

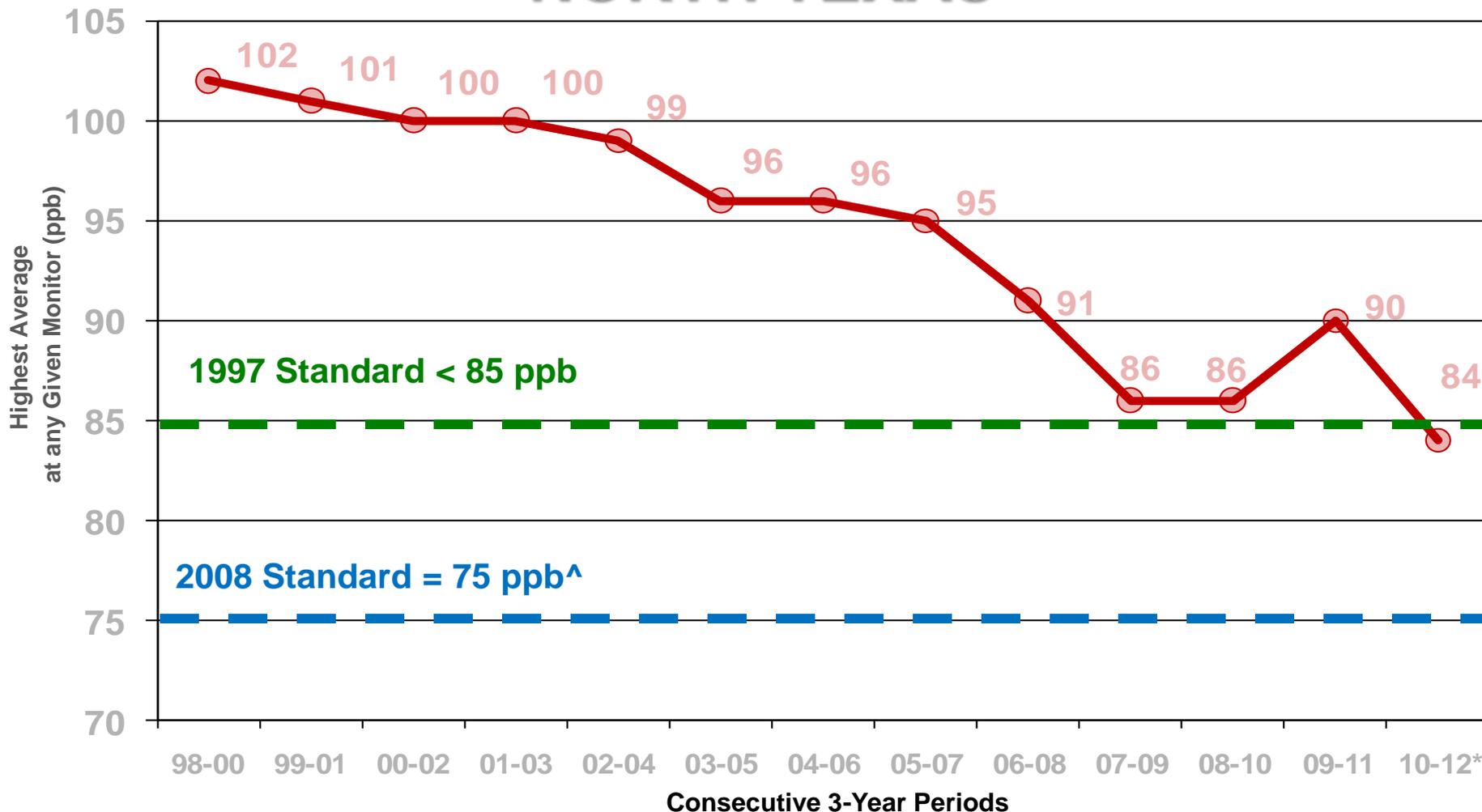
VEHICLE IDLING – UP IN SMOKE

Texas Public Works Association Annual Conference
Fleet Educational Session
June 7, 2012



Lori Pampell Clark, Principal Transportation Planner
Air Quality Management & Operations
NCTCOG Transportation Department

8-HOUR OZONE HISTORICAL TRENDS FOR NORTH TEXAS



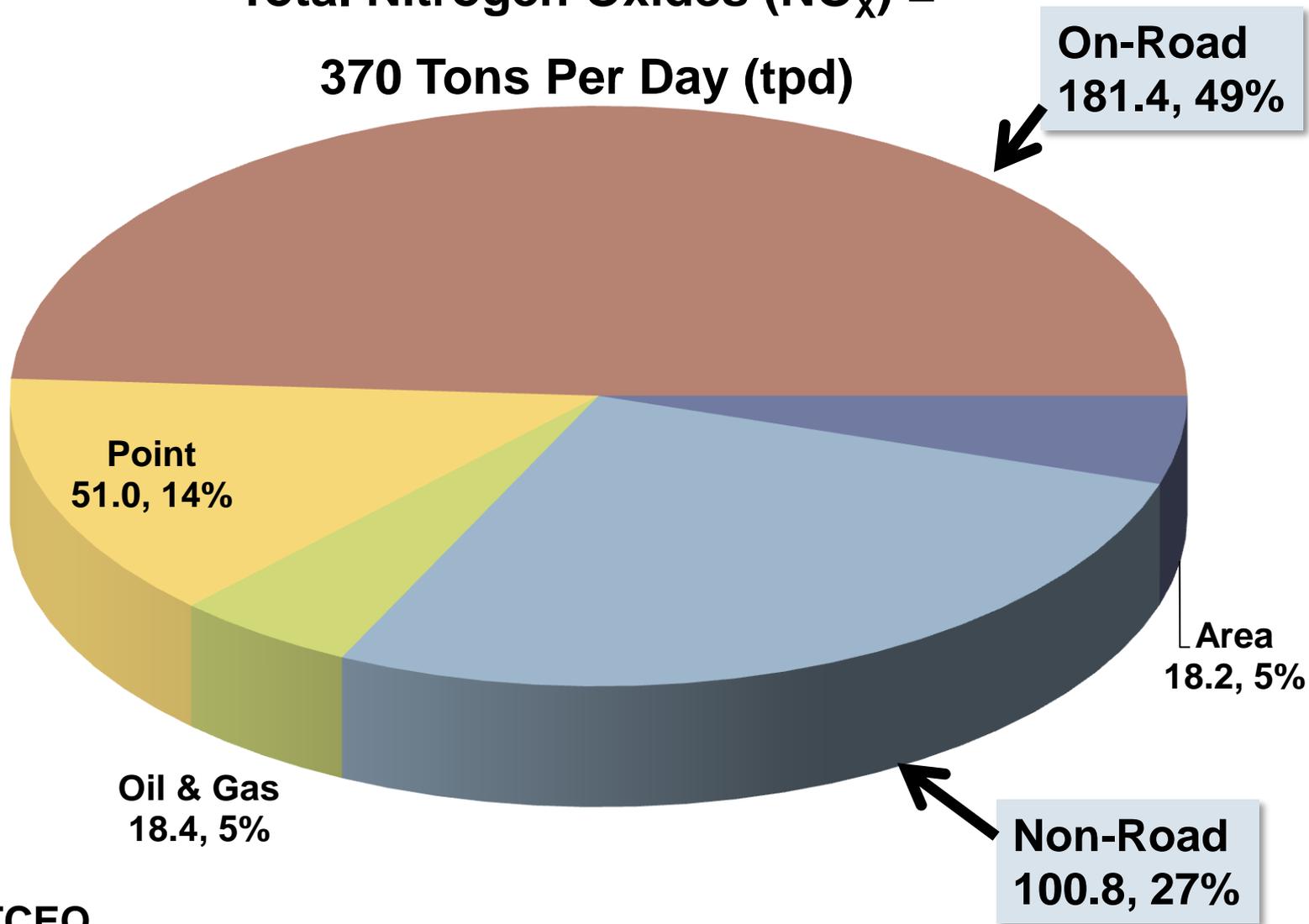
^ Attainment Goal - Attainment is reached when, at each monitor, the three-year average of the annual fourth-highest daily maximum 8-hour average ozone concentration is equal to or less than 75 ppb.

* Not a full year of data. Current as of 05/23/12

Source: NCTCOG TR Dept

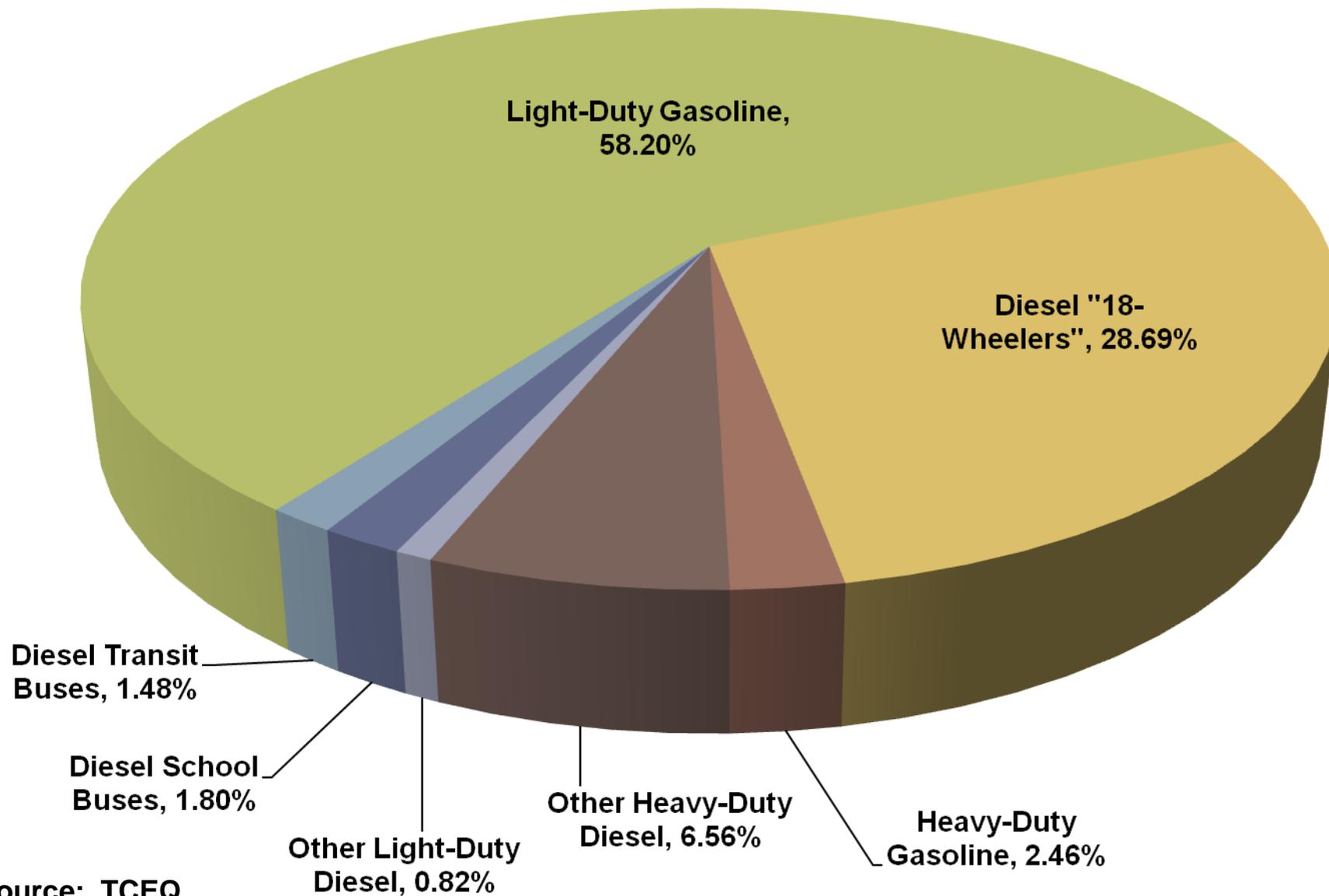
DFW EMISSIONS INVENTORY*

Total Nitrogen Oxides (NO_x) =
370 Tons Per Day (tpd)



*Source: TCEQ

ON-ROAD NO_x EMISSIONS INVENTORY* BY SECTOR



VEHICLE IDLING

Why is it of Concern?

Health

Exhaust Inhalation

Impacts of Poor Air Quality

Environment

200,000 Tons NO_x Each Year

5,000 Tons Particulate Matter Each Year

11 Million Tons of Carbon Dioxide Each Year

Elevated Noise Levels

VEHICLE IDLING

Why is it of Concern?

Energy Security

650,000 18-Wheelers → 685 Million Gallons of Fuel
6.7% of Annual Fuel Use for Medium-Duty Vehicles

Money

0 Miles per Gallon
20% Decrease in Engine Life for Heavy-Duty Vehicles
Increased Maintenance Costs



CHANGING BEHAVIOR

Why do Drivers Idle?

Excuse: The engine needs to be warmed up...

Fact: The best way to bring an engine to optimum temperature is by driving. In winter, the maximum time needed for modern engines to “preheat” is ~30 seconds for light-duty vehicles.

Excuse: It uses more fuel and causes more wear and tear on the engine to restart it...

Fact: If the engine is going to be running at idle for more than 30-45 seconds, it is better to turn it off and restart.

Excuse: I will get too hot/cold...I can't power accessories...

Fact: OK, this is where technology comes in....

TECHNOLOGY SOLUTIONS

Light-Duty Vehicles

Climate Control + Electrical Power: Auxiliary Power Systems, Automatic Power Management Systems

Heat: Air Heaters/Energy Recovery Systems

Medium-Duty Vehicles

PTO Capabilities: Battery/Auxiliary Power Systems

Heat: Air Heaters/Coolant Heaters/Energy Recovery Systems

Heavy-Duty Vehicles

EPA-Verified Technologies for Class 8 Long-Haul Trucks

Remote Plug-In Capabilities

School Buses

EPA-Verified Technologies

Hybrid and Electric Vehicles

WHAT CAN WE DO? Fleet Vehicles

Retrain/Educate Drivers

Technology to Monitor Driver Behavior

Adopt a Fleet Anti-Idling Policy

Expectations

Time Limits

Accountability

Recognition

Invest in Technologies

Idle Reduction Devices

Hybrid and Electric Vehicles



WHAT CAN WE DO? Everybody Else

Address Idling Emissions from Other Vehicles in City

Increase Public Awareness

Promote Use of Electrified Truck Stops

Engage School Districts

<http://epa.gov/cleanschoolbus/antiidling.htm>

Adopt Locally Enforced Idling Restrictions



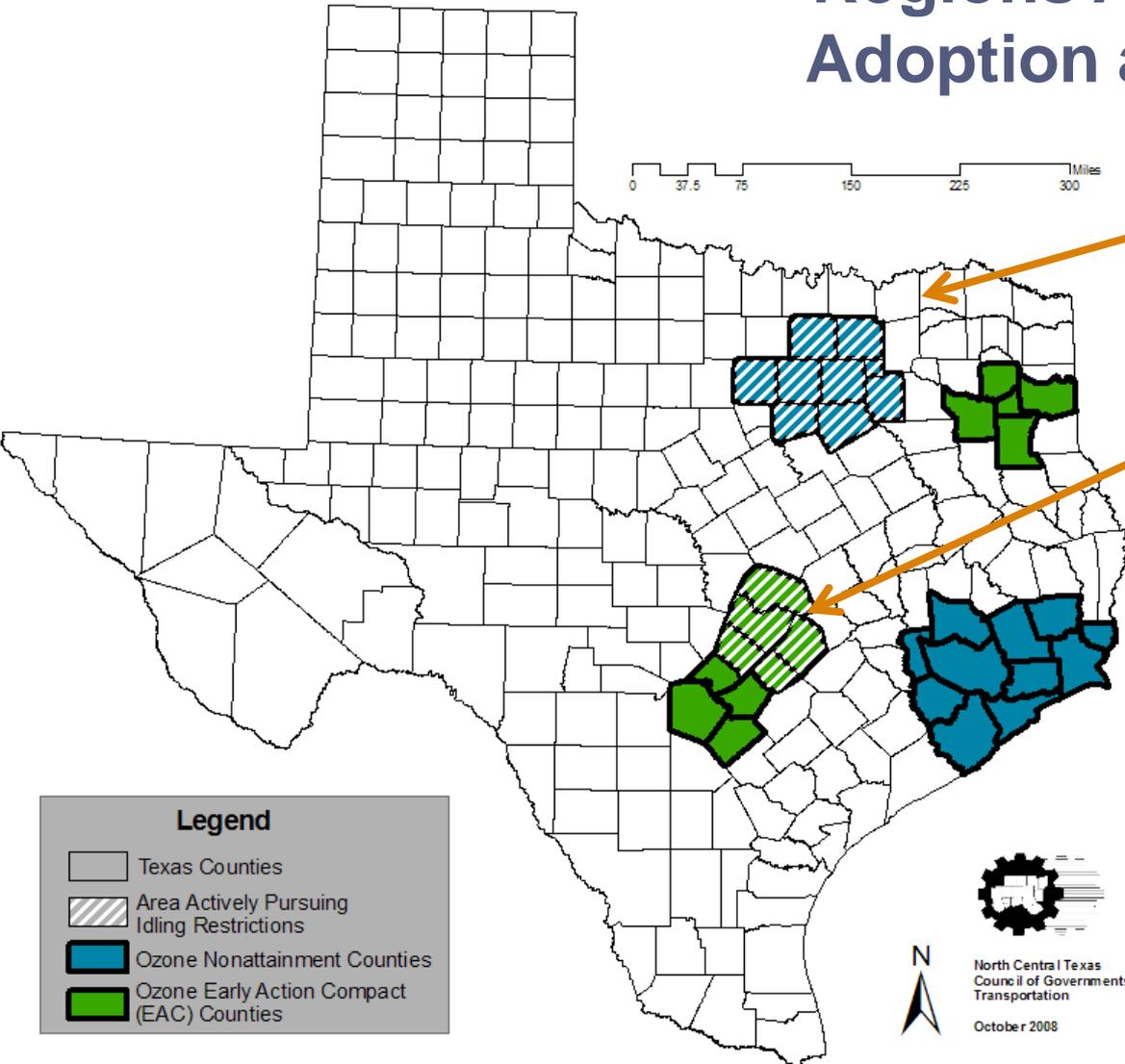
TEXAS IDLING RESTRICTIONS RULE

Regions Actively Pursuing Adoption and Enforcement

DFW Area

Austin Area (Adoptees*)

- City of Austin
- City of Bastrop
- City of Elgin
- City of Georgetown
- City of Hutto
- City of Lockhart
- City of Luling
- City of Round Rock
- City of San Marcos
- Bastrop County
- Caldwell County
- Hays County
- Travis County
- Williamson County



Legend

- Texas Counties
- Area Actively Pursuing Idling Restrictions
- Ozone Nonattainment Counties
- Ozone Early Action Compact (EAC) Counties

North Central Texas
Council of Governments
Transportation
October 2008

*Source

www.engineoff.org
(May 2011)

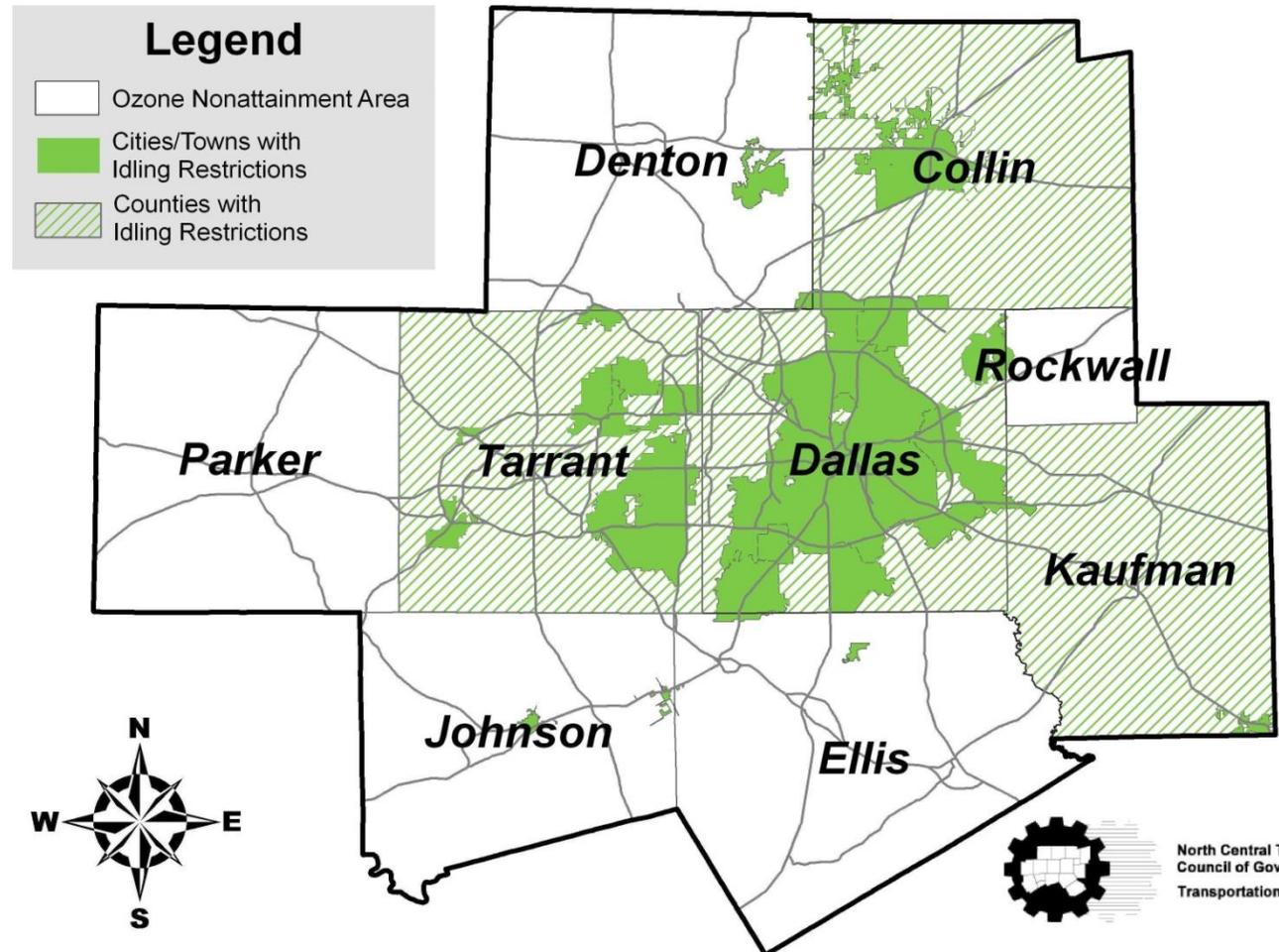
LOCALLY ENFORCED IDLING RESTRICTIONS

North Central Texas Area

Adopting Entities*

City of Arlington
 City of Benbrook
 City of Cedar Hill
 City of Celina
 City of Colleyville
 City of Dallas
 City of Duncanville
 City of Euless
 City of Hurst
 City of Keene
 City of Lake Worth
 City of Lancaster
 City of Mabank
 City of McKinney
 City of Mesquite
 City of North Richland Hills
 City of Pecan Hill
 City of Richardson
 City of Rowlett
 City of University Park
 City of Venus
 Collin County
 Dallas County
 Kaufman County
 Tarrant County
 Town of Little Elm
 Town of Westlake

*Current as of May 2012

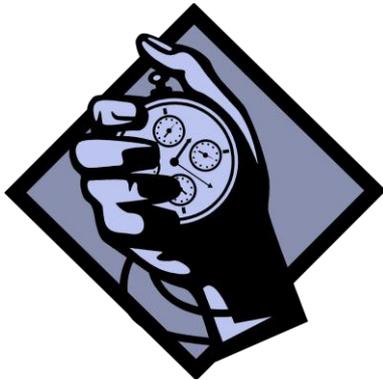


JANUARY 2012

LOCALLY ENFORCED IDLING RESTRICTIONS

Control Requirements

No gasoline or diesel powered motor vehicle over 14,000 pounds (GVWR) may idle the main engine for more than 5 minutes when the vehicle is not in motion.



Applicable Year Round*

***NOTE:** Rule revisions, approved by the Texas Commission on Environmental Quality (TCEQ) on July 20, 2011, expanded applicability of the rule to year round. This revision went into effect August 11, 2011.

LOCALLY ENFORCED IDLING RESTRICTIONS

Applicability



Motor Vehicles with a Gross Vehicle Weight Rating of Greater than 14,000 pounds, i.e.:
Flat Bed, Stake Trucks, Step Vans, Utility Trucks, Dump, Garbage, Fuel And Beverage Delivery Trucks, Tractor-Trailer Trucks, School and Transit Buses



Only Within a Jurisdiction of a Local Government That Has Signed a Memorandum of Agreement (MOA) with TCEQ to Delegate Enforcement Provisions to That Local Entity



Jurisdiction-By-Jurisdiction Adoption Required

LOCALLY ENFORCED IDLING RESTRICTIONS

Exemptions

Vehicle Type

- **Vehicles With Sleeper Berth (Reinstated August 11, 2011)**
- **Military, Emergency, Law Enforcement, and Armored Vehicles**
- **Airport Ground Support Equipment**
- **The Owner of a Vehicle Rented or Leased to a Person Not Employed By Owner**

Operations

- **Idling Due to Traffic Congestion**
- **Motors Run as Power Source for Mechanical Operations**
- **Idling During Operation for Maintenance/Diagnostic Purposes**
- **Operation of Engine Solely to Defrost a Windshield**

LOCALLY ENFORCED IDLING RESTRICTIONS

Exemptions Continued

Air Conditioning and Heating Provision

- **For Passenger Comfort and Safety in Vehicles Intended for Commercial/Public Passenger Transportation or Passenger Transit Operations (30 Minutes Maximum)**
- **For Employee Health or Safety While Employee is Using Vehicle to Perform an Essential Job Function Related to Roadway Construction or Maintenance During Use of Sleeper Berth for a Government-Mandated Rest-Period and Not Within Two Miles of a Facility Offering External Heating and A/C Connections (Reinstated August 11, 2011)**



LOCALLY ENFORCED IDLING RESTRICTIONS

Recent Legislative Action

SB493

- Exemption for Heavy-Duty Diesel or Compressed Natural Gas(CNG) Vehicles, Model Year 2008 or Newer, Over 8,500 pounds GVWR, Certified By the Environmental Protection Agency (EPA) to Emit No More Than 30 Grams of Nitrogen Oxides Emissions Per Hour When Idling
- Increase Maximum Weight Allowable for Vehicles With Idle Reduction Systems



HB1906

- Makes an Offense of the State Idling Rule a Class C Misdemeanor

NOTE: TCEQ will be voting to incorporate SB493 into the rule on August 8, 2012.

LOCALLY ENFORCED IDLING RESTRICTIONS

Implementation

Transfer of Authority:

- Adopt TCEQ Idling Limitation Rule
- Sign North Texas Memorandum of Agreement (MOA)

Outreach:

- Items Developed For Regional Use:

- Local Government Guide
- Anti-Idling Street Signs
- Driver Education Brochures
- Idling Complaint Hotline and Website to Report Idling Vehicles



1-877-NTX-IDLE

www.EngineOffNorthTexas.org

Enforcement:

- Identify Enforcement Personnel and Procedures
- Training Available on NCTCOG Emissions Database

TOOLS AND RESOURCES

Department of Energy

Alternative Fuels and Advanced Vehicles Data Center

www.afdc.energy.gov/afdc/vehicles/idle_reduction.html

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Alternative Fuels & Advanced Vehicles Data Center

[About the AFDC](#) | [Fuels](#) | [Vehicles](#) | [Fleets](#) | [Incentives & Laws](#) | [Data, Analysis & Trends](#) | [Information Resources](#) | [Home](#)

Alternative and Advanced Vehicles



Search

[Search Help](#) | [More Search Options](#)

- Light-Duty Vehicle Search
- Heavy-Duty Vehicle Search
- Cost Calculator
- Flexible Fuel Vehicles
- Natural Gas Vehicles
- Propane Vehicles
- Hybrid & Plug-In Electric Vehicles
- Fuel Cell Vehicles
- Diesel Vehicles
- Conversions
- Resale
- Technician Training
- Idle Reduction

Idle Reduction

Idling vehicles use billions of gallons of fuel each year and emit large quantities of air pollution and greenhouse gases. Idle reduction technologies and practices are an easy and important way to cut petroleum consumption and emissions.

What Is Idle Reduction? ▶

Benefits & Considerations ▶

Research & Development ▶

Incentives and Laws ▶

Strategies and Technologies

- ▶ [Heavy-Duty Trucks](#)
- ▶ [Medium-Duty Vehicles](#)
- ▶ [Light-Duty Vehicles](#)
- ▶ [School Buses](#)



Truck Stop Electrification Site Locator ▶

Locate truck stops that are equipped with idle reduction technologies.

[Printable Version](#)

[Site Map](#)

PUBLICATIONS

- 

National Idling Reduction Network News ▶
- 

Idling: Cruising the Fuel Inefficiency Highway ▶
- 

Energy Use and Emissions Comparison of Idling Reduction Options for Heavy-Duty Diesel Trucks ▶
- 

Study of Exhaust ...

TOOLS AND RESOURCES

Quantify Potential Savings Create Buy-In for Anti-Idling Policies Sell Management on Investment in Idle Reduction Technologies



How Much Could You Save by Idling Your Light-Duty Vehicle Less?

Instructions:
Fill in the blanks with information about your costs.

Calculate Costs for Avoidable Idling

| | | | | |
|---|--|--|--|--|
| 1 How much fuel is used for idling? You may consult the table below. $\text{[] gallons/hour} \times \text{[] hours/year} = \text{[] gallons/year}$ | 2 What is your fuel's price? $\text{[] gallons/year} \times \text{[] \$/gallon} = \text{[] \$/year}$ | 3 What is your average fuel economy? $\text{[] gallons/year} \times \text{[] miles/gallon} = \text{[] miles/year}$ | 4 "Miles of Idling" [] miles/year | Avoidable Idling Fuel Costs $\text{[] \$/year} +$ |
| 3 How much does an oil change cost? $\text{[] \$/oil change} \div \text{[] miles} = \text{[] \$/mile}$ | 4 How many miles between oil changes? $\text{[] miles} \times \text{[] \$/mile} = \text{[] \$/year}$ | Preventive Maintenance Costs $\text{[] \$/year} +$ | | 5 "Miles of Idling" [] miles/year |
| 4 How much does a new vehicle cost? $\text{[] \$/vehicle} \div \text{[] miles} = \text{[] \$/mile}$ | 5 How many miles do you expect vehicle to last? $\text{[] miles} \times \text{[] \$/mile} = \text{[] \$/year}$ | Replacement Costs $\text{[] \$/year}$ | | Total Avoidable Idling Costs Add right-hand column = $\text{[] \$/year}$ |

| How much fuel is used for idling (gal/h)? | |
|---|---|
| Engine Size (liters) | Idling Fuel Use (gal/h, no accessories) |
| 1 | 0.16 |
| 2 | 0.32 |
| 3 | 0.48 |
| 4 | 0.63 |
| 5 | 0.79 |

| Engine Size for Example Vehicles | | | |
|----------------------------------|--------------|----------|----------------------|
| Year | Manufacturer | Model | Engine Size (liters) |
| 2011 | Honda | Civic | 1.8 |
| 2011 | Honda | Accord | 2.4 |
| 2011 | Ford | Fusion | 2.5 |
| 2011 | Toyota | Camry | 2.5 |
| 2010 | Chevrolet | Malibu | 3.6 |
| 2011 | Ford | Explorer | 4.0 |
| 2010 | Chevrolet | Corvette | 6.2 |

Work sponsored by



U.S. DEPARTMENT OF ENERGY

Energy Efficiency & Renewable Energy

Argonne is a U.S. Department of Energy Managed by UChicago Argonne, LLC



How Much Could You Save by Idling Less?

Instructions: In each row, start at the left and fill in the blanks with information about your equipment and costs. Then multiply or divide as shown. Some answers are used again. Where you see an arrow, copy the answer into the blank at the end of the arrow, so you can use it in the next step.

Calculate Costs for Avoidable Idling

| | | | |
|---|--|---|---|
| 1 How much fuel is used for idling? If you don't know, look up the number in the table below. $\text{[] gallons/hour} \times \text{[] hours/year} = \text{[] gallons/year}$ | 2 Realistically, how many hours each year might you use IR devices instead of idling? [] hours/year | 3 What is the price of diesel fuel? $\text{[] \$/gallon}$ | Avoidable Idling Fuel Costs $\text{[] \$/year} +$ |
| 2 How much does an oil change cost? $\text{[] \$/oil chg.} \div \text{[] miles} = \text{[] \$/mile}$ | 3 How many miles between oil changes? $\text{[] miles} \times \text{[] \$/mile} = \text{[] \$/year}$ | Preventive Maintenance Costs $\text{[] \$/year} +$ | |
| 4 How much does an engine overhaul cost? $\text{[] \$/overhaul} \div \text{[] miles/overhaul} = \text{[] \$/mile}$ | 5 How many miles between overhauls? $\text{[] miles} \times \text{[] \$/mile} = \text{[] \$/year}$ | Overhaul Costs $\text{[] \$/year} =$ | |
| Total Avoidable Idling Costs Add right-hand column = $\text{[] \$/year}$ | | | 5 |

Calculate Costs for Idling Reduction (IR)

| | | | |
|---|--|---|---|
| 6 How much fuel is used by the IR device? $\text{[] gallons/hour} \times \text{[] hours/year} = \text{[] gallons/year}$ | 7 Price of diesel fuel (should equal price listed in line 3) $\text{[] \$/gallon} \times \text{[] gallons/year} = \text{[] \$/year}$ | 8 Fuel cost for IR device $\text{[] \$/year}$ | Operating Cost for On-board IR Device $\text{[] \$/year} + \text{[] \$/year} = \text{[] \$/year}$ |
| 8 Cost per hour to plug into EPS? $\text{[] \$/hour} \times \text{[] hours/year} = \text{[] \$/year}$ | 9 Enter hours plugged into EPS? [] hours/year | Cost to plug in $\text{[] \$/year} + \text{[] \$/year} = \text{[] \$/year}$ | Total Operating Costs for IR $\text{[] \$/year}$ |

Calculate Savings from IR

| | |
|---|--|
| Savings Line 5 - Line 8 $\text{[] \$/year} - \text{[] \$/year} = \text{[] \$/year}$ | Payback Time Line 5 - Line 9 $\text{[] \$/year} \div \text{[] \$/year} = \text{[] years}$ |
|---|--|

¹ IR: Idling Reduction ² EPS: Electrified Parking Space ³ Total number of hours from line 5 and 8 divided equal the number of hours in line 1

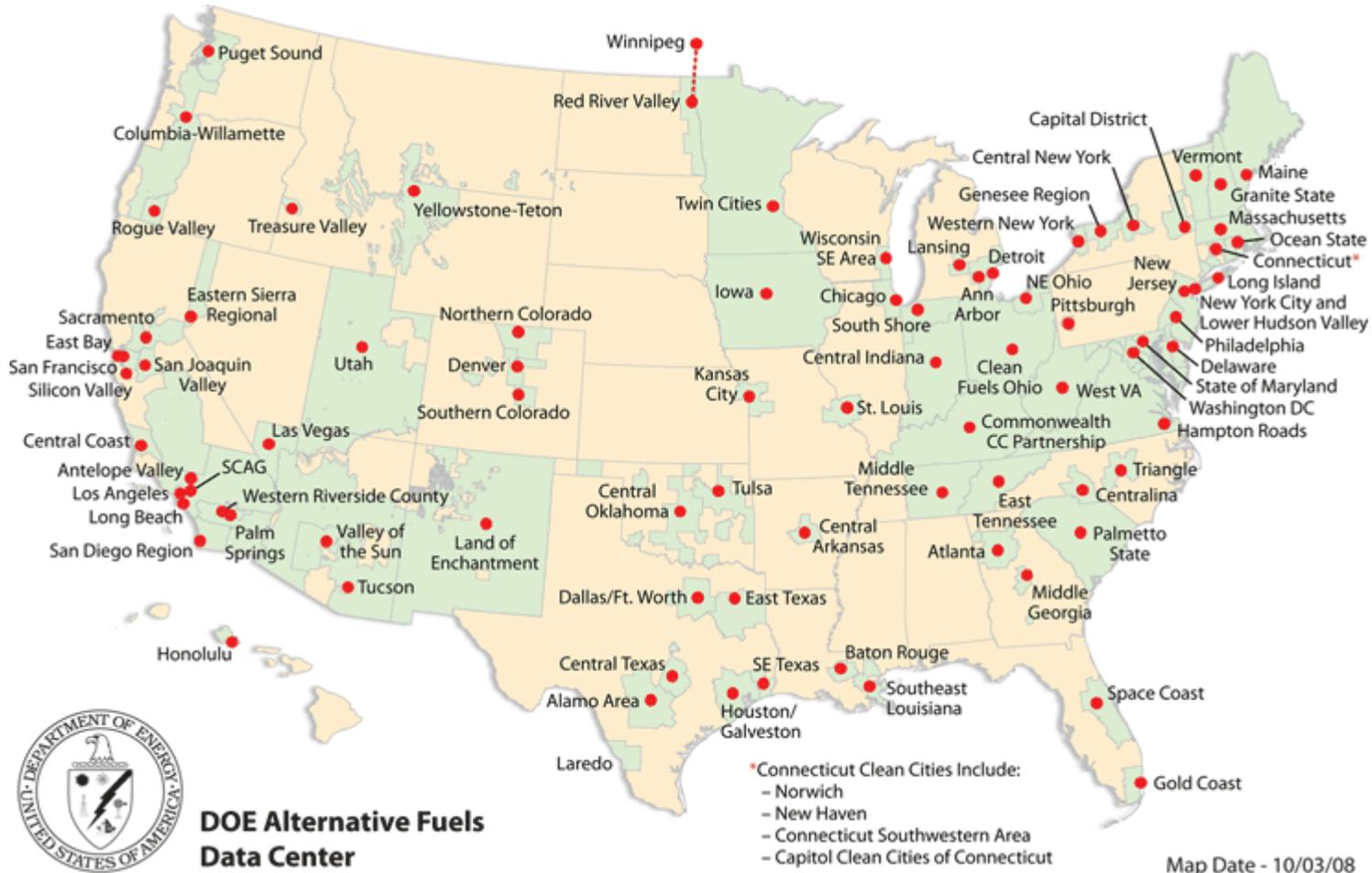
Work sponsored by

TOOLS AND RESOURCES

Clean Cities Coalitions

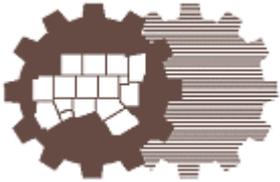
Provide Local Support

Connect to National Resources



FUNDING OPPORTUNITIES

NCTCOG Funding Programs



On-Site and On-Board Idle Reduction Projects,
Call for Projects Open Periodically Throughout Year
www.nctcog.org/AQFunding

Texas Emissions Reduction Plan (TERP)



On-Site and On-Board Idle Reduction Infrastructure
www.TERPGrants.org

SmartWay Transport Partnership



Innovative Financing for Fuel-Efficient Technologies
www.epa.gov/smartway

CONTACT INFORMATION

Shannon Stevenson

Program Manager

(817) 608-2304

sstevenson@nctcog.org

Lori Clark

Principal Transportation Planner

(817) 695-9232

lclark@nctcog.org

Amanda Brimmer

Principal Transportation Planner

(817) 608-2354

abrimmer@nctcog.org

Russell Garner

Air Quality Analyst

(817) 704-2508

rgarner@nctcog.org

www.EngineOffNorthTexas.org