



REQUEST FOR PROPOSALS (RFP)

Department of Administration
County of Dane, Wisconsin

COUNTY AGENCY

Department of Public Works, Highway and Transportation

RFP NUMBER

106125

RFP TITLE

Dane County Community Manure Management Feasibility Study

PURPOSE

The purpose of this document is to provide interested parties with information to enable them to prepare and submit a proposal for Manure Management Feasibility Study.

**DEADLINE FOR
RFP
SUBMISSIONS**

2:00 PM

November 21, 2006

LATE, FAXED OR UNSIGNED PROPOSAL WILL BE REJECTED

**SUBMIT RFP TO
THIS ADDRESS**

DANE COUNTY PURCHASING DIVISION
ROOM 425 CITY- COUNTY BUILDING
210 MARTIN LUTHER KING JR BLVD
MADISON, WI 53703-3345

**VENDOR
CONFERENCE**

November 7, 2006, 10:00 am. Attendance optional.

**SPECIAL
INSTRUCTIONS**

- Label the lower left corner of your sealed submittal package with the RFP number
- Place the Signature Affidavit as the first page of your proposal
- Submit an original and five (5) complete copies

**DIRECT ALL
INQUIRES TO**

NAME	Francisco Silva
TITLE	Purchasing Agent
PHONE #	608/267-3523
FAX #	608/266-4425
EMAIL	silva@co.dane.wi.us
WEB SITE	www.danepurchasing.com

DATE RFP ISSUED: October 23, 2006

Dane County Vendor Registration Program

All bidders wishing to receive a bid/proposal award must be a *paid registered vendor* with Dane County. Prior to the bid opening, you can complete a registration form online by visiting our web site at www.danepurchasing.com or you can obtain a Vendor Registration Form by calling 608.266.4131. Your completed Vendor Registration Form and Registration Fee must be received prior to the bid award.

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1.0 GENERAL INFORMATION

1.1 Introduction and Background

Dane County is one of the leading livestock producing counties in Wisconsin, and wants to insure that this industry remains viable. Dane County has approximately 400 dairy farms and 80 hog farms, with approximately 50,000 dairy cows and 20,000 swine. Both the number of farms and number of animals have decreased in the past decades, but the number of animals per dairy farm is increasing. With an average size of dairy herds at about 125 cows, there are also approximately 10 farms with 500 or more cows, with one at about 1,000 cows, another at 1,500 cows, and the third at 2,000 cows.

At the same time, Dane County wants to improve the protection of the environmental quality of its lakes and streams, including from the phosphorus and organic material contained in manure from livestock. Several manure spills into our County's waterways have heightened the awareness of this issue. While there is an excess of phosphorus on some farms, on a County-wide basis, there is a need to import phosphorus for agricultural needs. The County has developed an ordinance regarding the winter spreading of manure and adopted a resolution to look at alternative solutions to manure management, which has led to this request for proposals. Please see Appendix F for the resolution and the web page <http://www.danewaters.com/> for a link to the County's work on manure management.

In 2003, a study was done on the production of renewable energy from dairy manure at farms within Dane County. One of the recommendations was to do further studies on the concept of a community system. A brief description of the study is found in Appendix H. Copies of this study are available from Laura Williams at Madison Gas & Electric (MGE) at (608)252-7131.

An advisory committee for this study was appointed in the spring of 2006, and this committee established both a set of goals that need to be met for successful manure management systems as well as issues that need to be kept in mind as alternatives are analyzed. The agendas, minutes and several background documents from this committee can be found on the Internet at <http://www.danewaters.com/management/ManureTaskForce.aspx>, and by then going to the link for the Community Manure Feasibility Study Committee.

1.2 Scope of the Project

This project will evaluate a minimum of four alternatives for managing livestock manure in Dane County to meet the requirements specified in Section 5 of this Request for Proposals (RFP).

The County has multiple goals that it wants met in the management of manure as well as numerous issues that need to be considered when meeting the goals. The following goals and issues have been developed by the County's Community Manure Feasibility Study Committee.

Goals

- The main goal is to strengthen the livestock industry in Dane County while protecting water quality as related to manure management, considering the N, P and K nutrient management requirements for land application.
- Follow County Board Resolution 115, Sub 2 to produce a feasibility study of a Dane County community manure handling facility (see Appendix F for a copy)
- Financially feasible
- Odor reduction
- Reduction of greenhouse gases
- Environmentally acceptable
- Reduction of BOD, COD and ammonia in runoff to reduce the potential for fish kills
- Alternatives to storing manure on the farm for expanding livestock farms, both large and small
- Lower the cost of manure management for Dane County livestock producers

- Refine manure so that the nutrients are separated and in a condensed form, so farmers can use the nutrients their soil tests call for, while the extra nutrients could be sold out of the area
- Outlet for manure at times of the year when field and weather conditions are too risky for manure to run off and enter surface waters

Manure management issues identified by the Dane County advisory committee are listed below. These issues should be considered during the evaluation of alternative manure management systems.

Issues

- Bio-security
- Animal disease
- Contamination liability
- Antibiotics
- Weeds
- Odor
- Road and transportation issues – cost, spills, wear & tear of roads
- Pumping/piping manure
- Pipe transportation issues
- Pumped/piped vs. hauled
- Surface and ground water concerns
- Handling of sand bedding
- Can the system handle different types of manure?
- Can the system adjust to different volumes of manure at different times of the year?
- Control of substrate quality & content
- Handling of liquids
- Value-added products
- Markets: electricity / heat / solids / liquids / compost / tax credits/greenhouse gas (GHG) credits... The ownership of credits must be considered
- Electrical generation
- Availability and terms of an electrical power purchase agreement
- Availability of three phase power for utility purchase of energy
- Safety
- Regulatory requirements, including permits
- System ownership
- Economic support from Non Ag Community
- Public/private financing
- Source of revenue for public financing
- Revenue/expense allocation
- Return of nutrients to participating farms (can they exceed their soil nutrient management needs?)
- Identification of regional concerns/issues for location of animal agriculture operations
- Purchase land to build a manure management facility on
- Teaming up with existing farms
- Can the extra heat, water and energy produced be used by teaming with another industry, farm or nonfarm?
- Comparison of existing costs with costs of alternatives
- Handle food scraps, generating both tipping fees and reducing food into the Dane County landfill
- Use of non-farm substrates their quality control and their impact on marketing solids, liquids and GHG credits
- System flexibility to substrate change and expandability of system
- Maintain more land in farming

- Impacts of maintaining land in farming on the PDR (Purchase of Development Rights) program
- Impact measurement or measurement of program effectiveness
- Maintenance costs
- Total parasitic load
- System selected track record
- Labor requirements
- Effects of seasonal road load limits on cost of operation and system operation
- Operator education/training requirements
- Ease of system operation
- Management and business structure of business
- Insurance – who’s insured; who isn’t?

1.3 Procuring and Contracting Department/Division

This Request for Proposal (RFP) is issued by Dane County, Department of Administration, Purchasing Division, which is the sole point of contact for the County during the selection process. The person responsible for managing the procurement process is Francisco Silva.

The contract resulting from this RFP will be administered by Dane County, Department of Public Works, Highway and Transportation. The contract administrator will be John Reindl, Recycling Manager.

1.4 Definitions

The following definitions are used throughout the RFP.

County means Dane County, Department of Public Works, Highway & Transportation.

Proposer/vendor means a firm submitting a proposal in response to this RFP.

Contractor means proposer awarded the contract.

1.5 Clarification and/or revisions to the specifications and requirements

Any questions concerning this RFP must be submitted in writing by mail , fax or e-mail on or before November 7, 2006 to:

Francisco Silva
 Dane County Purchasing Division
 Room 425 City County Building
 210 Martin Luther King Jr. Blvd
 Madison, WI 53703
 VOICE: (608) 267-3523 FAX: (608)266-4425
 E-MAIL: silva@co.dane.wi.us

Vendors are expected to raise any questions, exceptions, or additions they have concerning the RFP document at this point in the RFP process. If a vendor discovers any significant ambiguity, error, conflict, discrepancy, omission, or other deficiency in this RFP, the vendor should immediately notify the above named individual of such error and request modification or clarification of the RFP document.

In the event that it becomes necessary to provide additional clarifying data or information, or to revise any part of this RFP, revisions/amendments and/or supplements will be posted on the Purchasing Division web site at www.danepurchasing.com

Each proposal shall stipulate that it is predicated upon the terms and conditions of this RFP and any supplements or revisions thereof.

1.6 Vendor Conference

An optional vendor conference will be held on Tuesday, November 7, 2006 at 10:00 AM at Dane County Public Works, 1919 Alliant Energy Center Way, Madison, WI to provide any needed additional instruction to proposers/vendors on the submission of proposals and respond to questions. All vendors who intend to respond to the RFP are strongly encouraged to attend the optional proposer/vendor conference. All questions will also be made available as an addendum as indicated in the Calendar of Events, section 1.8.

1.7 Reasonable Accommodations

The County will provide reasonable accommodations, including the provision of informational material in an alternative format, for qualified individuals with disabilities upon request. If you need accommodations at a proposal opening/vendor conference, contact the Purchasing Division at (608) 266-4131 (voice) or 608/266-4941 (TTY).

1.8 Calendar of Events

Listed below are specific and estimated dates and times of actions related to this RFP. The actions with specific dates must be completed as indicated unless otherwise changed by the County. In the event that the County finds it necessary to change any of the specific dates and times in the calendar of events listed below, it will do so by issuing a supplement to this RFP and posting such supplement on the Dane County web site at www.danepurchasing.com. There may or may not be a formal notification issued for changes in the estimated dates and times.

DATE	EVENT
October 23, 2006	Date of issue of the RFP
November 7, 2006	Last day for submitting written inquiries and vendor conference
November 10, 2006	Supplements or revisions to the RFP posted on the Purchasing Division web site at http://www.danepurchasing.com/
November 21, 2006	Proposals due from vendors
early December, 2006 (estimated)	Oral presentation by invited vendors
med December, 2006 (estimated)	Notification of intent to award sent to vendors
early January, 2007 (estimated)	Contract start date

1.9 Contract Assignment

This contract and any part thereof shall not be subcontracted without prior written approval of Dane County.

2.0 PREPARING AND SUBMITTING A PROPOSAL

2.1 General Instructions

The evaluation and selection of a contractor and the contract will be based on the information submitted in the vendor's proposal plus references and any required on-site visits or oral presentations. Failure to respond to each of the requirements in the RFP may be the basis for rejecting a response.

Elaborate proposals (e.g. expensive artwork) beyond that sufficient to present a complete and effective proposal, are not necessary or desired. The report should be printed on recycled paper (and so marked) and in a format that will not inhibit its recycling.

2.2 Proprietary Information

All restrictions on the use of data contained within a proposal and all confidential information must be clearly stated on the attached "Designation of Confidential and Proprietary Information" form. Proprietary

information submitted in a proposal, or in response to the RFP, will be handled in accordance with the applicable Wisconsin State Statute(s).

To the extent permitted by law, it is the intention of Dane County to withhold the contents of the proposal from public view until such times as competitive or bargaining reasons no longer require non-disclosure, in the opinion of Dane County. At that time, all proposals will be available for review in accordance with the Wisconsin Open Records Law.

2.3 Incurring Costs

Dane County is not liable for any cost incurred by proposers in replying to this RFP.

2.4 Submitting the Proposal

Proposers must submit an original and five (5) copies of all materials required for acceptance of their proposal by November 21, 2006 to:

DANE COUNTY PURCHASING DIVISION
ROOM 425 CITY-COUNTY BLDG
210 MARTIN LUTHER KING JR BLVD
MADISON, WI 53703

Proposals must be received in the above office by the specified time stated above. All proposals must be time-stamped in by the County Purchasing Division by the stated time. Proposals not so stamped will not be accepted.

All proposals must be packaged, sealed and show the following information on the outside of the package:

- Proposer's name and address
- Request for proposal title
- Request for proposal number
- Proposal due date

2.5 Proposal Organization and Format

Proposals should be typed and submitted on 8.5 by 11 inch paper bound securely. Proposals should be organized and presented in the order and by the number assigned in the RFP. Proposals must be organized with the following headings and subheadings. Each heading and subheading should be separated by tabs or otherwise clearly marked. The RFP sections which should be submitted or responded to are:

- Introduction (See Section 4 of this RFP)
- Response to general requirements (See Section 4 of this RFP)
 - Organization Capabilities
 - Staff Qualifications
 - Proposer References
 - Mandatory Requirements
- Response to technical requirements (See Section 5 of this RFP)
- Cost proposal (See Section 6 of this RFP)
- Required forms (See Section 8 of this RFP)
 - Attachment A Signature Affidavit
 - Attachment B Vendor Data Sheet
 - Attachment C Reference Data Sheet
 - Attachment D Designation of Confidential and Proprietary Information

- Appendices (Additional Information the proposer submits)

2.6 Multiple Proposals

Multiple proposals from a vendor will be permissible, however each proposal must conform fully to the requirements for proposal submission. Each such proposal must be separately submitted and labeled as Proposal #1, Proposal #2, etc. on each page included in the response.

2.7 Oral Presentations

Selected vendors will be required to make oral presentations to supplement their proposals. The County will make every reasonable attempt to schedule each presentation at a time and location that is agreeable to the proposer. Failure of a proposer to conduct a presentation to the County on the date scheduled may result in rejection of the vendor's proposal.

3.0 PROPOSAL SELECTION AND AWARD PROCESS

3.1 Preliminary Evaluation

The proposals will first be reviewed to determine if requirements in Section 2.0 are met, and if additional mandatory requirements are met. (see Section 4.0). Failure to meet mandatory requirements will result in the proposal being rejected. In the event that all vendors do not meet one or more of the mandatory requirements, the County reserves the right to continue the evaluation of the proposals and to select the proposal which most closely meets the requirements specified in this RFP.

3.2 Proposal Scoring

Accepted proposals will be reviewed by an evaluation committee and scored against the stated criteria. The committee may review references and will require oral presentations, and use the results in scoring the proposals.

3.3 Right to Reject Proposals and Negotiate Contract Terms

The County reserves the right to reject any and all proposals and to negotiate the terms of the contract, including the award amount, with the selected proposer prior to entering into a contract. If contract negotiations cannot be concluded successfully with the highest scoring proposer, the County may negotiate a contract with the next highest scoring proposer.

3.4 Evaluation Criteria

The proposals will be scored using the following criteria:

	<u>Description</u>	<u>Percent</u>
1.	General requirements	25
	a. experience and capabilities in providing similar services to those required	10
	b. proposer references as described in section 4.4	15
2.	Technical requirements	55
3.	Cost	<u>20</u>
	TOTAL	100

3.5 Award and Final Offers

The award will be granted in one of two ways. The award may be granted to the highest scoring responsive and responsible proposer. Alternatively, the highest scoring proposer or proposers may be requested to submit final and best offers. If final and best offers are requested, they will be evaluated against the stated criteria, scored and ranked. The award will then be granted to the highest scoring proposer.

3.6 Notification of Intent to Award

As a courtesy, the County may send a notification of award memo to responding vendors at the time of the award.

4.0 GENERAL PROPOSAL REQUIREMENTS

4.1 Introduction

Provide an overview/history of the firm.

4.2 Organization Capabilities

- A. Describe the firm's experience and capabilities in providing similar services to those required. Be specific and identify projects, dates, and results.
- B. Describe the availability of assigned personnel to provide service in an efficient and timely manner with respect to the scale and peripheral hardware as well as software support services.
- C. Identify from what location your firm will provide services to the County.

4.3 Staff Qualifications

Provide resumes describing the educational and work experiences for each of the key staff who would be assigned to the project.

4.4 Proposer References

Proposers must include in their RFPs a list of organizations, including points of contact (name, address, and telephone number), which can be used as references for work performed in the area of service required.

Selected organizations may be contacted to determine the quality of work performed and personnel assigned to the project. The results of the references will be provided to the evaluation team and used in scoring the written proposals.

5.0 TECHNICAL REQUIREMENTS

5.1 Survey of Farmers in Upper Lake Mendota Watershed

In cooperation with Dane County, a survey is to be done of all livestock farmers in the Upper Lake Mendota Watershed (approximately 350 farms) to determine their number of livestock, the quantity of manure generated annually, the type and quantity of bedding used, the type of manure handling system (scrape, flush or other), the types of concerns that they currently have with their manure management system and their level of interest in participating in a study for improved manure management, for a system either at an individual farm or a system to serve more than one farm. This survey is similar to a survey done in a 2003 feasibility study for Madison Gas & Electric, as noted in the Introduction and Background of this RFP, Section 1.1, and summarized in Appendix H. Sent to 300 dairy and swine farms, results were obtained from 43 farms.

The survey is to be done initially by mail, and then followed up with phone calls to attempt to receive at least a 25% rate of return. Results are not to be identified by the name of the farm, but rather by a coded designation.

5.2 Selection of Farms to be Used in Analysis

In cooperation with the County, one to three clusters of 2 to 5 farms will be selected for the analysis of several alternatives for the management of the manure, as described in the following sections.

5.3 Alternatives to be studied

Proposers are encouraged to present alternatives in addition to the required systems to be studied, but, at a minimum, the feasibility study is to analyze the at least the following systems:

- anaerobic digestion, with the recovery and sale of methane gas, or the generation of electricity, along with the recovery of solids
- combustion, which could include pyrolysis or gasification
- solids separation and recovery
- phosphorus removal and recovery

The systems of solids separation and recovery and phosphorus removal and recovery are to be evaluated both as a *pro forma* at each of the individual farms as well as a community system for each cluster of farms. The anaerobic digestion system and incineration systems need only be evaluated as a community system for each cluster of farms. For all technologies, the fate of the major nutrients (N, P, and K) is to be evaluated.

For the energy recovery systems, the study shall examine the opportunities and economics of combined heat and power (CHP) systems.

For anaerobic digestion, the study shall examine the opportunities and economics of producing Compressed Natural Gas

The proposer is welcome to include an analysis of other technologies to manage livestock manure that meet the goals of the County. A list of some alternative technologies identified by the County are listed in Appendix G.

5.4 Information to be included in the analysis of alternatives

The information to be presented in the report for each of the alternatives analyzed shall include the following:

Description of the system, including its basic design and process flow line

Description of the proposed technology, and examples of its use in other manure management projects or the status of its development if it is not yet commercial

Description of by-products, their quantity and characteristics and their potential uses, either at existing markets or markets yet to be created. At a minimum, these are to include:

- separated solids
 - spread on farm land
 - compost and use for non-farm uses
 - use for dairy or other livestock bedding (with or without composting)

- use as an additive in plastic lumber, particle board, mats, or other products such as being developed by the Forest Products Laboratory (Rowell), Michigan State University (Cook, Matuana and Gould), and Troika Technologies of Manitowoc, WI
- other
- liquids
 - return to farms for irrigation water, flush water or washdown water
 - treatment at a municipal wastewater treatment plant
 - discharge of treated water to surface or groundwater
 - other
- removed phosphorus
 - sale for use on farms or non-farm uses (note: Dane County generally does not allow the sale of home lawn fertilizers with added phosphorus. An exemption is made for organic fertilizers, such as biosolids, if they are applied to improve the physical condition of the soil. See Chapter 80 of the County ordinances.)
 - disposal in a landfill
 - other

Description of the environmental emissions from the proposed system and the permits required for compliance with existing federal, state and local requirements

Description of the destruction of, or carryover of, disease organisms in system byproducts

Description of any local substrates that could be added to the system and the effect on the operation and economics of the system. The County will compile a list of potential substrates and their producers within and near the County.

A description of the transportation requirements and costs for delivering the manure to the community facility along with the disposition of the processed material from the facility.

A *pro forma* calculation of the cost of transporting manure to the community facility from other farms, with one calculation for a 10 mile one way haul and another calculation for a 20 mile one way haul.

Description both of *pro forma* capital costs, and a *pro forma* 5 year-by-year estimate of operating costs and revenues, with a sensitivity analysis of the impact of major costs and revenues (those of more than 20% of total costs or revenues). Capital costs shall include a reserve for decommissioning of the system at the end of its useful life. Operation costs shall include any monitoring of material inflow and output as well as environmental monitoring. Maintenance costs shall include equipment rebuilding and replacement costs.

A calculation of the cost of harvesting and processing materials for bedding or the purchase of bedding, along with the cost of using the bedding.

5.5 Manure management at farms under study

For the farms that are included in this study, the following issues of manure management are to be determined.

A calculation of current manure handling costs for each of the farms, expressed on a per Animal Unit basis. These costs shall include:

- handling of manure within the barn
- pumping to storage
- storage

- loading of removal vehicle
- transportation to field (use average distances)
- application

A forecast of future manure management issues facing the farmers in the study area based on estimated growth of herd sizes, nutrient management requirements and future land use. The forecast shall look at a time horizon of 10 years into the future.

An estimate of future manure handling costs 10 years in the future, using the same categories as for the calculation of current manure handling costs, as listed above.

5.6 Potential financial assistance for system development and operation

Sources and potential levels of financial assistance – both capital costs and operating costs

- Federal
- State
- Local (county, city, village, town)
- Private financing

5.7 Potential business structure analysis

The report shall provide a list of alternative potential business structures and their advantages and disadvantages, to include at least the following structures:

- Owned by a single farmer
- Owned by a group of farmers
- Owned by a private third party
- Owned by government
- Other

As described in the County Board Resolution in Appendix F, the County is especially interested in a cooperative approach.

5.8 Other non-monetary issues

The report shall provide a description and discussion of other non-monetary issues associated with manure management not elsewhere covered in the report.

6.0 COST PROPOSAL

6.1 General Instructions on Submitting Cost Proposals

Two copies of the cost proposal should be submitted in a separate envelope with the written proposal. The proposal will be scored using a standard quantitative calculation where the most cost criteria points will be awarded to the proposal with the lowest cost.

6.2 Format for Submitting Cost Proposals

See Attachment E.

6.3 Fixed Price Period

All prices, costs, and conditions outlined in the proposal shall remain fixed and valid for acceptance for 60 days starting on the due date for proposals.

7.0 SPECIAL CONTRACT TERMS AND CONDITIONS

7.1 Payments

Payment may be made to the Contractor any time after the product has been accepted by the County, but not sooner than thirty(30) days after completion

8.0 REQUIRED FORMS

The following forms must be completed and submitted with the proposal in accordance with the instructions given in Section 2.0. Blank forms are attached.

Attachment A	Signature Affidavit
Attachment B	Vendor Data Sheet
Attachment C	Reference Data Sheet
Attachment D	Designation of Confidential and Proprietary Information
Attachment E	Cost Summary Page

SIGNATURE AFFIDAVIT

In signing this proposal, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a proposal; that this proposal has been independently arrived at without collusion with any other proposer competitor or potential competitor; that this proposal has not been knowingly disclosed prior to the opening of proposals to any other proposer or competitor; that the above statement is accurate under penalty of perjury.

The undersigned, submitting this proposal, hereby agrees with all the terms, conditions, and specifications required by the County in this Request for Bid, and declares that the attached proposal and pricing are in conformity therewith.

Name (Type or Print)

Title

Signature

Firm

Address: (Street, City , State, Zip Code)

Telephone

Fax

E-Mail

Date

VENDOR DATA SHEET

1. Proposing Company Name _____

Telephone _____ Toll Free Telephone _____ Fax _____

Address: _____

City: _____ State: _____ Zip + Four: _____

2. Contact Person in the event there are questions about your proposal

Name: _____ Title: _____

Telephone: _____ Toll Free Telephone: _____

Address: _____

City: _____ State: _____ Zip + Four: _____

3. All vendors that have 20 or more employees and that are awarded \$20,000 or more on this contract will be required to submit Affirmative Action information to the County Contract Compliance Office. Please list the Person in your Company we can contact about this plan.

Name: _____ Title: _____

Telephone: _____ Toll Free Telephone: _____

Address: _____

City: _____ State: _____ Zip + Four: _____

4. Mailing address where County purchase orders/contracts are to be mailed and person the Department can contact concerning orders and billing.

Name: _____ Title: _____

Telephone: _____ Toll Free Telephone: _____

Address: _____

City: _____ State: _____ Zip + Four: _____

REFERENCE DATA SHEET

FOR VENDOR:

Provide company name, address, contact person, telephone number, and appropriate information on the product(s) and/or service(s) used for three (3) or more installations/services with requirements similar to those included in this solicitation document. If vendor is proposing any arrangement involving a third party, the named references should also be involved in a similar arrangement.

Company Name: _____
Address: _____
Telephone: _____ Contact Person: _____
Product(s) and/or Service(s) Used: _____

Company Name: _____
Address: _____
Telephone: _____ Contact Person: _____
Product(s) and/or Service(s) Used: _____

Company Name: _____
Address: _____
Telephone: _____ Contact Person: _____
Product(s) and/or Service(s) Used: _____

Company Name: _____
Address: _____
Telephone: _____ Contact Person: _____
Product(s) and/or Service(s) Used: _____

Company Name: _____
Address: _____
Telephone: _____ Contact Person: _____
Product(s) and/or Service(s) Used: _____

ATTACHMENT D

DESIGNATION OF CONFIDENTIAL AND PROPRIETARY INFORMATION

The attached material submitted in response to this Proposal includes proprietary and confidential information which qualifies as a trade secret, as provided in Sect 19.36(5), Wisconsin State Statutes, or is otherwise material that can be kept confidential under the Wisconsin Open Records law. As such, we ask that certain pages, as indicated below, of this proposal response be treated as confidential material and not be released without our written approval. Attach additional sheets if needed.

Section	Page Number	Topic

Prices always become public information when proposals are opened, and therefore cannot be designated as confidential.

Other information cannot be kept confidential unless it is a trade secret. Trade secret is defined in Sect. 134(80)(1)(c) Wis. State Statutes, as follows: "Trade secret" means information, including a formula, pattern, compilation, program, device, method technique or process to which all of the following apply:

1. The information derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by other persons who can obtain economic value from its disclosure or use.
2. The information is the subject of efforts to maintain its secrecy that are reasonable under the circumstances.

In the event the Designation of Confidentiality of this information is challenged, the undersigned hereby agrees to provide legal counsel or other necessary assistance to defend the Designation of Confidentiality.

Failure to include this form in the proposal response may mean that all information provided as part of the proposal response will be open to examination or copying. The County considers other markings of confidential in the proposal document to be insufficient. The undersigned agree to hold the County harmless for any damages arising out of the release of any material unless they are specifically identified above.

Signature-Authorized Representative

Company Name

Print Name-Authorized Representative

Date

COST SUMMARY SHEET

Item Description

Cost

STANDARD TERMS AND CONDITIONS
(Request For Bids/Proposals/Contracts)

- 1.0 **APPLICABILITY:** The terms and conditions set forth in this document apply to Requests for Proposals (RFP), Bids and all other transactions whereby the County of Dane acquires goods or services, or both.
- 1.1 **ENTIRE AGREEMENT:** These Standard Terms and Conditions shall apply to any contract, including any purchase order, awarded as a result of this request. Special requirements of a resulting contract may also apply. Said written contract with referenced parts and attachments shall constitute the entire agreement, and no other terms and conditions in any document, acceptance, or acknowledgment shall be effective or binding unless expressly agreed to in writing by the County.
- 1.2 **DEFINITIONS:** As used herein, "vendor" includes a provider of goods or services, or both, who is responding to an RFP or a bid, and "bid" includes a response to either an RFP or a bid.
- 2.0 **SPECIFICATIONS:** The specifications in this request are the minimum acceptable. When specific manufacturer and model numbers are used, they are to establish a design, type of construction, quality, functional capability or performance level, or any combination thereof, desired. When alternates are proposed, they must be identified by manufacturer, stock number, and such other information necessary to establish equivalency. Dane County shall be the sole judge of equivalency. Vendors are cautioned to avoid proposing alternates to the specifications which may result in rejection of their bid.
- 3.0 **DEVIATIONS AND EXCEPTIONS:** Deviations and exceptions from terms, conditions, or specifications shall be described fully, on the vendor's letterhead, signed, and attached to the bid. In the absence of such statement, the bid shall be accepted as in strict compliance with all terms, conditions, and specifications and vendor shall be held liable for injury resulting from any deviation.
- 4.0 **QUALITY:** Unless otherwise indicated in the request, all material shall be first quality. No pre-owned, obsolete, discontinued or defective materials may be used.
- 5.0 **QUANTITIES:** The quantities shown on this request are based on estimated needs. The County reserves the right to increase or decrease quantities to meet actual needs.
- 6.0 **DELIVERY:** Deliveries shall be FOB destination freight prepaid and included unless otherwise specified. County will reject shipments sent C.O.D. or freight collect.
- 7.0 **PRICING:** Unit prices shown on the bid shall be the price per unit of sale, e.g., gal., cs., doz., ea., etc., as stated on the request or contract. For any given item, the quantity multiplied by the unit price shall establish the extended price, the unit price shall govern in the bid evaluation and contract administration.
- 7.1 Prices established in continuing agreements and term contracts may be lowered due to market conditions, but prices shall not be subject to increase for the term specified in the award. Vendor shall submit proposed increases to the contracting department thirty (30) calendar days before the proposed effective date of the price increase. Proposed increases shall be limited to fully documented cost increases to the vendor that are demonstrated to be industry wide. Price increases may not be granted unless they are expressed in bid documents and contracts or agreements.
- 7.2 Submission of a bid constitutes bidder's certification that no financial or personal relationship exists between the bidder and any county official or employee except as specially set forth in writing attached to and made a part of the bid. The successful bidder shall disclose any such relationship which develops during the term of the contract.
- 8.0 **ACCEPTANCE-REJECTION:** Dane County reserves the right to accept or reject any or all bids, to waive any technicality in any bid submitted and to accept any part of a bid as deemed to be in the best interests of the County. Submission of a proposal or a bid constitutes the making of an offer to contract and gives the County an option valid for 60 days after the date of submission to the County.
- 8.1 Bids **MUST** be dated and time stamped by the Dane County Purchasing Division Office on or before the date and time that the bid is due. Bids deposited or time stamped in another office will be rejected. Actual receipt in the office of the purchasing division is necessary; timely deposit in the mail system is not sufficient. **THERE WILL BE NO EXCEPTIONS TO THIS POLICY.**
- 9.0 **METHOD OF AWARD:** Award shall be made to the lowest responsible, responsive vendor conforming to specifications, terms, and conditions, or to the most advantageous bid submitted to the County on a quality versus price basis. Among other things, quantities, time of delivery, purpose for which required, competency of vendor, the ability to render satisfactory service and past performance will be considered in determining responsibility.
- 10.0 **ORDERING/ACCEPTANCE:** Written notice of award to a vendor in the form of a purchase order or other document, mailed or delivered to the address shown on the bid will be considered sufficient notice of acceptance of bid. A formal contract

containing all provisions of the contract signed by both parties shall be used when required by the Dane County Purchasing Division.

11.0 PAYMENT TERMS AND INVOICING: Unless otherwise agreed, Dane County will pay properly submitted vendor invoices within thirty (30) days of receipt of goods or services, or combination of both. Payment will not be made until goods or services are delivered, installed (if required), and accepted as specified. Invoices presented for payment must be submitted in accordance with instructions contained on the purchase order.

11.1 NO WAIVER OF DEFAULT: In no event shall the making of any payment or acceptance of any service or product required by this Agreement constitute or be construed as a waiver by County of any breach of the covenants of the Agreement or a waiver of any default of the successful vendor, and the making of any such payment or acceptance of any such service or product by County while any such default or breach shall exist shall in no way impair or prejudice the right of County with respect to recovery of damages or other remedy as a result of such breach or default.

12.0 TAXES: The County and its departments are exempt from payment of all federal tax and Wisconsin state and local taxes on its purchases except Wisconsin excise taxes as described below. The State of Wisconsin Department of Revenue has issued tax exempt number ES41279 to Dane County.

12.1 The County is required to pay the Wisconsin excise or occupation tax on its purchase of beer, liquor, wine, cigarettes, tobacco products, motor vehicle fuel and general aviation fuel. The County is exempt from Wisconsin sales or use tax on these purchases. The County may be subject to other states' taxes on its purchases in that state depending on the laws of that state. Vendors performing construction activities are required to pay state use tax on the cost of materials.

13.0 GUARANTEED DELIVERY: Failure of the vendor to adhere to delivery schedules as specified or to promptly replace rejected materials shall render the vendor liable for all costs in excess of the contract price when alternate procurement is necessary. Excess costs shall include administrative costs.

14.0 APPLICABLE LAW AND VENUE: This contract shall be governed under the laws of the State of Wisconsin, and venue for any legal action between the parties shall be in Dane County Circuit Court. The vendor shall at all times comply with and observe all federal and state laws, local laws, ordinances, and regulations which are in effect during the period of this contract and which in any manner affect the work or its conduct.

15.0 ASSIGNMENT: No right or duty in whole or in part of the vendor under this contract may be assigned or delegated without the prior written consent of Dane County.

16.0 NONDISCRIMINATION/AFFIRMATIVE ACTION: During the term of this Agreement the vendor agrees, in accordance with sec. 111.321, Wis. Stats., and Chapter 19 of the Dane County Code of Ordinances, not to discriminate against any person, whether an applicant or recipient of services, an employee or applicant for employment, on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force or any other reserve component of the military forces of the United States, or political beliefs. The vendor shall provide a harassment-free work environment. These provisions shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, including apprenticeships, rates of pay or other forms of compensation.

16.1 Vendors who have twenty (20) or more employees and a contract of twenty thousand dollars (\$20,000) or more must submit a written affirmative action plan to the County's Contract Compliance Officer within fifteen (15) working days of the effective date of the contract. The County may elect to accept a copy of the current affirmative action plan filed with and approved by a federal, state or local government unit.

16.2 The vendor agrees to post in conspicuous places, available for employees and applicants for employment, notices setting forth the provisions of this Agreement as they relate to affirmative action and nondiscrimination.

16.3 Failure to comply with these Terms and Conditions may result in the vendor being debarred, termination of the contract and/or withholding of payment.

16.4 The vendor agrees to furnish all information and reports required by Dane County's Contract Compliance Officer as the same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, D.C. Ords., and the provisions of this Agreement.

16.5 *Americans with Disabilities Act*: The vendor agrees to the requirements of the ADA, providing for physical and programmatic access to service delivery and treatment in all programs and activities.

17.0 PATENT, COPYRIGHT AND TRADEMARK INFRINGEMENT: The vendor guarantees goods sold to the County were manufactured or produced in accordance with applicable federal labor laws, and that the sale or use of the articles described herein do not infringe any patent, copyright or trademark. The vendor covenants that it will, at its own expense, defend every suit which shall be brought against the County (provided that such vendor is promptly notified of such suit, and all papers therein are

delivered to it) for any alleged infringement of any patent, copyright or trademark by reason of the sale or use of such articles, and agrees that it will pay all costs, damages, and profits recoverable in any such suit.

18.0 SAFETY REQUIREMENTS: All materials, equipment, and supplies provided to the County must fully comply with all safety requirements as set forth by the Wisconsin Department of Commerce and all applicable OSHA Standards.

18.1 MATERIAL SAFETY DATA SHEET: If any item(s) on an order(s) resulting from this award(s) is a hazardous chemical, as defined under 29 CFR 1910.1200, provide one (1) copy of the Material Safety Data Sheet for each item with the shipped container(s) and one (1) copy with the invoice(s).

19.0 WARRANTY: Unless specifically expressed otherwise in writing, goods and equipment purchased as a result of this request shall be warranted against defects by the vendor for one (1) year from date of receipt. An equipment manufacturer's standard warranty shall apply as a minimum and must be honored by the vendor. The time limitation in this paragraph does not apply to the warranty provided in paragraph 27.0.

20.0 INSURANCE RESPONSIBILITY: The successful vendor shall:

20.1 Maintain worker's compensation coverage as required by Wisconsin Statutes, for all employees engaged in the work. The successful vendor shall furnish evidence of adequate worker's compensation insurance.

20.2 Indemnify, hold harmless and defend County, its boards, commissions, agencies, officers, employees and representatives against any and all liability, loss (including, but not limited to, property damage, bodily injury and loss of life), damages, costs or expenses which County, its officers, employees, agencies, boards, commissions and representatives may sustain, incur or be required to pay by reason of the successful vendor furnishing the services or goods required to be provided under the contract with the County, provided, however, that the provisions of this paragraph shall not apply to liabilities, losses, charges, costs, or expenses caused by or resulting from the acts or omissions of County, its agencies, boards, commissions, officers, employees or representatives. The obligations of the successful vendor under this paragraph shall survive the expiration or termination of any contract resulting from the successful vendor's bid.

20.3 At all times during the term of this Agreement, keep in full force and effect comprehensive general liability and auto liability insurance policies (as well as professional malpractice or errors and omissions coverage, if the services being provided are professional services) issued by a company or companies authorized to do business in the State of Wisconsin and licensed by the Wisconsin Insurance Department, with liability coverage provided for therein in the amount of at least \$1,000,000 CSL (Combined Single Limits). Coverage afforded shall apply as primary. County shall be given ten (10) days advance notice of cancellation or non-renewal. Upon execution of this Agreement, the successful vendor shall furnish County with a certificate of insurance listing County as an additional insured and, upon request, certified copies of the required insurance policies. If the successful vendor's insurance is underwritten on a Claims-Made basis, the Retroactive Date shall be prior to or coincide with the date of this Agreement, the Certificate of Insurance shall state that coverage is Claims-Made and indicate the Retroactive Date, the successful vendor shall maintain coverage for the duration of this Agreement and for two years following the completion of this Agreement. The successful vendor shall furnish County, annually on the policy renewal date, a Certificate of Insurance as evidence of coverage. It is further agreed that the successful vendor shall furnish the County with a 30-day notice of aggregate erosion, in advance of the Retroactive Date, cancellation, or renewal. It is also agreed that on Claims-Made policies, either the successful vendor or County may invoke the tail option on behalf of the other party and that the Extended Reporting Period premium shall be paid by the successful vendor. In the event any action, suit or other proceeding is brought against County upon any matter herein indemnified against, County shall give reasonable notice thereof to the successful vendor and shall cooperate with the successful vendor's attorneys in the defense of the action, suit or other proceeding.

20.4 The County reserves the right to require higher or lower insurance limits where County deems necessary.

20.5 In case of any sublet of work under this Agreement, the successful vendor shall furnish evidence that each and every subvendor has in force and effect insurance policies providing coverage identical to that required of the successful vendor.

21.0 CANCELLATION: County reserves the right to terminate any Agreement due to non-appropriation of funds or failure of performance by the vendor. This paragraph shall not relieve County of its responsibility to pay for services or goods provided or furnished to County prior to the effective date of termination.

22.0 PUBLIC RECORDS ACCESS: It is the intention of the County to maintain an open and public process in the solicitation, submission, review, and approval of procurement activities. Bid openings are public unless otherwise specified. Records are not available for public inspection prior to issuance of the notice of intent to award or the award of the contract. Bid results may be obtained by visiting the Dane County Purchasing Office Monday – Friday, between 8:00 a.m. and 4:00 p.m. Prior appointment is advisable.

22.1 PROPRIETARY INFORMATION: If the vendor asserts any of its books and records of its business practices and other matters collectively constitute a trade secret as that term is defined in s. 134.90(1)(c), Wis. Stats., County will not release such records to the public without first notifying the vendor of the request for the records and affording the vendor an opportunity to challenge in a court of competent jurisdiction the requester's right to access such records. The entire burden of maintaining and defending the trade secret designation shall be upon the vendor. The vendor acknowledges and agrees that if the vendor shall

fail, in a timely manner, to initiate legal action to defend the trade secret designation or be unsuccessful in its defense of that designation, County shall be obligated to and will release the records.

22.2 Data contained in a bid, all documentation provided therein, and innovations developed as a result of the contracted commodities or services cannot be copyrighted or patented. All data, documentation, and innovations shall be the property of the County.

22.3 Any material submitted by the vendor in response to this request that the vendor considers confidential and proprietary information and which vendor believes qualifies as a trade secret, as provided in section 19.36(5), Wis. Stats., must be identified on a designation of Confidential and Proprietary Information form. In any event, bid prices will not be held confidential after award of contract.

23.0 RECYCLED MATERIALS: Dane County is required to purchase products incorporating recycled materials whenever technically and economically feasible. Vendors are encouraged to bid products with recycled content which meet specifications.

24.0 PROMOTIONAL ADVERTISING: Reference to or use of Dane County, any of its departments or sub-units, or any county official or employee for commercial promotion is prohibited.

25.0 ANTITRUST ASSIGNMENT: The vendor and the County of Dane recognize that in actual economic practice, overcharges resulting from antitrust violation are in fact usually borne by the County of Dane (purchaser). Therefore, the successful vendor hereby assigns to the County of Dane any and all claims for such overcharges as to goods, materials or services purchased in connection with this contract.

26.0 RECORDKEEPING AND RECORD RETENTION-PUBLIC WORKS CONTRACTS: The successful bidder on a public works contract shall comply with the State of Wisconsin prevailing wage scale and shall establish and maintain adequate payroll records for all labor utilized as well as records for expenditures relating to all subcontracts, materialmen and suppliers. All records must be kept in accordance with generally accepted accounting procedures. The County shall have the right to audit, review, examine, copy, and transcribe any such records or documents. The vendor will retain all documents applicable to the contract for a period of not less than three (3) years after final payment is made.

26.1 RECORDKEEPING AND RECORD RETENTION-COST REIMBURSEMENT CONTRACTS: Where payment to the vendor is based on the vendor's costs, vendor shall establish and maintain adequate records of all expenditures incurred under the contract. All records must be kept in accordance with generally accepted accounting procedures. The County contracting agency shall have the right to audit, review, examine, copy, and transcribe any pertinent records or documents relating to any contract resulting from this bid/proposal held by the vendor. The vendor will retain all documents applicable to the contract for a period of not less than three (3) years after final payment is made.

27.0 YEAR 2000 COMPLIANT: Vendor warrants that: a) all goods, services and licenses sold otherwise provided pursuant to this procurement have been tested for and are fully year 2000 compliant, which means they are capable of correctly and consistently handling all date-based functions before, during and after the year 2000; b) the date change from 1999 to 2000, or any other date changes, will not prevent such goods, services or licenses from operating in a merchantable manner, for the purposes intended and in accordance with all applicable plans and specifications and without interruption before, during and after the year 2000; and c) vendor's internal systems, and those of vendor's vendors, are year 2000 compliant, such that vendor will be able to deliver such goods, services and licenses as required by this procurement.

28.0 LIVING WAGE REQUIREMENT: The vendor shall, where appropriate, comply with the County's Living Wage requirements as set forth in section 25.015, Dane County Ordinances.

Appendix F

Dane County Resolution for Community Manure Management Feasibility Study

RES. 115, 05-06
ENDORISING STUDY OF A REGIONAL MANURE HANDLING FACILITY FOR DANE COUNTY
Moved by Supervisor Eggert, seconded by Supervisor Richmond to adopt Sub. 2 to Res. 115.

SUB. 2 TO RES. 115, 05-06
ENDORISING STUDY OF A REGIONAL MANURE HANDLING FACILITY FOR DANE COUNTY

Dane County's natural gifts and quality of life are under increasing pressure as more people come to live here. Clean water, availability of farmland, transportation, and other infrastructures, and access to green spaces are all threatened.

A community manure handling facility in Dane County would provide an opportunity to address a number of those critical issues in an innovative manner. Rather than expecting each livestock farm or food establishment to address animal manure and food waste management issues individually, a collective approach would provide enhanced benefits to a broad range of rural, suburban, urban, agricultural, environmental, and business interests. Those benefits include:

Alternative Energy Generation

There is a significant potential that a community manure handling facility could generate income through the sale of generated electricity, heat, and the trading of carbon sequestration credits. It would generate a renewable fuel with multiple market potentials, produce a net increase in energy, reduce carbon dioxide and methane emissions, and eliminate of noxious odors.

Economic Development

A community manure handling facility would generate advantages and 'economies of scale' in benefits that would be significantly more than if each farm attempted to adopt and maintain its own manure handling technology. It would also produce sanitized compost and nutrient-rich fertilizer to be sold for use in agriculture or urban gardens.

Land Use

A project of this type would help farmers keep farming in Dane County, and maintain more land in agricultural use, in two ways. It would reduce land used for manure storage, composting, or land-filling of organic wastes, and it would produce profits from energy generation, which could be used to purchase development rights on Dane County agricultural operations. In addition, it would help protect an agricultural "green belt" around the Madison metropolitan area.

Transportation and Waste Management

The costs to transport manure would be cut for contributing farms in the vicinity of such a facility. In addition, food wastes generated in the surrounding area would be accommodated by the handling facility thereby generating additional income through tipping fees and reducing the volume of wastes going to county landfills.

Water Quality

A community manure handling facility would significantly advance nutrient management in the Lake Mendota Watershed and other areas of the county by encouraging livestock operations to work together in a cooperative fashion that benefits both themselves and the larger public. Agricultural interests involved in these discussions have agreed that all the nutrients 'captured' in the manure handling facility would be distributed outside of the Lake Mendota Watershed as part of the operating process.

Finally, a community manure handling facility could be used as a pilot project for future community manure handling facilities located elsewhere in Dane County.

Numerous meetings and discussions have occurred this year involving the owners of agricultural operations in the Lake Mendota Watershed, UW-Madison scientists, state agencies, environmental groups, the Dane County Land and Water Resources Department, electric utility firms, and private sector firms who work with various manure management technologies.

Further, this proposal has already gained support from several County bodies, including the Lakes & Watershed Commission, Agricultural Advisory Council, and the County's recently convened Manure Task Force.

NOW, THEREFORE, BE IT RESOLVED that the Dane County Board of Supervisors hereby endorses a technical feasibility analysis for a Dane County Community Manure Handling Facility Initiative. This feasibility analysis should address appropriate technology for a regional facility of this scale, optimal location and transportation issues, economic feasibility of the various potential benefits listed above, and private or public organization and management of this facility while insuring any benefits accrue to all Dane County residents.

BE IT FURTHER RESOLVED that the Dane County Board of Supervisors establishes an ad hoc, seven-member committee to oversee this technical feasibility analysis with assistance from the Dane County Land and Water Resources Department and the University of Wisconsin-Madison. Two members (at least one of whom shall be an active or retired farmer) shall be appointed by the chairperson of the Environment, Agriculture and Natural Resources Committee; two members (at least one of whom shall be an active or retired farmer) shall be appointed by the chairperson of the UW Extension Committee; a County Board Supervisor from the manure spreading task force to be appointed by the Chair of the Environment, Agriculture and Natural Resources Committee; and two members (at least one of whom shall represent a utility interest) shall be appointed by the Dane County Executive.

The question before the Board was adoption of Sub. 2 to Res. 115. Motion carried unanimously.

December 1, 2005

Appendix G

Potential Technologies for Managing Manure as Identified by Dane County

Potential Technologies for Managing Livestock Manure

This is a listing of some potential technologies for managing livestock manure. No preference is implied by the order in which they are listed.

1. Anaerobic (without oxygen) digestion systems include a variety of approaches, with a multitude of names, including:

- covered lagoon
- plug flow
- complete mix
- temperature phased
- slurry loop
- anaerobic sequencing batch reactor
- fixed film
- thin film
- mobilized film
- attached media
- two-stage digester
- floating bed

Also classified by their operating temperatures (psychrophilic (ambient temperatures), mesophilic (30-40° C, 86-104° F) and thermophilic (120-140° F)), there are already around 20 anaerobic digestion systems processing livestock manure in operation in Wisconsin – mostly plug flow and complete mix systems -- producing methane that is burned to produce electricity and recovering solids for bedding. There is also research on biogas generation using an anaerobic catalysis and/or photocatalysis by Michael E. Zorn of the University of Wisconsin-Green Bay (funded by Focus on Energy). Zorn is attempting to use these processes to help convert dairy manure into biogas. Research has also been funded by Focus on Energy to enhance the decomposition by the use of ultrasound (sonication), along with other research elsewhere.

Anaerobic digestion results in the nearly the same quantity of by-products as was put into the system. It does not change the total of nutrients (N, P, K) from what a lagoon produces, although changes the form of some nutrients and reduces bacterial counts.

2. Aerobic digestion. These systems use oxygen and do not produce methane gas. As with anaerobic systems, several forms are available, including:

- lagoons with air injection
- fixed film
- suspended growth/activated sludge

It is not known if any of these systems are in operation in Wisconsin.

3. Pyrolysis – Heat is used to convert material to a solid, a liquid fuel and a gaseous fuel. A system is under development by financial backers from Cashton, who purchased a pyrolysis firm in Australia and had the prototype shipped to Wisconsin in late 2005. Demonstrated in Green Bay in the first week in May, no details were provided on materials produced or the economics of the system.

4. Incineration – a manure incinerator has been built in Brown County, with the goal to also produce electricity. The system started up in late 2005. By-product is said to be an ash of 2% of the input. In addition, incineration facilities have also been built for handling poultry manure, often with bedding.

5. Gasification - this is similar to pyrolysis, but the emphasis is on the production of a gaseous fuel. It is not a new technology – gasification of coal was used to produce coal gas before natural gas became widespread, and in WW II and shortly thereafter, some cars in Europe had gasification systems to make a fuel gas out of wood. Thus, gasification can be implemented on a wide range of sizes.

6. Solids separation

- mechanical screens and presses
- gravity separation
- centrifuging
- ultra filtration
- reverse osmosis

7. By-product utilization

- composting/biodrying – an example is the work of Prof. Leslie Cooperband, Univ of Illinois
- incorporation into plastic lumber – Roger Rowell of the US Forest Products Laboratory believes that this approach is both technically practical and economical and has developed products with both dairy and swine manure. Work is also being done at Michigan State University and Troika Technologies, Manitowoc, WI
- Peat moss alternative – Professors Tim Zauche and Mike Compton at UW-Platteville have developed this material, which has won a state award in early 2006 and was highlighted on Wisconsin Public Radio on February 3, 2006

8. Phosphorus removal systems

- chemical precipitation
- struvite formation and removal
- enhanced biological phosphorus removal

9. Phosphorus inactivation – tying up the phosphorus in the soil

10. Nitrification/denitrification for removal of nitrogen. This process is common in wastewater treatment plants.

11. Algae for the tying up of carbon

12. “Manure munching microbes” – this is already being used at a Dane County farm (Wagner) as a means to recycle liquids in a manure flushing system, providing odor control and solids removal.

13. Wetlands treatment, including constructed wetlands.

14. Ozone treatment – it is said that this will both result in the manure being “... sterilized immediately, killing odors and pollutants.” One such process is called the Candler Waste Elimination System.

15. Desalination – for removal of salts in areas where salt build up in soils or water is a concern. A California wastewater system is implementing a desalination process as part of their system to handle dairy manure.

16. Conversion to fuel oil or diesel oil – this is a thermochemical process, with work underway at several places in the US and in Europe. For example, a system of this type is under development by Smithfield Foods, with plans for installation at the Circle Four hog farm in Utah. In addition, the University of Illinois is researching this process (in partnership with the Illinois Pork Producers Association).

17. Electric charge – an Israel technology has been licensed to the US firm ElectroCell Technologies, and is said to both result in the capture of some of the phosphorus, as well as reduce insect populations, nitrates and ammonia.

18. Soldier fly conversion – soldier flies will consume manure, reducing nutrient levels (including phosphorus) and the fly pre-pupae can be harvested for animal feed or other purposes. A description of this process is in the book *Understanding Alternative Technologies for Animal Treatment*, by Janelle Hope Robbins and is the subject of a research project in Europe.

Prepared by
John Reindl, Recycling Manager
Dane County Dept of Public Works
September 18, 2006

Appendix H

Summary of 2003 Feasibility Study of Anaerobic Digestion of Dairy Manure in Dane County

Summary Review

Feasibility Study of Using Manure for Renewable Energy in a Portion of Dane County, Wisconsin

In 2003, a report on using livestock manure to produce renewable energy was prepared by Viridigen LLC in association with Bioenergy & Environmental. With the title of *Technical and Economic Feasibility Study Using Dairy Manure for Renewable Energy*, it was published by Madison Gas & Electric Company, Madison, WI on November 28, 2003 and is 141 pages long.

Madison Gas & Electric Company (MGE) commissioned this study to determine the technical and economic feasibility of using dairy manure to generate electricity.

The sections of the report include:

- Scope of Work
- Executive Summary
- Alternatives for Biomass Derived Renewable Electricity
- How Much Dairy Manure is Produced and What is its Energy Generating Potential
- Are Dairy Producers Interested in AD/EG Systems
- Meeting with Farmers
- Can Anaerobic Digestion Process be Made More Efficient
- Analysis of AD/EG System for 200 Cow Individual Farm
- Analysis of AD/EG System for 4,000 Cow Centralized Facility
- Improving the Economics of AD/EG System
- Qualitative Benefits of AD/EG System
- Advantages and Disadvantages of Centralized AD/EG System
- Conclusions
- Recommendations
- Appendices
 - Questionnaire
 - Summary of Questionnaire Responses
 - Presentation Slides
 - Danish Report Centralized Anaerobic Digestion Facilities
 - Waukesha Engine Life Cycle Cost Analysis for VGF48GLD Engine
 - Anaerobic Digestion and Energy Recovery at 200 Cow Dairy (Conventional)
 - Anaerobic Digestion and Energy Recovery at 4,000 Cow Dairy (Conventional)
 - Application for Wisconsin Focus on Energy Business and Marketing Grant Fund

The consultants sent out a one page questionnaire to approximately 300 farms within the MGE service areas, asking for information on manure quantities, type of manure handling system, quantity and type of bedding, challenges of odor and land availability and the farmers' interest in either individual or centralized system for anaerobic digestion. There was a response from 43 farmers and a follow up meeting was held at a local restaurant, with all farmers in the MGE database invited. Ten attended the follow up meeting, with attendance perhaps held low due to particularly good spring planting weather.

The level of interest in exploring systems at individual farms averaged out to a "medium" level, with 11 very interested, 11 not interested at all, and 6 not having an opinion. For a centralized facility, the average response was the same, but 10 farmers did not express an interest.

Besides an analysis of conventional anaerobic digestion systems, the study also examined systems using ultrasound (sonication) to accelerate the process. The report notes that sonication has been studied for municipal sewage treatment, but that it has not been tested with animal manures, which have a higher solids content.

For conventional 200-cow systems on individual farms, the study estimates a construction cost of just under \$190,000 per system, with details provided for the system components. Assuming a 25% grant for construction costs, annual expenses and income are estimated as follows (numbers rounded by reviewer):

Expenses	
Operations and maintenance	\$9,100
Farm loan repayment	12,200
Depreciation	11,400
Total	\$32,700
Income	
Electricity sales and avoided cost (5.1¢/KWH)	\$10,900
Waste heat recovery	7,300
Compost sales	10,200
Carbon and renewable energy credit	1,400
Total	\$29,800
Net	-\$2,900

With sonication, the net income is estimated to increase by nearly \$7,000, thus producing a profit.

For a conventional 4,000-cow centralized system to serve the 18 farmers who indicated their interest in such a system, the study estimates a construction cost of just under \$4.4 million, and extensive details are provided, showing each component, including land requirements. Assuming a 25% grant for construction costs, the annual costs (including delivery of the manure from the farmers to the central facility) and income are given as follows (numbers rounded by reviewer):

Expenses	
Operations and maintenance	\$289,000
Rolling stock maintenance	106,000
Farm loan repayment	212,000
Rolling stock debt service	50,000
Depreciation	141,000
Total	\$798,000
Income	
Electricity sales and avoided cost (6.1¢/KWH)	\$407,000
Waste heat recovery	256,000
Compost sales	277,000
Carbon and renewable energy credit	54,000
Total	\$994,000
Net	\$196,000

With sonication, the net income is estimated to increase by nearly \$233,000, thus increasing the profit margin and rate of return.

Besides sonication, the report notes that the economics might be improved by the digestion of other materials, but does not describe any specific materials available in the service area that might also be digested.

The report next looks at some non-quantifiable benefits of anaerobic digestion and energy generation, and found that they can include odor mitigation, reduction of disease organisms, and the ability of solids separation and composting to export phosphorus from farms that have excess phosphorus. The report notes that farms in Dane County have excess phosphorus and that future requirements may cause farmers to find ways to avoid applying it to their soils.

For a centralized system, several advantages and disadvantages were noted and described, as shown in the following lists:

- Advantages
 - Financial return from economies of scale

- Increased electrical generation
- Lower financial risk
- Integration of electrical generation into the existing electrical grid
- Removal of manure handling responsibilities from livestock farmers
- Environmental benefits, such as odor, disease-organisms, and phosphorus
- Renewable and carbon energy credits
- Community support

Disadvantages

- Cost of transporting manure
- Need for storage lagoons for the effluent from the facility
- Land requirements
- Permitting
- Obtaining financing
- Community objections

The report concludes that an anaerobic digestion system is both technically and economically feasible, but that the economic viability depends not only on the sale of electricity, but also other products, such as waste heat and composted solids. The report recommends that a more detailed study be commissioned.

Copies of the full report are available from Laura Williams, Market Development Manager, Madison Gas and Electric Company, (608) 252-7131, lwilliams@mge.com.

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