

# Integrating New NGV Platform RDD&D Programs to Meet Customer Needs

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# Panelists

- ◆ Richard Parish NREL
- ◆ George Kalet FAB Industries
- ◆ Tom Cummings John Deere Power Systems
- ◆ Todd Reppert Mack Trucks
- ◆ Bruce Hodgins Westport Innovations
- ◆ Robert Strange Autocar
- ◆ Michael Stricker Freightliner

# The Issues:

## Product Cost & Availability

- ◆ Small volume production MD and HD NGVs led to very high cost and limited availability
  - High price solution - Third party integration chassis, NG engine and storage system
    - ◆ Some integrators must purchase powered vehicle replacing the engine when a glider is not available
  - Discounted price of glider (when available) over the powered unit is minimal
  - Storage system costs escalated due to increase customer demand for extended range

# The Issues:

## Inconsistent Fleet Market Demand

- ◆ Broad range of vehicle types required
- ◆ Unpredictable vehicle ordering cycle
- ◆ Determination of production driven by numerous fleets for Manufacturers and integrators
- ◆ Fragmented market condition drives NGV RDD&D platform development

# The Principles

- ◆ Acknowledge commercial vehicle alternative fuel products require similar levels of engineering development as diesel products
- ◆ Technology development must target long term improvements in customer economics, moving towards commercial availability
- ◆ Multiple industry collaborations required for success

# Market Conditions Needed for Full Product Commercialization

- ◆ Investment justification reflected in significant volume
- ◆ Demonstrate product life cycle cost must equal or better diesel
- ◆ Fuel availability and long term price differentials are needed
- ◆ Positive, long-term commitment from government agencies for adoption of low-emissions or petroleum reducing solutions (energy security and GHG reduction)

# Economic Conditions

- ◆ Customer economics improve with:
  - Long term security fuel cost advantage over diesel
  - High fuel efficiency NG engines (relative to diesel engines)
  - High fuel consumption applications (heavy loading, extended operation)
  - Low range requirement (reduce tank size and cost)
  - Compatible with centralized or corridor refueling (limits infrastructure requirements)
  - Funding to offset initial capital cost

# Development of Market Pull Utility & Public Fleet Council

## ◆ CVEF established UPFC to:

- Accelerate manufacturers' development and commercialization of new NGV platforms
- Facilitate communication between:
  - ◆ Utility and public fleet administrators
  - ◆ Equipment vendors

# UPFC's agenda topics include:

- ◆ Assessing utilities', governments' and other public fleets' NGV preferences and performance specifications
- ◆ Leveraging buying power to increase number and types of NGVs offered in marketplace at lowest possible cost
- ◆ NGV maintenance and other technical support issues
- ◆ Development of total life-cycle cost analyses and other tools to evaluate NGVs vis-à-vis other options
- ◆ Implementation of effective EPACT compliance policies and procedures

# DOE/National Lab Perspective

- ◆ Reduce dependence on imported petroleum
- ◆ Improve energy security
- ◆ Conduct R&D on “high risk” technologies the private sector cannot afford to pursue alone
- ◆ Validate R&D activities through testing and evaluation

# DOE/National Lab NGV Activities

- ◆ Next Generation Natural Gas Vehicle activity initiated in 2000 under NREL leadership
  - Coordinated with SCAQMD and CEC
  - Well attended industry workshops helped to establish engine/vehicle development needs
  - Number of industry cost-shared medium and heavy-duty NG engine development and certification projects have been initiated and completed

# DOE/National Lab NGV Activities

## ◆ Industry/Government Coordination

### ■ Natural Gas Vehicle Technology Forum

- ◆ NGV technical progress
- ◆ Policy issues
- ◆ International impacts
- ◆ Codes and standards
- ◆ Regional partnerships

### ■ Clean Cities

- ◆ AFV information and implementation
- ◆ Technical assistance (Tiger Teams)

# Now the Panel Discussion

- ◆ Each panel member will first make brief opening remarks to clarify the issues or to make a position statement
- ◆ The audience will then direct questions to the entire panel or to individual members