

## 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





## Why NGV?

**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**



## Republic's NGV Experience

**We have successfully operated Natural Gas Vehicles since 1995.**

### 2013 NGV Deployments by City/Area

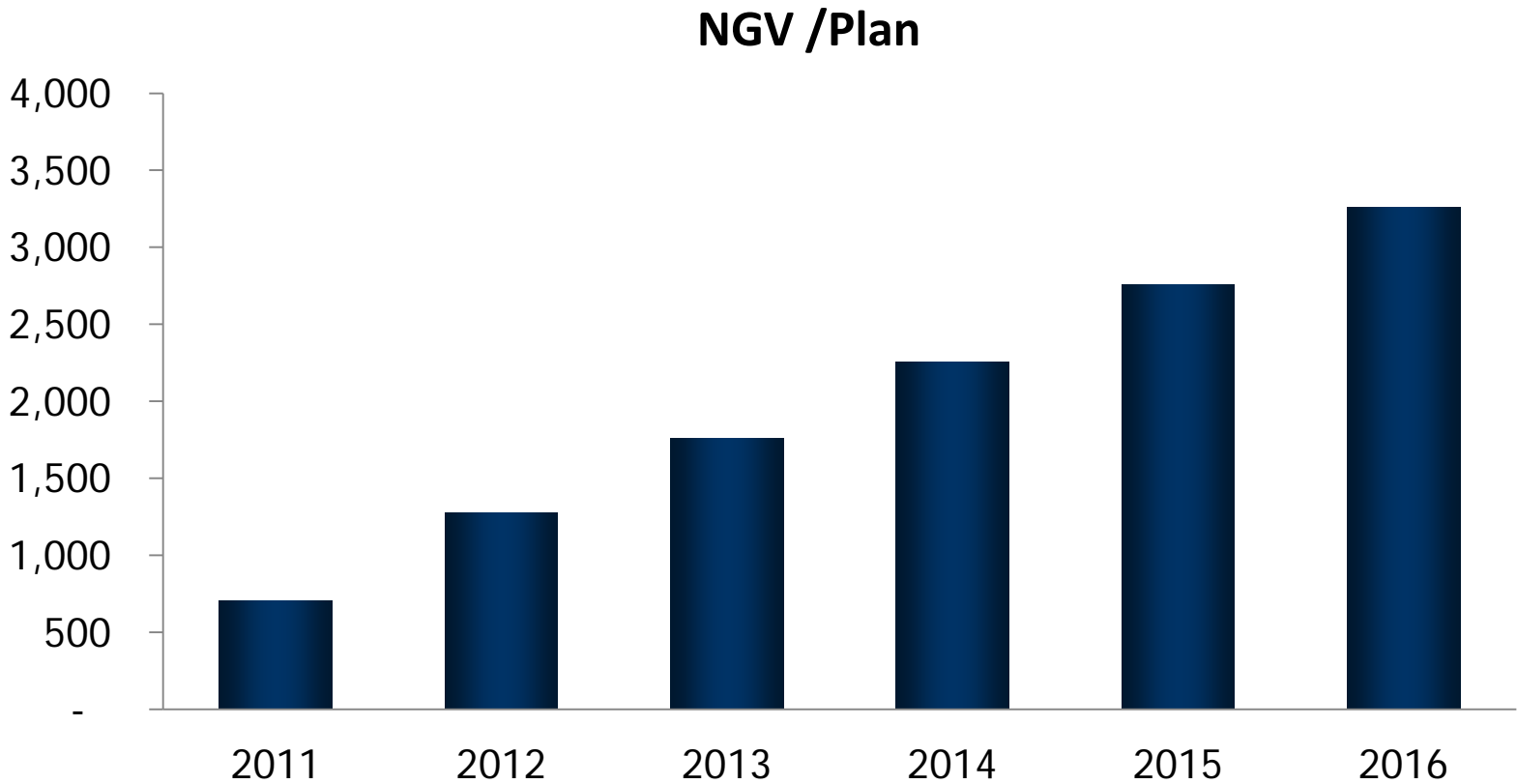
- Anaheim - 107 trucks
- Indianapolis – 79 trucks
- Houston – 104 trucks
- Fall River – 56 trucks
- Minneapolis – 23 trucks
- Philadelphia – 67 trucks
- Charleston – 53 trucks
- TOTAL – 489 trucks

**TOTAL NATIONWIDE – 1,800 + trucks**

We have  
experienced  
steady growth

- Built 10 fueling stations in 2013 to support the fleet deployments
- Total of 31 fueling stations nationwide.

## NATURAL GAS VEHICLES BY YEAR





## 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.**



# ENERGY INDEPENDENCE SUMMIT 2014

The Nation's Premier Alternative Fuels Policy Summit March 30-April 2 • Washington, DC

## Republic Services NGV Fill





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## Benefits Advantages

- **Environmental** – it's good for our communities
  - 85% NOx reduction (less smog)<sup>1</sup>
  - 23% Greenhouse Gas reduction<sup>1</sup>
- **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



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# Questions?

