Proposed Revisions to National Ambient Air Quality Standards for Ozone

Presented to
East West Gateway
Air Quality Advisory Committee
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Overview

- On November 25, 2014, EPA proposed to strengthen the national ambient air quality standards for ground-level ozone, based on extensive scientific evidence about ozone's effects on public health and welfare.
- The proposed updates will improve public health protection, particularly for children, the elderly and people of all ages who have lung diseases such as asthma.
- The proposed standards reflect strong scientific evidence regarding the harmful effects of ozone on human health and the environment – including more than 1,000 new studies.
  - Decades of scientific research links ozone to asthma attacks, bronchitis, heart attacks and premature death.
  - Elevated ozone levels can make it harder for even healthy people to breathe.
- Existing and proposed federal measures are leading to substantial reductions in ozone nationwide, which will help improve air quality and help many areas meet any revised standard.

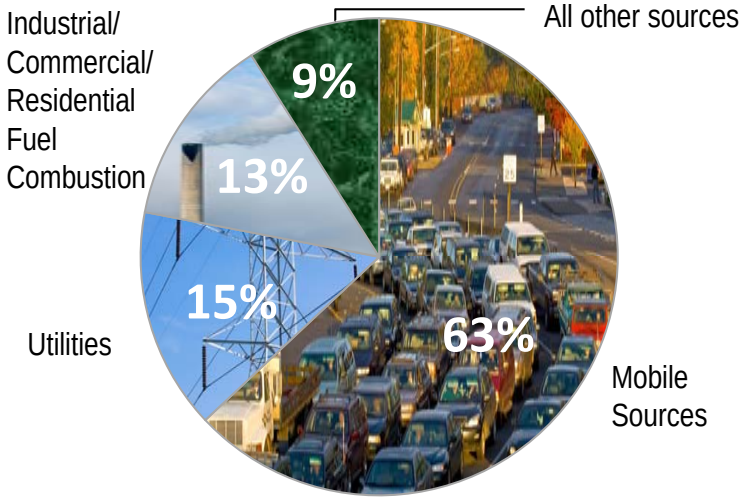
Overview

- The Clean Air Act requires primary standards to be "requisite to protect public health with an adequate margin of safety," including the health of groups of people considered more at risk.
  - In making this judgment, the EPA Administrator considers factors such as the nature and severity of health effects, the size of the at-risk groups affected, and the degree of certainty and uncertainty in the science.
- The law requires EPA to review the standards every five years.
- EPA is proposing to strengthen the level of both the primary and secondary ozone standards to a level in the range of 65 to 70 ppb to improve public health protection for millions of Americans. The current standard is 75 ppb.
  - A rigorous review of the latest science and advice from the agency's independent science advisors, the Clean Air Scientific Advisory Committee (CASAC), informed this proposal.
- EPA is also proposing to:
  - update the Air Quality Index (AQI) for ozone; and
  - make certain updates to monitoring and permitting requirements, which will smooth the transition and assure that the public has full information about air quality
- Implementing these standards is a federal, state, and tribal partnership. EPA will continue to do our part to assist states and tribes and streamline implementation.

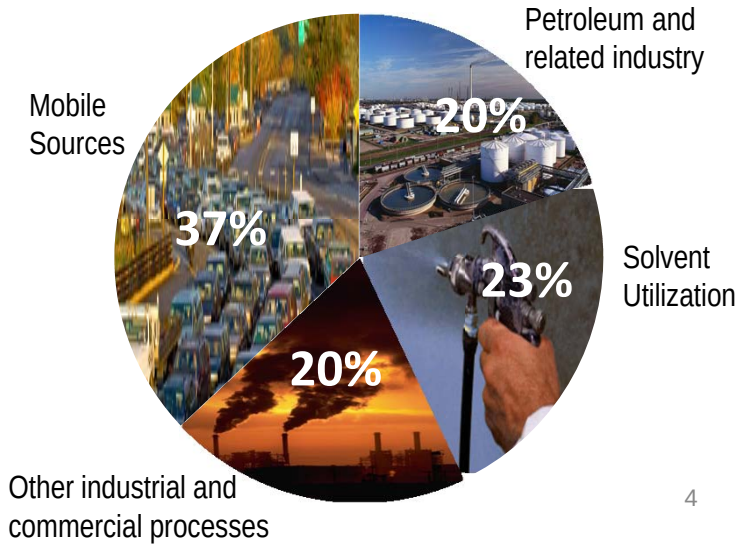
About Ground-Level Ozone

- Ozone is the main component of smog.
- It is not emitted directly into the air but forms when emissions of precursors, including nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide and methane “cook” in the sun.
- Emissions from industrial facilities, electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents are the major man-made sources of NOx and VOCs.

Sources of NOx

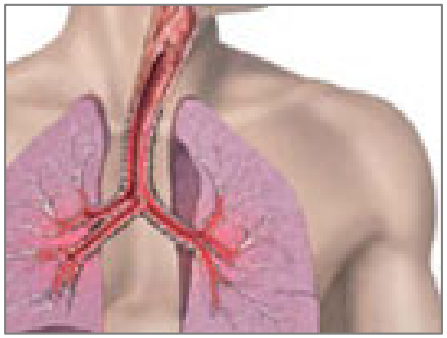


Sources of VOC



Source: EPA, 2011 National Emissions Inventory v1 -http://www.epa.gov/ttn/chief/net/2011inventory.html

Health effects of ground-level ozone



The science shows that ozone:

- Inflames and damages the airways
- Aggravates lung disease, including asthma, emphysema and bronchitis
- Increases the frequency and severity of asthma attacks
- Reduces lung function, making it harder to breathe as deeply as normal
- Causes coughing and sore throat or burning sensation in airways

Establishing and Meeting a NAAQS is a 2-Step Process

- EPA sets national ambient air quality standards (NAAQS) for six pollutants.
  - Ground-level ozone
  - Carbon monoxide
  - Nitrogen dioxide
  - Particulate matter
  - Lead
  - Sulfur dioxide
- The Clean Air Act outlines a 2-step process for setting and then meeting standards.
- Step 1 is ***setting the standards***, which requires EPA to conduct an extensive scientific review to determine whether new standards are necessary to protect public health and welfare.
  - The Clean Air Act bars EPA from considering cost in setting the NAAQS.
- Step 2 is ***implementing the standards***, which involves states, and tribes if they wish to, putting measures and programs in place to reduce harmful pollution to meet the standards.
  - The Clean Air Act specifies that cost, technical feasibility and the time needed to meet the standards are all factors that should be taken into account in this step.
  - State and federal programs have a proven record of improving air quality while the economy grows. EPA will use long-standing provisions in the law to work with state, tribal and local partners to make sure these standards are implemented in a flexible and cost-effective way.

Step 1: Setting Ozone Standards - Primary

- Proposing health-based standard of **65-70 ppb** (8-hr average).
  - Taking comment on lower levels including 60 ppb and on the proposed decision that the current standard does not protect public health with an adequate margin of safety
  - Soliciting comments on retaining the current standard of 75 ppb

  .
- Proposing to retain the averaging time and form of the standard.

- CASAC and EPA staff experts concluded that the scientific evidence supports a standard within a range of 60 to 70 ppb.

- The Administrator did not include a standard of 60 ppb in the proposed range, because of increasing uncertainty in the scientific evidence at lower ozone concentrations.
  - This uncertainty reduces confidence that ozone standard levels set below 65 ppb will result in additional health improvements beyond those that would result from a standard in the proposed range of 65 to 70 ppb.

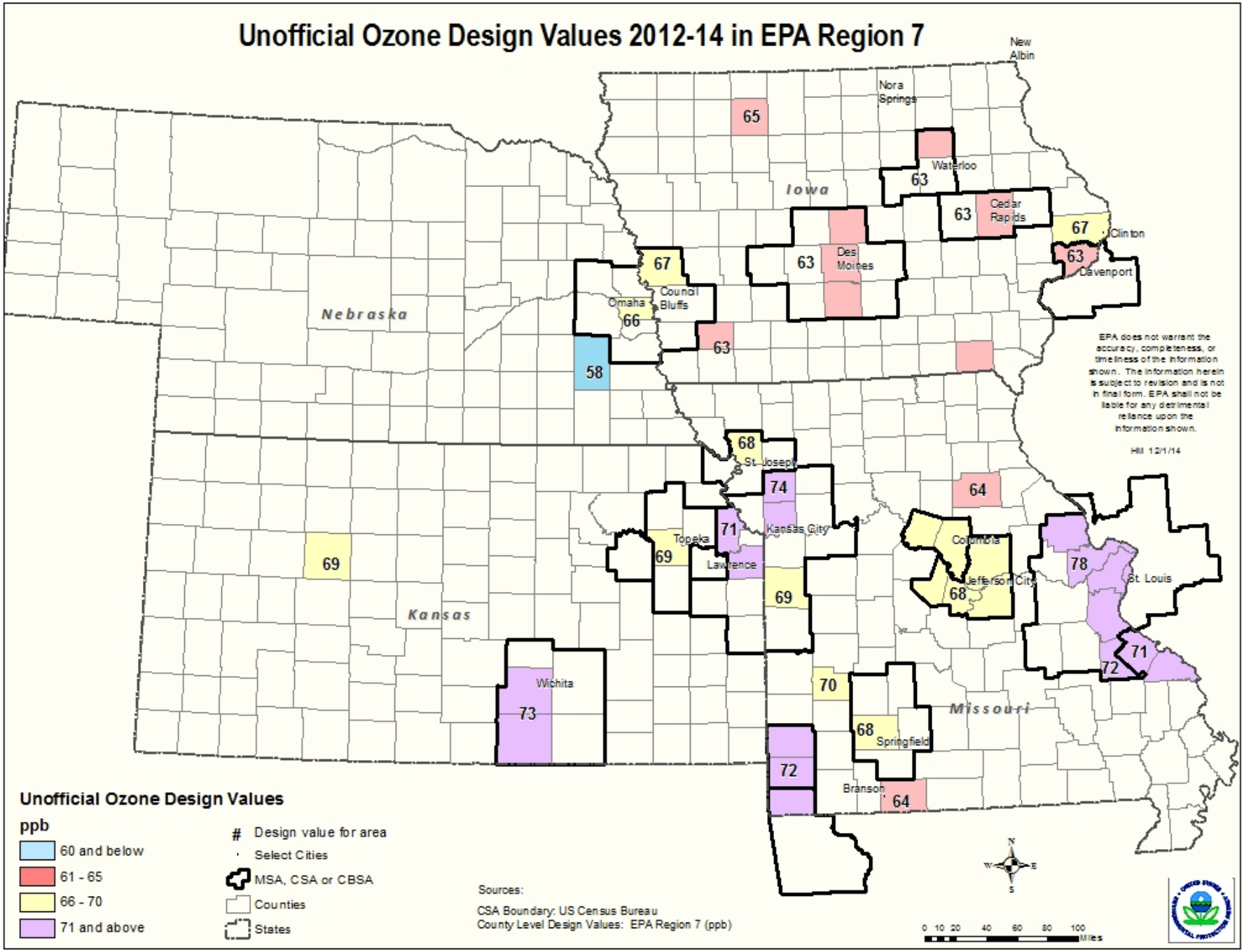
Step 1: Setting Ozone Standards - Secondary

- The impact of ozone exposure on trees, plants and ecosystems often is assessed using a seasonal index.
- Proposing to define a target level of protection for public welfare in terms of a cumulative, seasonal metric (W126) index value within the range of 13 to 17 ppm-hrs (3-year average).
  - Soliciting comment on defining a target level of protection within the range of 7 to 13 ppm-hrs.
- Proposing **secondary** ozone standard to protect public welfare to a level within the range of 65 ppb to 70 ppb. Analyses show that a standard in this range would provide protection equivalent to a W126 index value of 13 to 17 ppm-hrs.
  - Soliciting comment on revising the secondary standard to a distinct W126-based standard within a range of 13 to 17 ppm-hrs.
  - Soliciting comment on a distinct W126-based standard within the range extending below 13 ppm-hrs down to 7 ppm-hrs.
  - Soliciting comment on retaining the current standard of 75 ppb.

Existing and Proposed Federal Rules Will Help Reduce Ozone Pollution

- Rules intended to reduce ozone precursors such as NOx and VOCs, along with rules that will reduce these pollutants as a co-benefit of reducing toxic emissions and carbon pollution, will help most areas of the country meet a revised primary and secondary ozone standard in the range of 65-70 ppb by 2025.
- These federal programs include:
  - Requirements to reduce the interstate transport of ozone
  - The Mercury and Air Toxics Standards
  - Mobile Source-Related Standards, especially the Tier 3 emission control requirements for motor fuels and vehicles
  - Regional Haze Best Available Retrofit Technology Emission Standards
  - Emissions Standards for Reciprocating Internal Combustion Engines
  - Emissions Standards for Industrial, Commercial and Industrial Boilers, and
  - The Clean Power Plan

Unofficial Ozone Design Values 2012-14 in EPA Region 7



Step 2: Implementing the Standards

- Improving air quality is a partnership between the federal government, states and tribes. EPA will work closely with states and tribes to implement any revised ozone standard.
- Once EPA sets a new air quality standard, or revises an existing standard, it then designates areas as meeting or not meeting the standards based on recommendations from states.
  - States with nonattainment areas develop implementation plans showing how they will meet the standards, based on federal measures and any additional state or local measures.
- The schedule for attainment of any revised primary ozone standard varies by nonattainment designation classification. Attainment deadlines range from 3 to 20 years depending on the level of the ozone in the area, and the deadlines can be adjusted based on area-specific challenges.
- The Clean Air Act requires states to meet secondary ozone standards as “expeditiously as practicable,” but does not provide specific timeframes.

Tentative timeline for designations and implementation

- After a standard is final, states and tribes work with EPA to make plans to meet it. This process is laid out in the Clean Air Act and some of the key milestones are shown here.

Designation Schedule		
	Schedule	Tentative Date
State and Tribe Recommendations	Within 1 year after NAAQS promulgation	October 2016
Final Designation	Within 2 years after NAAQS promulgation (Administrator has discretion to extend the deadline by one year to collect sufficient information.)	October 2017 Effective date may vary. (Air quality data years: 2014 –2016)
Implementation Schedule		
Infrastructure SIP	Within 3 years after NAAQS promulgation	October 2018
Attainment Plans Due	Within 36 - 48 months after designations depending on classification	October 2020-2021

Attainment Schedule by Classification	
Classification	Schedule*
Marginal	3 years to attain
Moderate	6 years to attain
Serious	9 years to attain
Severe	15 to 17 years to attain
Extreme	20 years to attain

*Areas must attain as expeditiously as practical, but not later than the schedule in the table. Two one-year extensions are available in certain circumstances based on air quality.

Proposed Changes to the Air Quality Index

- EPA is proposing updates to the Air Quality Index (AQI) for ozone pollution.
  - The AQI is EPA's color-coded tool used by state and local governments to help inform the public about current and daily air quality and recommends steps that individuals can take to reduce their exposure to air pollution.
  - The AQI converts ozone concentrations to a number on a scale from 0 to 500.
- EPA is proposing to change the breakpoints for each AQI category based on the level of the proposed primary standard and information from the health studies examined in the review.
- EPA is soliciting comments on these proposed revisions to the AQI.

AQI Category	Index values	Current Breakpoints (2008 AQI) (ppb, 8-hour avg)	Proposed Breakpoints (ppb, 8-hour avg)
Good	0 - 50	0 - 59	0 – (49 to 54)
Moderate	51 – 100	60 – 75	(50 – 55) – (65 to 70)
Unhealthy for Sensitive Groups	101 - 150	76 - 95	(66 to 71) - 85
Unhealthy	151 - 200	96 - 115	86 - 105

Proposed Changes to Monitoring Requirements

- EPA is proposing changes to monitoring requirements to smooth the transition to any revised standards and assure that the public has full information about air quality.
- **Ozone monitoring season**
  - Proposing to extend the ozone monitoring season for 33 states, to match the times of year when data show ozone can approach unhealthy levels, and to alert the public;
  - Proposing to require year-round monitoring at 80 existing multipollutant monitoring sites (NCore) stations.
  - Implementation of revised seasons proposed for January 1, 2017.
- **Photochemical Assessment Monitoring Stations (PAMS)**
  - Revising PAMS applicability to all ozone non-attainment areas with NCore sites – uses existing network infrastructure.
  - Proposing changes to certain required methods.
  - Proposing changes to decrease monitoring burden and increase flexibility.
  - Implementation deadlines of 2017 or 2019 based on nonattainment status of areas.
- **Ozone Federal Reference Method**
  - Proposing to add a new ozone Federal Reference Method (FRM) while retaining the current FRM and Federal Equivalent Methods (FEMs).
  - Impact on state monitoring networks will be minimal as existing approved methods are adequate for continued operation.

Proposed Changes to Clean Air Permitting Provisions and Other Efforts to Ease Transition

- PSD Grandfathering
  - Proposing that any in-the-pipeline permit application meeting certain conditions would be required to consider its impact on the 2008 NAAQS but not the 2015 NAAQS
  - Seeking comment on appropriate criteria for PSD grandfathering
- Ongoing and Upcoming Efforts
  - Ongoing reductions from federal measures (including reductions in ozone precursors).
  - Planning timely assistance for state, tribal and local air agencies.
  - Exceptional Events Rule revisions and guidance (forthcoming).

Ozone NAAQS Review Schedule

- **Proposal Published** in Federal Register: **December 17, 2014**
- **Public comment period ends: March 17, 2015**
  - Comments should be labeled with Docket ID number EPA-HQ-OAR-2008-0699
- **3 Public hearings scheduled:**
  - **1/29/15:** Arlington, TX and Washington, DC
  - **2/2/15:** Sacramento, CA
- **Final Rule** to be signed by October 1, 2015
- For more information on the rule and how to comment, go to http://www.epa.gov/air/ozonepollution/