

June 2007 Proposal to Revise the National Ambient Air Quality Standards for Ground-level Ozone



General Overview

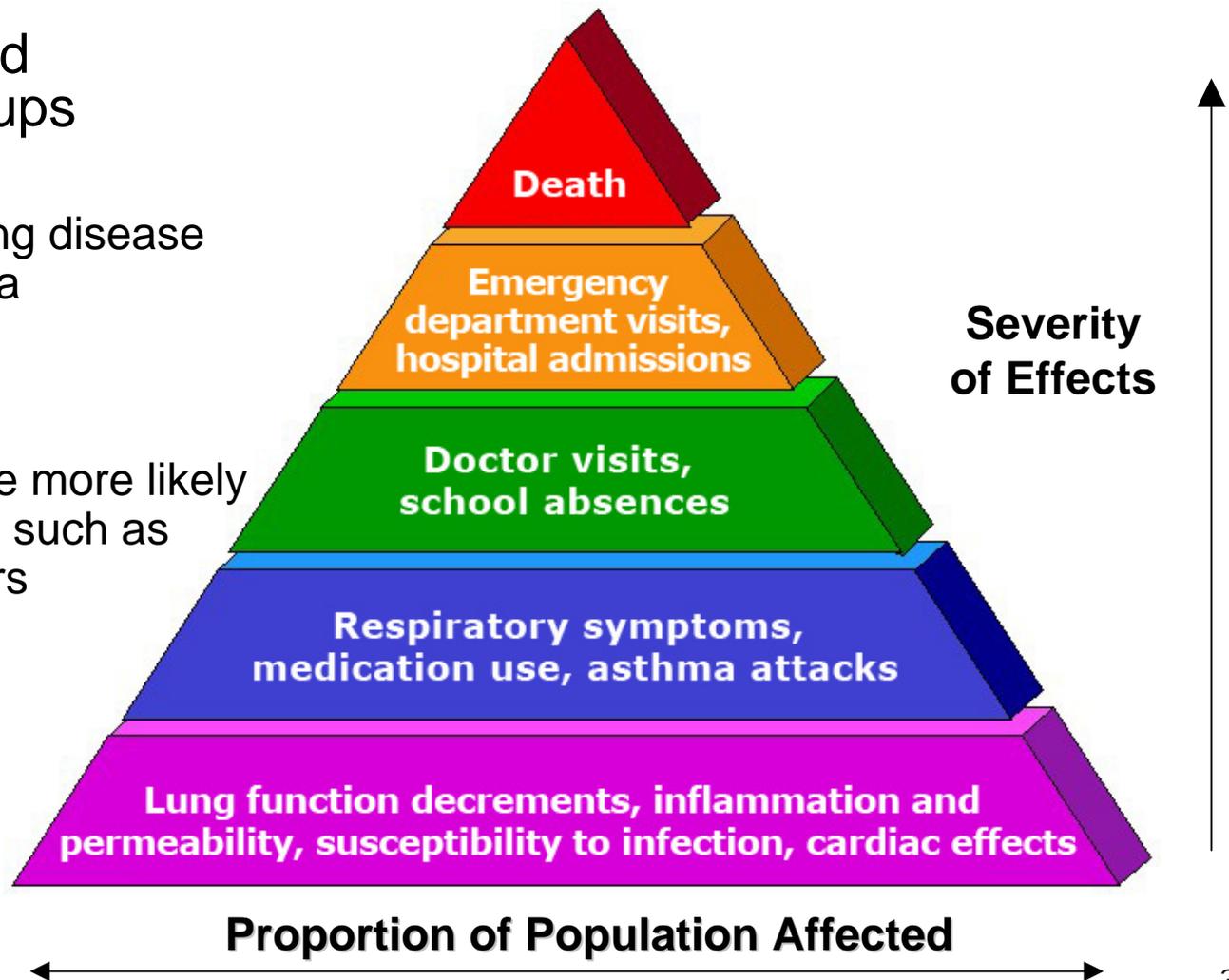
Ozone and Health

- Ozone can penetrate deep into the lungs and can:
 - Make it more difficult for people working or playing outside to breathe as deeply and vigorously as normal
 - Irritate the airways, causing: coughing, sore or scratchy throat, pain when taking a deep breath, shortness of breath
 - Increase asthma attacks and use of asthma medication
 - Inflammate and damage the lining of the lung by injuring the cells that line the air spaces in the lung
 - Increase susceptibility to respiratory infection
 - Aggravate chronic lung diseases such as asthma, emphysema and bronchitis
- Repeated episodes of ozone-induced inflammation may cause permanent changes in the lung, leading to long-term health effects and a lower quality of life
- Ozone may continue to cause lung damage even when symptoms have disappeared

Ozone Health Impacts: “Pyramid of Effects”

■ Susceptible and vulnerable groups include:

- People with lung disease such as asthma
- Children
- Older adults
- People who are more likely to be exposed, such as outdoor workers



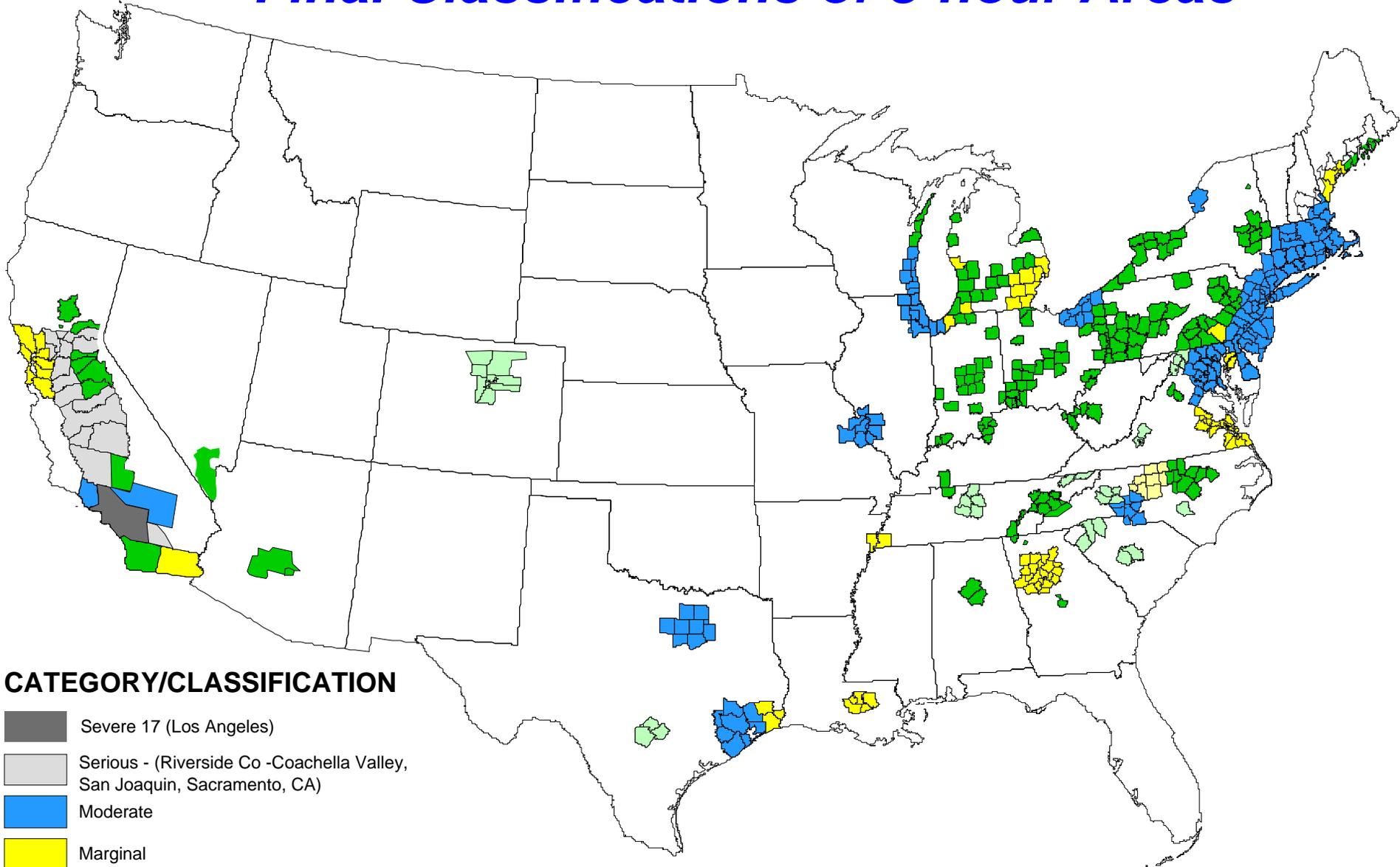
Ozone and the Environment

- Ground-level ozone is absorbed by the leaves of plants, where it can:
 - Interfere with the ability of sensitive plants to produce and store food
 - This can lead to reduced growth, biomass production and/or yields.
 - Make sensitive plants more susceptible to certain diseases, insects, other pollutants, competition and harsh weather.
 - Reduce or change species diversity
 - This can lead to damage to ecosystems dependent on those species.
 - Visibly injure the leaves of plants, harming the appearance of vegetation in national parks, recreation areas and cities.

Current 8-Hour Ozone Standard

- In 1997, EPA made the ozone standard more stringent, set at 0.08 ppm based on an 8-hr average:
 - Because of rounding, these standards are effectively 0.084 ppm.
 - An area attains the current standards if: the three-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration measured at each monitor does not exceed 0.084 ppm
- EPA final nonattainment designations were effective in June 2004
 - Phase 1 implementation rule published April 30, 2004
 - Phase 2 implementation rule published Nov. 29, 2005
- States plans were due to EPA on June 15, 2007

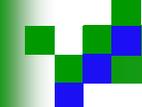
Final Classifications of 8-hour Areas



CATEGORY/CLASSIFICATION

- Severe 17 (Los Angeles)
- Serious - (Riverside Co -Coachella Valley, San Joaquin, Sacramento, CA)
- Moderate
- Marginal
- Marginal (EAC Greensboro, NC)
- Subpart 1 (Basic)
- Subpart 1 EAC (Basic)

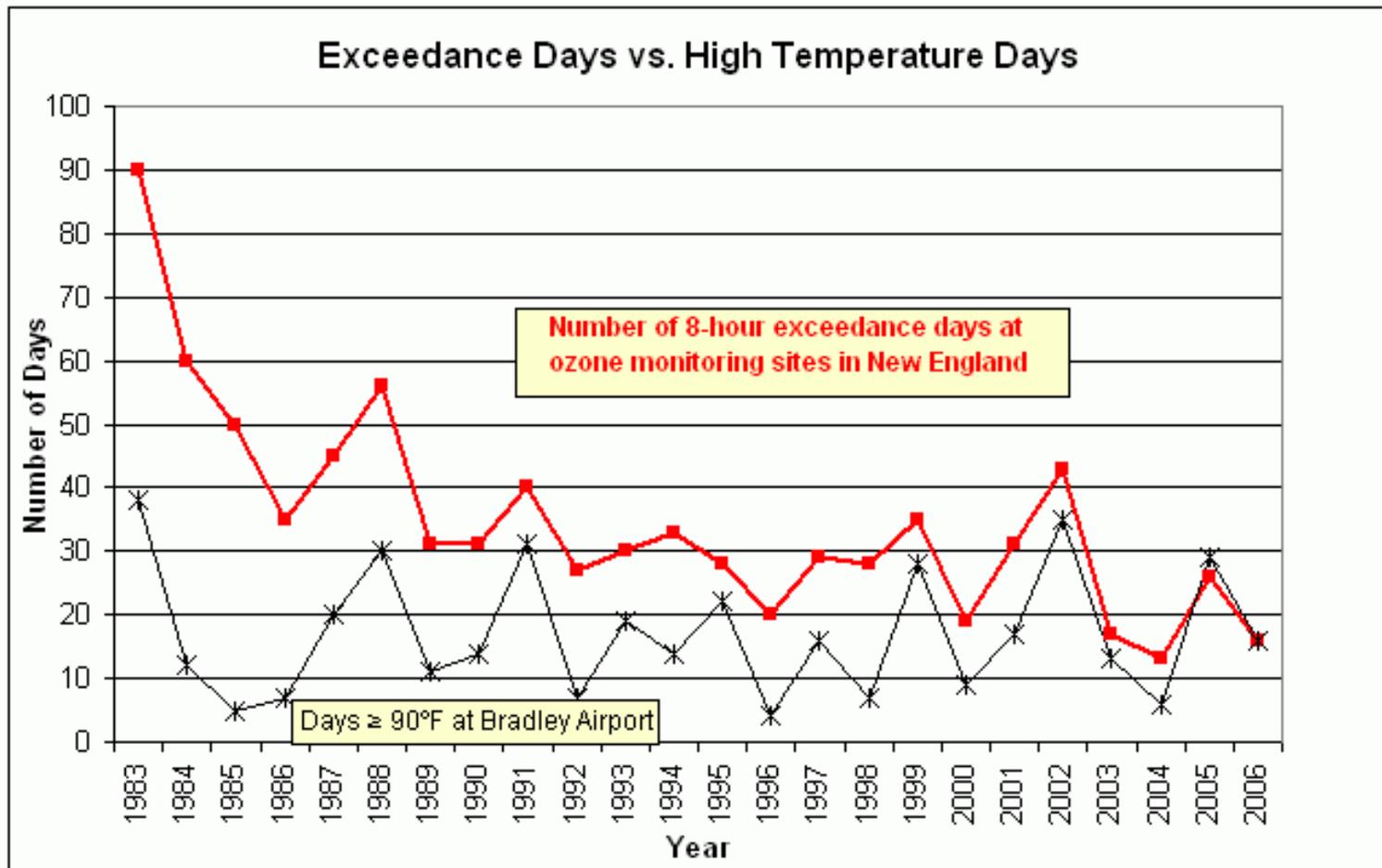
Based on Reclassification rule published in the Federal Register on September 22, 2004 (69 FR 56697).



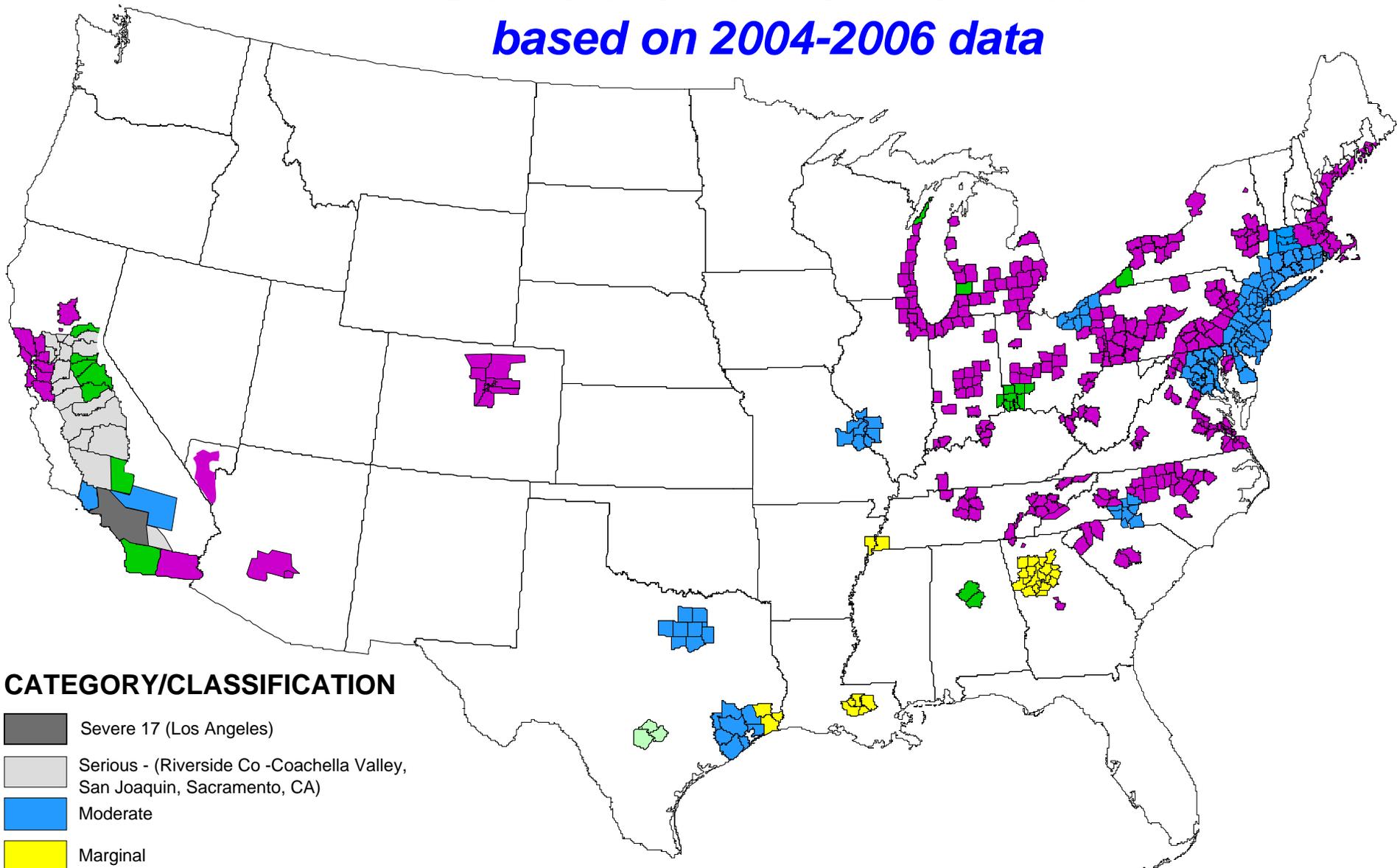
Progress in Achieving the Ozone Standard in New England

- EPA and the New England states have implemented numerous control strategies to reduce nitrogen oxides (NO_x) and sulfur dioxide (SO₂) emissions.
- Adopted strategies include:
 - Tier 2/sulfur gasoline program for new cars and light-duty vehicles starting 2004
 - 2004 and 2007 NO_x limits for heavy-duty diesels
 - Federal non-road standards for diesel equipment, lawn and garden equipment, marine engines, locomotives.
 - Power plant emissions reduced significantly through the NO_x Budget Trading Program implemented beginning in 2003
 - Clean Air Interstate Rule (CAIR) will reduce power plant emissions further

Long Term Trend in Ozone Exceedance Days in New England



Status of 8-hour Ozone Areas based on 2004-2006 data

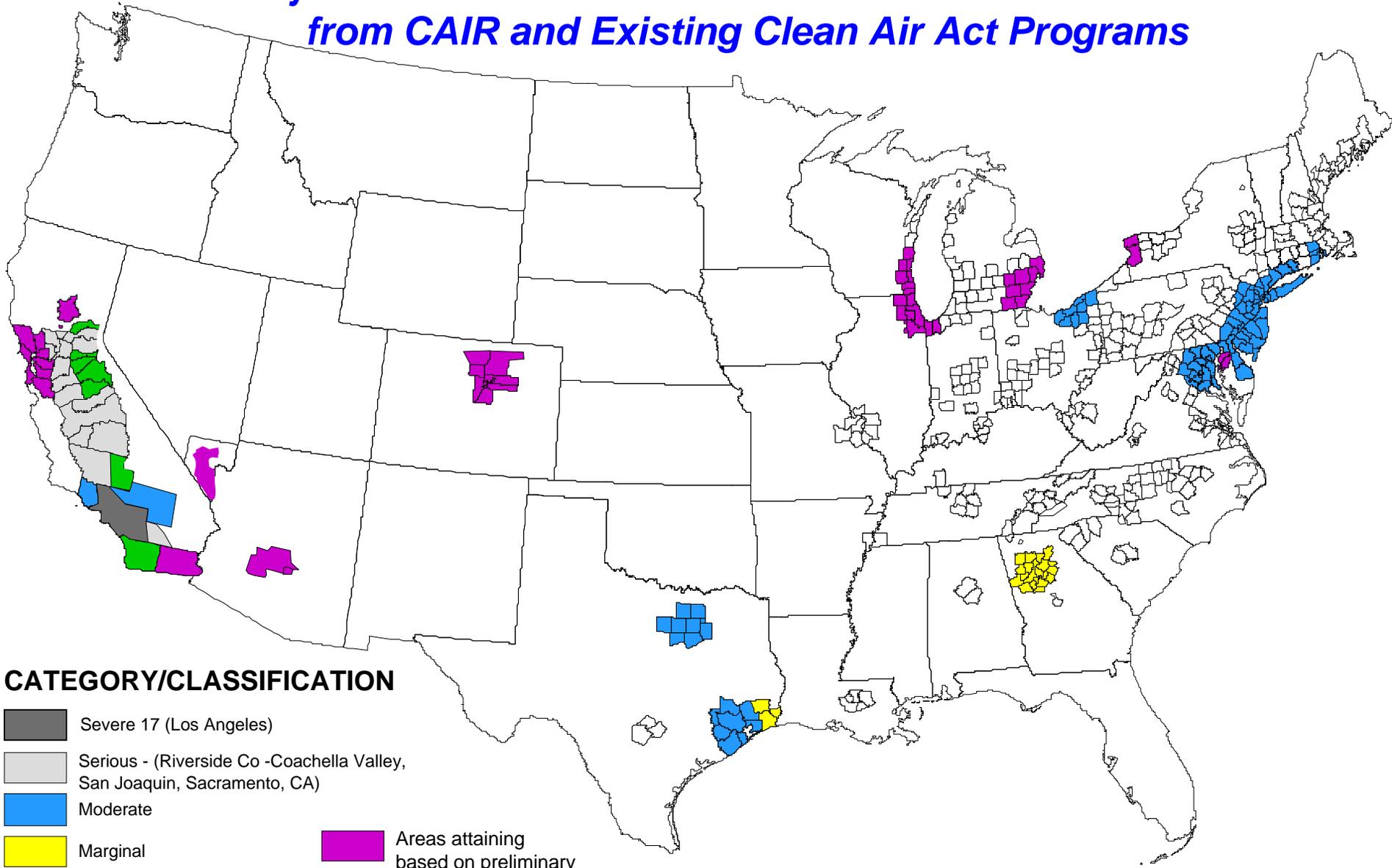


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Areas attaining based on preliminary 2004-2006 data

Projected Nonattainment Areas in 2010 after Reductions from CAIR and Existing Clean Air Act Programs



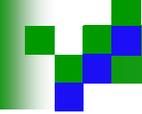
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Projections concerning future levels of air pollution in specific geographic locations were estimated using the best scientific models available. They are estimations, however, and should be characterized as such in any description. Actual results may vary significantly if any of the factors that influence air quality differ from the assumed values used in the projections shown here.

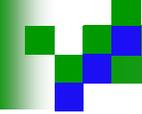
Proposed Revisions to the Ozone Standard

- On June 20, 2007, EPA proposed revisions to the National Ambient Air Quality Standards (NAAQS) for ground-level ozone.
- The law requires EPA to review the scientific information and the standards for each pollutant **every five years**, and to obtain advice from the Clean Air Scientific Advisory Committee (CASAC)
- The proposed revisions reflect new scientific evidence about ozone and its effects on people and the public welfare
- The proposed revisions would affect two types of ozone standards:
 - *Primary standards* to protect public health
 - *Secondary standards* to protect public welfare and the environment
- There is a 90 day public comment period
- Agency will issue final rule by March 12, 2008



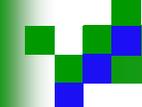
The Primary Ozone Standard – New Health Evidence in this Review

- Clinical studies show evidence of adverse respiratory responses in healthy adults from exposure to ozone at a level of 0.080 parts per million (ppm); very limited new evidence at 0.060 ppm
- Large number of new epidemiological studies, including new multi-city studies, strengthen EPA's confidence in the links between ozone exposure and health effects. New studies link ozone exposure to important new health effects, including mortality, increased asthma medication use, school absenteeism, and cardiac-related effects
 - Studies report effects at ozone levels well below the current standard
- Studies of people with asthma indicate that they experience larger and more serious responses to ozone that take longer to resolve



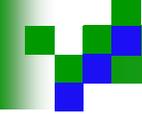
EPA's Human Health Exposure and Risk Assessments

- Estimated the magnitude of the public health risk from ozone and the extent to which alternative ozone standards might reduce adverse health effects (i.e., increased respiratory symptoms, increased hospital admissions, and possibly mortality)
- Focused on 12 urban areas:
 - Atlanta, Boston, Chicago, Cleveland, Detroit, Houston, Los Angeles, New York City, Philadelphia, Sacramento, St. Louis, Washington D.C.
- Exposure/risk assessments do not capture national-scale public health impacts or quantify the full range of ozone-related adverse health effects
- Results indicate no sharp breakpoint: gradual reductions in exposure and risk under alternative standards



Proposed Revisions to Primary Ozone Standard

- Current science shows that the current 8-hour ozone standard (effectively 0.084 ppm) is not adequate to protect the public health.
- EPA is proposing to set the standard within the range of:
0.070 to 0.075 ppm
- The Agency is requesting comment on a range of alternative levels for the standard, from 0.060 ppm to the level of the current standard
- EPA also proposes to specify the level of the primary standard to the third decimal place
 - Current monitoring technology can measure ozone at these precise levels.

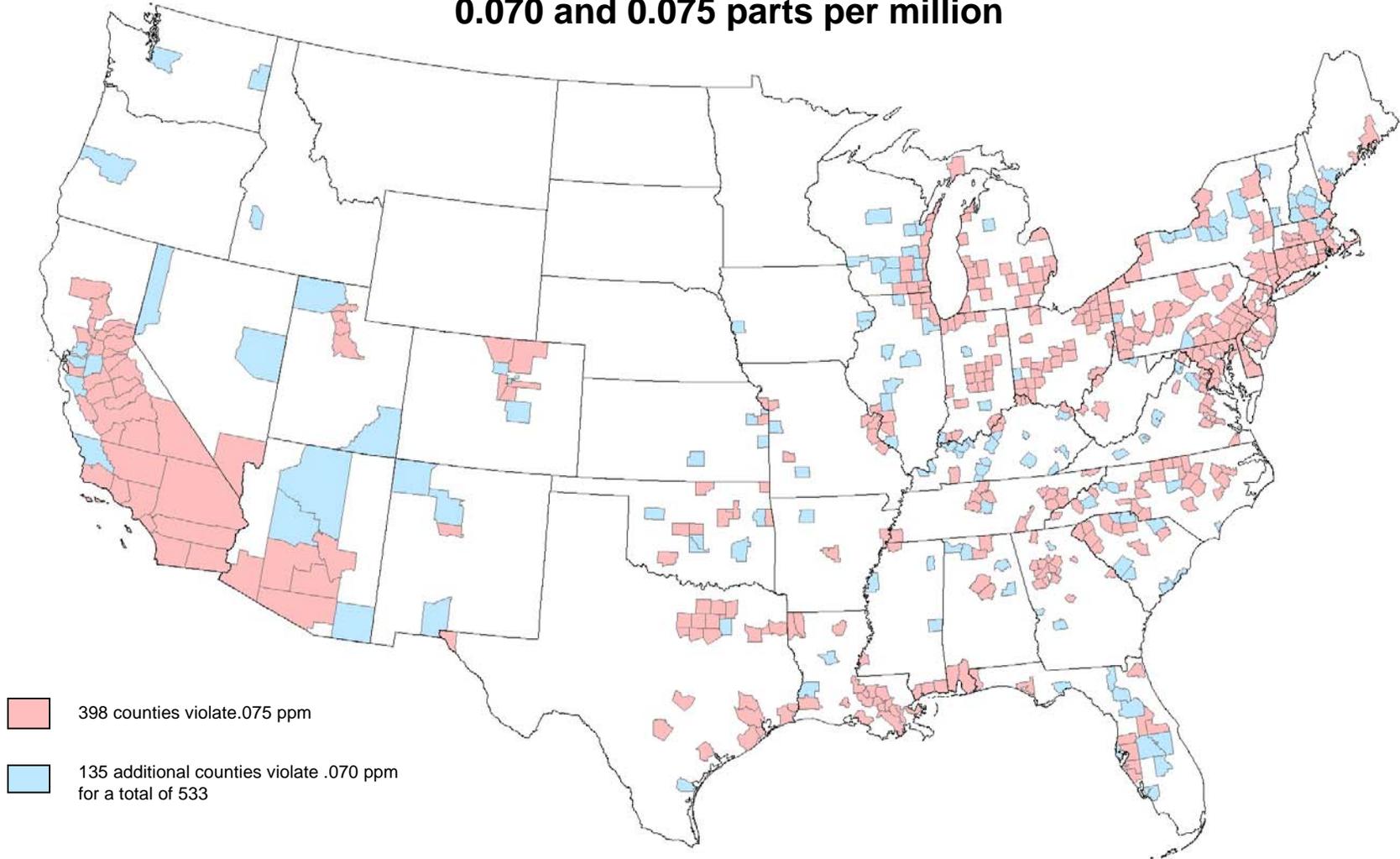


Impacts on New England

- A lower standard means a greater number of unhealthy air quality days, for example:
 - In 2005, there were 20 days in CT when ozone concentrations exceeded the existing standard, i.e, “unhealthy days”
 - Under a 0.075 ppm standard, there would have been 36 unhealthy days in CT in 2005
 - Under a 0.070 ppm standard, there would have been 43 unhealthy days in CT in 2005
- A lower standard also means more areas are impacted

Estimates are based on the most recent data (2003 – 2005). EPA will not designate areas as nonattainment on these data, but likely on 2006 - 2008 data which we expect to show improved air quality.

Counties With Monitors Violating Alternate 8-hour Ozone Standards 0.070 and 0.075 parts per million



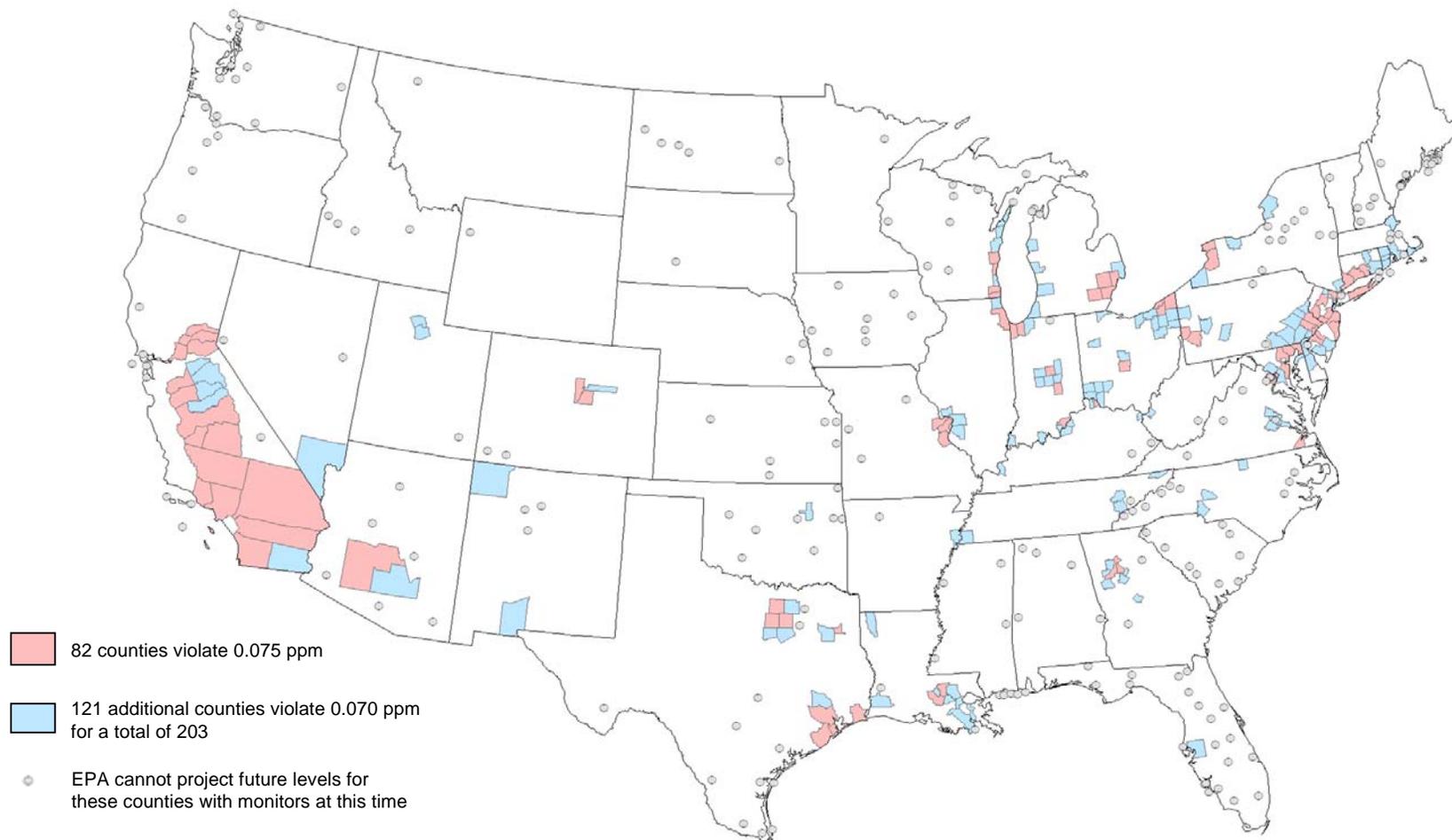
Notes:

¹ 398 of 639 monitored counties violate 0.075, 533 of 639 monitored counties violate 0.070.

² No monitored counties outside the continental U.S. violate.

³ Monitored data can be obtained from the AQS system at <http://www.epa.gov/ttn/airs/airsaqs/>

Counties With Monitors Projected to Violate Alternate 8-hour Ozone Standards of 0.070 and 0.075 parts per million in 2020



Notes:

¹ Modeled emissions reflect the expected reductions from federal programs including the Clean Air Interstate Rule, the Clean Air Mercury Rule, the Clean Air Visibility Rule, the Clean Air Nonroad Diesel Rule, the Light-Duty Vehicle Tier 2 Rule, the Heavy Duty Diesel Rule, proposed rules for Locomotive and Marine Vessels and for Small Spark-Ignition Engines, and state and local level mobile and stationary source controls identified for additional reductions in emissions for the purpose of attaining the current PM 2.5 and Ozone standards.

³ Modeled design values in ppm are only interpreted up to 3 decimal places.

⁴ Consistent with current modeling guidance, EPA did not project 2020 concentrations for counties where 2001 base year concentrations were less than recommended criterion. Such projections may not represent expected future levels. These counties are shown on the map with a grey dot.

² Controls applied are illustrative. States may choose to apply different control strategies for implementation.

The Secondary Ozone Standard

Welfare Effects Evidence: Vegetation

- Ozone affects plants differently than it affects humans. New studies indicate that the current 8-hour ozone standard may not be suitable to protect vegetation (crops and trees)
 - Plants respond to cumulative exposures to ozone, meaning the adverse effects build over repeated exposures, throughout the growing season
 - Plant growth tends to be most vigorous during periods of high temperature and high light—the same conditions that promote the formation of ozone
- Recent field-based studies provide additional evidence that growth and yield effects are related to cumulative impacts of ozone on vegetation during the growing season
- Ozone effects on sensitive tree species include loss of vigor, loss of competitive advantage and susceptibility to disease. This could lead to loss of plant diversity which could change the types of plants in an ecosystem



Proposed Revisions to Secondary Ozone Standard

- EPA is proposing two alternatives for the secondary ozone standard:
 - A new **cumulative, seasonal standard**, or
 - A standard identical to the proposed primary standard
- The proposed new seasonal standard is known as “W126”
 - W126 is a cumulative index form that weights and sums hourly measurements over a given period of time
 - EPA is proposing to set this standard within a range of:
7 to 21 ppm-hrs.



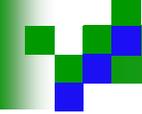
Example Timeline if Ozone NAAQS are Revised

Milestone	Date
Signature—Final Rule	March 2008
Effective Day of Rule (60 days following publication in Federal Register)	Approximately June 2008
State Designation Recommendations to EPA	June 2009 (based on 2006-2008 monitoring data)
Final Designations Signature	Approximately June 2010
Effective Date of Designations	Approximately 2010
SIPs Due	Approximately 2013
Attainment Dates	2013-2030 depending on severity of problem

Schedule for the Ozone Standard Review

- Proposed rule signed June 20, 2007*
- Published in Federal Register July 11, 2007
- Public comment Period: Written comments must be received by October 9, 2007.
- Public hearings to be held:
 - August 30, 2007
 - Philadelphia, PA
 - Los Angeles, CA
 - September 5, 2007
 - Atlanta, GA
 - Chicago, IL
 - Houston, TX
- Final rule to be signed by March 12, 2008*

(* Dates for proposal and final rules were established under a consent agreement)



For more information...

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