Casella Overview

- Founded in 1975 in Rutland, VT with one truck, 2013,
  - 815 collection vehicles and 1500 landfill and support
    - Currently operate in ME, VT, NH, MA, NY and PA
  - 35 hauling divisions 10 landfills, 38 transfer stations, 16 recycling facilities
    - Last year, Casella recycled over 1.5 million tons of material
Casella’s Path to CNG Power

2006 – Rise in fuel prices and new sustainability objectives precipitated a search for alternatives.

2007 – short dance with HD hybrids, investigated fuel catalysts, some bio-fuels (still used), propane, LNG.

2008-2009 – strategic plan, budget, project plan, time line

2010 – first station on line, first 6 trucks purchased, Williston, Vermont.

2011 – 2013 3 more stations, 30 trucks, NY state
Why CNG for our waste trucks?

**Business and Operating** – provides positive investment returns and reduced fuel cost volatility.

- Maintenance about equal to diesel and can be lower. No DPF or SCR, installed 3 way catalyst only.
- Natural gas delivered is one-half the cost of diesel fuel
- Natural gas prices historically less volatile and reserves estimated at 120 years??

**Sustainability** – improved emissions profile over diesel and is a transition fuel

- Simpler solution to ever tightening EPA requirements
- Only technology available that meets present emission requirements for the next 10 yrs
- Domestic fuel
- Produces less CO, VOCs, NOX and PM than gasoline or diesel - 23% less GHG
- 15 to 20% quieter than diesel trucks
CNG makes economic sense for waste trucks

**Equipment costs**

- CNG trucks cost roughly $40k more than a diesel truck (fuel cylinders and system)
- Chassis cost is equal
- CNG fueling station costs 350k to $1 million.
- Federal and some state grant money available.
- Savings in the neighborhood of **12 to $1,500 per month at 8000 DGE/yr**

- Casella received $205,000.00 through an EPA DERA Grant to help finance 3 CNG collection vehicles in Williston, VT
- Awarded NYSERDA grant of $432,500.00 to convert 7 International DT series collection vehicles for our fleets in Geneva, NY and FT Edward, NY
- Genesee Region Clean Communities through Federal Highway Administration CMAQ Program; $175,000.00
US Liquid Petroleum Dependence

What could possibly go wrong?
Arab oil embargo 1973
GLOBAL COMPETITION FOR OIL INCREASING

2009 to 2015E

CHINA
- 2.2 up to 10.1 Bbl/Person

INDIA
- 0.9 up to 5.4 Bbl/Person

Chinese vehicle ownership per capita is equal to where the U.S. was in 1925.
U.S. Average Retail Fuel Prices

- Gasolene
- CNG
- Propane
- Diesel

Cost per GGE
# Price Stability Example

## Natural Gas @ $2.88 per MCF

<table>
<thead>
<tr>
<th>INPUT</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas (divide by 7.2)</td>
<td>$0.40</td>
</tr>
<tr>
<td>Transport Costs &amp; Fees</td>
<td>$0.20</td>
</tr>
<tr>
<td>Electricity Costs per GGE</td>
<td>$0.10</td>
</tr>
<tr>
<td>Maintenance per GGE</td>
<td>$0.20</td>
</tr>
<tr>
<td>Federal and State Taxes</td>
<td>$0.25</td>
</tr>
<tr>
<td>Fuel Card Fees per GGE</td>
<td>$0.05</td>
</tr>
<tr>
<td>Retailer Profit Margin</td>
<td>$0.70</td>
</tr>
<tr>
<td>CNG at the Pump</td>
<td>$1.90</td>
</tr>
</tbody>
</table>

## Natural Gas @ $5.76 per MCF

<table>
<thead>
<tr>
<th>INPUT</th>
<th>COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas (divide by 7.2)</td>
<td>$0.80</td>
</tr>
<tr>
<td>Transport Costs &amp; Fees</td>
<td>$0.20</td>
</tr>
<tr>
<td>Electricity Costs per GGE</td>
<td>$0.10</td>
</tr>
<tr>
<td>Maintenance per GGE</td>
<td>$0.20</td>
</tr>
<tr>
<td>Federal and State Taxes</td>
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</tr>
<tr>
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<td>$0.05</td>
</tr>
<tr>
<td>Retailer Profit Margin</td>
<td>$0.70</td>
</tr>
<tr>
<td>CNG at the Pump</td>
<td>$2.30</td>
</tr>
</tbody>
</table>
Decoupling of natural gas and oil due to the “Shale Gale”

- Crude Oil (left)
- Natural Gas (right)

Source: FactSet Research Systems
# NGV Around the World

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Vehicles</th>
<th>% of Total NGVs Worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran</td>
<td>2,859,386</td>
<td>18.82%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>2,850,500</td>
<td>18.76%</td>
</tr>
<tr>
<td>Argentina</td>
<td>1,900,000</td>
<td>12.50%</td>
</tr>
<tr>
<td>Brazil</td>
<td>1,694,278</td>
<td>11.15%</td>
</tr>
<tr>
<td>India</td>
<td>1,100,000</td>
<td>7.24%</td>
</tr>
<tr>
<td>China</td>
<td>1,000,000</td>
<td>6.58%</td>
</tr>
<tr>
<td>Italy</td>
<td>779,090</td>
<td>5.13%</td>
</tr>
<tr>
<td>Ukraine</td>
<td>390,000</td>
<td>2.57%</td>
</tr>
<tr>
<td>Columbia</td>
<td>348,747</td>
<td>2.30%</td>
</tr>
<tr>
<td>Thailand</td>
<td>300,581</td>
<td>1.98%</td>
</tr>
<tr>
<td>USA</td>
<td>114,000</td>
<td>.84%</td>
</tr>
</tbody>
</table>
Fueling Infrastructure

1. Infrastructure/gas supply partner
   - Full service: commodity, maintenance, electricity, capital and operation.
   - Requires long term contract for commodity
   - Roll all costs into commodity cost

2. In house effort; construction and gas supply
   - Substantial effort for a medium size company
   - Planning, engineering, construction.
   - Requires an internal champion/project manager
   - Negotiate own commodity supply deal
Gap Analysis

1) Station load profile, gas and electricity vs demand
2) Adequate gas supply
3) Emergency procedures, emergency power
4) Shop upgrade
5) Vehicle specifications
6) Vehicle fuel capacity
7) Mileage penalty is a reality, use +- 10%
8) O&M
9) Sighting/permitting
10) CAPEX
11) Training
12) Fueling redundancy
Casella first “Time Fill” CNG station in Williston, VT

Compressors and Controls

Time Fill Post Dispensers

Time Fill Post Dispensers – Truck Hookup
Casella’s CNG Station In Horseheads NY
Williston, VT – 2 x 40HP Compressors
Cummins Natural Gas Line Up

ISB6.7 G
- Displ: 6.7 L
- Power: ~260 hp
- Torque: ~660 lb-ft
- Cert: EPA 13, Euro 6

ISL G
- 8.9 L
- 320 hp
- 1000 lb-ft
- EPA 13, Euro 6

ISX12 G
- 12 L
- 400 hp
- 1450 lb-ft
- EPA 13

ISX 15 G
- 15 L
- 450 hp
- 1750 Lb-ft

Cummins Confidential
Casella Partners

POWERED BY

www.americannaturalgas.com
Geneva, NY
## Fleet-to-Date

<table>
<thead>
<tr>
<th>Location</th>
<th>Dedicated CNG</th>
<th>Dual Fuel Vehicles</th>
<th>Stanchion Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Williston, VT</td>
<td>8</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>Geneva, NY</td>
<td>9</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Ft Edward, NY</td>
<td>11</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Elmira, NY</td>
<td>7</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2 dual fuel tractors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For more information, please visit:

**casella.com**

Peter Vanderhoof
[ peter.vanderhoof@casella.com]

Thanks!