



**Clean Energy**  
North America's leader in clean transportation

**Natural Gas Refuse Trucks: Overview  
Colorado SWANA**

October 6, 2011



### Compressed Natural Gas

- Utilizes existing NG distribution
- Compressed and Stored on-site
- Dispensed in Fast Fill or Time Fill
- Sold in DGE = 139,000 Btu
- Stored as a gaseous fuel onboard








**LNG Production**

Clean Energy

- ▶ Production: 300,000 Gal/Day
- ▶ 2 Million gallons of storage
- ▶ Fleet of 58 LNG Trailers
- ▶ Multiple Supply Sources
- ▶ Not prevalent fuel in SW



### Industry Update

- Currently 5,000 natural gas trucks in US
- WM, Republic & Local CO Success Stories
- Factory Direct with Cummins ISL G
- Available in Every Chassis / Body
- CE fuels over 3,500 refuse trucks daily



### Natural Gas Refuse Trucks



### Why Natural Gas in Vehicles?



**Cleaner**




**Cheaper**

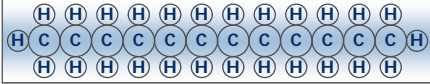


**Domestically Available**

### NG is the Cleanest Vehicle Fuel Available Today!




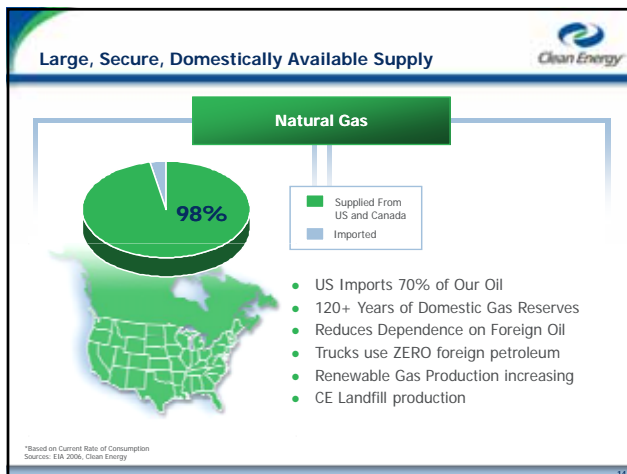
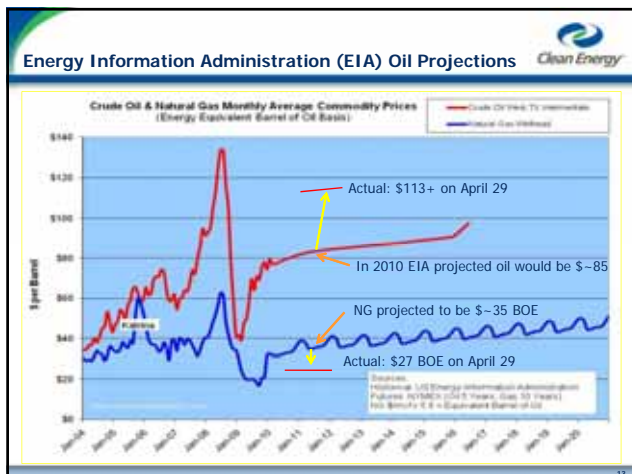
Natural Gas (CH<sub>4</sub>)



Diesel (C<sub>12</sub>H<sub>26</sub>)

- Certified to 2010 EPA Emissions
- Cleanest Heavy Duty Technology
- No particulate filters or chemical agents
- 23% Reduction in GHGs (Pipeline NG)
- 91% Reduction in GHGs (Landfill Gas)
- 90% Quieter





### Clean Energy Biomethane

- City of Dallas owns & operates landfill
- Clean Energy purchased biogas plant
- Owens all biogas / biomethane rights
- Sold to utilities or nominated to fleets
- Capacity: 9MMCFD in / 4.5MMCFD out
- Anticipate 7.5MMCFD out by 2015
- Equal to 54,000 DGE per day of fuel
- 2<sup>nd</sup> Project now in development.

### What's in it for Your Fleet?

- Substantial Reduction in Fuel Costs
- 30 Trucks @ 10,000 DGE / year = \$300,000 Savings
- Reduction in Total Truck Operating Cost
- Trash is collected by Cleaner, Quieter Trucks
- Significantly Reduce Fleet Greenhouse Emissions
- Trucks are Powered by American Fuel, Not OPEC Oil

**Project Cost and Financing** 

**Station Cost: \$700,000 - \$1.5 M**

- **Option 1:** Utilize capital to purchase station and upgrade facilities
  - Fuel Cost: NG Commodity + Utilities + Operation and Maintenance (OM) = Total Fuel Cost
  - Currently: \$1.50 per gallon in savings
- **Option 2:** Finance station. No upfront capital required. CE provides capital for station and facility modifications
  - Fuel Cost: NG Commodity + Utilities + Compression Fee (Capital Recovery + OM) = Total Fuel Cost
  - Currently: \$0.50 per gallon fuel savings




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**How Clean Energy can Help** 



**FUELING SERVICES**

**VEHICLES & CONVERSIONS**  
BAP TECHNOLOGIES

**GRANTS & FINANCE**


**SERVICE & SUPPORT**


**ENGINEERING & CONSTRUCTION**

**COMPRESSORS & EQUIPMENT**  
LAW

**LNG TECHNOLOGY & CONSTRUCTION**  
NorthStar Inc.

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