

# **Alternative Method for Measuring Real-Time Heavy-Duty Diesel Emissions**

***24th CRC REAL WORLD EMISSIONS WORKSHOP***

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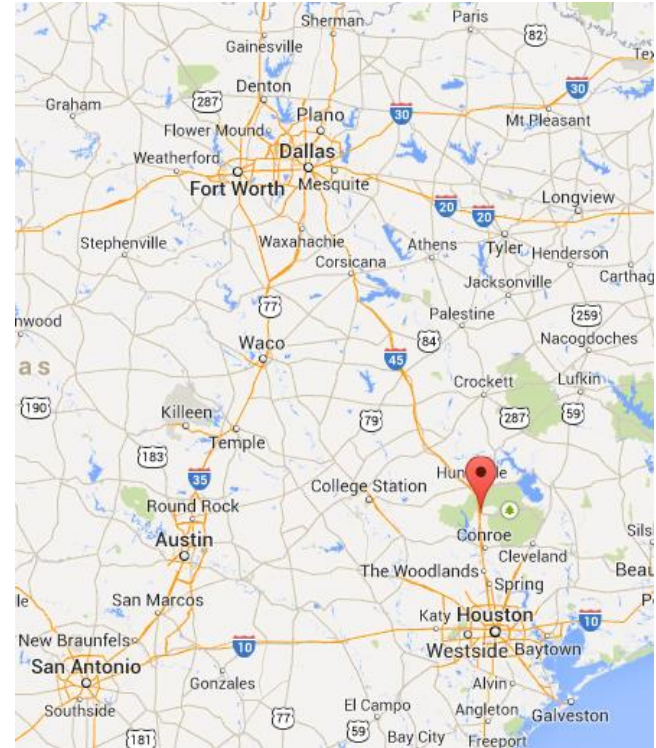
Bill Knowles (Texas Department of Transportation)

# Background

- Project Purpose:
  - Investigate a heavy duty diesel vehicle (HDDV) I/M program for the DFW region
- Funded by:
  - North Central Texas Council of Governments (NCTCOG) and
  - Texas Department of Transportation (TxDOT)
- Work performed by:
  - Texas A&M Transportation Institute (TTI) and University of Denver

## Project Approach

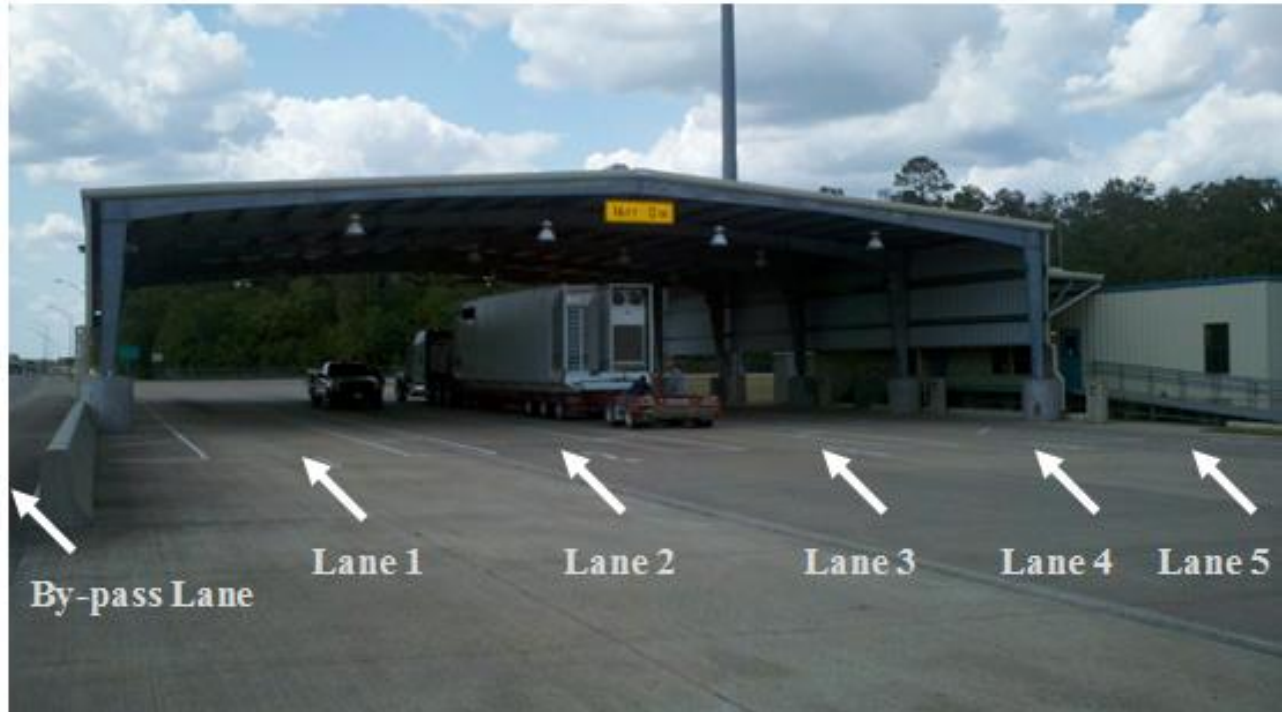
- Investigate HDDV I/M programs and methodologies
- Perform an on-site pilot testing study
- Assess possibilities for HDDV I/M or screening programs



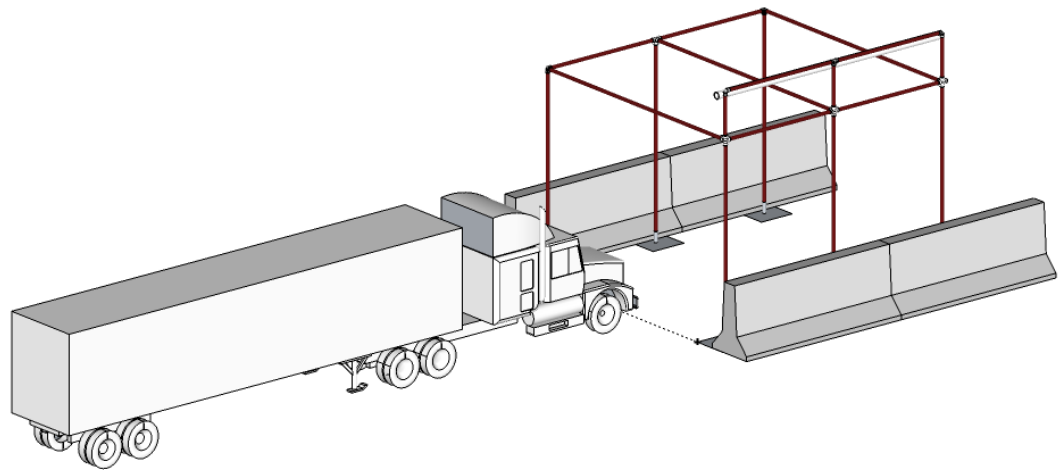
# SHED Test Setup (1)



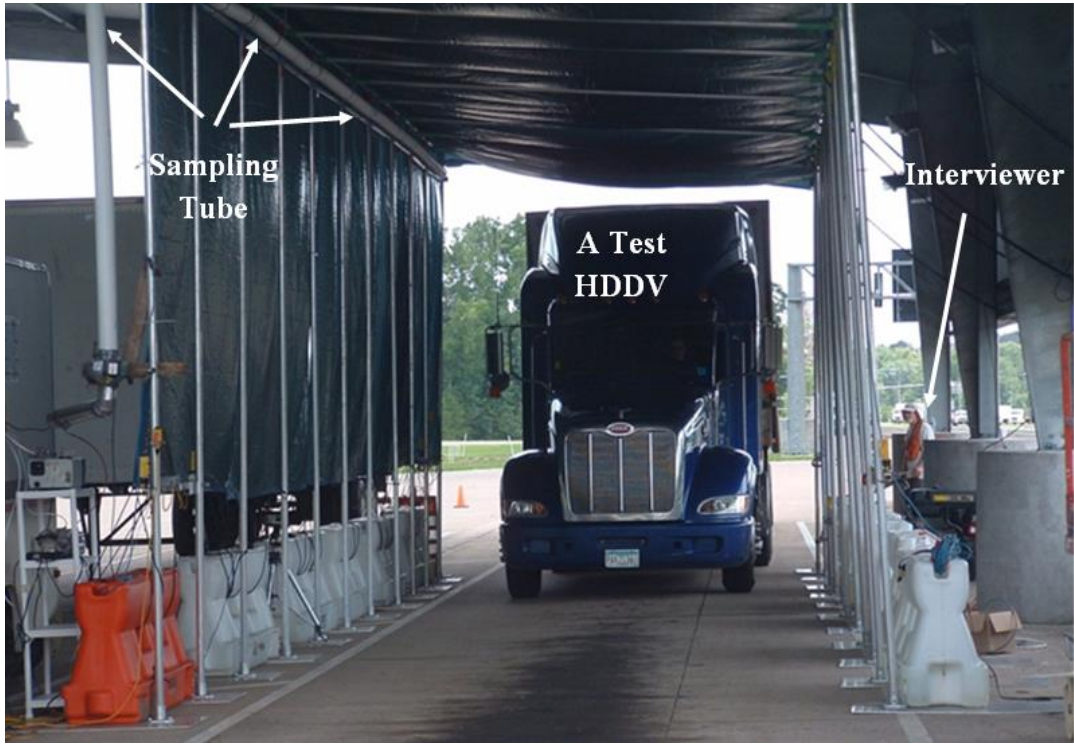
# SHED Test Setup (2)



# SHED Test Setup (3)



# SHED Test Setup (4)



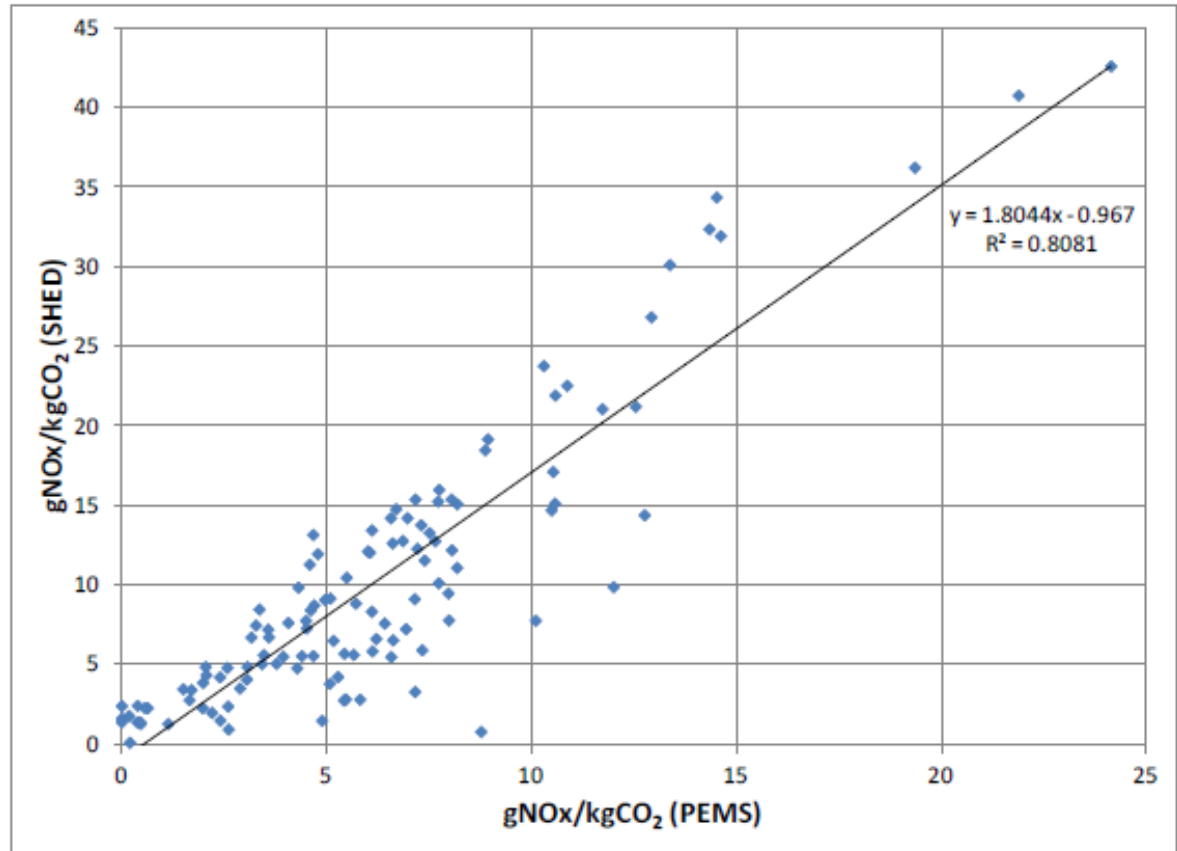
# Equipment



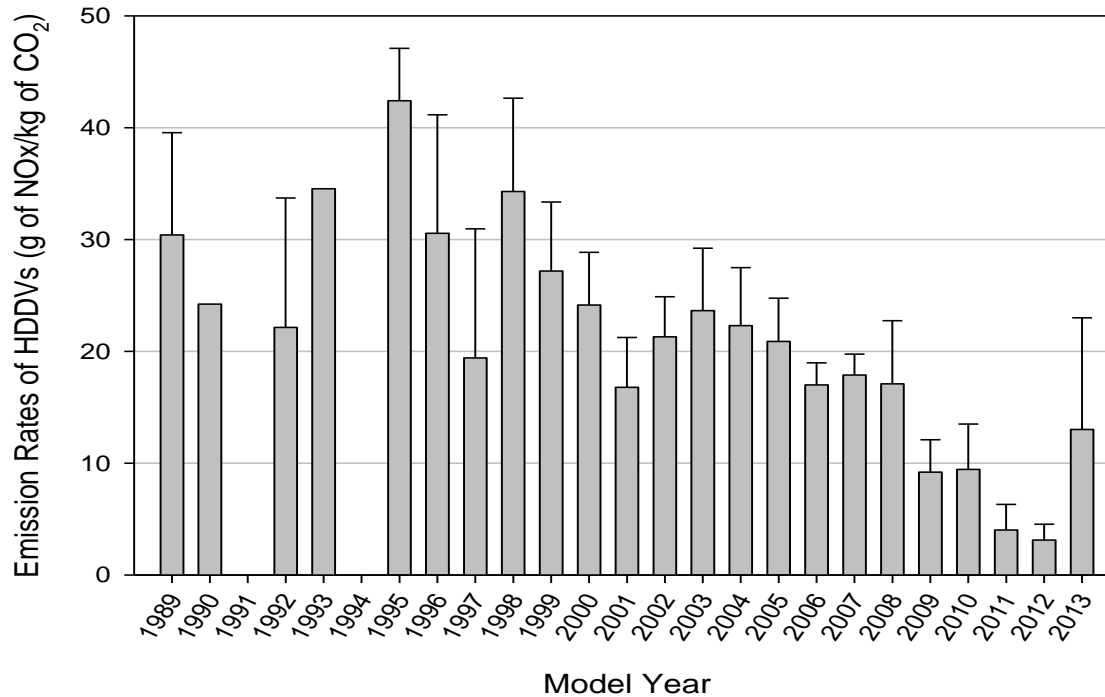


## Data Analysis Results

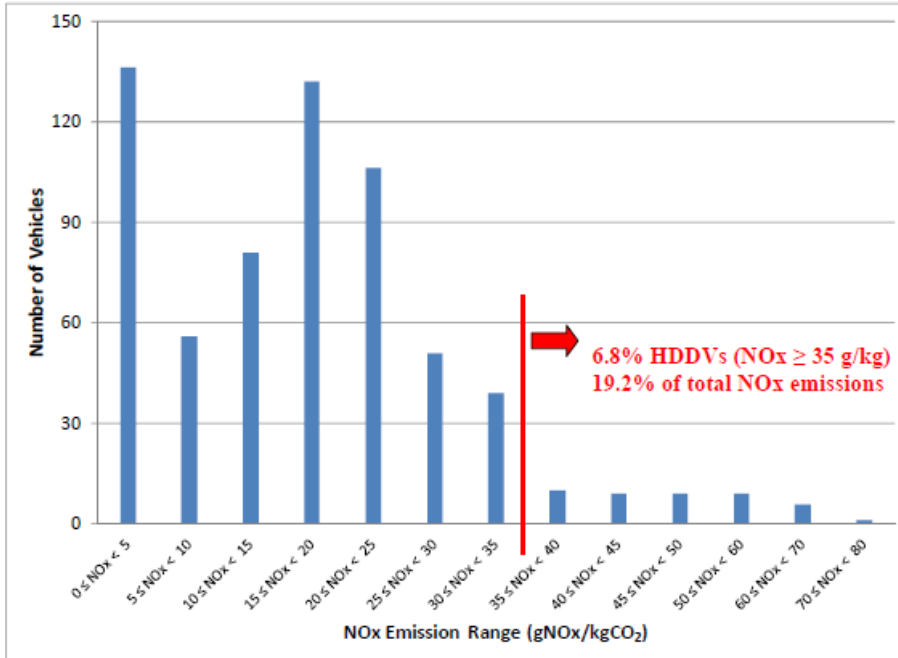
- Very poor correlation between opacity and PEMS for NO<sub>x</sub>
- Reasonable correlation between conventional Remote Sensing and PEMS
- Good correlation between SHED and PEMS



# NOx Emissions by Model Year



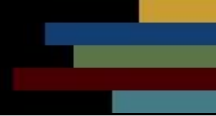
# Results – High Emitters



Pollutant	Percentage of Vehicles	Percentage of Emissions
NOx	7%	19%
CO	15%	71%
HC	11%	44%
PM	13%	62%

## Possible SHED Applications

- SHED approach can serve as a viable HDDV I/M technology
- Other benefits/applications
  - “Clean screening” for fleet PR/marketing
  - Identification of high emitters
  - Evaluation of alternative fuels and technologies
  - Technology compliance checks
- Applications at borders and ports



## Proposed Next Steps

- Phase 1: Optimize SHED Technology and Operations
- Phase 2: Pilot Deployment
- Phase 3: Full-Scale Deployment