

# New Technology Research & Development Program

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**TERC**

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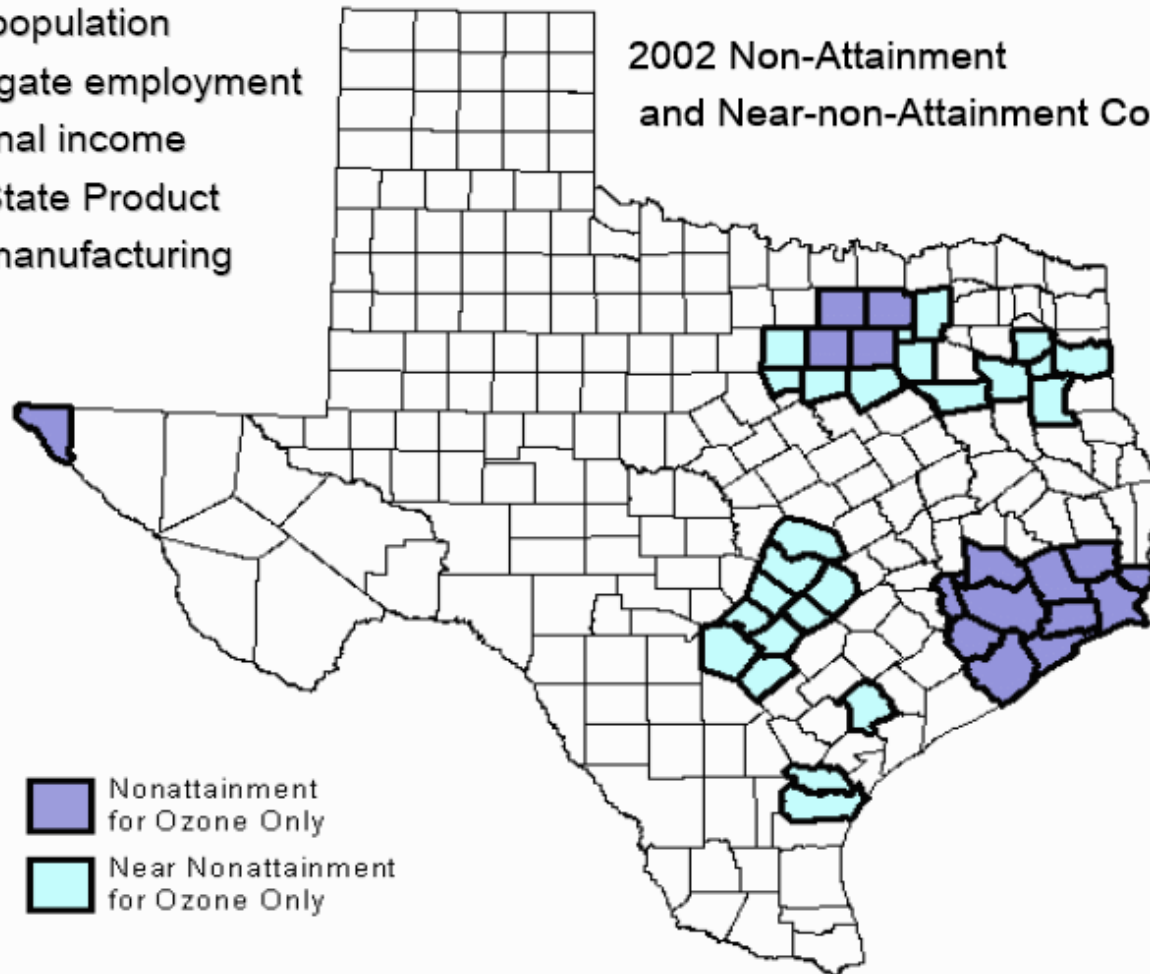
# The Legislative Mandates for NTRD

- Expedite the verification of new technologies to maximize NO<sub>x</sub> reductions
- Facilitate the development of new technologies to further reduce NO<sub>x</sub> emissions
- Promote economic development in Texas through new technology development and verification

# Texas Ozone Non-Attainment Areas

70% of state's population  
76.4% of aggregate employment  
83.4% of personal income  
83% of Gross State Product  
85% of Texas manufacturing activity \*

2002 Non-Attainment and Near-non-Attainment Counties



\* Data Source: The Perryman Group. *The Importance of Maintaining A Proper State Implementation Plan (SIP) to Address Air Quality Issues in Texas: An Economic and Fiscal Impact Assessment*. November 2002.

# Organization Overview



# TERC

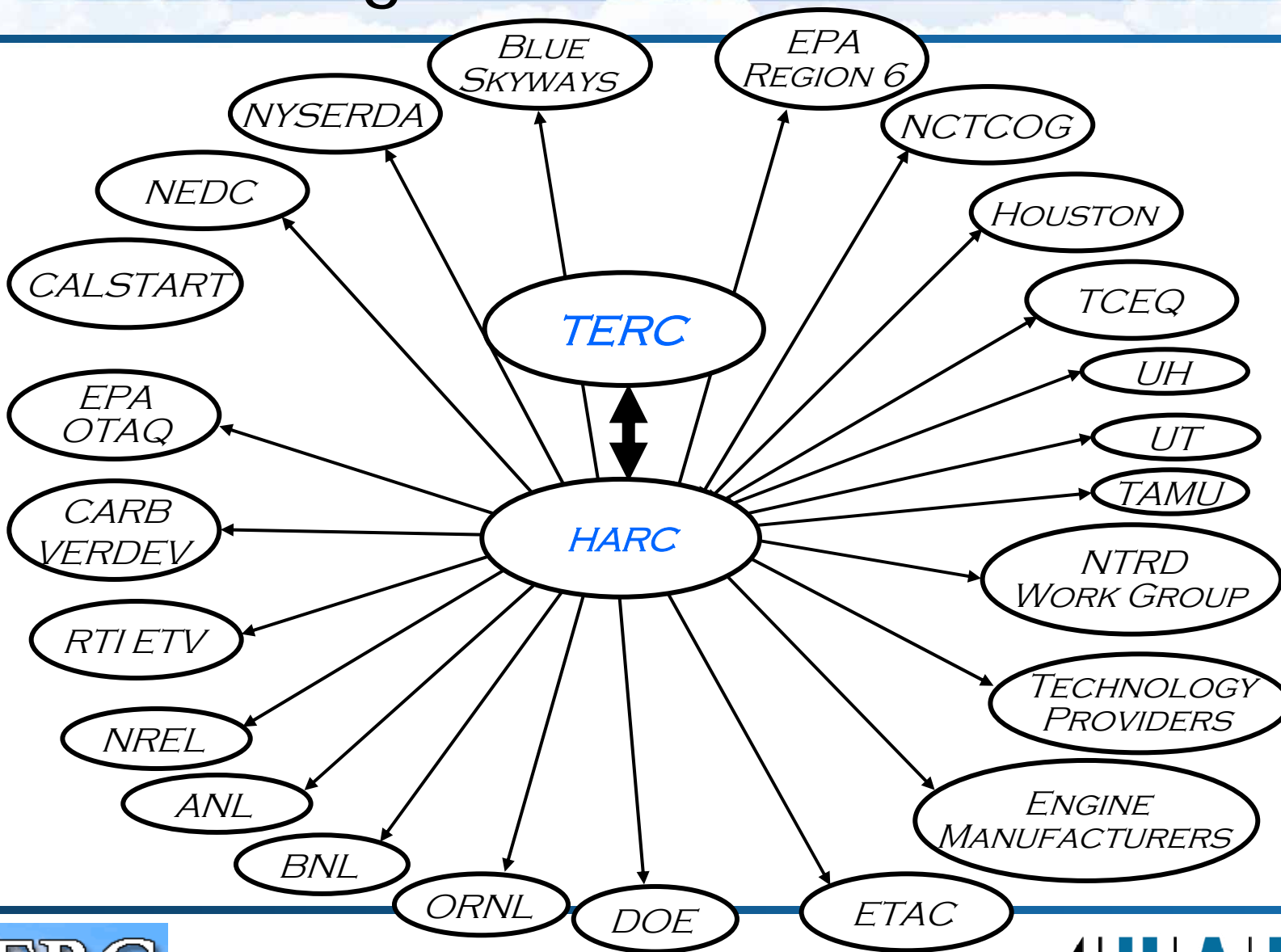
## Environmental Improvement Through Research and Science

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- Non-profit environmental solutions organization
- Led by elected officials, environmental leaders, and the business community
- Applying the best research skills and technology knowledge to Texas air quality challenges
- Founded in 2002
- Headquartered in Houston

# The Growing NTRD Network



# NTRD Strategic Plan: 7 Key Elements

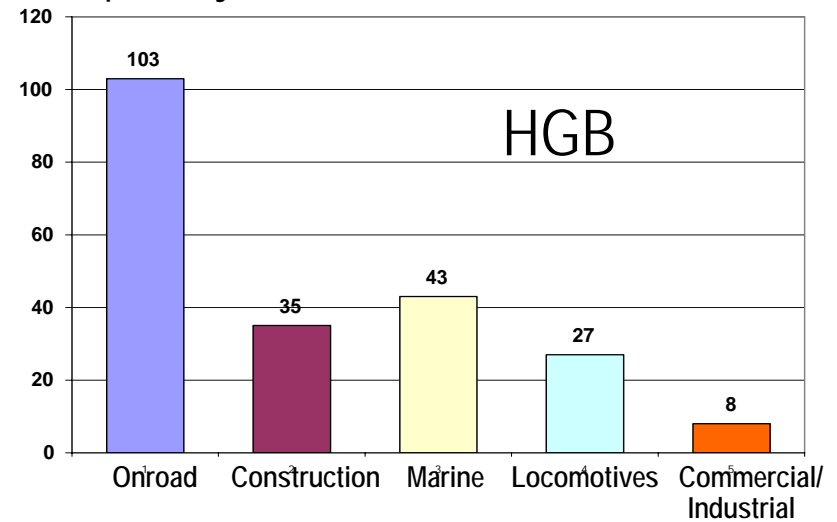
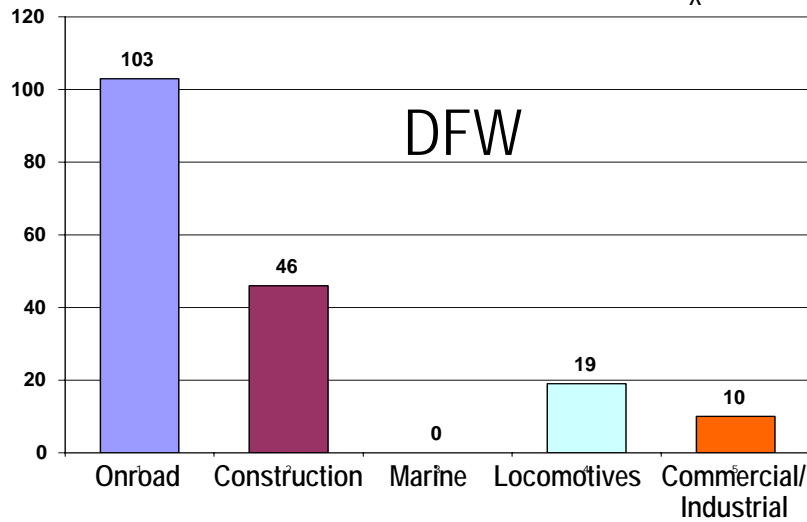
- 1. Focus on major NO<sub>x</sub> emissions sources**
  - On-road, Construction, Marine, Locomotives, Commercial/industrial
- 2. Expedite emissions technology verification & implementation**
  - Verification of new retrofit technologies or extend verification to other applications
- 3. Stimulate development of new, low-emissions engine technologies**
- 4. Stimulate development of engine upgrade kits and retrofits**
  - Particularly cost-effective when installed at scheduled engine overhaul
- 5. Stimulate the development of exhaust treatment retrofit technology**
  - Critical to match technology and application operational characteristics
- 6. Study and pursue alternative fuels and fuel additive improvements**
- 7. Seek opportunities to support development of hybrid powertrain projects**
  - “NO<sub>x</sub> and beyond” emissions strategy

# New Technology R&D Funding

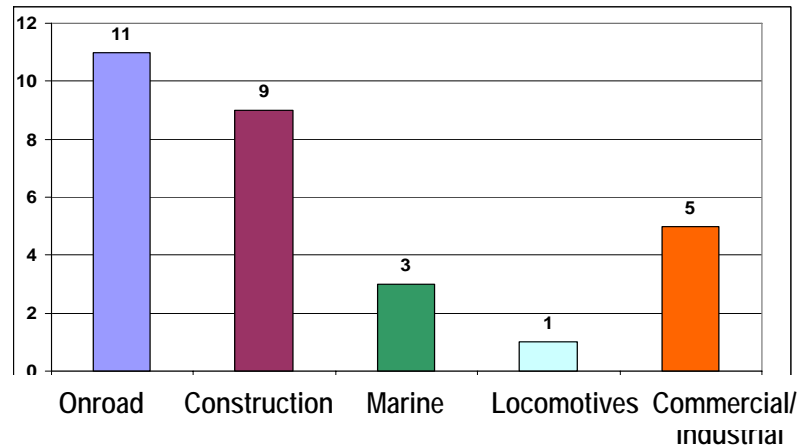
- The NTRD Program is currently funded at \$16 million for the 2006/07 Biennium by the State of Texas. These funds are leveraged into additional funding from federal and other sources. The results to date are:
  - A \$100,000 phase 1 EPA SBIR award to Lynntech (College Station, TX) in 2006 while the 2007 SBIR funding round is still open.
  - A preliminary \$2 million commitment from the North Central Texas Council of Government (NCTCOG) for technology testing and demonstration projects
  - \$300,000 from EPA for a Smartway Demonstration Project (NCTCOG in Arlington, TX)
  - \$6.2 million as matching contributions from NTRD grant recipients

# Emission Inventories in HGB and DFW

Diesel NO<sub>x</sub> Emissions (tons per day, 2007)



Number of  
FY06/07 NTRD  
Approved  
Projects by  
Sector



# NTRD Funded Projects

- 2 Studies (inventory, duty/drive cycle) \$412,000
- 11 SCR Retrofit Technology Development \$5,968,000
- 5 LNT/LNC Retrofit Technology Development \$3,100,000
- 4 Engine/Vehicle Retrofits \$1,755,000
- 1 Hybrid Technology \$693,000
- Total funds committed \$12,228,204
- Total available funds \$15,952,726

# Upcoming Solicitations

- RFGA 8a: (Repeat) Engine Overhaul Kits \$2,500,000
  - Aimed at engine manufacturers to develop verified kits that can be applied at the time of engine overhaul. Expected NO<sub>x</sub> benefits of up to 40%, with cost effectiveness estimated at \$800-\$1400/ton NO<sub>x</sub>.
- RFGA 9: TxLED emissions testing \$250,000
- RFGA-10: Biodiesel NO<sub>x</sub> effects \$600,000
  - Complementary to EPA and CARB biodiesel emissions testing programs. Seeks to establish root cause of biodiesel NO<sub>x</sub> emissions effect and potential fuel property and/or engine modifications that can ensure NO<sub>x</sub> neutrality.
- RFGA-11: Nanotechnology \$5,000,000
  - Nanotechnology projects resulting in products that can aid in reducing NO<sub>x</sub> emissions from diesel engines and equipment.

# NTRD in the next Biennium

- Texas Senate Bill 12 is still working its way through the legislature (currently in session) and proposes some modifications to the TERP and NTRD programs:
  - Limits eligible projects to NO<sub>x</sub> reducing technology projects for existing and new engines.
  - Extends TERP and NTRD to 2013.
  - Raises cost effectiveness (TERP) limit to \$15,000/ton NO<sub>x</sub>
  - Full funding of the TERP program could push available TERP funds for FY07/08 beyond \$450M and NTRD available funds over \$30M.

# NTRD ETAC Strategy Meeting Objective

- Assuming TERC/HARC will continue to manage the NTRD program (there is no indication to the contrary):
- How do we allocate the available NTRD funds to ensure the highest possible payoff for the State in terms of NO<sub>x</sub> reductions in the HGB and DFW non-attainment areas?
- What gaps exist?
  - Coverage of major sectors/emissions sources?
  - Technology gaps?
  - End user education?
  - Additional incentives, policy gaps?
  - Infrastructure gaps?