



## Texas' Challenges & Texas' Response

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Jerry Matthews, Executive Director

[Jerrymatthews@mail.utexas.edu](mailto:Jerrymatthews@mail.utexas.edu)

Texas Council on Environmental Technology

10100 Burnet Rd., R7100

Austin, Texas 78758

[www.tcet.state.tx.us](http://www.tcet.state.tx.us)



# SENATE BILL 5, 77<sup>th</sup> RS

- Established TERP, Texas Emissions Reduction Plan & TCET
- Incentives
  - ◆ Adoption of technologies
  - ◆ Purchase of light duty vehicles
- R&D
- Energy Efficiency

# TCET Mission

- Texas Council on Environmental Technology given the mission to evaluate, seek regulatory approval for, and facilitate the deployment of new environmental technologies that have the potential to improve air quality, water quality or reduce the generation of solid wastes.

# Introduce Solutions for Environmental Problems

- Identify, fund, evaluate, & certify new technologies
- Seek verification by EPA
- Facilitate deployment, and
- Assist TCEQ and EPA to ensure credit for new, innovative, and creative technological advancements.

# Technology R&D Grants

- Provide grants to support development of emissions reducing technologies
- Promote the commercialization of technologies

# Eligible Projects and Priorities

- Retrofit and add-on technologies to reduce emissions from existing stock of vehicles targeted by the TERP;
- Advanced technologies for new engines and vehicles that produce very low or zero emissions of oxides of nitrogen, including stationary and mobile fuel cells;

# Projects & Priorities, Cont.

- Studies to improve air quality assessment and modeling;
- Advanced technologies that promote increased building and appliance energy performance; and
- Advanced technologies that reduce emissions from other significant sources

# Projects & Priorities, Cont.

- Grants for technology projects to allow qualifying fuels to be produced from energy resources in Texas
- Preference to projects involving otherwise unusable energy resources
- Producing qualifying fuels at competitive prices and economically attractive to local businesses

# Projects & Priorities, Cont.

- Special consideration to technologies that provide multiple benefits by reducing emissions of particulates and other air pollutants.
- Publicly or privately owned vehicles eligible for funding.
- Studies shall be consistent with air quality research priorities identified by TCEQ.

# Commercialization Potential

Applications must show clear and compelling evidence that:

- The technology project has commercialization plan and organization; And
- The technology proposed for funding:
  1. Must be offered for commercial sale within five years; And
  2. Will offer opportunities for projects eligible for funding under chapter 386 (TERP).

# Specific Considerations

- Projected potential for reduced emissions of oxides of nitrogen and cost effectiveness.
- The potential for the technology to contribute significantly to air quality goals.
- The strength of the commercialization plan.

# Advisory Committees

- May include representatives of industry, environmental or consumer groups, local governments, agriculture, TCEQ, the GLO, and the RRC
- Any senator or representative may participate on any advisory committee appointed under this section

# Current Grants

- **Prototype fabrication and testing of the Jirnov vortex engine for quantification of NO<sub>x</sub> emissions**
  - ◆ General vortex energy, inc., \$155,000
- **A sustainable solution to the air pollution problem caused by low technology brick kilns**
  - ◆ El Paso electric company, \$225,000
- **Emissions testing of prototype diesel/electric hybrid commercial pickup/delivery vehicles (PUDS) and the assessment of potential emission reductions in the Houston-Galveston non-attainment area from WidespreadUse in delivery fleets**
  - ◆ Houston advanced research center, \$164,419

# Current Grants, Cont.

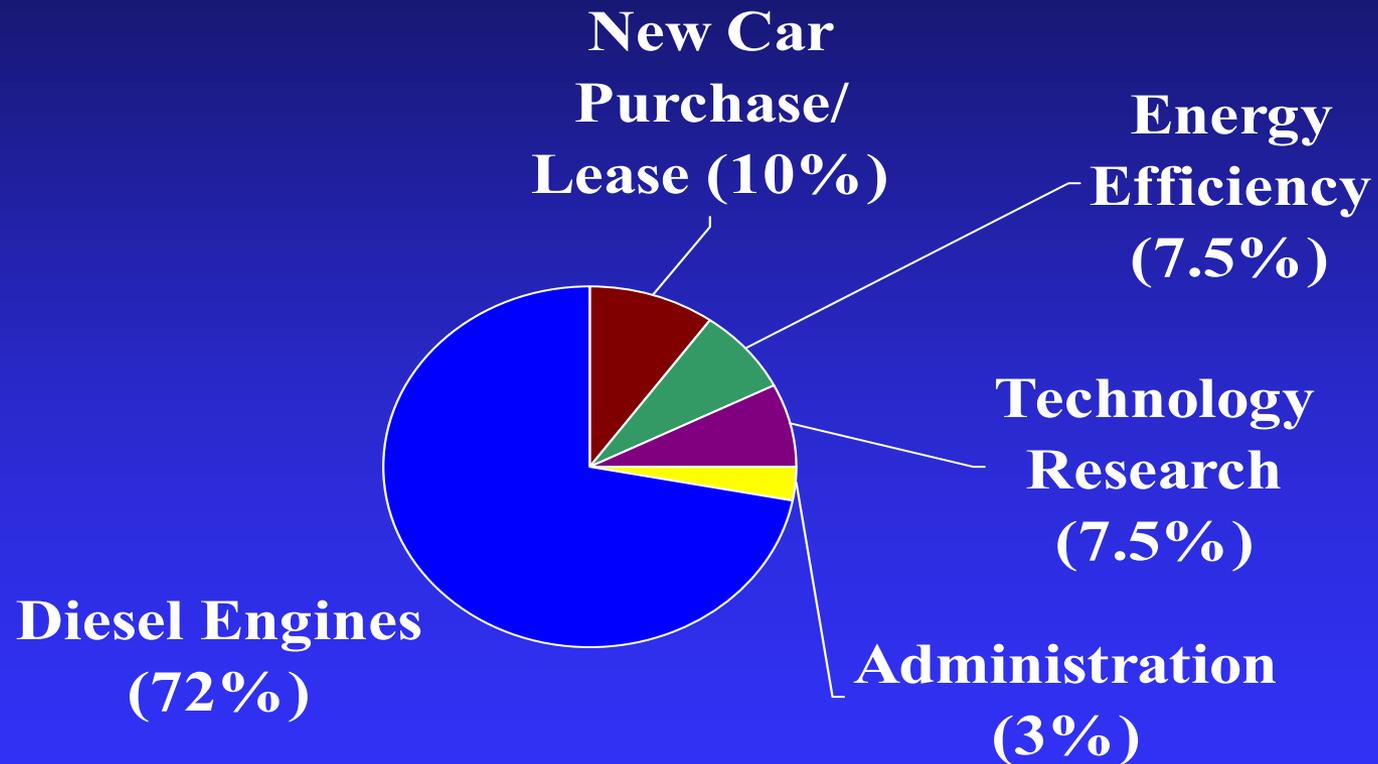
- **Test of alliance advanced emission control system employing Inegration of lean NO<sub>x</sub> and diesel oxidation catalysts**
  - ◆ Cleaire advanced emission controls, \$150,000
- **A virtual functionality test for the EGR systems of light-duty gasoline vehicles**
  - ◆ Eastern research group, \$284,623
- **Assessment of information needs for air pollution health effects research in Houston, Texas**
  - ◆ Bridges to sustainability, \$50,000
- **Developing a critical assessment of air quality technology development needs**
  - ◆ Environ international corporation, \$50,000

# Project to Be Awarded

- **Development of emissions factors and/or correlation equations for gas leak detection, and the development of an EPA protocol for the use of a gas-imaging device as an alternative or supplement to current leak detection and evaluation methods.**
  - ◆ Award amount: \$500,000.
  - ◆ Award expected: March 28.

# Texas Emissions Reduction Plan - SB5

## \$130 Million Per Year



# Incentive Grants For Reducing Emissions

- The TCEQ's emissions reduction incentive grants program provides grants to eligible projects in nonattainment areas and affected counties. The grants offset the incremental costs associated with reducing emissions of nitrogen oxides (NO<sub>x</sub>) from high-emitting mobile diesel sources.

<http://www.tnrcc.state.tx.us/oprd/sips/grants.html>

# TERP Requirements (Grants)

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- Must meet cost effectiveness of \$13,000 / ton of NO<sub>x</sub> reduced per year.
- Retrofit devices must reduce NO<sub>x</sub> by at least 30%.
- No minimum reductions required for qualifying fuels.
- Emission reductions must be verifiable.

# What Projects Are Eligible for a Grant

## ■ Eligible applicants.

- ◆ Operators of on-road heavy-duty diesel vehicles or non-road diesel equipment primarily in one or more of the state's air quality nonattainment areas or other affected counties.
- ◆ For infrastructure projects, persons owning or operating the infrastructure in a nonattainment area or affected county.
- ◆ For demonstration projects, persons that own the technology to be demonstrated in a nonattainment area or affected county,
- ◆ Or persons that own the vehicles or equipment

# Eligible Projects

- Lease or purchase of non-road equipment (at least 50 hp)
- Repower, retrofit, or add-on of devices to non-road diesel powered equipment (at least 50 hp) or to on-road heavy-duty diesel-powered vehicles (10,000 lb or more gross vehicle weight rating)
- (Cont.)

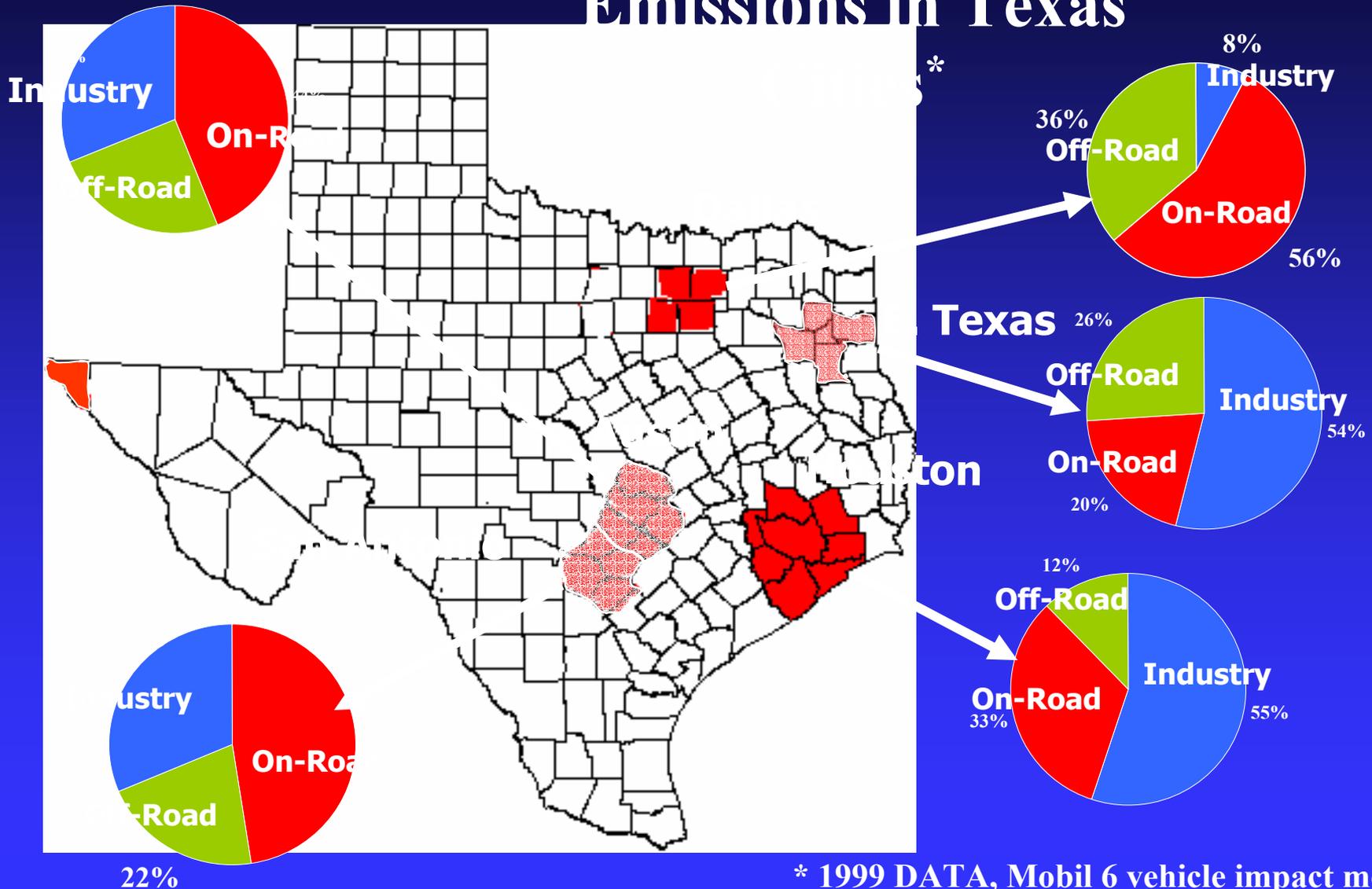
# Eligible Projects, Cont.

- Infrastructure projects, including:
- On-site or mobile refueling infrastructure
- On-site infrastructure for dispensing electricity
- On-vehicle infrastructure for dispensing/accepting electricity
- Use of a qualifying fuel
- Demonstration of new technology

# 38 Eligible Counties

Bastrop, Bexar, Brazoria, Caldwell, Chambers  
Collin, Comal, Dallas, Denton, Ellis, El Paso  
Fort Bend, Galveston, Gregg, Guadalupe, Hardin  
Harris, Harrison, Hays, Jefferson, Johnson  
Kaufman, Liberty, Montgomery, Nueces  
Orange, Parker, Rockwall, Rusk, San Patricio  
Smith, Tarrant, Travis, Upshur, Victoria  
Waller, Williamson, Wilson

# Sources of NOx Emissions in Texas

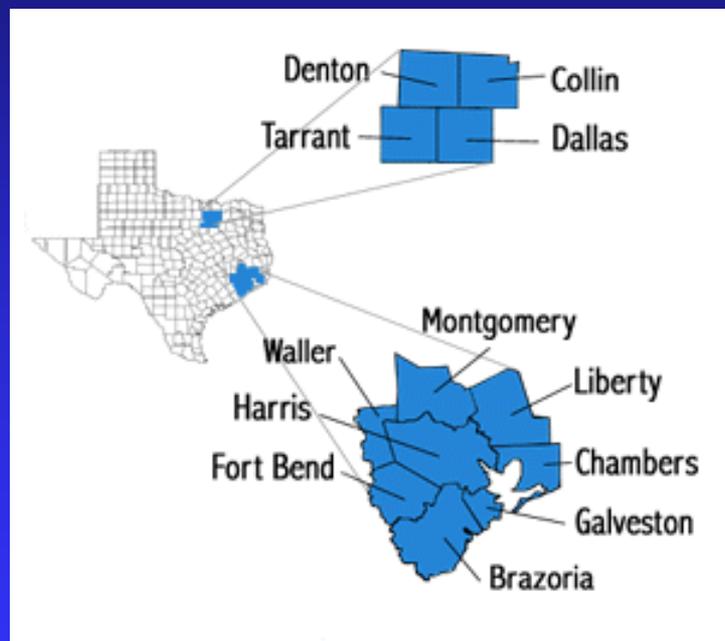


\* 1999 DATA, Mobil 6 vehicle impact model

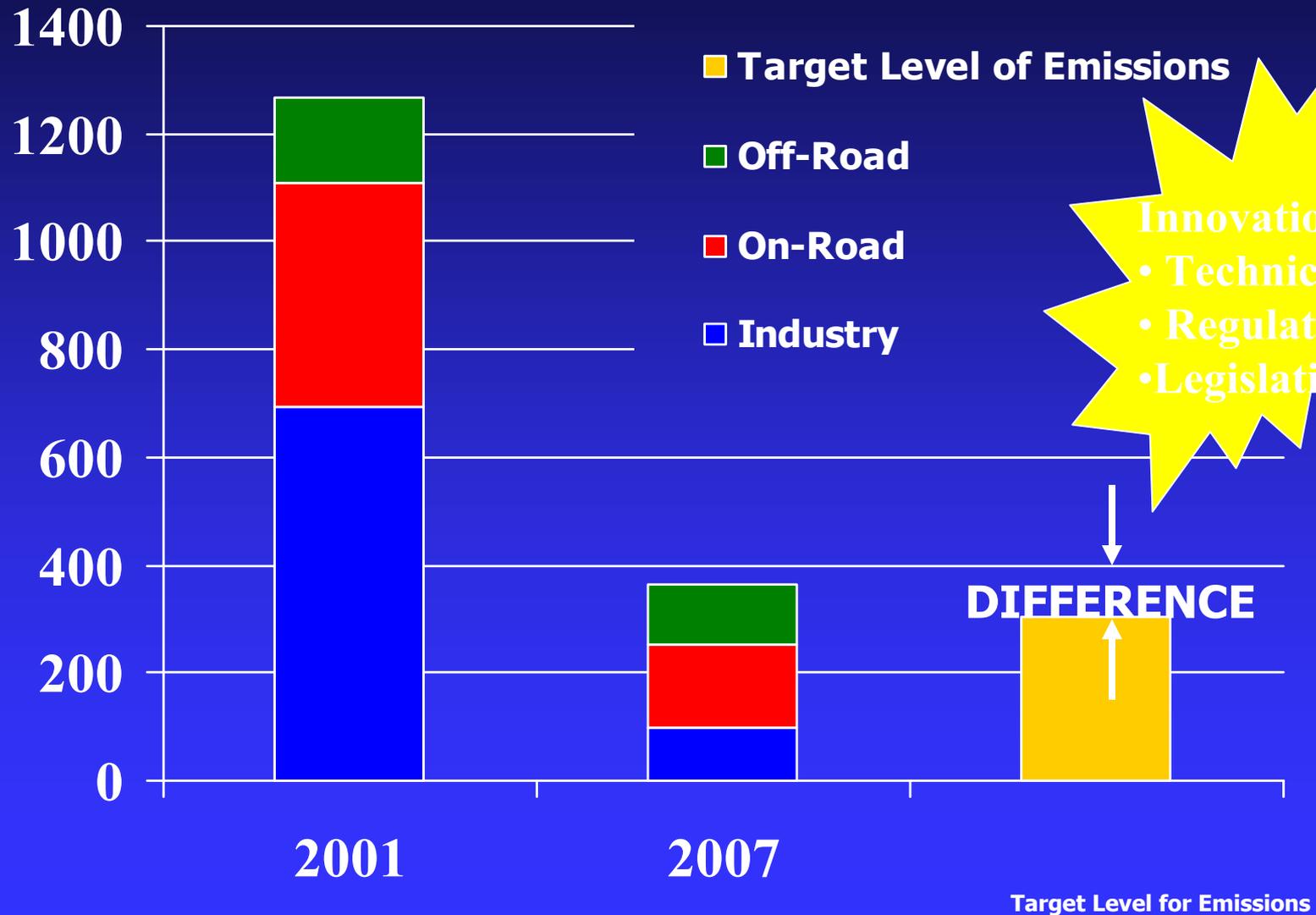


# Non-attainment Areas

**Houston-Galveston Area**  
**Dallas-Fort Worth**



# The Houston Plan



# Clean Air Innovations

- Retrofit, repower and add-on technologies
- Cleaner advanced fuels
- Development and use of cleaner vehicles
- Commercial and residential air conditioning ozone reduction systems
- Diesel inspection/maintenance programs
- Infrastructure projects
  - ◆ Alternative fuels or electricity for vehicles
- Energy efficiency
  - ◆ Energy star appliances and residential building codes
- VMT reduction strategies
- Strategies for emission reductions at airports



# Other New Technologies

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- **Fuel cells.**

- ◆ A fuel cell consists of two electrodes sandwiched around an electrolyte. Oxygen passes over one electrode and hydrogen over the other, generating electricity, water and heat.
- ◆ Zero emissions technology when using hydrogen as fuel.