Biogas as a Waste Management Solution

Turning “Waste” into Resources

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How Biogas Systems Work

Manure (e.g., dairy, swine)

Wastewater Biosolids (e.g., Primary/Secondary Sludge)

Food Waste (e.g., Household, Restaurant, Hospitality, Grocery)

Other Organics (e.g., FOG, Crop Residue, Brewery Waste)

Anaerobic Digestion

Biogas

Electricity

Heat

Vehicle Fuel

Pipeline Gas

Digestate

Fertilizer

Animal Bedding

Other Products (e.g., building material, erosion control)
U.S. Biogas Market – Current and Potential

- **Operational Biogas Systems**
  - 2,200+
  - 1,269 Water (860 using their biogas)
  - 66 Food Scrap
  - 645 at Landfills

- **Potential New Biogas Systems**
  - 13,500+
  - 3,888 Water (incl. 380 not using their biogas)
  - 931 Food Scrap
  - 440 at Landfills

- **On Farm**
  - 8,241 (dairy, swine only)
  - 253 (dairy, swine only)

- **Water at Landfills**
  - 665

- **Food Scrap at Landfills**
  - 66

- **American Biogas Council**
  - [americanbiogascouncil.org](http://americanbiogascouncil.org)
AD vs. Solar/Wind

Biogas/AD Systems Are Worth It

• Capacity factor:
  – Solar: 17% (EIA, NJ) CapEx x 5.6
  – Wind: 22% (average worldwide) CapEx x 4.3
  – Biogas/AD: 95% (DOE, UW) CapEx x 1.1

• How much are the non-energy benefits:
  – Organic material management
  – Odor reduction
  – Nutrient recycling
  – Reduced or negative GHGs
  – Watershed protection
  – More jobs
  – Ongoing supply chain activity
Don’t care about supporting renewable energy?

• **With what infrastructure will we manage:**
  - 66,500,000 TONS of food waste each year
  - The sludge from 31 BILLION gallons of wastewater EVERY DAY
  - The manure AND NUTRIENTS from 8 BILLION cows, chicken, turkey and pigs

• **Where will the nutrients for US agriculture come from?**
  - 12,840,000 short TONS of nitrogen (N) needed
  - 4,321,000 short TONS of phosphate (P₂O₅) needed
  - Nitrogen is mostly made from ammonia using fossil fuels
  - Phosphorus mining in the US creates radioactive waste—or we import it

• **13,500 US Biogas Systems =**
  - $40 billion in capital deployment
  - 335,000 short-term construction jobs and 23,000 permanent jobs
Let’s work together to develop better policy

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