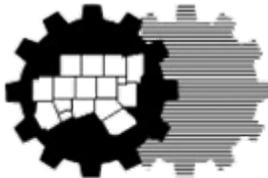


# AIR QUALITY NONATTAINMENT STATUS IMPACTS

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## Oklahoma Weather Center: Research Experiences for Undergraduates

July 7, 2008



**Madhusudhan Venugopal**  
**Senior Transportation Planner**  
**North Central Texas Council of Governments**

# 1990 CLEAN AIR ACT

## National Ambient Air Quality Standards (NAAQS)

### Six Criteria Pollutants

Carbon Monoxide (CO)

Lead (Pb)

Nitrogen Oxides (NO<sub>x</sub>)

Ozone (O<sub>3</sub>)

Particulate Matter (PM<sub>10</sub> & PM<sub>2.5</sub>)

Sulfur Dioxide (SO<sub>2</sub>)



# FEDERAL OZONE STANDARDS

## Dallas-Fort Worth Nonattainment Area

**Clean Air Act Amendments Of 1990**

**1-Hour Ozone Standard**

**Four North Central Texas Counties**



**8-Hour Ozone Standard**

**Nine North Central Texas Counties**

**2004 Designation As Moderate**

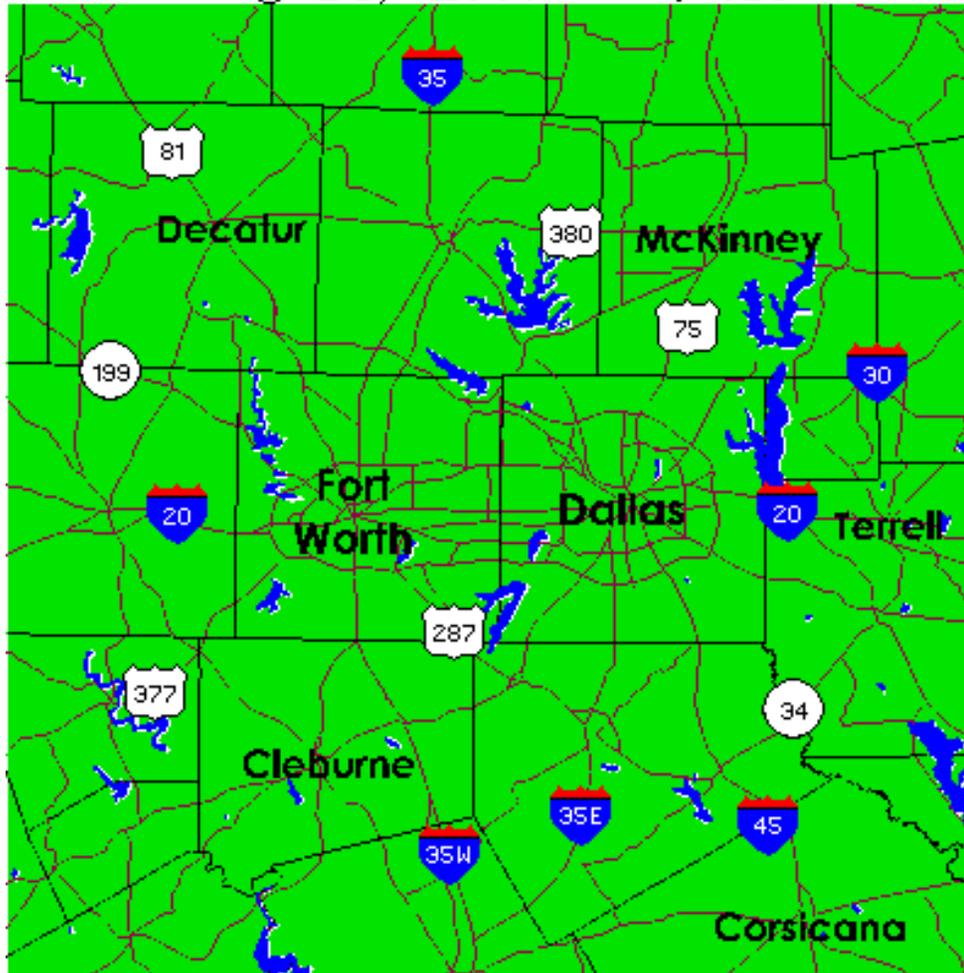
**8-Hour Ozone Standard**

**Attainment Date: June 15, 2010**

# HIGHEST OZONE LEVEL IN 2007

Maximum Daily 8-Hour Average = 121 ppb

North-Central Texas  
Aug 14, 2007 7 AM

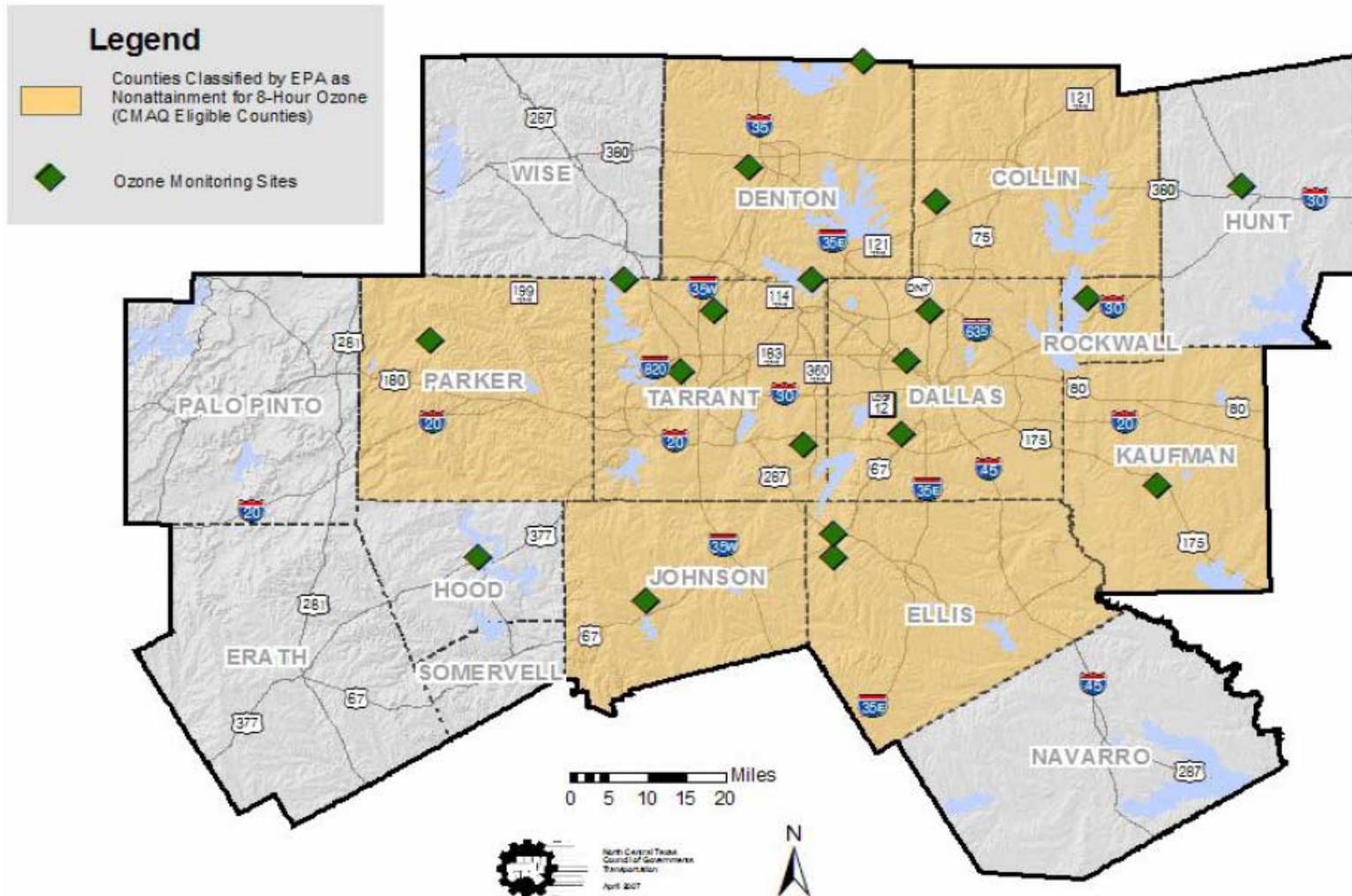


## Air Quality



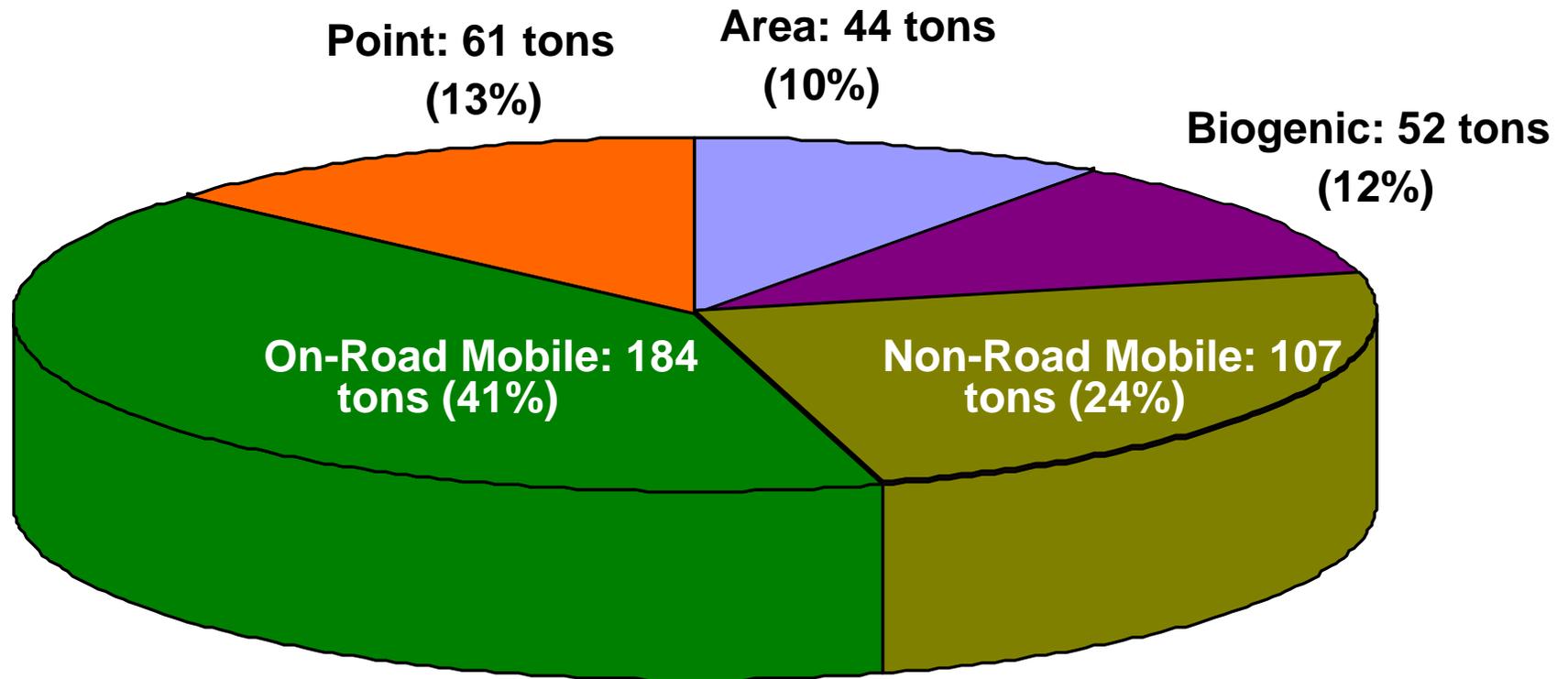
# AIR QUALITY STATUS IN NORTH TEXAS

## Current 8-Hour Ozone Nonattainment Area at 84 ppb



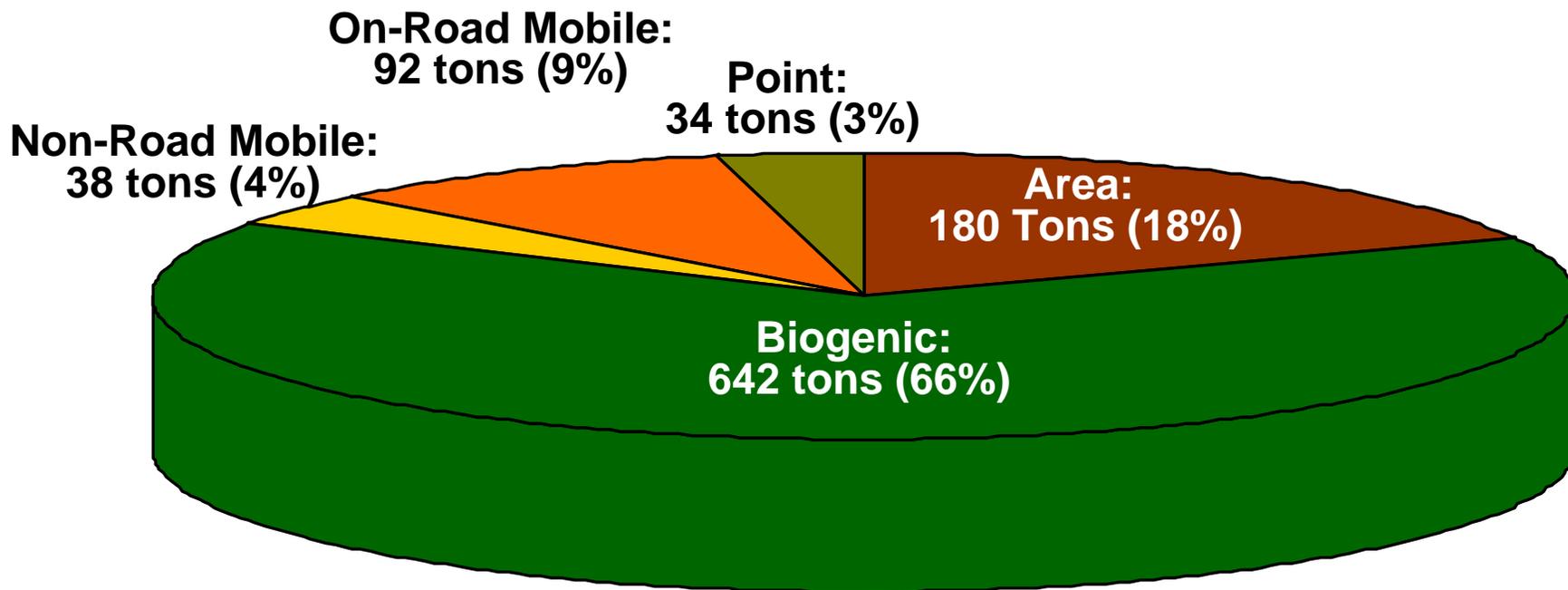
# AIR QUALITY STATUS IN NORTH TEXAS

## 2009 Nitrogen Oxide (NOx) Emission Inventory



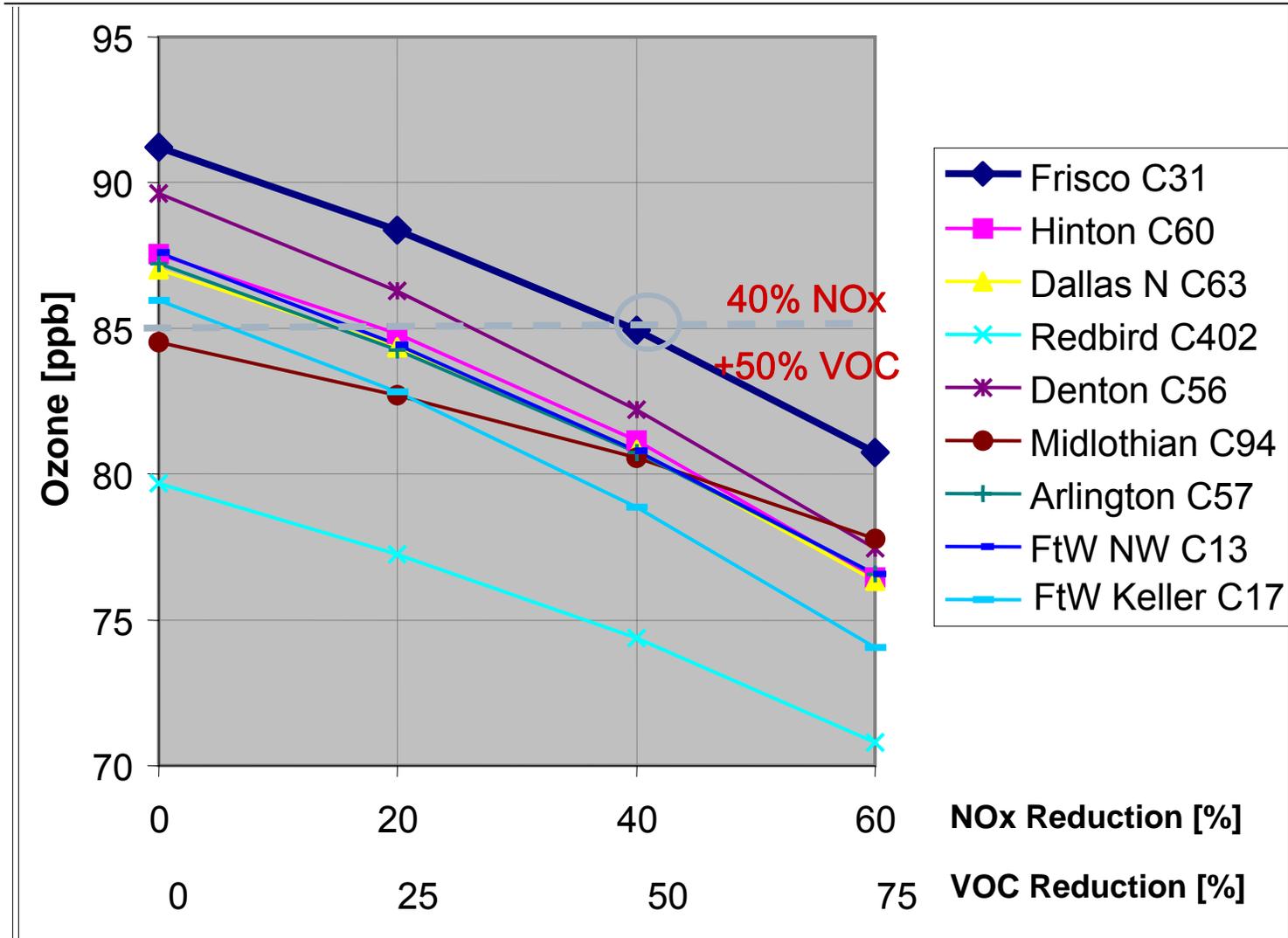
# AIR QUALITY STATUS IN NORTH TEXAS

## 2009 Volatile Organic Compounds (VOC) Emission Inventory



# AIR QUALITY STATUS IN NORTH TEXAS

## DFW 2009 Design Value Scaled 8-Hour Ozone NOx and VOC Reductions (Aug 13-22, 1999)



# AIR QUALITY STATUS IN NORTH TEXAS

How much reduction do we need?

Updated Future Case			
Ozone Precursor	Reduction Required (%)	9-County Emissions Inventory	Reduction Required (Tons)
VOC	---	333 Tons	---
<b>NOx</b>	<b>42%</b>	<b>396 Tons</b>	<b>166.3 Tons</b>
NOx + VOC	40%	396 Tons	158.4 Tons
	50%	333 Tons	166.5 Tons

# DFW NONATTAINMENT AREA

## 8-Hour Ozone State Implementation Plan

### State Rules

### NOx Benefit

<b>DFW Major Source Rule</b>	<b>-----</b>
- Industrial, Commercial & Institutional Resources	<b>8.88 tpd</b>
- Electric Generating Utility Sources	<b>0.40 tpd</b>
- Cement Kilns	<b>9.69 tpd</b>
<b>DFW Minor Source Rules</b>	<b>2.90 tpd</b>
<b>East Texas Combustion Source Rule</b>	<b>22.40 tpd</b>
<b>Subtotal</b>	<b>44.27 tpd</b>

# DFW NONATTAINMENT AREA

## 8-Hour Ozone State Implementation Plan

### Transportation Control Measures

### NOx Benefit

<b>Bicycle/Pedestrian Projects</b>	<b>0.01 tpd</b>
<b>Grade Separation Projects</b>	<b>0.18 tpd</b>
<b>HOV/Managed Lane Projects</b>	<b>0.79 tpd</b>
<b>Intersection Improvement Projects</b>	<b>0.15 tpd</b>
<b>Park And Ride Improvement Projects</b>	<b>0.04 tpd</b>
<b>Rail Transit Projects</b>	<b>0.28 tpd</b>
<b>Vanpool Projects</b>	<b>0.08 tpd</b>
<b>Subtotal</b>	<b>1.53 tpd</b>

# DFW NONATTAINMENT AREA

## 8-Hour Ozone State Implementation Plan

<u>Voluntary Mobile Emission Reductions</u>	<u>NOx Benefit</u>
Clean Vehicle	0.24 tpd
Employee Trip Reduction	0.43 tpd
Locally Enforced Idling Restriction	0.62 tpd
Diesel Freight Idling Reduction	0.33 tpd
SmartWay Transport Demonstration Project	0.002 tpd
Policy For Construction Equipment	0.06 tpd
Aviation Efficiencies	0.95 tpd
<b>Subtotal</b>	<b>2.63 tpd</b>

# DFW NONATTAINMENT AREA

## 8-Hour Ozone State Implementation Plan

### Other State and Local Programs

### NOx Benefit

Energy Efficiency	2.12 tpd
Texas Emissions Reduction Plan*	-----
Vehicle Repair And Replacement	-----
Clean School Bus Program	-----
Stationary Diesel/Dual Fuel Engines	-----
Locomotive And Marine Compression Engines	-----
Coatings/Consumer Products VOC Reductions	-----
<b>Subtotal</b>	<b>2.12 tpd</b>

\*Only control measure that produces significant short-term results

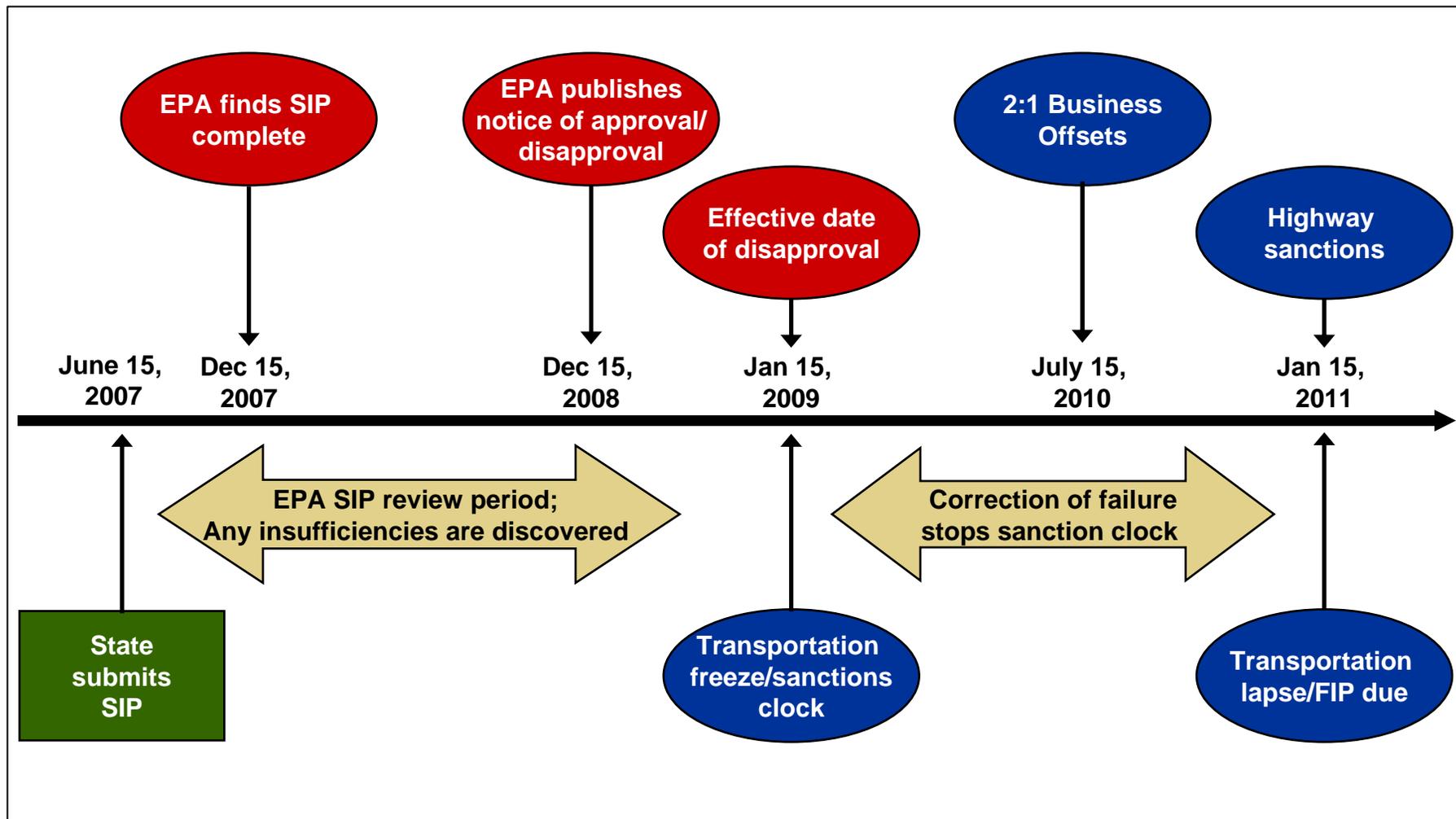
# DFW NONATTAINMENT AREA

## Guidelines for Weight of Evidence Determination

Results of Modeled Attainment Test	Supplemental Analyses
Future Design Value < 82 ppb, all monitor sites	Basic supplemental analyses should be completed to confirm the outcome of the modeled attainment test
Future Design Value 82-87 ppb, at one or more sites/grid cells	A weight of evidence demonstration should be conducted to determine if aggregate supplemental analyses support the modeled attainment test
Future Design Value $\geq$ 88ppb, at one or more sites/grid cells	More qualitative results are less likely to support a conclusion differing from the outcome of the modeled attainment test.

# STATE IMPLEMENTATION PLAN

## Dallas-Fort Worth Timeline



# **EPA PROPOSED OZONE STANDARD**

## **Re-evaluation of Current Standard**

### **Why the Standard is Being Revised**

- 1) The Clean Air Act (CAA) Requires the Environmental Protection Agency to Reevaluate each National Ambient Air Quality Standard (NAAQS) every five years.**
- 2) New Evidence Questions Adequacy of the Current Standard**

**Notably, in Protecting At-Risk Groups, Such As:**

**Asthmatic children**

**People with lung disease,**

**All children and older adults; especially those active outdoors**

**Outdoor workers**

# **EPA REVISED OZONE STANDARD**

## **Implementation Timeline**

<b><u>Event</u></b>	<b><u>Tentative Dates</u></b>
<b>EPA Proposes More Stringent 8-Hour Standard</b>	<b>Jun. 20, 2007</b>
<b>Four Public Hearings On Proposal:</b>	
<b>Los Angeles And Philadelphia</b>	<b>Aug. 30, 2007</b>
<b>Chicago And Houston</b>	<b>Sept. 5, 2007</b>
<b>EPA Issues Final Standards</b>	<b>Mar. 12, 2008</b>
<b>State Designation Recommendations To EPA (Based On 2006-2008 data)</b>	<b>Mar. 12, 2009</b>
<b>Final Designations By EPA</b>	<b>Mar. 12, 2010</b>
<b>Effective Date Of Designations</b>	<b>2010</b>
<b>State Implementation Plans Due To EPA</b>	<b>2013</b>
<b>Attainment Deadline (Depending On Severity)</b>	<b>2013-2030</b>



# **EPA REVISED OZONE STANDARD**

## **Health Benefits and Cost Estimates**

**The new standard (75 ppb) will prevent, in 2020:**

**380 Cases Of Chronic Bronchitis**

**890 Fatal Heart Attacks**

**1,000 Cases Of Acute Bronchitis**

**1,900 Hospital And Emergency Room Visits**

**6,100 Cases Of Aggravated Asthma**

**11,600 Cases Of Upper/Lower Respiratory Symptoms**

**243,000 Days Of Missed Work Or School**

**750,000 Days Of Restricted Activity**

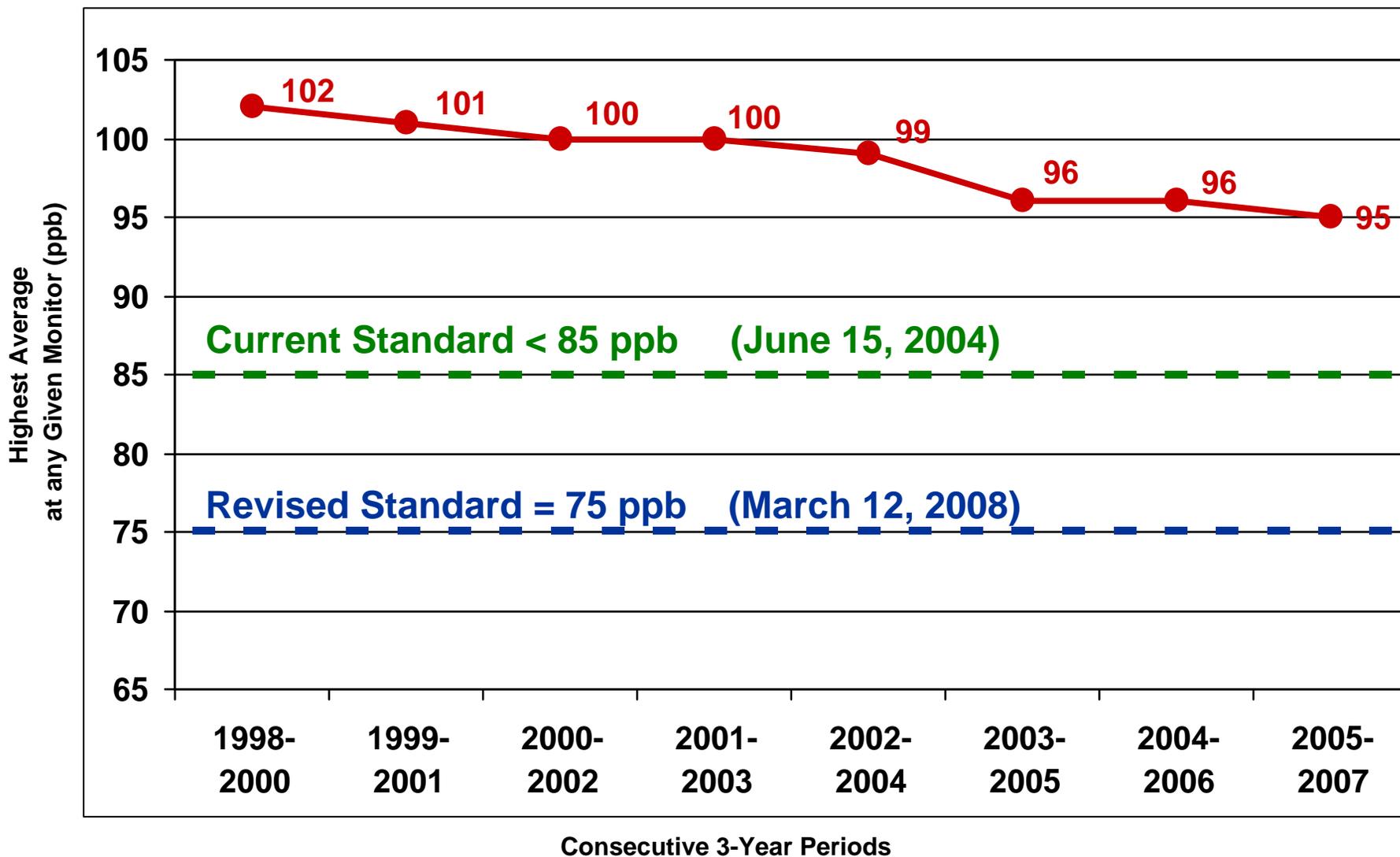
**Benefits are likely greater than costs:**

**Estimated Health Benefits In 2020 Is \$2-\$19 billion**

**Estimated Cost Of Implementation Is \$7.6-\$8.5 billion**

# 8-HOUR OZONE HISTORICAL TRENDS\*

## DFW Nonattainment Area



\* Current Attainment Goal - According to the US EPA National Ambient Air Quality Standards, attainment is reached when, at each monitor, the three-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is less than 85 parts per billion (ppb).

# **DFW NONATTAINMENT AREA**

## **Transportation Conformity Analysis**

**Conducted On Local Level**

**Evaluates Latest Transportation System Updates**

**Compares Against State Air Quality Plan**

**Ensures System Is Consistent With Air Quality Goals**

**If Successful, Transportation System Can Proceed**

**If Fail, More Transportation System Modifications**

**Impacts \$400 Million In Transportation Projects**

# **DFW NONATTAINMENT AREA**

## **Transportation System Implementation Delays**

**Higher Costs Of Construction**

**Unnecessary Levels Of Traffic Congestion**

**Higher Frequency Of Traffic Conflicts/Incidents**

**Increased Frustration**

**Lost Worker Productivity**

**Time Is Money**

# **81<sup>st</sup> TEXAS LEGISLATURE**

## **Air Quality Categories**

**Texas Emissions Reduction Plan (TERP)**

**Locally Enforced Idling Restriction**

**Vehicle Engine Standards Consistent With California**

**Differential Speed Limits**

**Low-Income Vehicle Repair Assistance, Retrofit,  
And Accelerated Vehicle Retirement Program (LIRAP)**

**Inspection and Maintenance (I&M) Program**

**Others Being Developed by Special Interest Groups**

# **AIR QUALITY NONATTAINMENT STATUS IMPACTS**

## **Resources**

**North Texas Clean Air Coalition (Business)**

**North Central Texas Council Of Governments**

**Texas Commission Of Environmental Quality**

**Environmental Protection Agency**

**Air North Texas**

**Try Parking It**

**Drive Clean Across Texas**

**American Lung Association**

# **AIR QUALITY NONATTAINMENT STATUS IMPACTS**

**Questions?**