



## South Coast AQMD Technology Advancement Office



## Heavy-Duty Program - Natural Gas Engines



## Clean Fuels Program Advisory Group August 19, 2010



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# Background

- Clean fuels technology provides several benefits
  - Criteria emissions and toxic contaminants
  - Petroleum-based fuel dependency
  - Greenhouse gases
  - Other non-quantifiable benefits
- Current engine disparity
  - Availability of engine OEM
  - Diesel engines for most application
  - Limited alternative fuel engine family
- Abundance of natural gas production



# Natural Gas Engine & Vehicle Development

- SCAQMD, DOE, CEC, & NREL – provides \$13.5 million
  - Development of efficient and low emission natural gas engines
  - Integration of engines into chassis and vehicle platforms
  - Demonstration of vehicles under real world operations
  - Verify emissions benefits, fuel efficiency, & petroleum reduction
- RFP issued in March 2010
  - Over 20 companies submitted proposals
  - Four companies selected, including
    - Cummins Westport, Southwest Research Institute, Emissions Solutions, & ISE
- Anticipated schedule: 12/2010 through 12/2012



# Proposals

- Cummins Westport

- Engine: 11.9L natural gas engine
- Base engine: Cummins ISX 11.9 L diesel engine
- Technology: TWC
- Engine Integration: Refuse hauler & Class 8 truck
- Vehicle Demonstration: TBD
- Partners: Cummins, Autocar, Republic Waste

- Southwest Research Institute

- Engine: 11L natural gas engine
- Base engine: Doosan 11L diesel engine
- Technology: TWC
- Engine Integration: Autocar ACX chassis (Refuse hauler)
- Partners: Doosan, Autocar, Waste Management



# Proposals

- Emissions Solutions, Inc.

- Engine: 13L natural gas engine
- Base engine: Navistar 13L diesel engine
- Technology: TWC
- Partners: On-going

- ISE Corporation

- Engine: 6.8L natural gas engine with series hybrid
- Base engine: Ford V10 gasoline
- Technology: TWC
- Engine Integration: Transit buses
- Vehicle Demonstration: Sunline Transit & San Diego MTS
- Partners: Roush, Sunline Transit, & San Diego MTS

