In-Use Emission Testing Program

Clean Fuels Program Advisory Group Meeting

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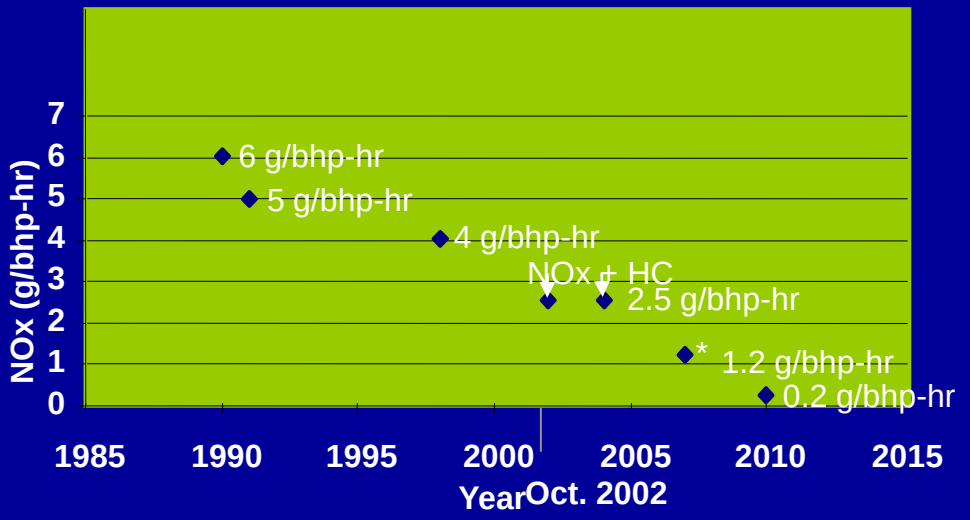
Background

- New on-road heavy-duty engines
  - Meet stringent state and federal standards
  - 3-way catalyst or EGR with SCR and DPF
- Vehicles with newer technologies
  - Significant reduction in NOx and PM emissions
  - Need to assess impact of technologies on other pollutants
  - Demonstrate retrofit technology for reduced exhaust emissions



Objective/Goal

The proposed project will:

- Characterize in-use emissions from gas and diesel 2007/2010 vehicles
  - On-road class 8 trucks
  - Refuse haulers
  - Transit buses
  - School buses
- Demonstrate retrofit device for use on heavy-duty vehicles if needed

Vehicle Test Matrix

Engine/Technology	Number of Vehicle				Total Test
	Transit	Sch. Bus	Refuse	Goods Movement	
I. 8.9L 0.2g Natural gas engine with 3-way cat.	1	-	1	3	11
II. 15L 0.8g HPDI engine with EGR and DPF				3	6
III. 15L 0.2g HPDI engine with EGR and SCR/DPF				2	4
IV. Diesel engine at 1.2 g NOx	-	-	1	3	10
V. Propane and diesel school bus	-	2	-	-	2
VI. Diesel engine above 0.2 g NOx w/o SCR	-	-	2	2	12
VII. Diesel engine at or below 0.2 g NOx w/SCR	-	-	2	3	14
VII. Natural gas engine w/3-way catalyst + AFD	1*		1*	1*	7
Total	1	2	6	16	66

Test Drive Cycle Matrix

Application	Test Drive Cycle				
	CBD	UDDS	OCTA	AQMD Refuse	Port
Transit	✓	✓	✓		
Refuse Truck		✓		✓	
Goods Movement		✓			✓
School Bus	✓				

Phase 1 Measurement

- Methane and non-methane hydrocarbon
- NO, NOx, N_2O, CO, CO_2, PM
- Ultrafine particles (mass concentration and number)
- Ammonia, benzene, formaldehyde, carbonyls

Testing Laboratory

- West Virginia University
  - Gas and some diesel vehicles
  - Technology demonstration project
- University of California, Riverside
  - Propane and diesel vehicles
  - Propane and diesel school bus
- Testing began in August 2011 & will end in April 2012

Phase 2
Control Device Demonstration Program

- Data logging for temperature and pressure
- Design, fabrication, and installation of retrofit device
- Emission tests
- Demonstration begins in May 2012 and ends in March 2013