

Financial Planning for Manure Treatment Systems

Financial Planning for Digester Systems

Implementing a large-scale manure treatment system, such as anaerobic digestion, can be complex and challenging. In addition to sorting through the many technical aspects needed to meet a particular set of farm goals, an understanding of the financial impacts of an on-farm treatment system is also needed. Financial planning throughout the treatment system planning process will provide this understanding and enable producers to make improved decisions pertaining to treatment.

Pre-feasibility Cost Estimating

Financial planning for manure treatment systems begins with information gathering. Capital and operating cost information from full-scale operating digester systems can be found in case studies on the Cornell Manure Management Program website www.manuremanagement.cornell.edu, and the EPA AgSTAR website www.epa.gov/agstar. Additional cost information can also be obtained from farm magazine articles, workshops and seminars, visits to farms with treatment systems, and from industry personnel. Initial cost estimations can be made for a specific farm and digester system using the EPA AgSTAR Farmware v.2.0 software, which is free for download at www.epa.gov/agstar. Although limited in scope, this software is relatively easy to use and is a good step towards understanding the cost variables and economic potential of a digester system.

Feasibility Study Analysis

The feasibility study is a more in-depth analysis of the operation and costs of a manure treatment system and its component alternatives. Feasibility studies

are conducted by independent consultants that have a thorough understanding of waste treatment. (A list of consultants is available at the Cornell manure management website.) Feasibility studies should provide estimated up-front capital and construction costs, as well as projections for annual revenue and operating and maintenance costs resulting from operation of several different treatment system configurations. These economic data will provide clear understanding of how each manure treatment system alternative could financially affect the farm business compared to the current management system. It is often at this stage of development that individual farm goals are refined based upon the projected economics and perceived risks associated with the various treatment system options.

Pro-Forma Financials

A pro-forma financial analysis model was developed by Cornell University to assist dairy producers to plan and manage the financial side of manure digester, composting and solid-liquid separation system projects. This Microsoft Excel spreadsheet, which is available for free download at www.bee.cornell.edu/extension/manure/financial_analysis_model.htm, enables the user to analyze the economic impact of individual and collective components of a manure treatment system, including the digester, electric co-generation, solid-liquid separation, and solids/liquid handling processes. Although this model has detailed input requirements, it is flexible and can be revised over time to accommodate new information and meet the needs of an individual producer. Additional assistance in using the model is available through the New York Farm Viability Institute. Together with the feasibility study, the financial analysis results of the model form an effective business plan for a manure treatment project. Income statements, cash flow, and balance sheet projections developed by the financial model can also be used in grant and loan applications.

Author

David M. Belcher
Dept. of Biological and Environmental Engineering
Cornell University
October 2005

Financing with Grants and Loans

There are several state and federal grant and loan programs designed to promote the implementation of manure treatment projects. A general listing of federal and New York State grant and loan programs can be found at

www.manuremanagement.cornell.edu/HTMLs/Financial.htm#NYS. Grants, which do not require payback, are initiated through a request for proposals (RFP). The complexity of the grant application, along with individual grant requirements such as how funds can be spent, the need for pre-existing information, and the amount of matching funds required, differ widely between grant programs. When incorporating grants into a digester project financial plan, particular attention should be paid to aspects of the grant program that affect project cash flow, such as added project construction requirements and fund recovery procedures.

Loans are often an important part of digester financing. From the standpoint of the financial lender (who does not benefit from odor reduction), digester systems are capital intensive and have little asset value. Set against the backdrop of volatile milk prices and a farm's current financial situation (e.g. debt load), a financial lender must determine how the digester project investment affects overall farm cash flow, and how risky the digester treatment venture is. A thorough understanding of the technology, risks, and pro-forma cash flow effects of the digester system will help address these concerns, and prepare the farm for the loan process. Loan guarantees or interest rate reductions may also be

available from federal or state agencies to help promote lending for digester systems.

Private Digester Project Developers

Private company digester development is a relatively new concept whereby private companies contract with a dairy operation to design, build, and operate a digester at the producer's farm. Arrangements vary from company to company; however, a typical arrangement would be for a private party to finance, build and operate a digester in exchange for owning all the biogas, power, heat and economic credits produced by the system. Electricity, heat, and digested solids for bedding/land application can be provided or sold back to the producer in exchange for providing raw manure to the digester process. The primary benefits of such an arrangement to a producer are: (1) the farm enterprise does not have to invest money or management time into the digester system and its operation; (2) manure odor is reduced, and (3) the fixed- and operating costs may be reduced. The primary disadvantage of the private party arrangement is that any profits associated with sale of biogas, energy and credits go to the project developer and not the producer. In addition, a private digester developer may require the importation of food waste, which could affect farm activity as well as the farm nutrient management plan. All lease agreements need to be studied carefully. Ultimately, the farm goals will determine the viability of private party development in the integration of digestion into an individual farm setting.

Who to Contact

David M. Belcher
Dept. of Biological and Environmental Engineering
Cornell University
Ithaca, NY 14853
dmb45@cornell.edu
607-255-1819
www.manuremanagement.cornell.edu

Sharon LaMontagne
New York Farm Viability Institute, Inc.
159 Dwight Park Circle, Suite. 104
Syracuse, NY 13209
slamo@nyfarmviability.org
315-453-3823, ext.101
<http://www.nyfarmviability.org/>

Acknowledgements

The research for this fact sheet was supported in part by the New York State Energy Research and Development Authority, under agreement 7536, "Transferring Technology from NYSERDA Agricultural Innovation Manure Projects". Support was also received from the USDA Rural Business-Cooperative Service and the New York State Dept. of Agriculture and Markets, through the New York Agricultural Innovation Center. Any opinions, findings, conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of NYSERDA or the State of New York, and reflect the best professional judgment of the author based on information available as of the publication date.