RNG Alternative Fuel

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Mission Statement:

To provide an efficient and cost effective solid waste management program which protects the environment and conserves natural resources.
Landfill Biogas Basics
What is CNG?

- CNG - Compressed Natural Gas (methane)
- Compressed to 3600 psi
- Used as vehicle fuel

What is RNG?

- CNG derived from biogas
- WWTP, digesters, landfills, etc
Decomposing Waste Produces Landfill Gas

- Landfill Gas Components
  - Methane – 55%
  - Carbon Dioxide – 40%
  - Nitrogen – 5%
  - Oxygen – Less than 0.5%
  - VOCs, H2S, Siloxanes, H2O, etc

- Gas Temperature 80-120°F

Energy!!!

Added Value?
Gas Collection

Gas extracted via wells
Gas Collection

Collection Pipes

• Header Pipe
• Condensate
• Clean Outs
Use of Biogas Resource
Why RNG?

- **Financial**
  - Less than $2.00/gallon
  - Less price fluctuation
  - Revenue source for landfills

- **Domestic Fuel Source**
  - Security
  - Local jobs

- **Noise** – 80-90% reduction

- **Safe**

- **Environmental Benefits**
Environmental Benefits

Burns Cleaner

- Vehicle maintenance
- 60–90% less smog-producing pollutants
- 30–40% less GHG emissions
- Lower carbon intensity
# Environmental Benefits

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Carbon Intensity (gCO2e/MJ)</th>
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</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>95.86</td>
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<tr>
<td>CNG from Pipeline</td>
<td>68.00</td>
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<tr>
<td>CNG from Digester</td>
<td>13.45</td>
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<tr>
<td>CNG from Landfill</td>
<td>11.26</td>
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http://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf
Biogas Project Development
Dane County Future – High BTU

- County ownership
- Private O&M for first 3 years
- $28M capital
- 4 year pay back

Revenue streams
- Gas – compared to frac gas
- RINs (Renewable Identification Number)
  - Federal program: Renewable Fuels Standard (RFS)
- LCFS (Low Carbon Fuels Standard)
  - California program
Dane County’s Future – High BTU
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Questions?

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