Environmental and Energy Study Institute (EESI) and NAFA Fleet Management Association Briefing

Republic Services, Inc.
NGV Collection Vehicles
Energy Reduction Focus Consideration

- **CNG Trucks** – Fuel savings initiatives
- **Hydraulic Hybrid** – tests showing favorable fuel savings and performance
- **Hybrid Electric & Electric** – Potential technology if we can mitigate weight concerns
- **Telematics/Weight Mgt.** – Driver training & behavior, route optimization

**Source:**
1. South Coast Air Quality Management District 2007 Air Quality Management Summit Panel
Innovations that make the business of collection more efficient, environmentally friendly, and cost effective.
Republic’s Considerations

1. It’s the right thing to do – and it’s environmentally responsible

2. It’s cleaner – emissions are lower and increasingly alternative fuels are mandated

3. It’s local – natural gas is abundantly available from North American sources

4. It’s cheaper – current natural gas costs are lower than diesel
Solid Waste Industry

- Large NGV market segment
  - Two (2) billion gallon/year market
  - 200,000 truck addressable market
- High fuel consumption per vehicle (35-50 DGE/day)
- Fleet returns to base
- Requires less infrastructure
We have successfully operated Natural Gas Vehicles since 1995.

### 2013 NGV Deployments by City/Area

- Anaheim - 107 trucks
- Indianapolis – 79 trucks
- Houston – 104 trucks
- Fall River – 56 trucks
- Minneapolis – 23 trucks
- Philadelphia – 67 trucks
- Charleston – 53 trucks
- TOTAL – 489 trucks

**TOTAL NATIONWIDE – 1,800 + trucks**

- Built 10 fueling stations in 2013 to support the fleet deployments
- Total of 31 fueling stations nationwide.
NATURAL GAS VEHICLES BY YEAR

NGV / Plan

- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
Where Does NGV Make Sense?

Innovations that make the business of collection more efficient, environmentally friendly, and cost effective.
Deployment Considerations

- A progressive *regulatory environment*
- A large fleet near OEM Dealer Support
- Fleet *returns to base*
- A *suitable site* (e.g. access to gas pipeline, adequate space, ease of permitting, etc.)
- Fleet *composition* (link to fleet life cycle – replacement and redeployment)
NGV Challenges

NGV conversion is not a one size fits all solution. Depending on site characteristics, NGV may not be a practical solution.

- Location, Location, Location
  - Site feasibility
  - Access to adequate gas and power
  - Public infrastructure

- Shop Improvements & Permitting & Zoning

- Market competition and engine options
What is the Impact?

Innovations that make the business of collection more efficient, environmentally friendly, and cost effective.
Republic Services NGV Fill
Benefits Advantages

- **Environmental** – it’s good for our communities
  - 85% NOx reduction (less smog)$^1$
  - 23% Greenhouse Gas reduction$^1$

- **Operational** – It’s quiet and it does not smell

- **Financial** – Potential to save money

- **Customers** – Identifying with NGV

Source:
1. South Coast Air Quality Management District 2007 Air Quality Management Summit Panel
Questions?