



# South Coast AQMD Technology Advancement Office



## Heavy-Duty Engines and Aftertreatment



Advisory Group Retreat  
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**Adewale Oshinuga**  
**Program Supervisor**

# Heavy-Duty Engine Technology (LNG)

- Develop, demonstrate, & certify LNG HD HPDI engine (400-450) hp
  - 0.6g NO<sub>x</sub> with HPDI, EGR, & DPF technology
  - 0.2 g NO<sub>x</sub> + SCR
  - Assess performance, durability, & reliability
  - Early introduction of 0.2g LNG HD trucks
- Project cost: ~\$10 million, funded by
  - AQMD, CEC, POLA, POLB, Clean Energy, & Westport Power
- Status:
  - Currently at 0.7g
  - 0.2 g HPDI engine optimization/commissioning completed
  - Certification testing completed (anticipated certification – Spring 2010)
  - Limited on-road test for performance is ongoing
  - Large-scale in-field demonstration will begin in Spring 2010



# Heavy Heavy-Duty Truck Retrofit Technology

- Develop & demonstrate control technology for NO<sub>x</sub> & PM
  - HD trucks – 15 HHD, (DDC Series 60 & Cat C13)
  - SCRT ( CRT + SCR)
  - Assess reliability & emission reduction potential of technology
- Project Cost - ~ \$731,500, funded by
  - AQMD, Johnson Matthey, Ralphs
- Status:
  - All vehicles are operating & monitored (September 2008)
  - Drivers experience (positive)
  - Urea tank refueled the same time as fuel tank
  - Efficiency: NO<sub>x</sub> >70%; PM >85%; NH<sub>3</sub> slip not monitored (7 ppm)
  - In-field Demonstration continues
  - Chassis emission test is planned



# Construction Equipment Retrofit Technology

## Showcase Program

- Objective:
  - Demonstrate NOx & PM technologies on over 200 pieces of diesel construction equipment
  - Assess reliability & emission reduction potential of technology
- Equipment & Technology:
  - 185 machines - Scraper, excavators, dozers, loaders, backhoes, tractors (17 – 650 hp)
  - SCR, DPF, & other NOx & PM control strategy
- Project Cost - ~ \$5 million funded by
- AQMD, MSRC, CARB, aftertreatment technology providers, & 18 fleets
- Status:
  - 25 engines retrofitted by 9 manufacturers
  - Demonstration is on-going



# Construction Equipment Retrofit Technology

## Other Construction Programs

- Demonstrate SCR technology on construction equipment for 1100 hr
  - Assess reliability & emission reduction potential of technology
  - Project cost - ~ \$195k funded by AQMD, EF&EE, CSDLAC
  - Demonstration is on-going
- Demonstration of SCR & DPF technology on construction equipment for 1100 hr
  - Assess reliability & emission reduction potential of technology
  - Project cost - ~ \$670k funded by AQMD, Servo Tech, CSDLAC
  - Demonstration is on-going

