DIESEL INSPECTION AND MAINTENANCE (I/M) PILOT PROGRAM RESULTS

Surface Transportation Technical Committee
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North Central Texas Council of Governments
Currently no emissions testing for diesel vehicles in Texas

**DIESEL INSPECTION AND MAINTENANCE (I/M)**

**Need For Testing**

- **Light-Duty Vehicles ≤ 8,500 lbs GVWR**
- **Medium-Duty Vehicles = 8,501 – 14,000 lbs GVWR**
- **Heavy-Duty Vehicles ≥ 14,001 lbs GVWR**

2012 On-Road NOx Emissions Inventory

On-Road Emissions = 181 tons per day (tpd) NOx

Source: Texas Commission on Environmental Quality (TCEQ)
DIESEL I/M PILOT PROGRAM
Project Purpose

Investigate a heavy-duty diesel vehicle (HDDV) I/M Program for the Dallas-Fort Worth (DFW) region
Characterize NO\textsubscript{X} emissions from HDDVs through on-site pilot testing study
Assess data, validity, and implications for HDDV I/M or screening programs

Idea
Mock-up
Prototype
North Central Texas Council of Governments (NCTCOG)
Texas A&M Transportation Institute (TTI)
Texas Department of Motor Vehicle (TxDMV)
Texas Department of Public Safety (DPS)
Texas Department of Transportation (TxDOT)
University of Denver (DU)
Location
New Waverly Weigh Station (NWWS), Northbound I-45
Timeline
June 11-22, 2012
Vehicles Tested
~1,500 long-haul HDDVS
Most headed for DFW
10 Control Vehicles
Validated via Portable Emissions Monitoring System (PEMS)
NEW WAVERLY WEIGH STATION

Site Features

By-pass Lane

Lane 1

Lane 2

Lane 3

Lane 4

Lane 5
SHED PROTOTYPE

Test Setup

Streamlined Heavy-Duty Emissions Determination (SHED) prototype
License plate data from TxDMV and five other states

Model year distribution for TX vehicles very similar to statewide distribution
SHED DATA ANALYSIS
Testing Methodology Correlation and Results

NO\textsubscript{X} Emissions Testing Correlation

<table>
<thead>
<tr>
<th></th>
<th>SHED</th>
<th>Remote Sensing</th>
<th>Opacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEMS</td>
<td>Very Good</td>
<td>Good</td>
<td>Poor</td>
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SHED Emission Rates (g NO\textsubscript{x}/kg CO\textsubscript{2})

HDDV Model Year

[Graph showing emission rates for HDDVs from 1989 to 2013, with error bars indicating variability]
SHED DATA ANALYSIS
Vehicle Identification for High Emissions of NO$_X$

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Percentage of Vehicles</th>
<th>Percentage of Emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO$_X$</td>
<td>7%</td>
<td>19%</td>
</tr>
<tr>
<td>CO</td>
<td>15%</td>
<td>71%</td>
</tr>
<tr>
<td>HC</td>
<td>11%</td>
<td>44%</td>
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<tr>
<td>PM</td>
<td>13%</td>
<td>62%</td>
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6.8% HDDVs (NO$_X$ ≥ 35 g/kg) 19.2% of total NO$_X$ emissions
SHED: Viable HDDV I/M Technology

Benefits and Other Applications

“Clean screening” for fleet
Can capture both intra- and inter-state vehicles
Compliance check for advance emissions control technology
Evaluation of alternative fuels and technologies

Identified Next Steps

Engage the US Environmental Protection Agency (EPA)
Seek guidance to be able to claim emissions credits for diesel
Optimize SHED technology and operations
Establish appropriate cut-points
Utilize data collected for MOVES model refinement
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www.nctcog.org/DieselReport