NEWTRIENT
INNOVATIVE SOLUTIONS IN RESOURCE RECOVERY

TECHNOLOGY PROVIDER BUSINESS INFORMATION REQUEST

COMPANY INFORMATION

Date: 09/18/2017

Company:	CH Four Biogas, LLC		
Phone:	(800) 823-6844	**Web Site:**	http://www.chfourbiogas.com/
Address:	37 Walnut St. Suite 300	**City:**	Wellesley
State:	MA	**Zip Code:**	02465

BUSINESS CONTACT

Name:	Ethan Werner
Phone:	800-823-6844 x102
Email:	ewerner@chfourbiogas.com
Address:	37 Walnut St. Suite 300
City:	Wellesley Hills
State:	MA
Zip Code:	02465

TECHNICAL CONTACT

Name:	Benjamin Strehler
Phone:	800-823-6844 x104
Email:	bstrehler@chfourbiogas.com
Address:	37 Walnut St. Suite 300
City:	Wellesley Hills
State:	MA
Zip Code:	02465

BUSINESS HISTORY

How long have you been in business? 12 years

Are you part of a larger company? **Yes** ☐ **No** ☑

Did you exist as another company before this company was formed? **Yes** ☐ **No** ☑ *If so, what was that company's name?*

Number of employees? 15

What is your business structure? LLC

What types of insurance and or surety do you provide?

Liability, E&O, Comprehensive, Process & performance

Describe your business service(s). *For example: consulting, development, engineering, equipment sales, finance, other.*

CH Four Biogas is a North American leader in anaerobic digestion technologies. CH Four has a North American supply chain and offer a full suite of services from design and permitting, through installation and operations. With over a decade of experience and operating systems, CH Four has established a reputation for consistent performance and continued involvement with CH Four clients.

Describe your area or region of operation.

North America

Does your company hold any patents or the rights to any patents? **Yes** ☑ **No** ☐ *If yes, please describe.*

CH Four BAG system for poultry litter and high-strength inputs

Do you manufacture equipment? Yes ☐ No ☑ *If yes, please describe.*

Do you integrate equipment manufactured by others? Yes ☑ No ☐
If you integrate, please list the names of the companies you represent.

CH Four anaerobic digester systems are integrated with energy production, waste heat capture and back-end digestate processing technologies

How do you answer potential customer's questions about financial strength of your company?

Yes

Do you offer technical/service support? Yes ☑ No ☐ *If so, what methods?*

Technical support is provided

Do you offer design services? Yes ☑ No ☐ *If yes, please describe.*

Design services are provided through CH Four Biogas, LLC.

Do you offer financing? Yes ☑ No ☐ *If so, what terms?*

Negotiable depending on customer

Are you a full stop shop? *Design to construction to operate?* Yes ☑ No ☐ *If so, please describe.*

CH Four offers a full suite of services from design and permitting, through installation and operations.

Do you have preferred partners? Yes ☑ No ☐ *If so, please list and provide contact information/identify partners by name.*

Reference provided upon request for each project

Do you have any third-party verification/research that has been done on this technology? Yes ☑ No ☐
If so, please describe.

Third-party verification results are available.

Do you provide a performance guarantee? Yes ☑ No ☐ *If so, what are you guaranteeing?*
For example: up time, methane production, biogas production, parasitic load, throughput, O&M cost, percent recovery, other. Please describe.

Throughput and production, depending on inputs. Cost controls and GMP available.

Are there any other aspects of your business that you feel should be included in this document?

Production, treatment and marketing recommendations for post-digester effluents, including phosphorus and nitrogen recovery and management. Also, similar services are possible for by-products such as planters called cow-pot created from post-digestion solid materials.

INITIAL TECHNOLOGY OVERVIEW

This information is to guide in the development of a more specific and detailed Technology Information Request.
Please answer the following questions for each Technology or Service Provided.

What is the name of the technology or service you provide?

Complete mix digester project feasibility, development, construction-management, and long-term operations

What unit process is the technology used in?
For example: initial collection/transfer manure storage, energy recovery, primary/coarse solids recovery, advanced suspended/fine solids recovery, drying, struvite production, nitrification denitrification, ammonia stripping, algae, vermi composting, membrane filtration, evaporation, other.

CH Four Biogas has the ability to manage all aspects biomass-powered energy project development including manure and food waste feedstock management, energy production, waste heat recovery, solids separation and digestate management at dairy farms and processing plants.

How many systems have you installed on dairy farms or other livestock operations?

CH Four Biogas projects include multiple digester systems on agricultural and municipal operations. With over 40 constructed across North America, and a current list of projects can be viewed at the following link: http://www.chfourbiogas.com/project-locations.html

Size of farm(s)?

CH Four Biogas projects can be designed for a range of sizes from large to small agricultural and municipal operations

Location of farm(s)?

See list of projects: http://www.chfourbiogas.com/project-locations.html

What's the smallest and largest farm using your system?

1,000 m3 anaerobic digester (100 kW) to a dual set of digesters 1,500 m3 each (1 MW)

Input material description and characteristics: *For example: raw manure, digestate, screened digestate, suitable non-farm feedstocks, other.*

Full manure stream for a dairy including flush water from the milking parlor and food waste from off-site providers (optional)

Does the technology treat the full manure stream for a farm or a fraction of the stream?

The digester can be designed to treat the full manure stream for a dairy including flush water from the milking parlor.

Do you consider this a mature system or ongoing farm development?

The technology is mature. CH Four Biogas continue to research and offer the latest technologies to process manure and develop products derived from manure

Any weather constraints? **Yes** ☐ **No** ☑ *If so, please describe.*

Any bedding constraints? **Yes** ☐ **No** ☑ *If so, please describe.*

Sand bedding and sawdust may require pre-processing and separation

Is this process scalable and to what extent (top and bottom limits)? **Yes** ☑ **No** ☐ *If so, please describe.*

The digester system can be sized for large and small agricultural and municipal projects.

Do you have a known scaling factor? **Yes** ☐ **No** ☑ *If so, please describe.*

Sizing and scaling factors are not a matter of technology but of economics.

Input and output of your unit/system – do you have a mass balance analysis? **Yes** ☑ **No** ☐ *If so, please describe.*

A mass balance is available for each digester project

Do you consider this technology part of a larger system that you provide? **Yes** ☑ **No** ☐ *If so, please describe.*

The digester can be designed as a stand-alone system or can incorporate solids separation and nutrient extraction systems

Has your technology been accepted by the NRCS? **Yes** ☑ **No** ☐ *If so, please describe.*

Numerous projects in conjunction with NRCS offices

Would you be willing to provide information for a technical review? **Yes** ☑ **No** ☐

Would you be willing to respond to a Request for Quotation (RFQ) on a generic project for comparison of your technology against other technologies in the same unit process? **Yes** ☑ **No** ☐

REFERENCES

Please provide customers or colleagues with whom we can discuss your business and performance.
Please include a list with company name, location, contact name and contact information below.

CH Four Biogas Reference provided upon request

Reference 1

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Reference 2

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Reference 3

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Reference 4

Company Name:	
Company Location:	
Contact Name:	
Contact Information:	

Are there any other facts about this technology that you feel should be included in this document? *If so, please describe below.*