Power with Purpose™

Development and Commissioning of a Biogas Project – A StormFisher Perspective

Agenda

General Description of a Project

Feedstock

Engineering/Construction

Fertilizer

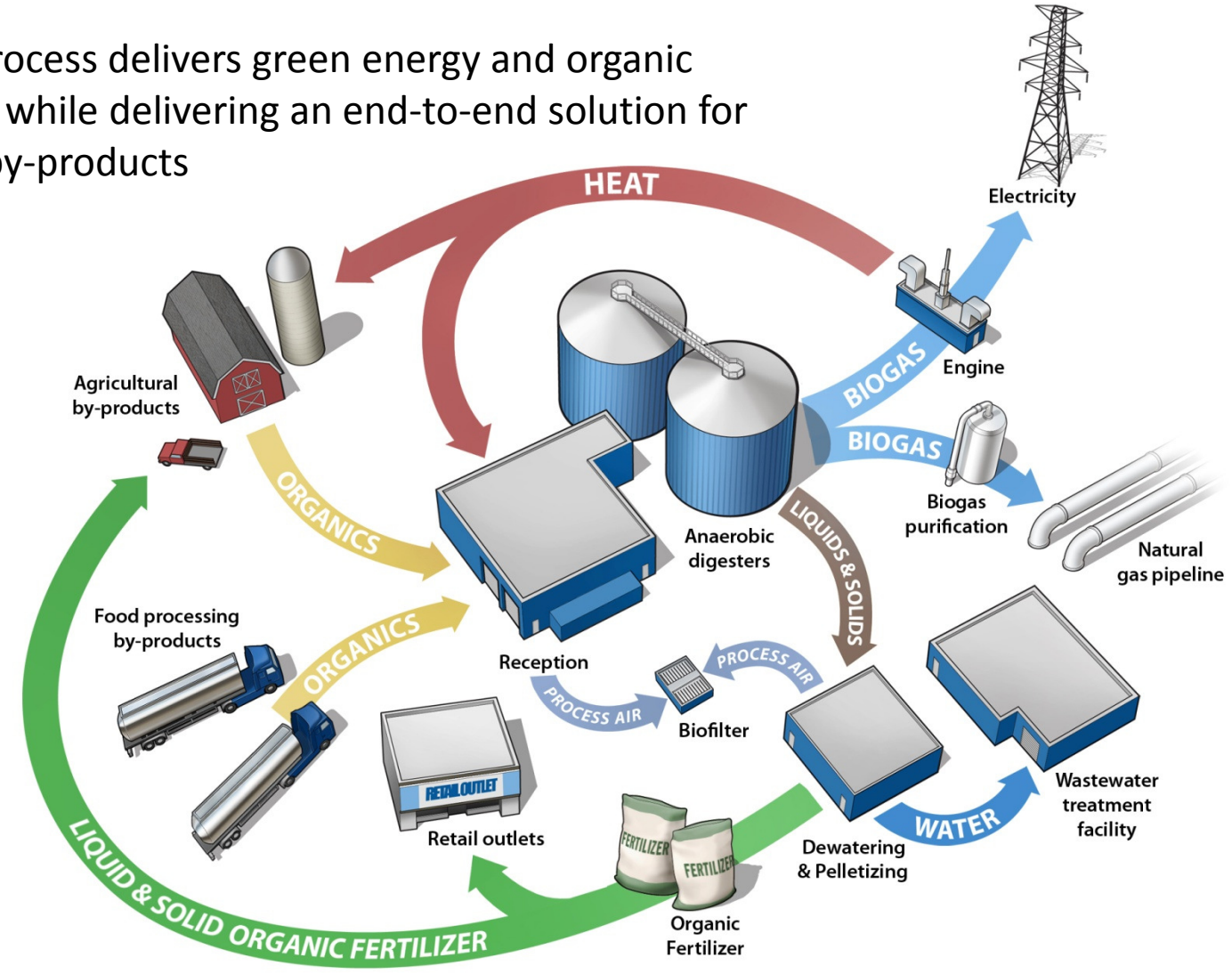
Risks/Mitigants

Questions

StormFisher BIOGAS

Biogas Process

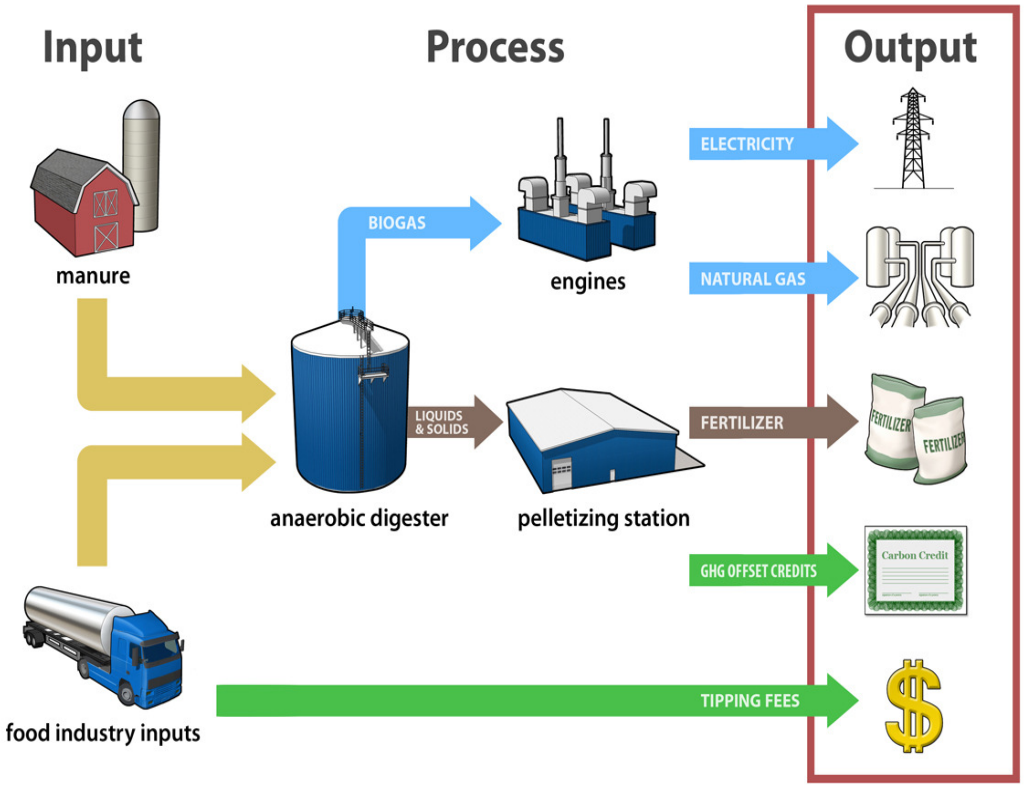
Biogas process delivers green energy and organic fertilizer, while delivering an end-to-end solution for organic by-products



StormFisher BIOGAS

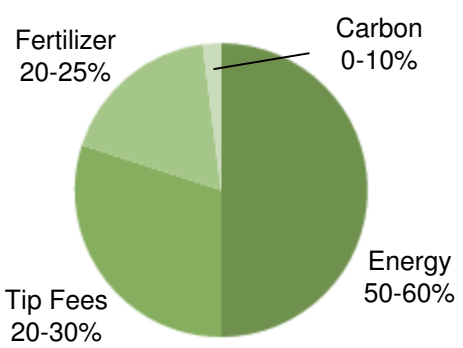
StormFisher generates income from energy production, fertilizer sales, GHG offset credits sales, and tipping fees

StormFisher Business Model



- Feed-in tariff or similar program
- Attractive rate offer for gas injection
- Premium demand in local markets
- GHG provides project upside benefit
- High landfill fees / enforcement

StormFisher Project Revenue Profile



Agenda

General Description of a Project

Feedstock

Engineering/Construction

Fertilizer

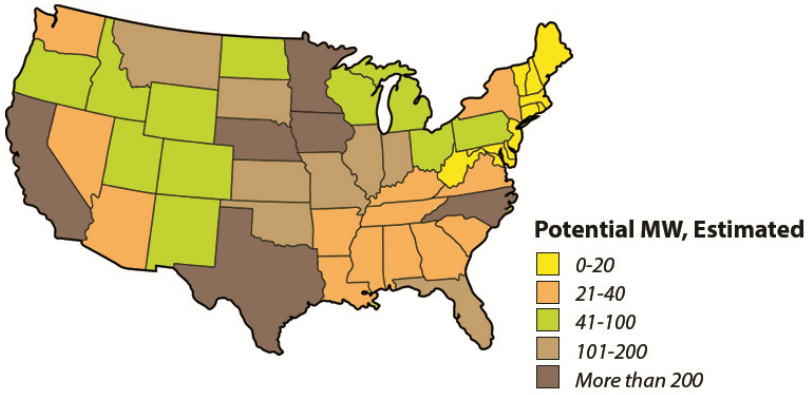
Risks/Mitigants

Questions

StormFisher BIOGAS

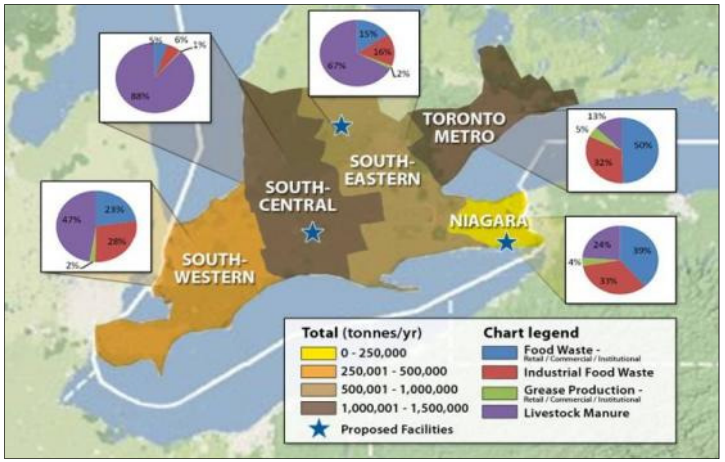
Vast availability of diverse feedstock illustrates the large untapped biogas market in North America

Manure Power Potential (MW)



Source: "Combined Heat and Power Market Potential for Opportunity Fuels", August 2004 by Resource Dynamics Corporation for US DOE - Potential MW for Animal Farm Anaerobic Digestion Projects by State, StormFisher

South-Western Ontario Organics By-Products (mt/year)



Source: RSS Consulting

- The combined manure and food processing market potential exceeds 8,700 MW in the continental US, enough to build **2,200 of StormFisher average-sized plants (2.8MW)**
- **Availability of feedstock will continue to grow** as regulations dealing with landfill diversion and manure management become more stringent

StormFisher BIOGAS

StormFisher's feedstock sources are diverse and are focused on sources that generate disposal fees

- StormFisher's plants are capable of using a diverse range of organic wastes providing a buffer in the event of downturns in particular industries (e.g. Swine flu), or development of alternative uses for feedstocks (e.g. biodiesel from fryer oil) and changes in consumer trends
- Focus is on feedstocks that are currently disposed of by land-filling, composting or land application (waste of waste) due to availability of disposal fees

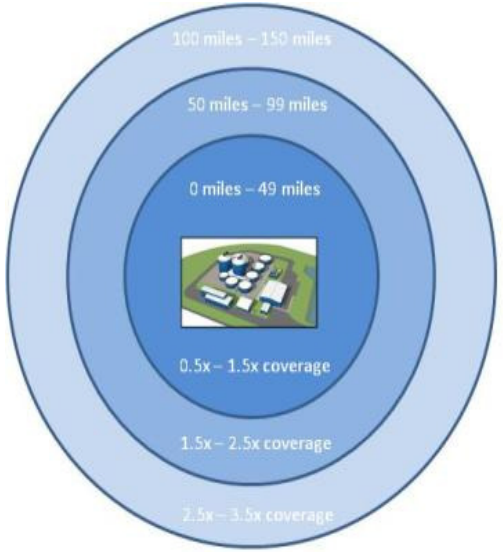
Acceptable Feedstock Description Chart

Type of Organic By-Product (Feedstock)	Dominant Disposal Method	Disposal Fees (US$/tonne)
High Energy (Category A) • Dissolved air flotation slurry (DAF) • Mixed processed meat wastes • Grease trap and interceptor contents • Animal blood	**Landfill, compost**	**$30-$60**
Medium Energy (Category B) • Secondary food processing waste (i.e. packaged food) • Grocery waste • Restaurant waste • Institutional waste • Dairy processing wastes • Cereal and grain waste	**Landfill, compost, land application**	**$20-$75**
Low Energy (Category C) • Dairy, Cattle, Pig, or Chicken manure • Industrial aerobic sludge	**Land application**	**$0– $40**

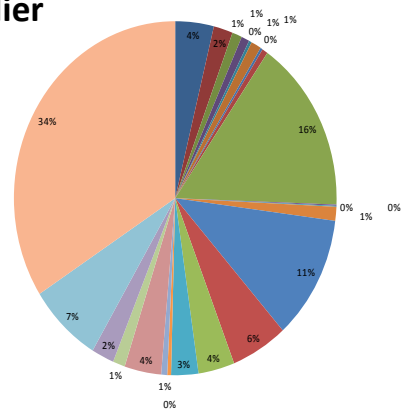
A multi-pronged approach to feedstock selection minimizes feedstock supplier risk

- Sites are screened based on the abundance and quality of organic by-products, and diversity of suppliers. We target a minimum **coverage ratio of 3-5x within a 150-mile radius**
- Lock in suppliers by offering **preferred pricing and** a **secure and reliable disposal method**
- Large volume supply relationships have more stringent contracts to protect against concentration risk; suppliers view StormFisher as **a strategic partner in their waste management practices and environmental and social initiatives**
- It is expected that higher prices can be obtained for feedstocks upon signing contracts once the facility has entered production since discounts were offered to attract suppliers

Target Feedstock Supplier Coverage Ratio by Distance



Typical Plant Recipe Volume by Feedstock Supplier

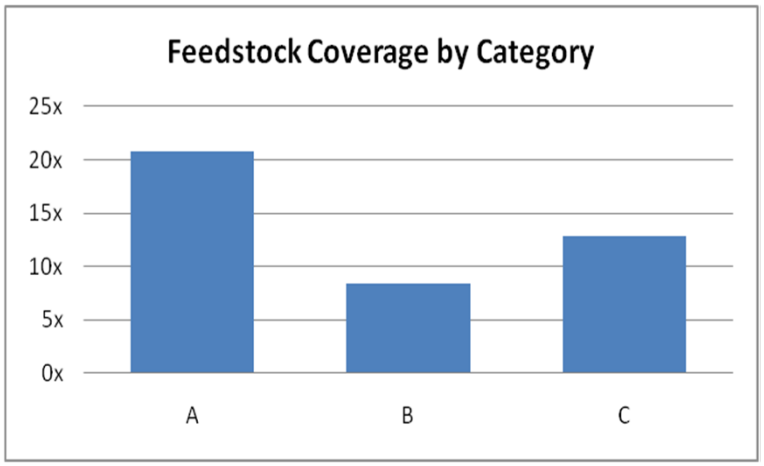


Contracts with multiple suppliers **reduces dependency on single sources of feedstock**

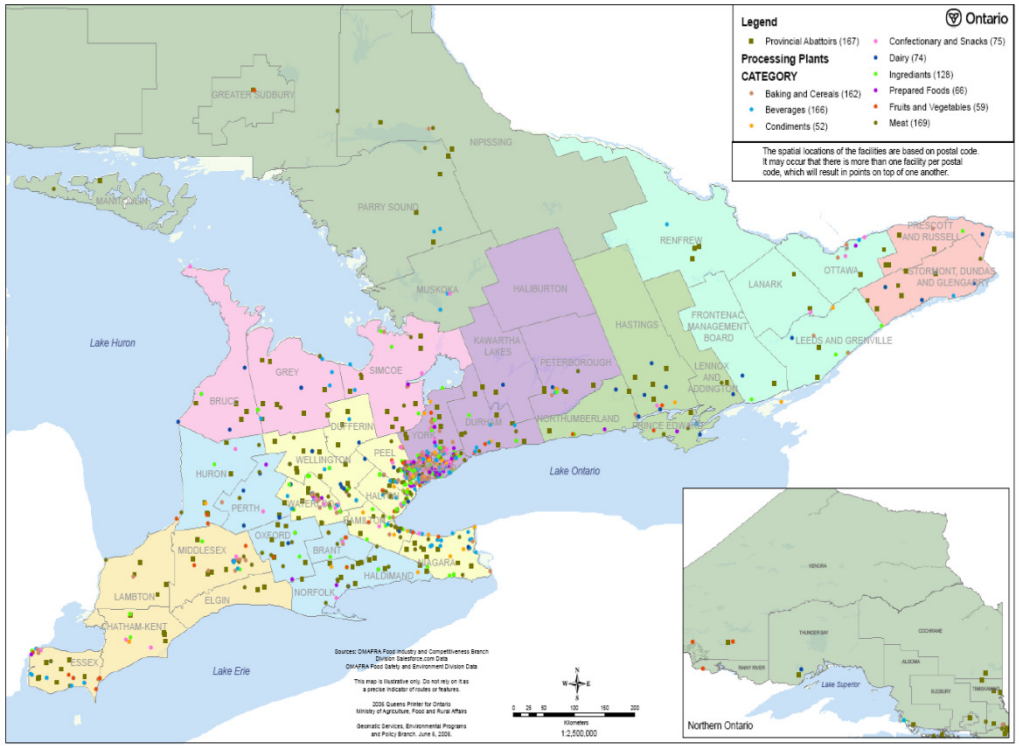
StormFisher BIOGAS

With extensive market knowledge and an experienced team, we have contacted over 800 feedstock suppliers in Ontario

- StormFisher has had discussions with:
  - **Over 800 feedstock suppliers identified in Ontario**
  - **>1,750,000 tonnes/year**
  - **Over 35 MW of generation potential**
- Dedicated organics feedstock team which has developed extensive relationships with the food processing and the waste hauling industries
- StormFisher's team has **years of experience in food and agriculture** and has developed strong ties with food by-product generators and farms



Major Feedstock Locations by Plant Type



Food Processors are becoming increasingly environmentally active, driven by consumer demand and regulatory pressure

StormFisher's partnership with Loblaw was reported on by the Globe and Mail, Canada's best known newspaper

StormFisher BIOGAS

Loblaw COMPANIES LIMITED

For Immediate Release

STORMFISHER BIOGAS AND LOBLAW COMPANIES LIMITED TO CREATE ELECTRICITY FROM ORGANIC TRIMMINGS

New StormFisher facility to create renewable energy to support local power grid

London, ON. (October 19, 2009) StormFisher Biogas and Loblaw Companies Limited (Loblaw) announces an agreement that will see all the organic trimmings produced at Loblaw corporate grocery stores in South Western Ontario diverted to StormFisher's new renewable energy facility in London, Ontario. Through this agreement, StormFisher will provide Loblaw with an additional location to convert their organic trimmings to renewable energy and Loblaw becomes the first grocery retailer to work with StormFisher to have its organics used to generate electricity.

ReportonBusiness.com

POWER GENERATION

Inniskillin Wines taps into recycling

Cuts a deal with biogas developer StormFisher to take grape seeds and skins and turn them into electricity

RICHARD BLACKWELL
November 15, 2007

One of Canada's top wineries is gearing up to generate a new byproduct from the wine-making process - electricity.

Inniskillin Wines of Niagara-On-The-Lake, Ont., said yesterday it has signed a deal with startup biogas developer StormFisher Biogas, to take the skins and seeds left over after the wine-making

StormFisher's partnership with Inniskillin Wines was covered by over 180 news agencies in 15 countries and 12 languages

BIOGAS

StormFisher has developed a logo that can be used by our clients to indicate that their organic waste is being used in a way that helps the environment

StormFisher BIOGAS

A competitive process, scope of acceptable materials and reliability of disposal are pivotal to StormFisher's competitive advantage

Alternative Organic By-Product Disposal Methods

Disposal Method	Disposal Cost	Market Constraints
Landfill	C$30-60/mt + transportation	• Organic diversion legislation expected shortly will set firm targets • Consumer/customer pressure for sustainable supply chain management
Composting	C$35-75/mt + transportation	• Prefer leaf and yard waste (carbon) • Seasonal constraints do not allow for reliable client services
Land Application / Animal Feed	C$0-25/mt	• Compete for liquid materials & vegetable/bakery waste • New feed regulations prohibit material in same building as meat going to feed
Farm-Based Biogas Plants	>C$20-50/mt + transportation	• Limited ability to accept wide variety of materials due to small reception areas

Agenda

General Description of a Project

Feedstock

Engineering/Construction

Fertilizer

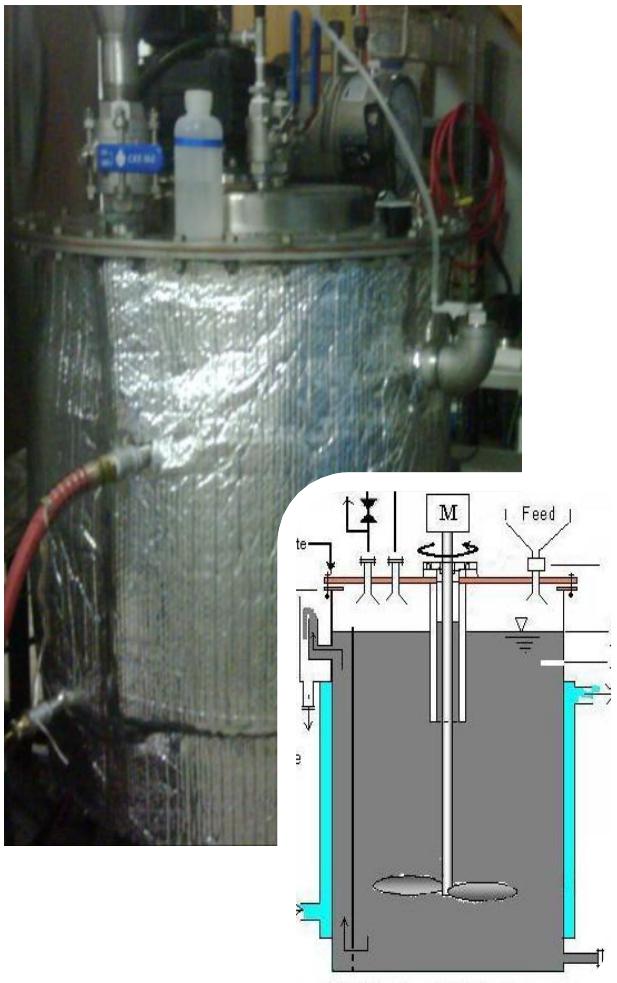
Risks/Mitigants

Questions

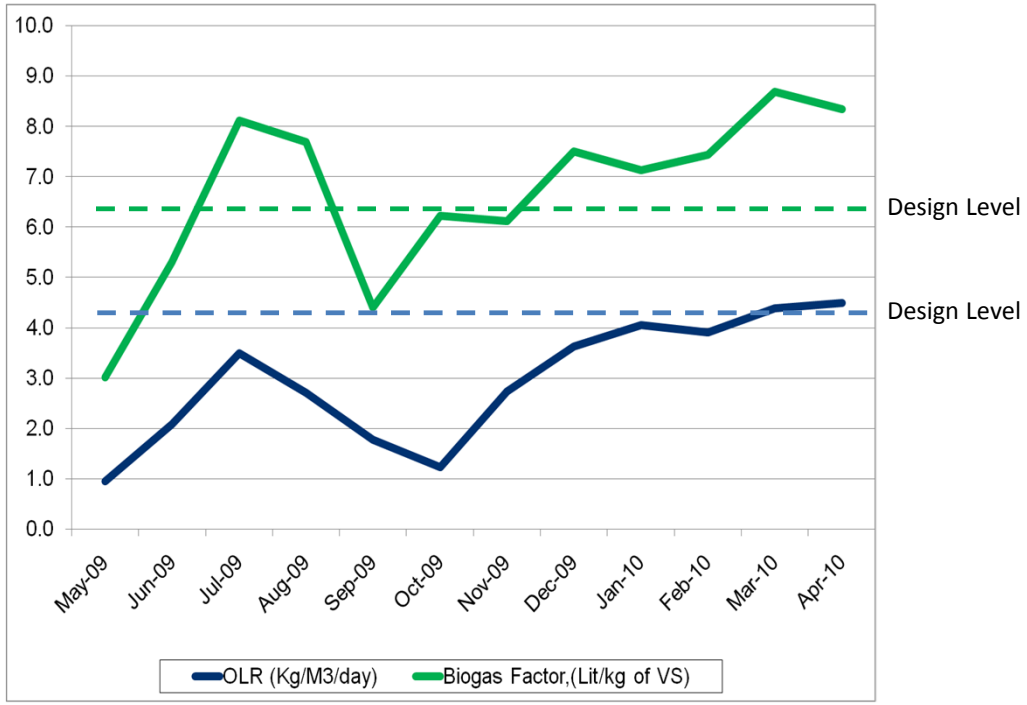
StormFisher BIOGAS

Using a representative recipe in our pilot digester, we have verified that design parameters have met and even exceeded expectations

StormFisher's Pilot Unit



Pilot Unit Actual Biogas Production vs. Design Level

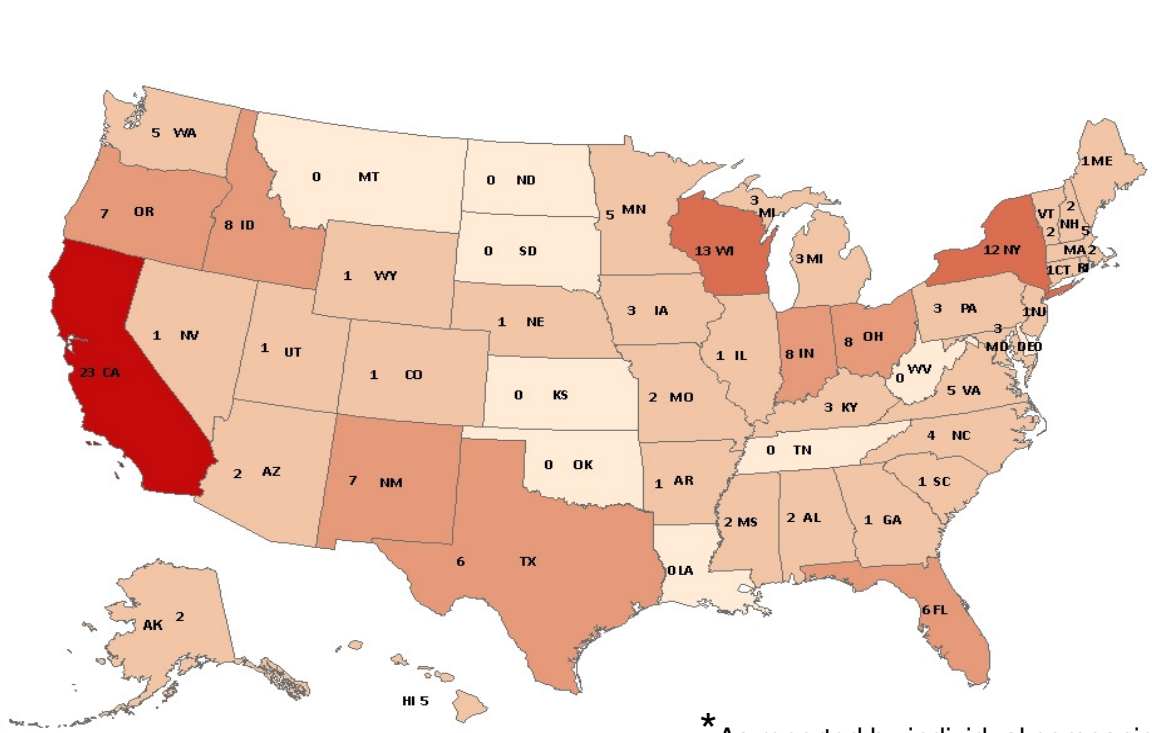


(Feed Rate) (Biogas Production)

StormFisher BIOGAS

Where Companies are Developing Biogas-Electricity Projects

- Total Projects: 324*
- Total Power Capacity: 649 MW*
- Total Industry Investment: $3.5 billion
- Average: $5.74 million/MW
- Average: $12.6 million/project



Number of Companies Developing 1603-Eligible Projects Now (Avg projects/company/state: 2.6)

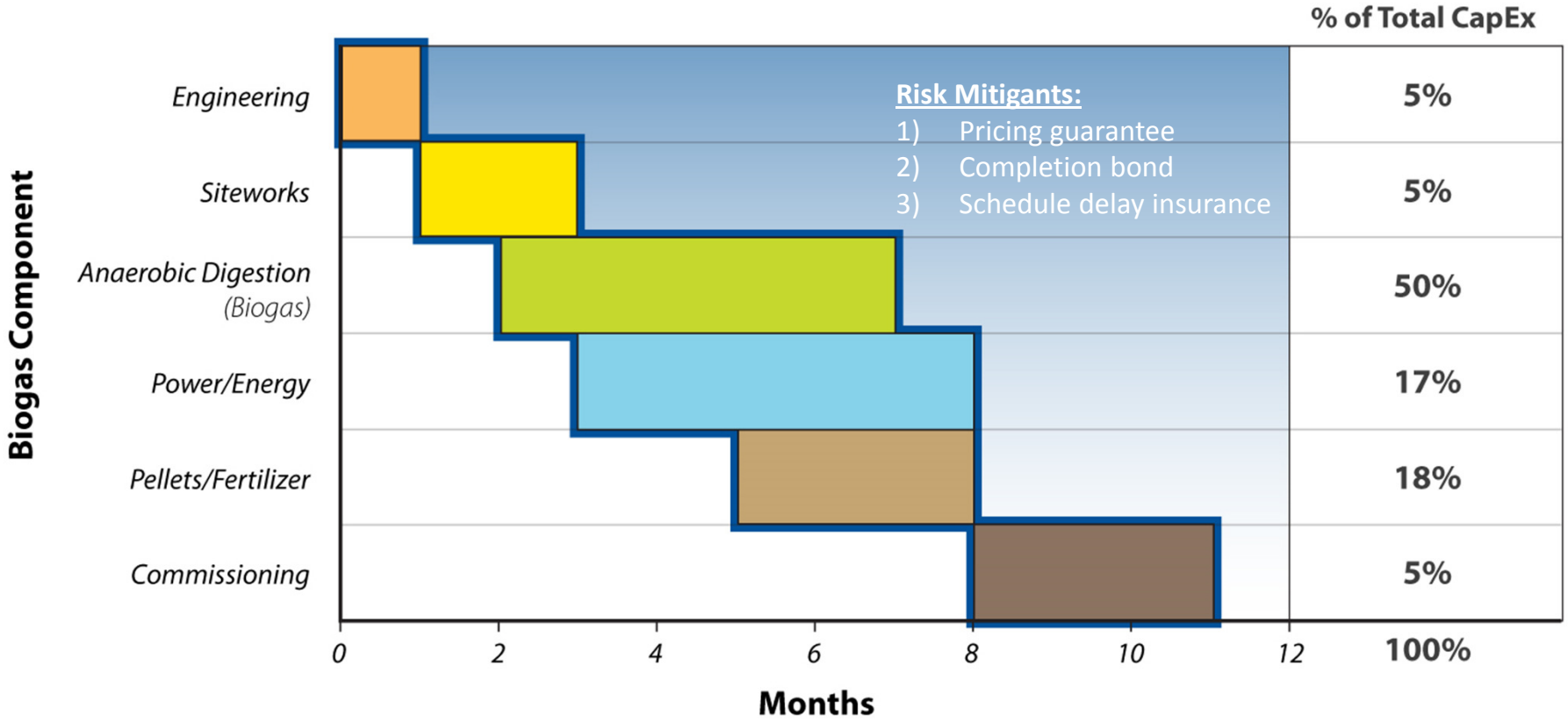
- 0
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 - 25

*As reported by individual companies to the American Biogas Council, Fall 2011

Information courtesy of ABC

StormFisher forecasted construction to take 8-12 months and attain full commercial operation 3-4 months later

Construction Timeline and Capex Breakdown



The Renewable Natural Gas and CNG Revolution Has Begun

- Gasoline and diesel costs continue to rise
- Renewable CNG is used worldwide as a vehicle fuel
  - More than 50% replacement in vehicles in Sweden, Denmark and other countries
  - Powers small and large vehicles (scooters to semis)
  - Well proven and safe
  - Solid waste sector is leading the way

StormFisher BIOGAS

Agenda

General Description of a Project

Feedstock

Engineering/Construction

Fertilizer

Risks/Mitigants

Questions

StormFisher BIOGAS

The feedstock processed in the biogas plant will produce a high-grade organic fertilizer desirable across several markets

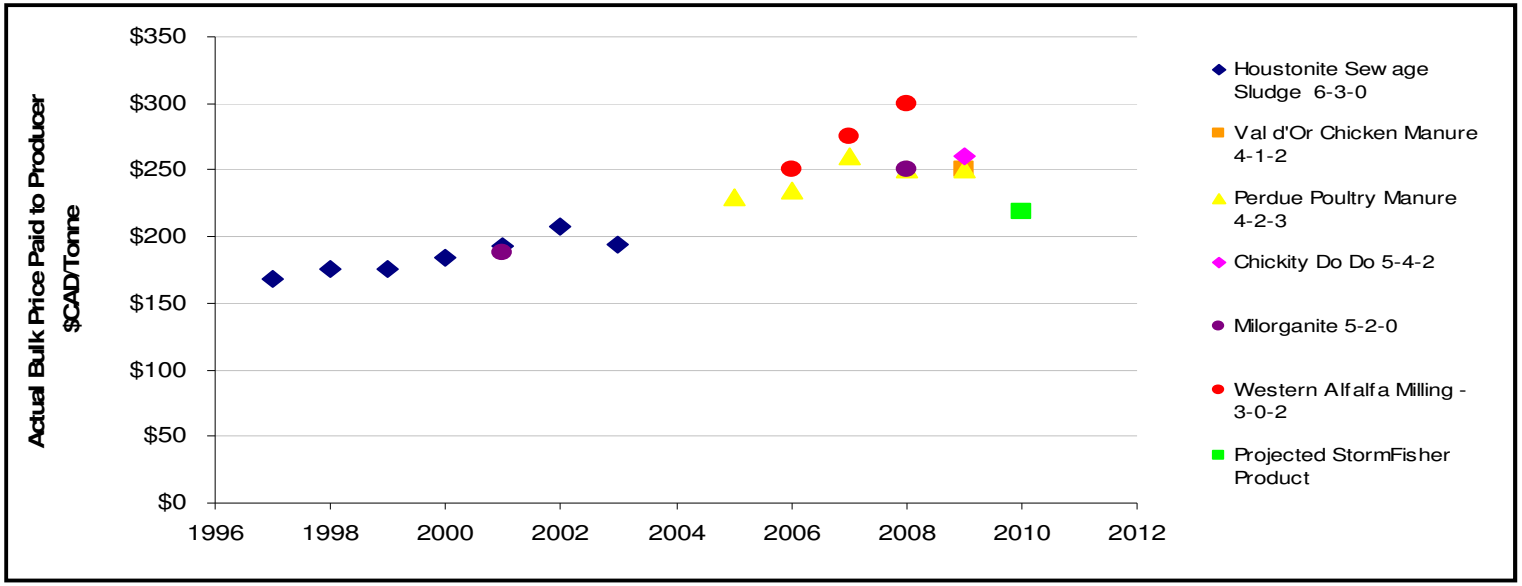
- Our biogas projects will produce a high-grade organic fertilizer with 60-85% organic content and a nutrient breakdown of 4-5%-N, 3-4%-P and 1-2%-K. The fertilizer can be used primarily in agriculture, horticulture, professional turf, and retail lawn and garden applications and is a safer alternative to synthetic fertilizers.
- The fertilizer can be sold in either 2-4 mm granular or 6-10 mm pellet form. The high macronutrient and organic contents, low odor, neutral pH and dark color are all attributes that customers find appealing. Initial growth trials indicate that growth performance is as good or better than other organic fertilizers currently available.
- Samples of a representative product have been laboratory tested for pathogens and metals and are below levels of concern. We have previously sought out licenses to sell these products in Canada and in the US which is handled on a state-by-state level.
- We looked at wholesaling to other fertilizer blenders and/or distributers and not selling direct to retail.

Photo of Proxy material made in Germany

StormFisher BIOGAS

Historical fertilizer prices support a price point of C$200/tonne based on the product's NPK and organic content value

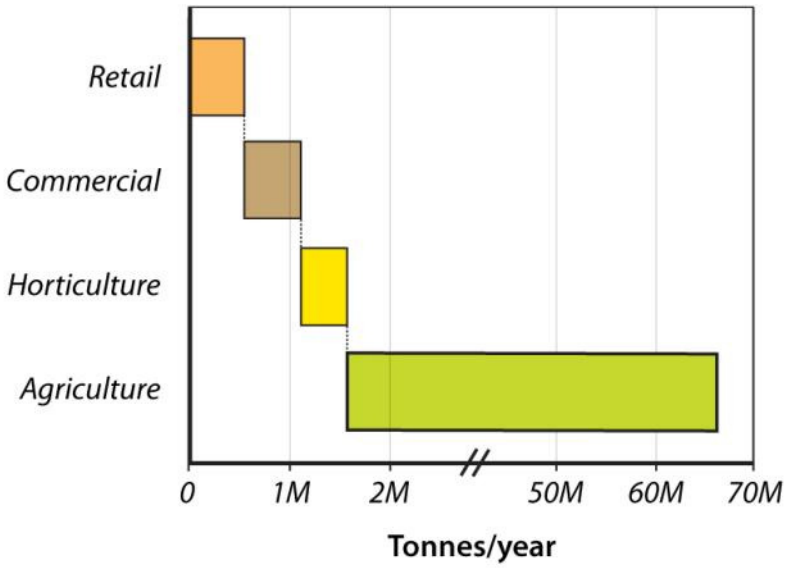
Fertilizer Prices of Similar Products



- Prices for organic fertilizers are trending upwards and are expected to continue as customers seek alternatives to synthetic fertilizers and local jurisdictions and watershed management districts restrict the usage of synthetics.
- The fundamental value of the StormFisher fertilizer product comes from filler and nutrient value (C$140/tonne). Contract prices upwards of C$200/tonne reflect the organic premium for the product.
- Organic fertilizers are currently only 6% of the 55 million tonne/year U.S. market; the market is dominated by synthetic fertilizer. While the organic market is currently small, it is expected to grow as many consumers and local jurisdictions demand greater availability and use of organic fertilizers. Additionally, synthetic fertilizers depend heavily on fossil fuel inputs which will continue to drive prices higher.
- The primary market for the StormFisher product is wholesalers who will then either blend it with synthetics or directly retail the product.

The market impact of a biogas plant's fertilizer production is minimal, accounting for less than 1% of the total NA market

Fertilizer Market in North America



Market	Expected Product Price (US$/tonne)
Retail	$170 – $255
Commercial	$170 – $255
Horticulture	$170 – $255
Agriculture	$170 – $255

StormFisher BIOGAS

Agenda

General Description of a Project

Feedstock

Engineering/Construction

Fertilizer

Risks/Mitigants

Questions

StormFisher BIOGAS

Risks and Mitigants

Risk	Risk Level	Mitigants
Development	**M**	• Robust development model provides a systematic framework of de-risking projects through commercial execution, cost management and resource optimization • Internal experience and successful execution of the project permitting process • Milestone-based development plan minimizes front-end expenditures • Local developments in areas that support renewable energy
Feedstock	**M**	• Multiple feedstock contracts with no single source supply • Location of plants in feedstock-rich areas with 3-5 available feedstock coverage • Green marketing and PR opportunities • Sites will have temporary storage for up to 14 days of feedstock supply
Fertilizer	**L**	• 100% of volume signed up through LOI's • Product is saleable in all fertilizer market segments and has been demonstrated to be superior to similar products on the market • Similar products have been on the market for over 80 years with continuous, successful production and sales
Financing	**L**	• Secure government loans/grants to support capex costs • Seek out project finance from equipment vendors (i.e. CHP) • Secure take or pay long term feedstock contracts with municipalities

L = Low, M = Medium, H = High

StormFisher BIOGAS

Risks and Mitigants (cont'd)

Risk	Risk Level	Mitigants
Engineering & Construction	M	• Technology partner involvement in projects from the initial design phase through construction • Seasoned engineers, construction managers and consulting engineers involved • Fixed-price contracts, equipment warranties, surety products and contingent equity funds • Fertilizer design reviewed by independent engineer and trials performed to demonstrate the performance of large system. Results are positive with success in liquid separation, drying and pelletization of digestate • Design/selection of equipment based on European experience and redundant installed capacity/over-sizing of pumps, blowers, solids separation, drying and pelletizing equipment
Operations	M	• Program in place to train operators in Europe at existing plants • Critical skill sets for plant managers and operators identified • There is gas storage availability of up to 6 hours of production to allow for biodigester downtime. The aggregate availability of the system is expected to be around 90% based on experience of similar systems in Europe and the reliability of GE Jenbacher genset
Biogas Technology	L	• Technology deployed in over 4,000 installations in Europe • Mesophilic process and storage allows for fuel mix flexibility • Pre-screening of inputs by technology partner, independent engineering analysis of biogas production, and lab/pilot testing of potential feedstocks supports production estimates

L = Low, M = Medium, H = High

StormFisher BIOGAS

Questions/Comments

StormFisher BIOGAS