Final Updates to National Ambient Air Quality Standards for Ozone

What we'll cover

2015 Final
8-hour Ozone Standards

Primary: 70 ppb

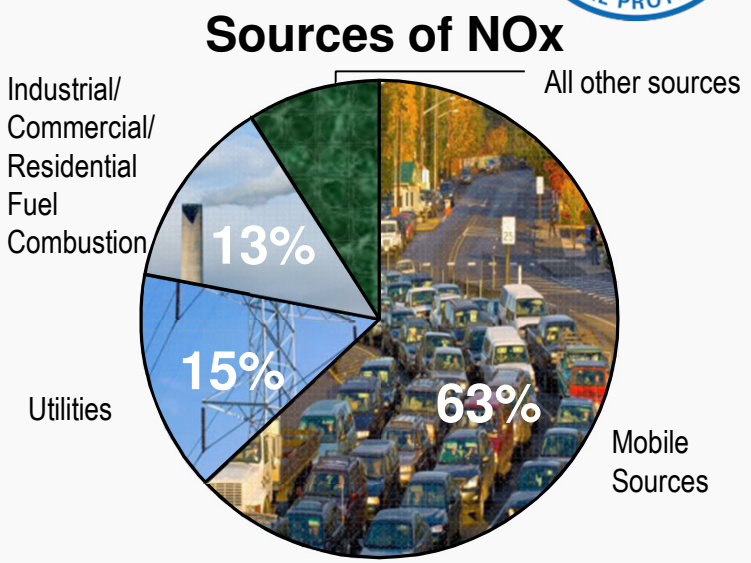
Secondary: 70 ppb

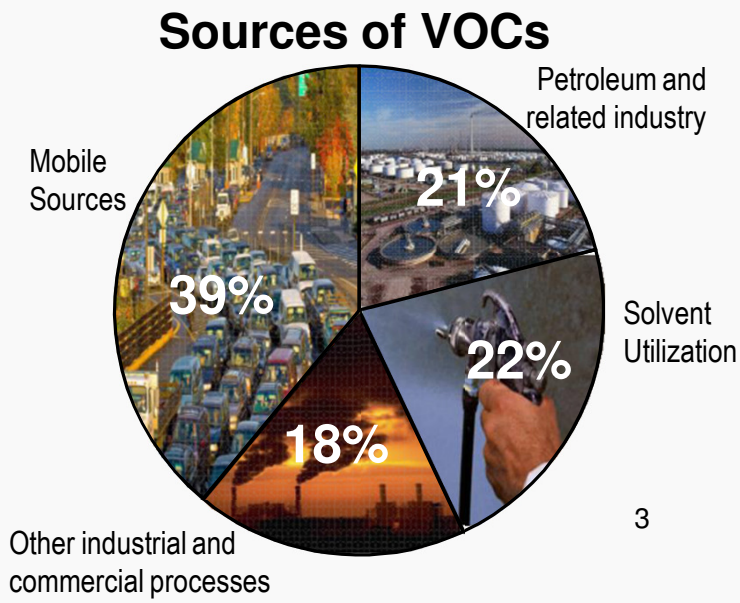
Areas will meet the standards if the 4th highest daily maximum 8-hour ozone concentration per year, averaged over three years, is equal to or less than 70 ppb.

- Updated standards
- Updated Air Quality Index (AQI)
- Monitoring updates
- Implementation
  - PSD permitting
  - Designations
  - Ozone transport

About Ozone

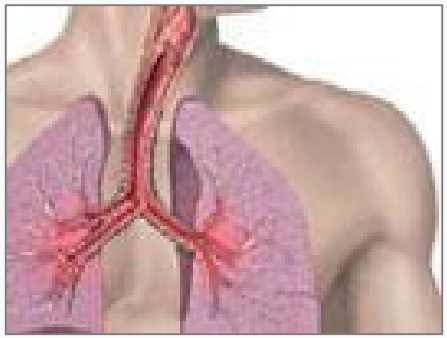
- Forms in the atmosphere from nitrogen oxides (NOx) and volatile organic compounds (VOCs)
- Most commonly elevated in the warm summer months.
- But in parts of the western U.S. with high local VOC and NOx emissions, ozone has formed when there is snow on the ground.
- Not just a city pollutant: ozone, and the pollutants that form it, can travel long distances on the wind, leading to high ozone even in rural areas.





Source: EPA, 2011 National Emissions Inventory v2 -http://www.epa.gov/ttn/chief/net/2011inventory.html

Ozone is Linked to Serious Health Effects



A large body of scientific evidence shows that ozone:

- Causes coughing and sore throat or burning sensation in airways
- Reduces lung function, making it harder to breathe deeply
- Inflames and damages the airways
- Aggravates lung disease, including asthma, emphysema and bronchitis
- Increases the frequency and severity of asthma attacks
- Repeated ozone damage to developing lungs can affect children into adulthood, causing permanent reduction to the lungs' ability to function, and is likely to be one of the many causes of asthma development.

These effects can lead to:

- More medication use for people with asthma
- More frequent visits to the doctor
- Missed school days
- Missed work days
- More emergency room visits and hospital admissions
- Increased risk of premature death

Updates to Primary and Secondary Standards and the Air Quality Index

Updated Standard– Primary

The Clean Air Act charges the EPA Administrator with setting primary standards that are *requisite* to protect public health with an adequate margin of safety.

In setting the primary ozone standard, the Administrator:

- Examined the body of scientific evidence on ozone and health
  - Evidence expanded significantly since EPA last reviewed the ozone standards in 2008.
  - Important new studies available since 2008.
    - **New clinical studies** -- provide the most certain evidence of health effects in adults; clearly show ozone at 72 ppb can be harmful to healthy, exercising adults.
    - Clinical studies also show effects in some adults following exposures to ozone concentrations as low as 60 ppb; however, there is greater uncertainty that these effects are adverse.

Updated Primary Standard, cont.

- The Administrator also reviewed results of analyses of exposure to ozone and looked at how different levels of the standard would reduce risk.
  - Analyses take into account how people are exposed to ozone in their daily lives.
  - Focused on risks to children, particularly from repeated exposures.
- Administrator also considered advice from the Clean Air Scientific Advisory Committee (CASAC) and public comments on the proposal.
  - CASAC concluded that the science supports a standard level within a range of 70 ppb down to 60 ppb, noting that the decision about what standard provides an adequate margin of safety is a judgment left to the Administrator.

Updated Standard – Primary (cont.)

- Based on the science, the Administrator has determined that the **2008 standard was not adequate to protect public health**.
- **She revised the standard level to 70 ppb, which:**
  - Is requisite to protect public health with an adequate margin of safety.
  - Is below the lowest exposure level shown to cause adverse health effects in clinical studies.
  - Essentially eliminates exposures shown to cause adverse health effects, protecting 99.5 % of children from even single exposures to ozone at 70 ppb.
  - Substantially reduces exposures to ozone levels lower than 70 ppb, reducing multiple exposures to 60 ppb by more than 60%.
    - Repeated exposures are important, because the more times children are exposed to ozone, the more likely they will experience serious health effects.

Secondary Standard

- **EPA also strengthened the secondary (welfare) standard level to 70 ppb** to provide requisite public welfare protection from known or anticipated adverse effects.
  - New studies add to evidence that repeated exposure to ozone reduces growth and has other harmful effects on plants and trees. These types of effects have the potential to harm ecosystems.
  - EPA determined that a standard that generally limits cumulative, seasonal exposures to 17 parts per million-hours or lower, in terms of a three-year W126 index, will provide requisite protection.
    - W126 is a cumulative, seasonal index used to measure ozone exposures of concern.
    - Analyses of data from air quality monitors show that a standard level of 70 ppb will provide the requisite protection.

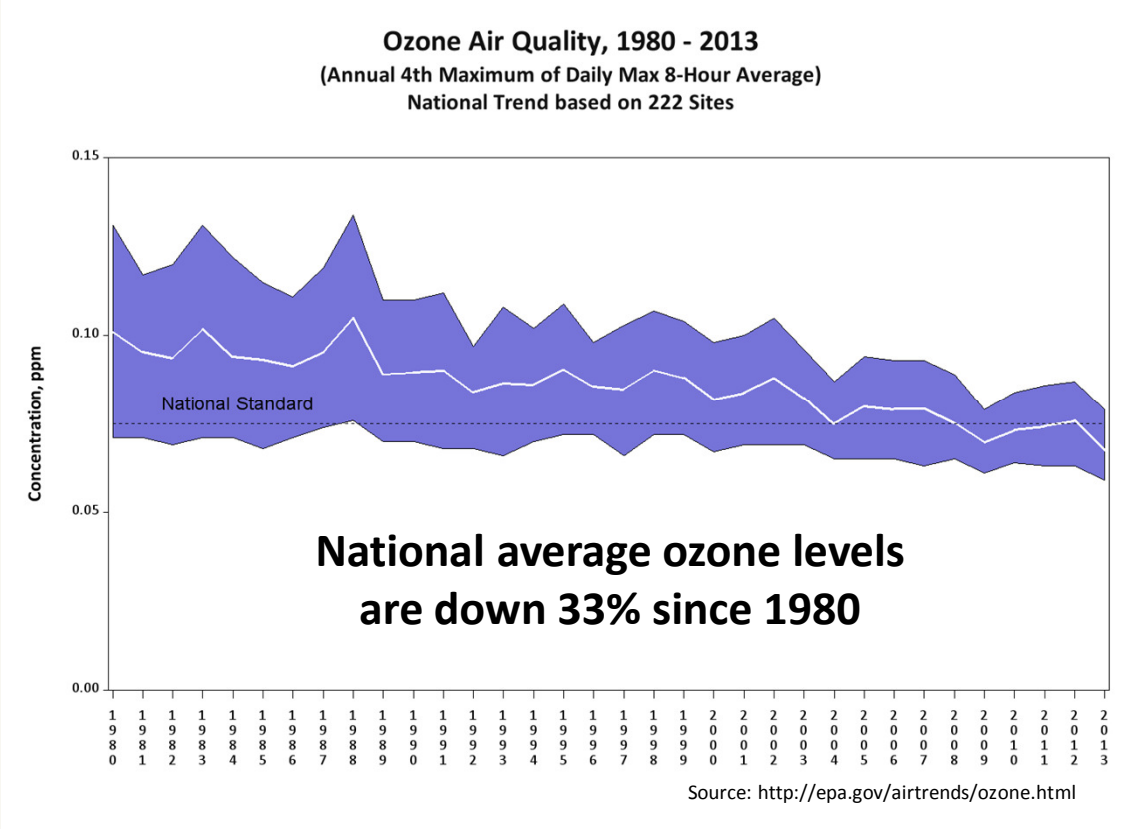
National Air Standards Reduce Pollution

Setting and implementing national standards for pollution has made the air cleaner.

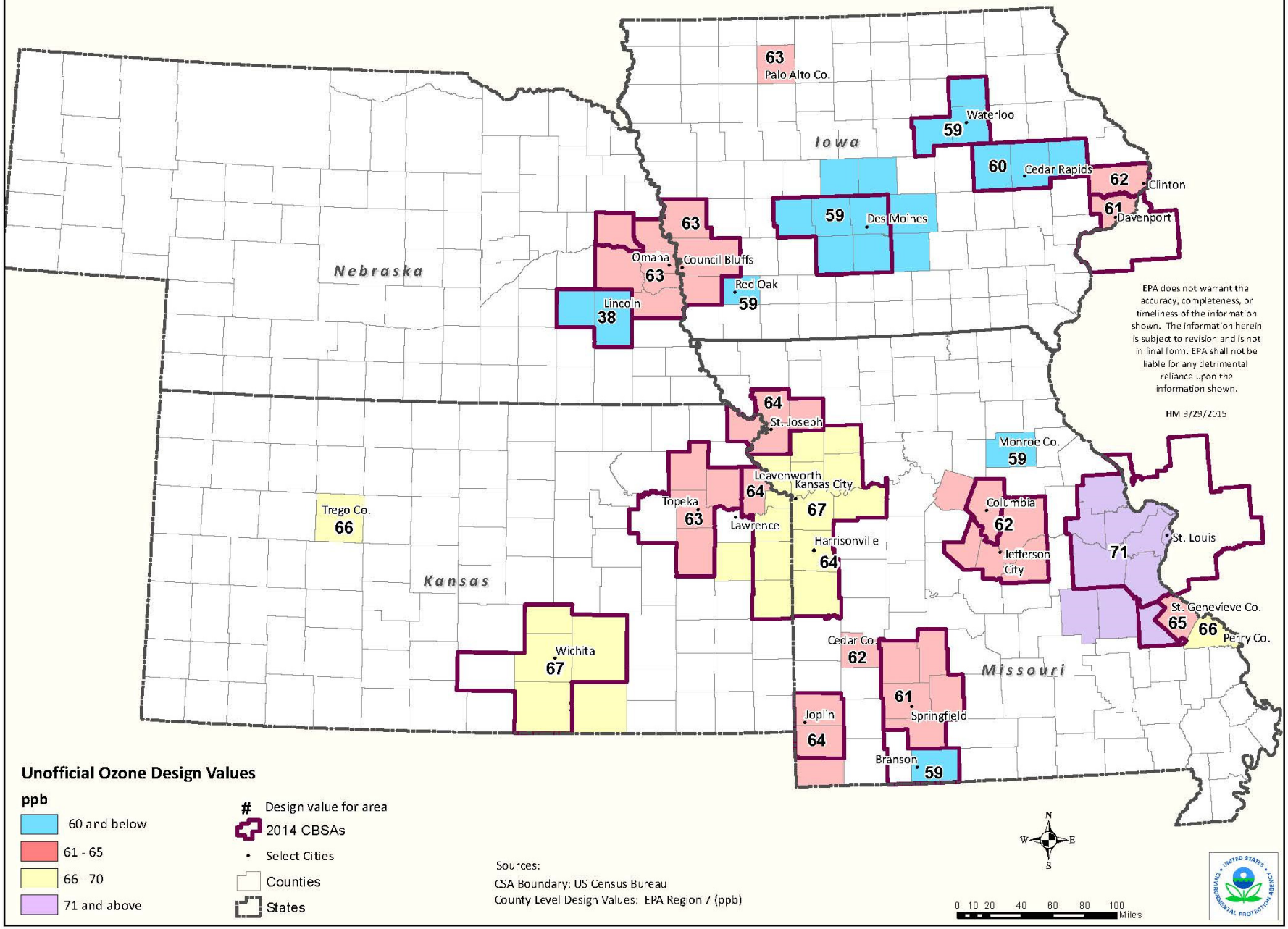
90% of areas designated nonattainment for the 1997 ozone standards now meet those standards.

The science shows that further reductions in ozone will improve public health protection.

We will continue to work together with states using common sense and flexible programs to build on the progress we have already made.



Unofficial Ozone Design Values 2013-15 in EPA Region 7



Air Quality Index Updates

AQI Category	Index Values	Breakpoints in the 2008 AQI (ppb, 8-hour average)	Updated Breakpoints (ppb, 8-hour average)
Good	0 - 50	0-59	0-54
Moderate	51 - 100	60-75	55-70
Unhealthy for Sensitive Groups	101 – 150	76-95	71-85
Unhealthy	151 – 200	96-115	86-105
Very Unhealthy	201 – 300	116-374	106-200
Hazardous	301 –500	375 to the Significant Harm Level*	201 to the Significant Harm Level*

**The Significant Harm Level for ozone is 600 ppb, two-hour average*

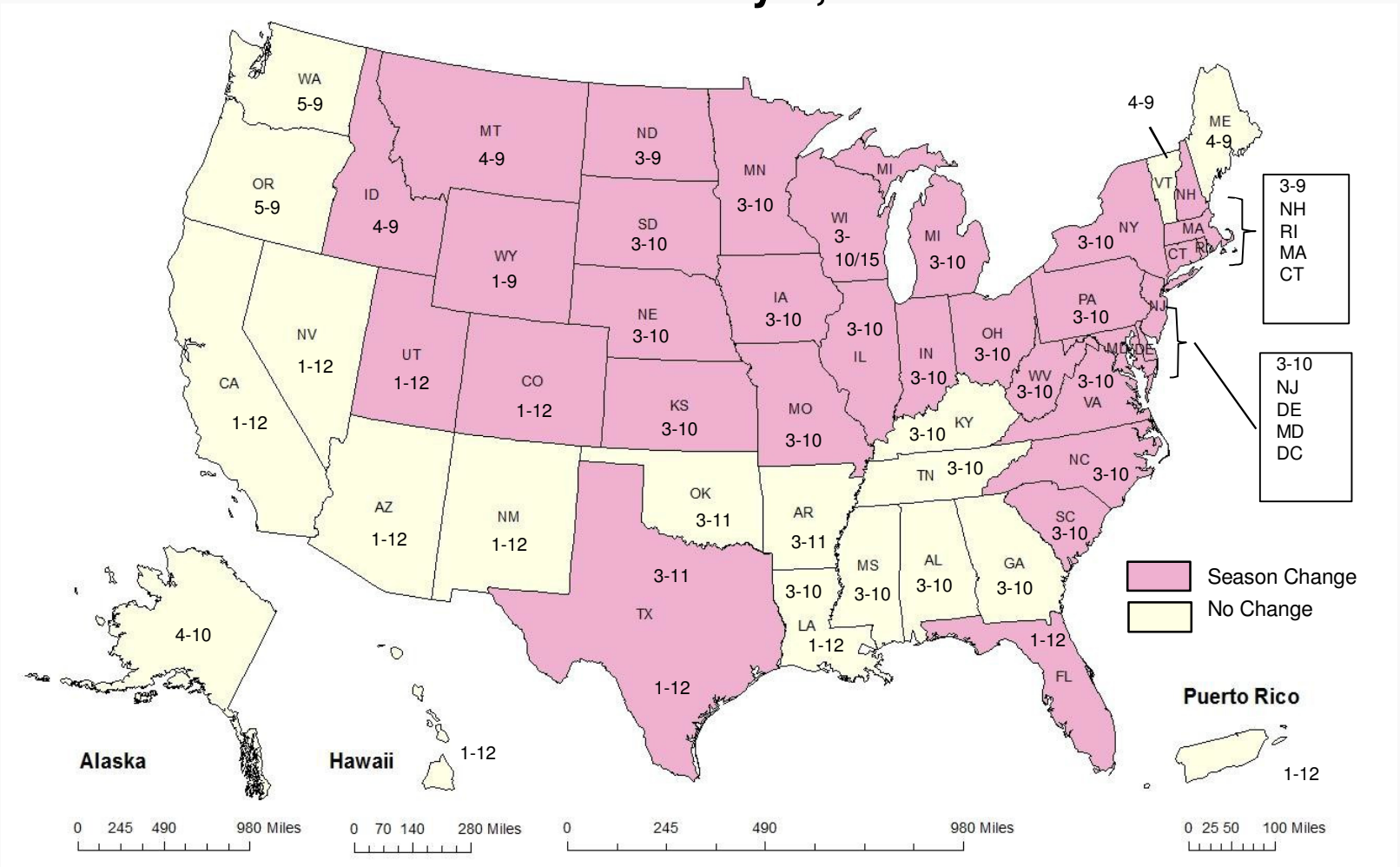
Monitoring Updates

Ozone Monitoring Season

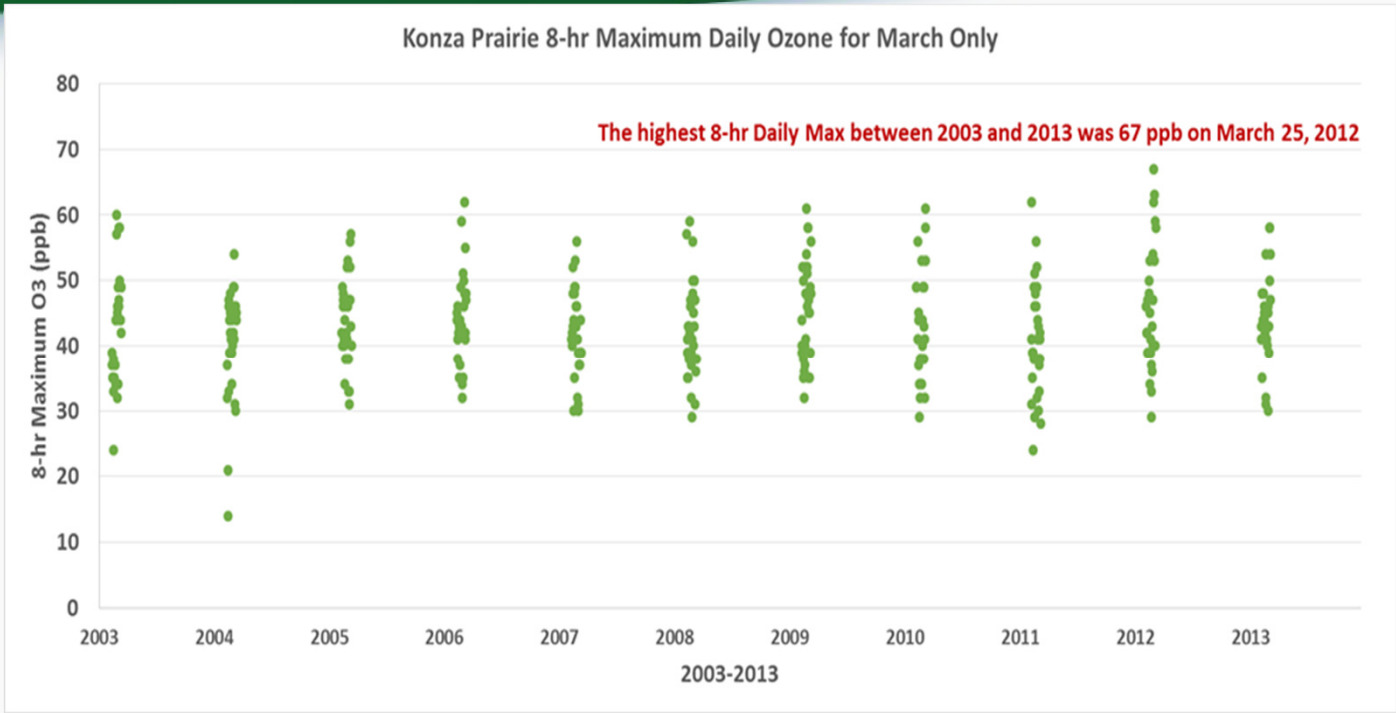
- Final rule extends ozone monitoring season for 32 states and D.C.
  - One month extension for 22 states and D.C.;
  - Additional extensions of two months to seven months for 10 states, including states where ozone can be elevated during the winter;
  - Year-round seasons for all NCore multi-pollutant sites.
- All waivers are revoked when the rule becomes effective (60 days after publication in the Federal Register)
  - Regions and states with existing waivers should pursue new waivers as appropriate.
  - Regional Administrators will still be allowed to approve changes to states' ozone monitoring seasons without rulemaking.
- Does not affect the CSAPR trading program ozone season (remains May 1 – Sept 1).

Ozone Monitoring Seasons

Effective January 1, 2017



Extension of Ozone Season –March Impacts



	KCK	Omaha	Wichita
1st High	**74 (March 25, 2012)**	**64 (March 25, 2012)**	**62 (March 25, 2012)**
2nd High	**62 (March 26, 2012)**	**63 (March 16, 2011)**	**61 (March 16, 2011)**
3rd High	**61 (March 24, 2012)**	**59 (March 24, 2012)**	**59 (March 30, 2010)**
4th High	**58 (March 31, 2012)**	**58 (March 27, 2012)**	**59 (March 3, 2011)**
5th High	**57 (March 15, 2014)**	**57 (March 29, 2010)**	**57 (March 24, 2011)**

PSD Permitting Updates

- Rule includes grandfathering provision to avoid delay of certain pending applications. Permit can be issued under terms of compliance with the 2008 ozone NAAQS if either:
  - The permitting agency has formally determined the application to be complete as of Oct. 1, 2015; or
  - The public notice for a draft permit or preliminary determination has been published prior to the date revised ozone standards become effective (60 days after publication in the Federal Register).
- Compliance demonstration tools (MERPs, SILs)
- PSD offsets
- Update to 40 CFR Appendix W to Part 51 (Guideline on Air Quality Models)

Updates for Secondary Pollutants (Ozone and PM2.5)

- EPA granted Sierra Club petition (OAR-11-002-1093 on Jan 4, 2012) with commitment to update the Guideline on Air Quality Models (Appendix W) to address O3 and secondary PM2.5 impacts

- Current Appendix W provides little information about assessing single source secondary impacts (O3 and secondary PM2.5)

- Proposed revision includes an entire chapter on secondarily formed pollutants and a chapter focused on visibility, deposition (AQRVs)

- Additional information on the Proposed Rulemaking to revise Appendix W, including presentations pertaining to the revisions given at the 11th Conference on Air Quality Modeling and Public Hearing can be found at: https://www3.epa.gov/ttn/scram/11thmodconf.htm

Updates for Secondary Pollutants (Ozone and PM2.5)

- Model Emissions Rates for Precursors (MERPs) will be included as part of future rulemaking/guidance

- MERP would neither replace the existing Significant Emissions Rates (SERs) for these precursor pollutants nor serve as the basis for the applicability of PSD requirements to sources with emissions above the SER

- MERP would represent a level of emissions of precursors that is not expected to contribute significantly to concentrations of secondarily-formed PM2.5 or ozone

- Source emitting above the SER but below the MERP would still need to follow administrative PSD requirements but may not need to do further technical demonstration (e.g., photochemical modeling) to show impacts are below the appropriate SIL

Meeting the Standards

Existing and proposed federal rules will help states meet the standards by reducing ozone-forming pollution. These rules include:

- Regional Haze regulations;
- Mercury and Air Toxics Standards;
- Clean Power Plan;
- Tier 3 Vehicle Emissions and Fuels Standards;
- Light-Duty Vehicle Tier 2 Rule;
- Mobile Source Air Toxics Rule;
- Light-Duty Greenhouse Gas/Corporate Average Fuel Efficiency Standards;
- Heavy-Duty Vehicle Greenhouse Gas Rule;
- Reciprocating Internal Combustion Engines (RICE) NESHAP;
- Industrial/Commercial/Institutional Boilers and Process Heaters MACT (and amendments); and
- Requirements to reduce the interstate transport of air pollution.

SIP Deadlines and Attainment Dates

- **2020 to 2021:** Attainment plans and demonstrations due for nonattainment areas classified as "Moderate" and above.
- **2020 to 2037**: Nonattainment areas are required to meet the primary (health) standard, with deadlines depending on the severity of an area's ozone problem.

Attainment Schedule by Classification	
Classification	**Schedule to Attain**
Marginal	3 years from date of designation
Moderate	6 years
Serious	9 years
Severe	15 to 17 years
Extreme	20 years
*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.	

Ozone Transport

Ozone Transport – 2015 Standards

- Having the CSAPR framework established and in place will help us make progress on transport issues for the 2015 ozone NAAQS.
- Transport SIPs are a state obligation; however, EPA can assist states with some of the technical analyses related to transport.
- EPA is planning to do source apportionment modeling to provide contribution information for the 2015 NAAQS to help states begin developing their 110 SIPs (due October 2018).
  - Intend to make this information available in Fall 2016.

For additional information

- To read the final rule and fact sheets, visit http://www3.epa.gov/ozonepollution/actions.html
- For technical documents related to the review of the standard, see: http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html
- For local air quality forecasts and information on current air quality, visit www.airnow.gov