

EPA REVISED NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) FOR OZONE 2008



Fall 2008

PRESENTED BY THE LOUISIANA STATEWIDE OZONE
COMMITTEE

Introduction



2

- Why are we here?
 - ▣ What is ozone and how does it form?
 - ▣ What is the Clean Air Act?
- What is the new ozone standard and how does it affect Louisiana?
 - ▣ What are monitors and what do they tell us?
 - ▣ What are the impacts of the new standard? Timeline?
- What are the next steps?
 - ▣ Control strategies and solutions both State & Federal
 - ▣ Voluntary Measures

What is Ozone ?



3

- Ozone is commonly referred to as smog.
- It is not emitted, but forms in the atmosphere under certain conditions
- Volatile Organic Compounds (VOC) + Nitrogen Oxides (NO_x) + Sunlight = Ozone
- In other words, emissions from industry + cars + human activities + nature + sunshine = ozone

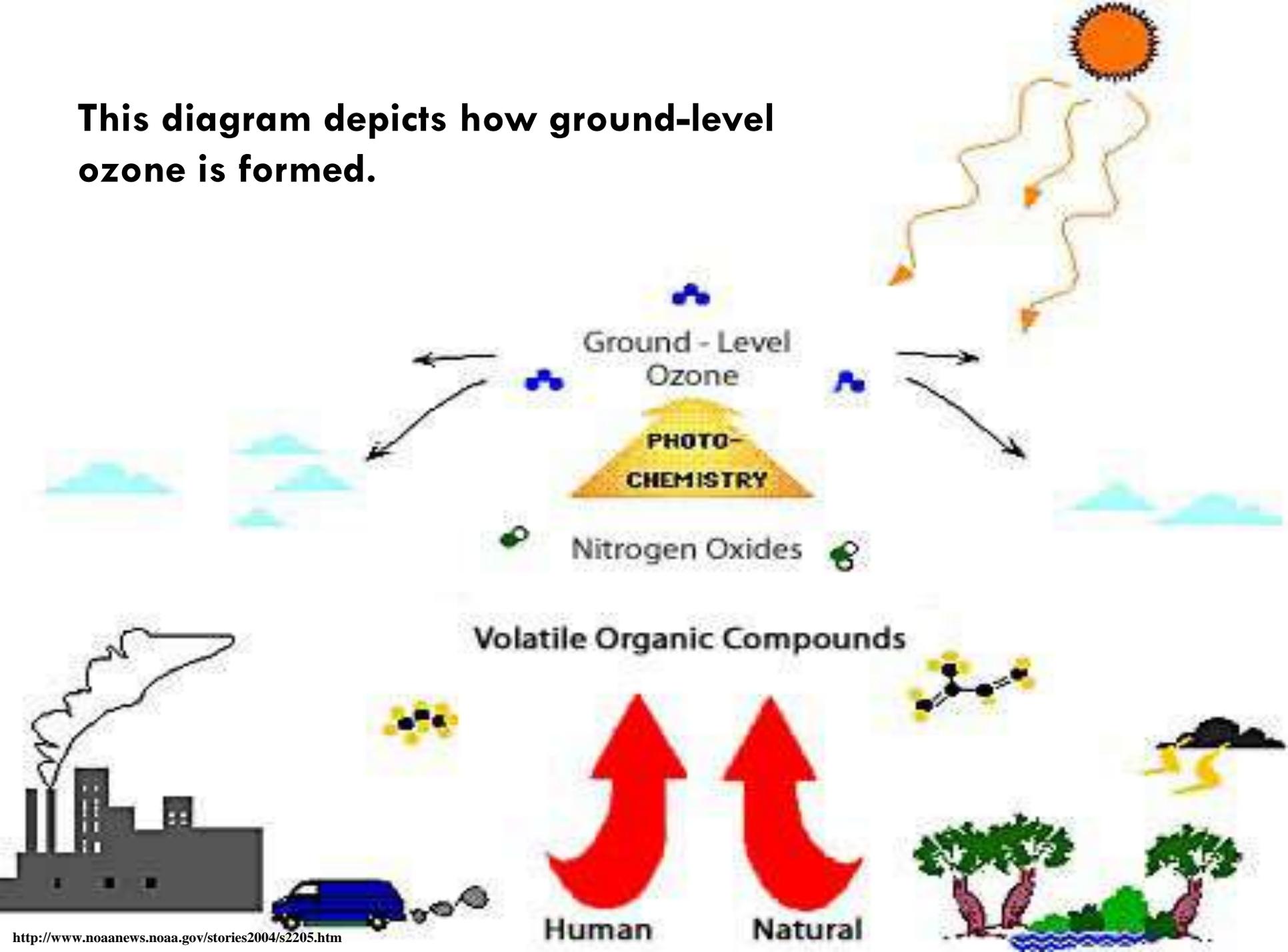
Ozone: Good up high, Bad near by

4



Ozone protects us from the sun's harmful ultraviolet rays in the stratosphere, but turns to smog in the troposphere.

This diagram depicts how ground-level ozone is formed.

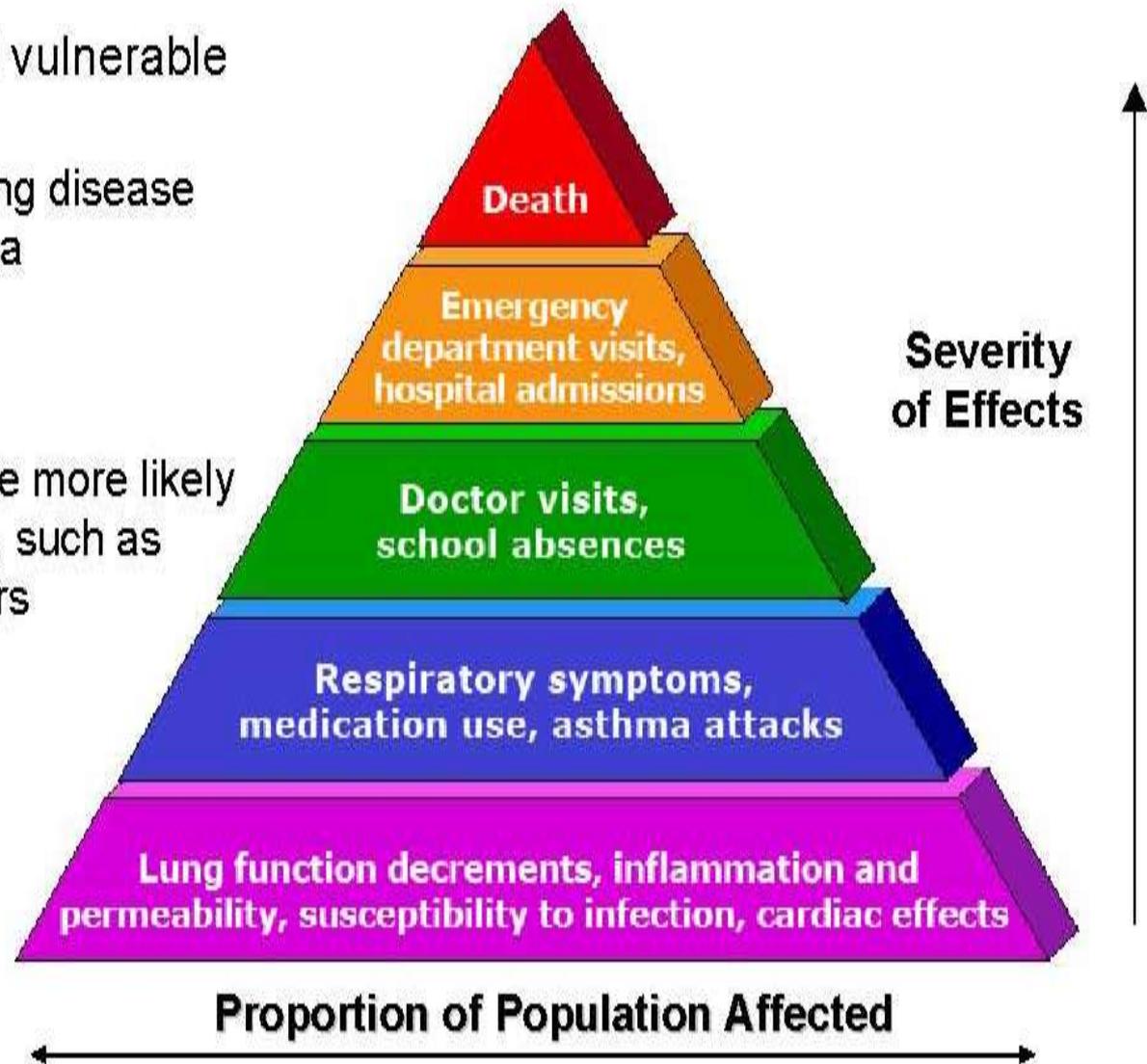


Ozone and Health

- 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, and 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



The Clean Air Act Amendments of 1990

8

- Requires EPA to set National Ambient Air Quality Standards for 6 Criteria Pollutants;
- Two types of standards
 - ▣ Primary – protects public health
 - ▣ Secondary – protects public welfare;
- The 6 pollutants are: Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Particulate Matter and Sulfur Dioxide;
- Louisiana is in attainment of all NAAQS except Ozone;
- This discussion will focus on Ozone and the state's responsibility to meet the standard.



9

The New Ozone Standard

How will it affect Louisiana?



What is the role of the state regulator?

10

- Work with community leaders and businesses to develop an ozone pollution control strategy
- Work with industries to develop an ozone pollution control strategy
- Submit recommendations for designations based on monitor data to EPA
- Rule revisions and promulgation
- Compilation and submittal of State Implementation Plans (SIP) for areas designated nonattainment.



Designations and Classifications

11

- Designation refers to whether or not an area is above or below the standard
- Classification categories are determined based on an area's ozone concentration.



Designations

12

- Attainment means that the monitor readings are at or below the standard;
- Nonattainment means that the monitor readings are above the standard;
- Unclassifiable means that there is no monitor data to reach a conclusion.

Classifications

Historical Classification Categories

- Marginal: 3 years to reach attainment
- Moderate: 6 years to reach attainment
- Serious: 9 years to reach attainment
- Severe-15: 15 years to reach attainment
- Severe-17: 17 years to reach attainment
- Extreme: 20 years to reach attainment

8-Hour Ozone Standard: The Beginning June 2004



14

- Originally proposed in 1997; Proposal litigated and eventually implemented in 2004;
- Standard based on daily 8-hour rolling average concentrations;
- Determine the 4th highest daily 8-hour average concentration at each station for each year;
- Average the above value over 3 consecutive years;
- If average value exceeds 0.080 ppm (actually 0.084 ppm since could round down) area failed to attain standard;
- Only area failing to meet 2004 8-hour standard in Louisiana is the Baton Rouge 5-parish area.

8-Hour Ozone Standard: The Revision for 2008

15

On March 12, 2008, EPA announced a new primary 8-hour ozone standard of 0.075 parts per million (ppm). The secondary standard was set identical to the primary.

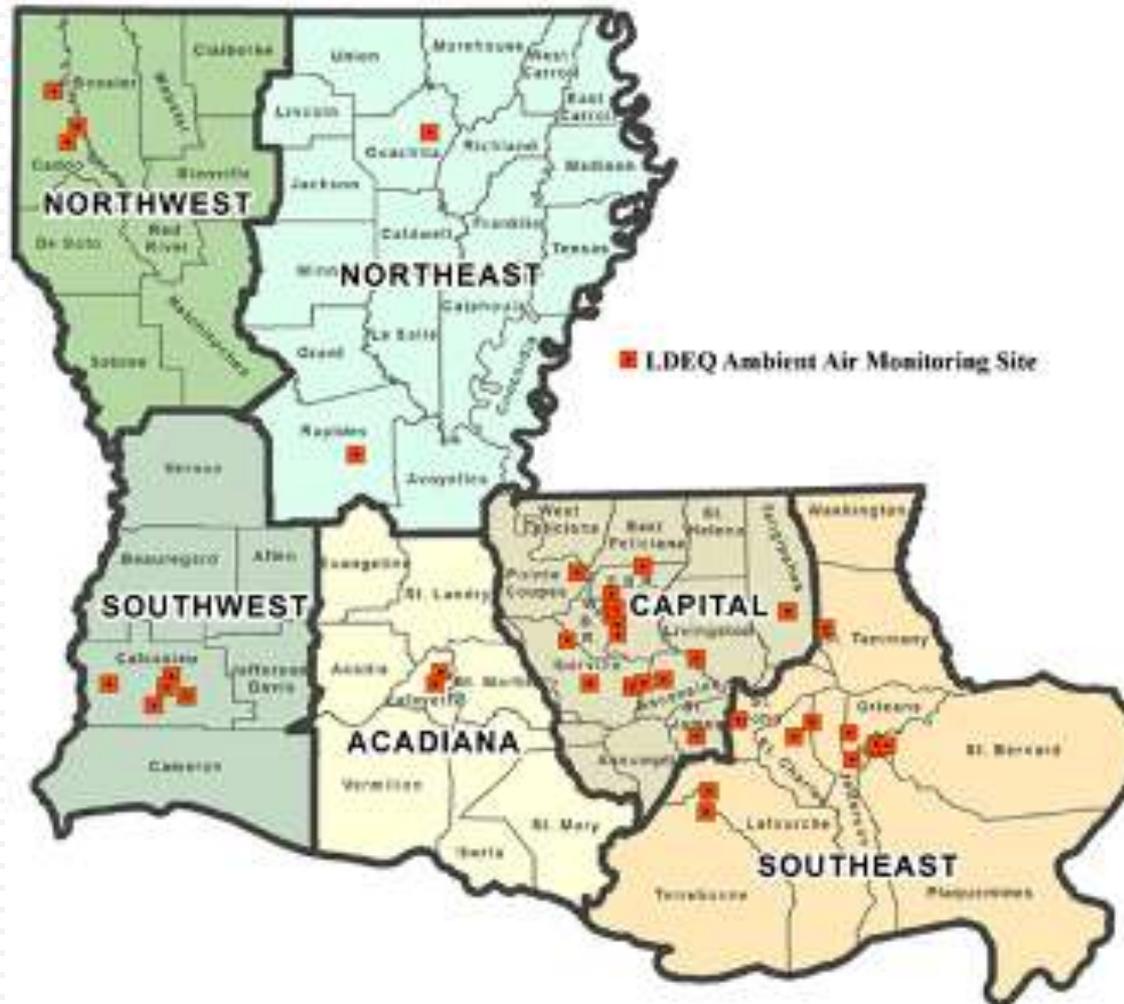
26 parishes may potentially be designated nonattainment based on monitor data showing design values* above 0.075 ppm.

*Design Value – the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentration measured at each monitor within an area.



Monitoring sites in Louisiana

16

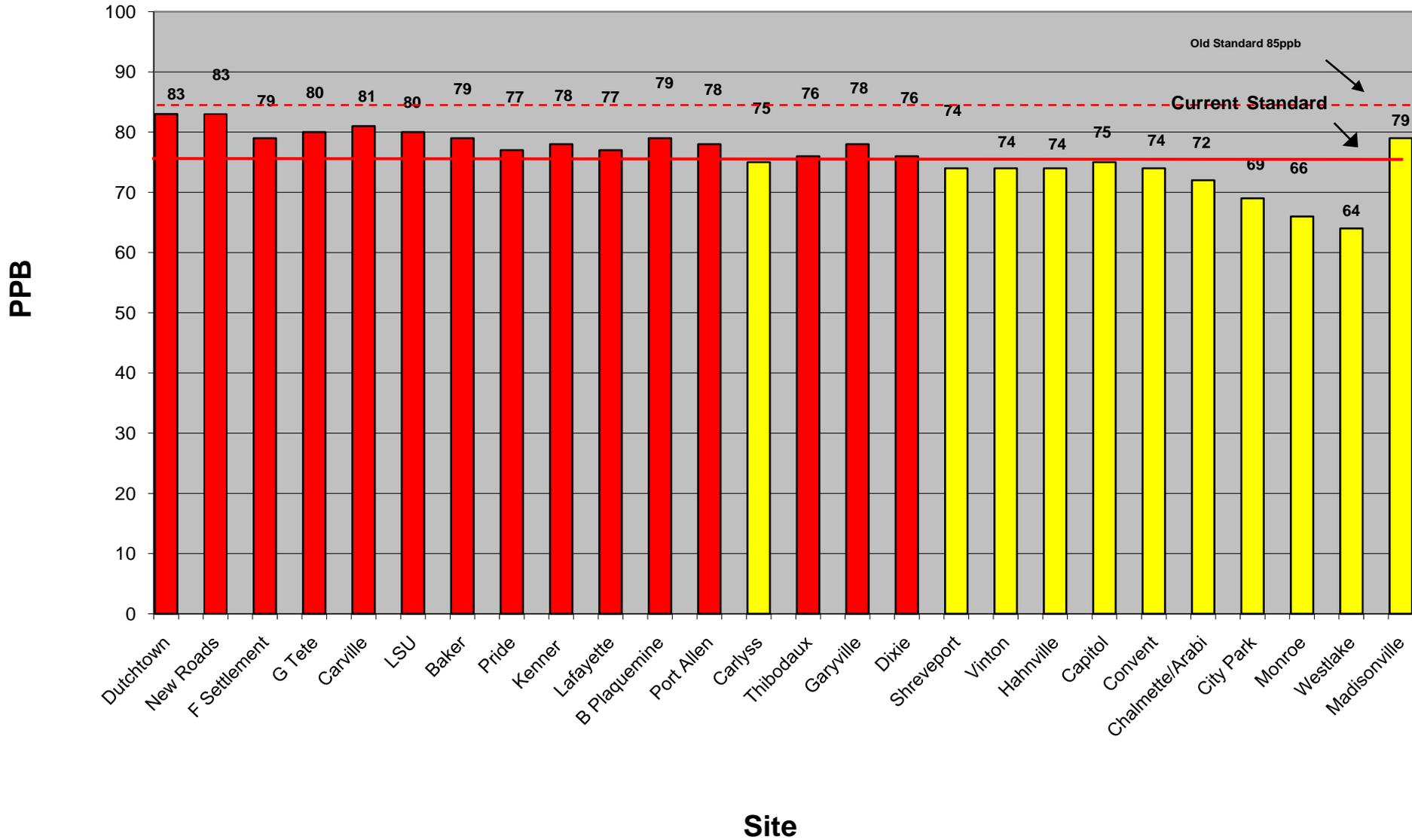


Typical Monitor Site

17

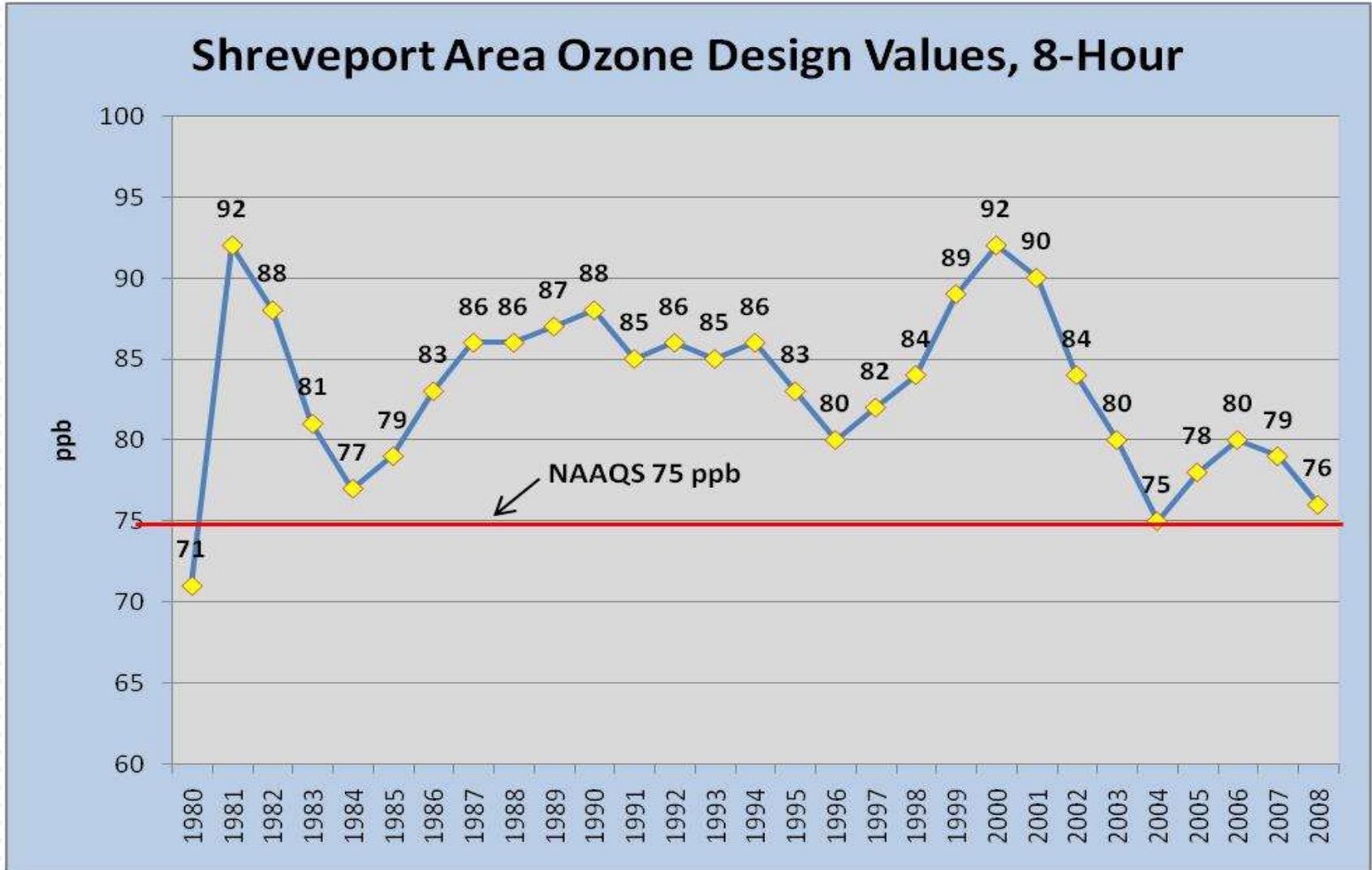


8-Hr Design Value as of August 1, 2008 2008 Ozone NAAQS



Shreveport Area Design Values Graph

19

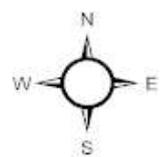
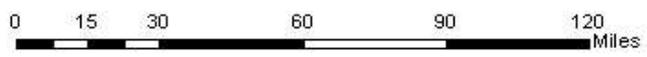
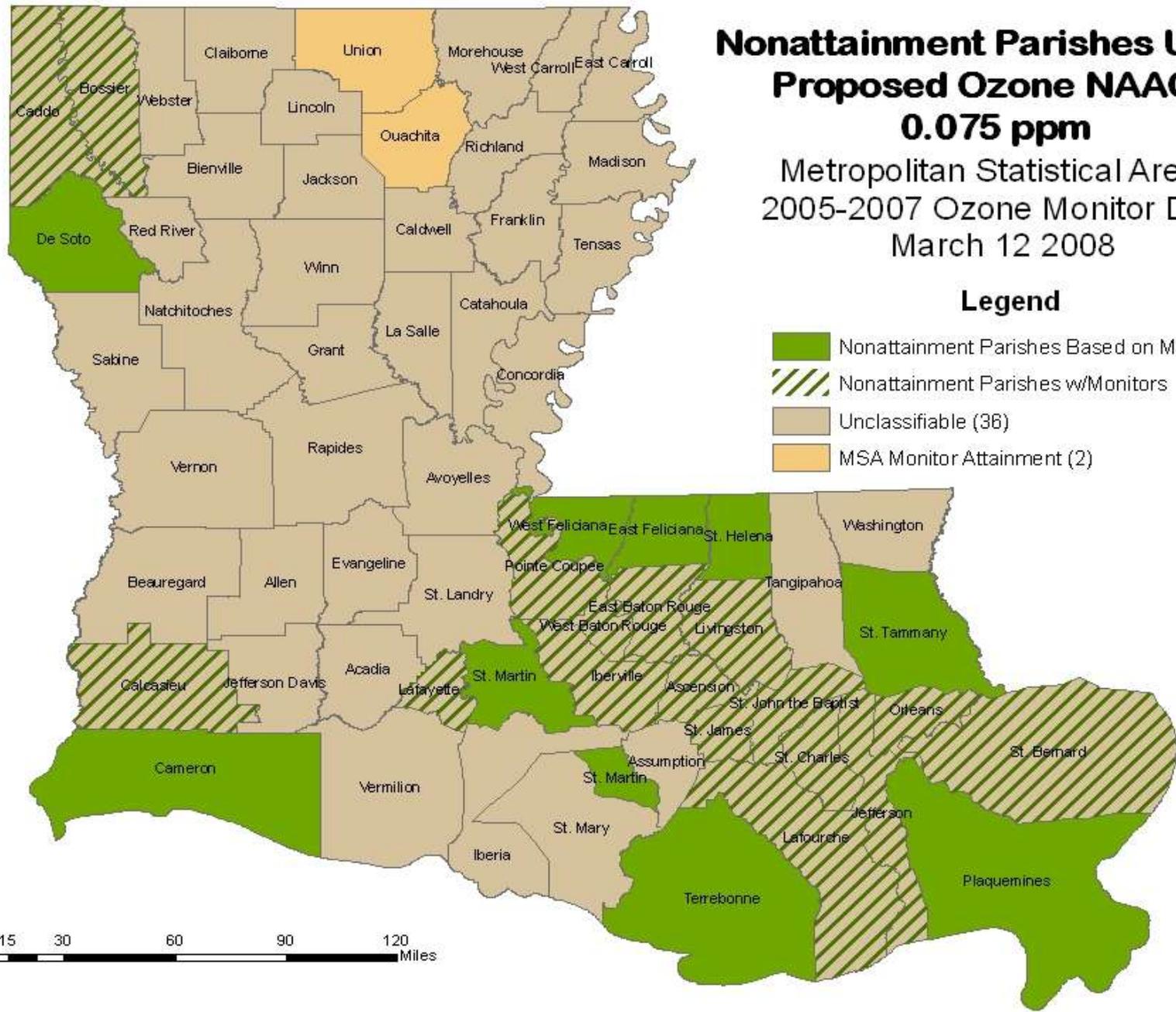


Nonattainment Parishes Under Proposed Ozone NAAQS 0.075 ppm

Metropolitan Statistical Areas
2005-2007 Ozone Monitor Data
March 12 2008

Legend

- Nonattainment Parishes Based on MSA (26)
- Nonattainment Parishes w/Monitors
- Unclassifiable (36)
- MSA Monitor Attainment (2)



NONATTAINMENT PARISHES AT 0.075 PPM

SHREVEPORT - BOSSIER MSA
(BOSSIER, CADDO, DESOTO)

BATON ROUGE MSA
(ASCENSION, EAST AND WEST BATON ROUGE, IBERVILLE,
LIVINGSTON, EAST AND WEST FELICIANA, ST. HELENA, AND
POINTE COUPEE)

LAFAYETTE MSA
(LAFAYETTE, ST. MARTIN)

ST. JAMES PARISH

LAKE CHARLES MSA
(CALCASIEU, CAMERON)

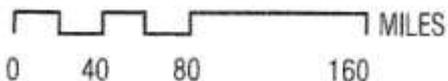
NEW ORLEANS - METAIRIE - KENNER MSA
(JEFFERSON, ORLEANS, PLAQUEMINE,
ST. BERNARD, ST. CHARLES, ST. JOHN,
ST. TAMMANY)

HOUMA - BAYOU CANE - THIBODAUX MSA
(LAFOURCHE, TERREBONNE)

AFFECTED PARISHES

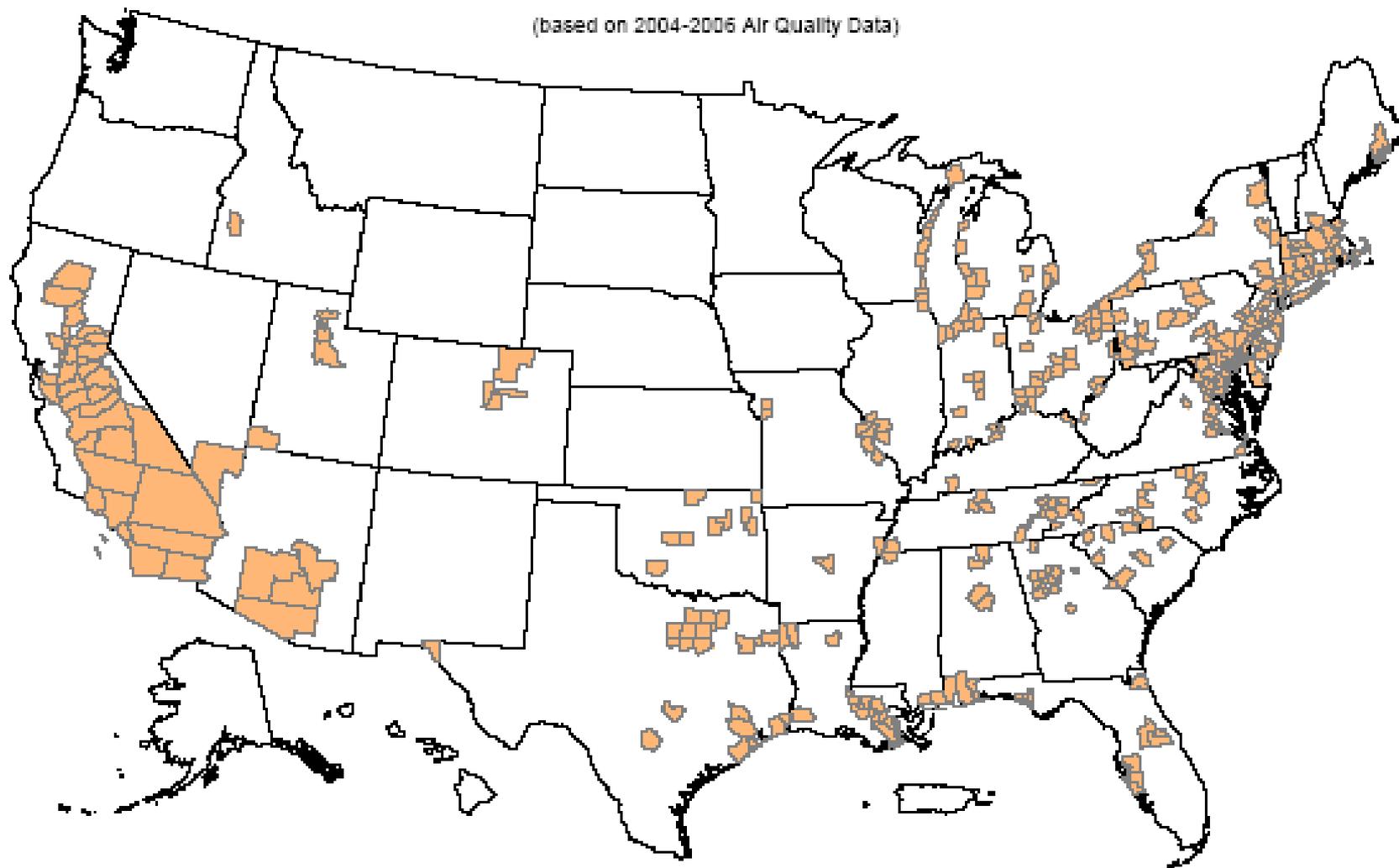


NONATTAINMENT PARISHES



Counties with Monitors Violating the 2008 8-Hour Ozone Standard of 0.075 parts per million (ppm)

(based on 2004-2006 Air Quality Data)



Notes:

¹ 345 monitored counties violate the 2008 8-hour ozone standard of 0.075 parts per million (ppm).

² Monitored air quality data can be obtained from the AQS system at <http://www.epa.gov/ttn/airs/airsaqs/>

Classification Requirements for Marginal Areas

24

- Attainment timeline is 3 years
- Major Source 100tpy of either VOC or NO_x
- Emissions Inventory
- New Source Review (NSR) for Air Permitting
- Offsets of 1.1 to 1
- Transportation Conformity
- General Conformity (federal, non-highway projects)
- Additional requirements if you fail to attain the standard

Classification Requirements for Moderate Areas

25

- Attainment timeline is 6 years
- Marginal Requirements and:
 - 15% Reduction from Baseline Within 6 Years
 - RACT on Major Sources(Reasonably Available Control Technology)
 - Gasoline Reid Vapor Pressure (RVP) of ≤ 9.0 psi
 - Stage II Vapor Recovery
 - Inspection/Maintenance Program for vehicles
 - Offsets of 1.15 to 1
 - Additional requirements if you fail to attain standard

Revised Air Quality Index (AQI)

26

Category	AQI Value	1997 8-hour (ppm)	2008 8-hour (ppm)
Good	0-50	0.000-0.064	0.000-0.059
Moderate	51-100	0.065-0.084	0.060-0.075
Unhealthy for Sensitive Groups	101-150	0.085-0.104	0.076-0.095
Unhealthy	151-200	0.105-0.124	0.096-0.115
Very Unhealthy	201-300	0.125-0.374	0.116-0.374
Hazardous	301-400	No Change	No Change
	401-500	No Change	No Change

Benefit Results

27

- • In addition to the mortality benefits of reduced air pollution, the EPA estimates a standard of 0.075 ppm would prevent the following additional adverse health effects annually in 2020 throughout the United States*:
 - 380 cases of chronic bronchitis
 - 890 nonfatal heart attacks
 - 1,900 hospital and emergency room visits
 - 1,000 cases of acute bronchitis
 - 11,600 cases of upper and lower respiratory symptoms
 - 6,100 cases of aggravated asthma
 - 243,000 days when people miss work or school
 - 750,000 days when people must restrict their activities

- * Based on current US population of 300,000,000

Cost Results

28

- Based on the technology scenarios analyzed, EPA estimates:
 - The average estimated value of these and other health benefits would range from a low of \$2 billion to a high of \$17 billion per year in 2020
 - The average estimated costs of implementing a standard of 0.075 ppm would range from a low of \$7.6 billion to a high of \$8.8 billion in 2020

Impacts of the 2008 Standard on New Nonattainment Parishes, Local Governments, Industries and Businesses

29

- Changed Emission Inventory Requirements
- Lowered Major Source Thresholds
- New Source Review
- Emission Offsets
- RACT Requirements
- Transportation Conformity/General Conformity
- Automobile Inspection/Maintenance
- Regulations on small businesses (bakeries, dry cleaners, paint shops, etc.)

What are the next steps?

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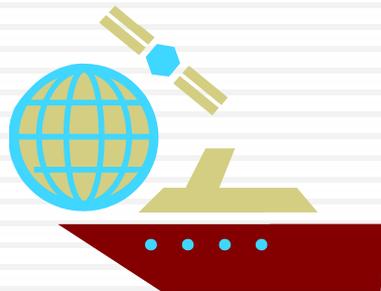
- Implementation of national rules
- Implementation of state rules to comply with the Clean Air Act requirements
- Implementation of Ozone Action Day
- Voluntary Measures
- Education and Awareness



Federal Rules in Progress

31

- National Refinery Initiative
- Clean Air Visibility Rule
- Ultra Low Sulfur Diesel Rule
- Heavy Duty Diesel Rule
- Locomotive and Marine Vessel Rule
- Small Spark-Ignition Engine Rule



National Refinery Initiative

32

Refinery Consent Decrees

- Affects Oil Refineries in US
- Requires Installation of Control Equipment to Reduce Emissions of NO_x, SO₂ and Particulates
- Implementation Time Varies According to Agreement Between EPA and Affected Company



Clean Air Visibility Rules (Regional Haze)

33

- Affects sources with potential to emit more than 250 tons/year of NO_x , SO_2 , or PM_{10} .
- Reduces SO_2 by 13,672 tons/year and NO_x by 3,498 tons/year



Ultra-Low Sulfur Diesel Rule

34

- Affects Fuel for Highway and Non-Road Engines
- Begins in 2007 and Complete in 2014
- Reduces Sulfur in Fuel to 15ppm
- At Completion, PM reduced 95%, NO_x 90%



Heavy-Duty Diesel Rule

35

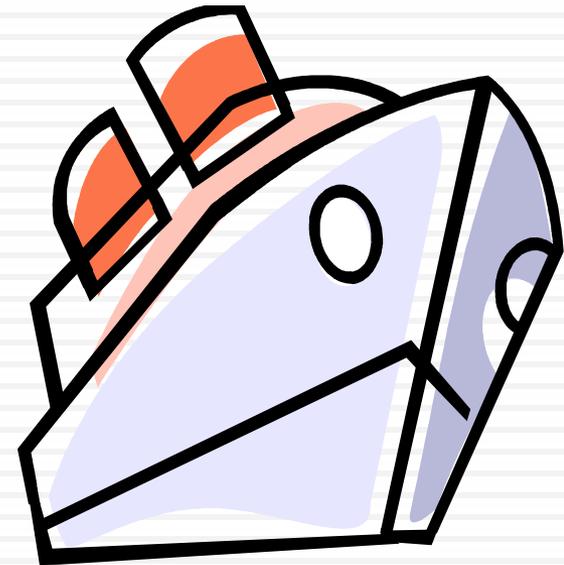
- Affects heavy-duty trucks beginning with 2007 model year, completely phased in by 2010.
- Reduces NO_x and diesel sulfur content.



Locomotive and Marine Vessel Rules

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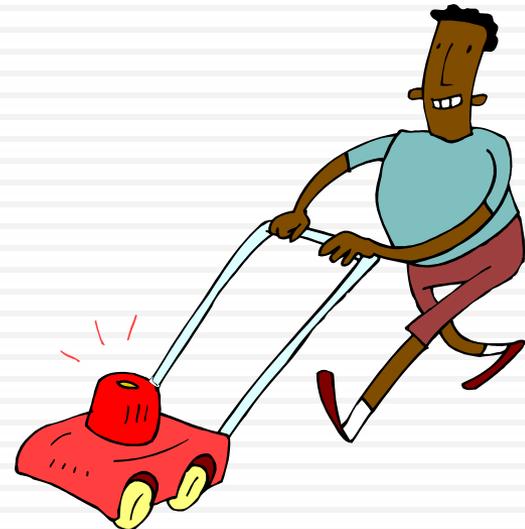
- Reduces locomotive and marine vessel PM emissions by 90% and NO_x emissions by 80%
- Begins phase-in starting 2009



Small Spark-Ignition Engines

37

- Reduces small spark-ignition engine VOC emissions by 35%.
- Phase-in 2011 or 2012 depending on size.



Reductions through State Rulemaking

38

- **Add Chapter 21 VOC Controls**
 - Extend Controls Statewide
 - VOC Storage Tank Emissions
 - Limit Use of Flares for Non-Emergency Venting
 - Use of Infrared Camera To Audit for Leaks

- **Add Chapter 22 NO_x Controls**
 - Extend Rule to Areas Outside of BR MSA
 - Tighten Emission Factors
 - Limit Use of Averaging and Credits
 - Eliminate Some Exemptions



Transportation Reduction Measures

39

- Vehicle Emission Reduction Activities
 - ▣ Ridesharing
 - ▣ Bicycle Lanes
 - ▣ Compressed Workweek, Flex-Hours
 - ▣ Telecommuting
 - ▣ Mass Transit: Buses, Light Rail, Vanpools



Reduction thru Voluntary Measures

40

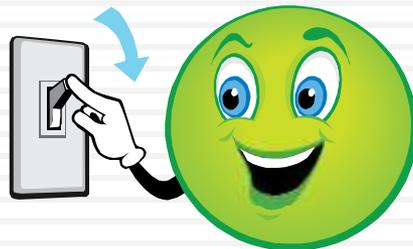
- ❑ Open Burning Restrictions
- ❑ Engine Idling Restrictions
- ❑ Truck Stop Electrification
- ❑ Traffic Light Synchronization
- ❑ Vehicle Scrappage Program
- ❑ Use of Electric Lawn Equipment
- ❑ Ozone Action Day Restrictions
- ❑ Clean City Coalition Programs
- ❑ Port and Marine Vessel Emission Reductions



Ozone Action Day Reduction Measures

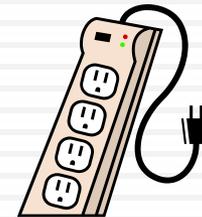
41

- ❑ Maintain your vehicle properly
- ❑ Trip chain, combine errands and limit daytime driving
- ❑ Ride public transportation or carpool to work
- ❑ Take your lunch to work
- ❑ Walk or ride a bicycle for short trips.
- ❑ Refuel when its cool - after 6 p.m. Don't top off your tank – 
- ❑ Avoid prolonged idling and jackrabbit starts - "Drive Emission-wise".
- ❑ Wait until the evening (6 p.m.) to mow your lawn or use gas powered lawn equipment
- ❑ Barbecue with electric starter or use a chimney, not fluid starter. 
- ❑ Conserve energy in your home
- ❑ Spread the word! Talk to your coworkers and neighbors about the Ozone Action Program.



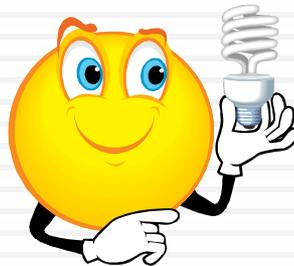
Residential Energy Conserving Measures

- New air conditioners should be at least 13 seer and the temperature should be adjusted when leaving the home or use a programmable thermostat.
- Use low temperature setting on water heaters.
- Purchase only Energy Star appliances.
- Replace incandescent bulbs with Energy Star Compact Fluorescent Lamps (CFLs).
- Wash clothes on colder settings.
- Use the right size burner for the size of pot (small pot on small burner), and cover pots and pans while cooking
- Unplug unused devices, or install smart power strips on grouped electronics (i.e. computer/monitor/speakers)
- Seal around all doors and have weather stripping and thresholds properly installed



Commercial Energy Conserving Measures

- ❑ Cool roof: Select a light-colored or reflective roof coating
- ❑ Ensure that all windows and doors close and seal properly
- ❑ Install high-efficiency luminaries (lights and ballasts).
- ❑ Install occupancy controls for lighting systems where possible
- ❑ Install solar films or solar screening on windows receiving direct sunlight
- ❑ Have the building commissioned to ensure proper operation of building systems
- ❑ Install advanced heating and air conditioning controls
- ❑ Residential and commercial building energy conserving measures were provided by the Louisiana Department of Natural Resources. More information can be found at www.dnr.louisiana.gov or by calling 800-836-9589.



Path Forward



44

- Meet with stakeholders in potential nonattainment areas
- Work with EPA on Implementation Rules
- Work through Clean Cities to promote voluntary measures
- Promote Air Quality Awareness
- Work on Clean Air Act Reforms
- Build on the work in the BR Nonattainment area to help other areas with implementation.

Clean Air Act Reform Committee

45

- ▣ The Statewide Committee is working with the Louisiana Congressional Delegation on reforms for outdated rules;
- ▣ 4 specific issues concerning amendments
 - Attainment Timelines and Standard Setting
 - Designations, Classifications and Modeling
 - Requirements and Control Measures
 - Philosophical and Health Discussion

Questions? Ask our DEQ experts!

46

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