DYNAMIC

Creating a better future… Today

Biogas Utilization

Wisconsin Biogas Conference

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Dynamic Group – Who Are We?

- Dynamic Group is a leading developer of organic waste project solutions.
  - Anaerobic digestion
  - Landfill diversion
  - Nutrient concentration/Water treatment
- Technology Agnostic
- More than 60 years combined experience in the organic waste industry.

Dynamic Group – What do we Do?

- Dynamic transforms innovative ideas and technologies into efficient solutions by integrating systems.

- Dynamic provides a broad range of consulting services in organic waste management and renewable energy.

Project Development
Consulting
Feasibility Studies
Design Engineering
Anaerobic Digestion

Water Treatment
Operations & Maintenance
Constructing Management
Technology Review
Permitting

Biogas Utilization

Biogas is a methane rich fuel produced through the breakdown of organic matter in the process of anaerobic digestion.

Biogas can be used in a variety of different manners efficiently harness the fuels energy potential. Three of the primary uses are:

1. Renewable Energy
2. Direct Use
3. Renewable Natural Gas (RNG)

Renewable Electricity

Biogas used as fuel for CHP to produce renewable electricity and heat.

Most Common installation/use of biogas from anaerobic digestion over previous decade.

Utilities no longer willing to pay a premium for electricity as renewable requirements/ portfolios have been filled.

Currently Utilities are offering power purchase rates of $0.03 - $0.05/kWh.

Typical anaerobic digestion facility will require $0.09/kWh or better to create a favorable economic return to investors.

Direct Use

Lowest capital cost uses of for biogas

Competition with current low cost of natural gas negatively impacts project returns.

Challenges exist matching gas production rates and gas utilization rates.

Farm use for creating dry dairy fiber for bedding from dewatered digester solids.

Industrial use by co-location near large industrial natural gas user willing to pay a premium for renewable aspect of the biogas to offset a fraction of their natural gas use.

Renewable Natural Gas (RNG)

CO2 and other impurities are removed from the biogas, increasing methane content and quality to the same pipeline standards for natural gas.

Capital cost is similar to that for use as renewable energy.

Requires geographic location near existing gas transmission pipeline, limiting availability.

CNG opportunities limited by additional infrastructure and transportation partners.

Current market for RNG offers a premium over natural gas due to the value of environmental credits in todays market.

RNG Environmental Credits

RINs are renewable identification numbers used to identify and tack biofuel production tat obligated parties need to demonstrate blending for compliance with renewable fuel standards (RFS).

D3 of the RFS includes ethanol, renewable diesel, and now renewable natural gas.

The value of qualified biogas fluctuates based on trading prices of three primary revenue components:

1. Commodity Gas Price
2. RIN Credit
3. California LCFS Credits

At current trading prices for the three previously identified components there is a market to sell qualified biogas at a price in excess on $20 per MMBtu at the point of injection into the pipeline.

Questions??

Thank You From the Dynamic Team

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Let Dynamic help solve your Organic Waste needs today!

Visit us on the web: www.dynamicgrp.us