S. EPA, proposed emission guidelines to address greenhouse gas emissions from existing fossil fuel-fired power plants.
  – *State-specific rate-based goals for carbon dioxide emissions from the power sector.*
  – *Guidelines for states to follow in developing plans to achieve the state-specific goals.*

• This proposal follows carbon pollution standards for new power plants proposed in September 20, 2013.
The proposal will:

- Reduce carbon pollution from existing power plants, for which there are currently no national limits.
- Maintain an affordable, reliable energy system.
- By 2030, reduce nationwide carbon dioxide (CO₂) emissions, from the power sector by approximately 30% from 2005 levels.
  - Significant reductions begin by 2020.
- Cut hundreds of thousands of tons of harmful particle pollution, sulfur dioxide and nitrogen oxides as a co-benefit.
- Provide important health protections to the most vulnerable, such as children and older Americans.
- Lead to health and climate benefits worth an estimated $55 billion to $93 billion in 2030.
Summary (Cont’d)

• Build on actions states, cities and businesses across the country are already taking to address the risks of climate change.
• Spur investment in cleaner and more efficient technologies, creating jobs and driving innovation.
• Require a reasonable emission reduction glidepath starting in 2020.
• Provide a flexible timeline—up to 15 years from guideline issuance—for all emission reduction measures to be fully implemented in 2030.
  – Recognizing that investments in infrastructure can take time to put in place.
• Provide an array of tools states can use to formulate approvable plans.
EPA Establishes a Goal for Every State

• EPA analyzed the practical and affordable strategies that states and utilities are already using to lower carbon pollution from the power sector.

• Proposed goals are based on a consistent national formula, calculated with state and regional specific information.

• Each state goal is a rate – a statewide number for the future carbon intensity of covered existing fossil-fuel-fired power plants.
  – Encompasses the dynamic variables that ultimately determine how much carbon pollution is emitted by fossil fuel power plants.
  – Accommodates the fact that CO₂ emissions from fossil fuel-fired power plants are influenced by how efficiently they are operated and by how much they operate.

• The state goal rate is calculated to account for the mix of power sources in each state and the application of the “building blocks” that make up the best system of emission reduction.
  – States will need to meet an interim goal and a final goal.
States Choose How to Meet the Goals

- Demand-side energy efficiency programs.*
- Generating electricity from low/zero-emitting facilities.*
- Expanding use of existing NGCC units.*
- Transmission efficiency improvements.
- Energy storage technology.
- Working with utilities to consider retiring units that are high emitting.
- Energy conservation programs.
- Retrofitting units with partial CCS.
- Use of certain biomass.

- Efficiency improvements at higher-emitting plants.*
- Market-based trading programs.
- Building new renewables.
- Dispatch changes.
- Co-firing or switching to natural gas.
- Building new natural gas combined cycle units.

* Measures EPA used in calculating the state goals
Benefits and Costs

• Nationwide, by 2030, this proposed rule would help reduce CO₂ emissions from the power sector by approximately 30% from 2005 levels (~ 730 million tonnes)

• It will also by 2030, reduce by over 25% pollutants that contribute to the soot and smog
  – 48,988 to 50,802 tonnes* of PM$_{2.5}$
  – 384,646 to 427,284 tonnes* of SO₂
  – 369,224 to 388,275 tonnes* of NO₂

*converted from short tons in CPP fact sheet
Benefits and Costs (Cont’d)

• These reductions will lead to public health and climate benefits worth an estimated $55 billion to $93 billion in 2030.

• Proposal will avoid an estimated 2,700 to 6,600 premature deaths and 140,000 to 150,000 asthma attacks in 2030.

• Health and climate benefits far outweigh the estimated annual costs of meeting the standards.
  – Estimated at $7.3 billion to $8.8 billion in 2030.
Next Steps

- The proposed rule, as well as information about how to comment and supporting technical information, are available online at: [http://www.epa.gov/cleanpowerplan](http://www.epa.gov/cleanpowerplan)

- EPA will hold 4 public hearings the week of July 28th in Denver, Atlanta, Pittsburgh, and Washington, D.C.

- There will be a 120-day public comment period on the proposal.
## Proposed Implementation Timeline

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<tbody>
<tr>
<td><strong>State submits Negative Declaration</strong>&lt;br&gt;by June 30, 2016&lt;br&gt;State submits negative declaration</td>
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<td><strong>EPA publishes FR notice</strong></td>
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<td><strong>State submits complete implementation Plan by June 30, 2016</strong>&lt;br&gt;by June 30, 2016&lt;br&gt;State submits plan</td>
<td></td>
<td></td>
<td></td>
<td><strong>EPA reviews plan and publishes final decision within 12 months on approval/disapproval</strong></td>
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<tr>
<td><strong>State submits initial Plan by June 30, 2016 and request 1-year extension</strong>&lt;br&gt;by June 30, 2016&lt;br&gt;State submits initial plan and request for 1-year extension</td>
<td><strong>EPA reviews initial plan and determines if extension is warranted</strong></td>
<td><strong>by June 30, 2017&lt;br&gt;State submits complete plan</strong></td>
<td><strong>EPA reviews plan and publishes final decision within 12 months on approval/disapproval</strong></td>
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<tr>
<td><strong>State submits initial multi-state Plan by June 30, 2016 and request 2-year extension</strong>&lt;br&gt;By June 30, 2016&lt;br&gt;State submits initial multi-state plan and request for 2-year extension</td>
<td><strong>EPA reviews initial plan and determines if extension is warranted</strong></td>
<td><strong>by June 30, 2017&lt;br&gt;State submits progress report of plan</strong></td>
<td><strong>by June 30, 2018&lt;br&gt;States submits multi-state plan</strong></td>
<td><strong>EPA reviews plan and publishes final decision within 12 months on approval/disapproval</strong></td>
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**Emission Guideline Promulgation June 1, 2015**

**Compliance period begins 2020**