



ABC Biogas Business School

AD Risk Analysis Checklist

Vanessa McKinney, U.S. EPA

The AgSTAR Program



PARTNERSHIP PROGRAM

Collaborative program sponsored by EPA and USDA.

- 1 Promote Anaerobic Digestion**
Advancing economically and environmentally sound livestock manure management.

- 2 Strong Ties**
Working with industry, government, NGOs and university stakeholders.

- 3 Helping Hand**
Assisting those who enable, purchase, or implement farm anaerobic digestion projects.

Risk Analysis and Technical Review Checklist


- 35 Best Practices, over 10 topic areas
 - 3 page quick checklist
 - Detailed step-wise guide
- A focus on helping Project Developers:
 - Determine technical & financial feasibility of projects
 - Conducted streamlined analysis of potential projects
 - Assemble information from a variety of sources to support project advancement
 - Answer important questions needed for accessing potential financing



Checklist Topics


1. Project Overview
2. Feedstock Supply & Characteristics
3. Biogas Production Potential
4. Biogas Use
5. Facilities & Equipment
6. Project Cost Estimate
7. Financing Plan
8. Permits
9. Operation, Maintenance & Monitoring
10. Financial Feasibility Assessment

Checklist Topics

1. Project Overview
2. Feedstock Supply
3. Biogas Production
4. Biogas Use 
5. Facilities & Equipment
6. Project Cost Estimate
7. Financing Plan
8. Permits
9. Operation, Maintenance
10. Financial Feasibility

- Does the plan present calculations for expected volumetric rate of biogas production for each given influent processed?
- Does the plan demonstrate that the expected rate of biogas production is consistent with the anticipated feedstock supply and estimated volatile solids (VS) loading rate?
- Are the values utilized to calculate the expected volumetric rate of biogas production the same as peer-reviewed constants for each given influent processed?
- If the values utilized for calculating the volumetric rate of biogas production are different from values referenced in peer-reviewed resources, does the plan provide clearly documented methodology and laboratory analyses which demonstrate that different values are needed to calculate expected biogas production?

Checklist Topics

1. Project Overview
2. Feedstock Supply
3. Biogas Production
4. Biogas Use 
5. Facilities & Equipment
6. Project Cost Estimation
7. Financing Plan
8. Permits
9. Operation, Maintenance
10. Financial Feasibility

- Does the plan present calculations for expected volumetric rate of biogas production for each given influent processed?

Possibly the most important component of a biogas project plan is the estimate of the expected volumetric rate of biogas production. This quantity is a function of the:

- Concentration of VS in the digester influent,
- Volumetric loading rate, and
- Expected rate of biogas production as a function of volatile solids added (VS_a).

Biogas Production Rates for select common feedstocks		
Species	Biogas Production Rate, m ³ /kg VS _a	Source
Lactating dairy cow manure	0.09	Chen and Hashimoto 1980
Feeder pig manure	0.12	Chen and Hashimoto 1980
Crop residues	0.4 – 0.8	Ward et al. 2008, IEA Bioenergy 2010, Weiland 2010
Municipal solid waste	0.2 – 0.8	Ward et al. 2008

Information for the Agriculture Sector

www.epa.gov/agstar



Success Stories

- Project profiles
- Interviews with operators

Market Trends

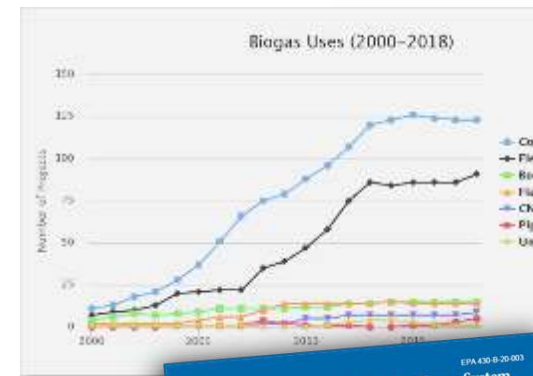
- National data for anaerobic digester projects
- Opportunities

Technical Information

- Biogas Toolkit - NEW
- Updated 3rd Edition Project Development Handbook - NEW
- Operators Guidebook (Coming Soon!)

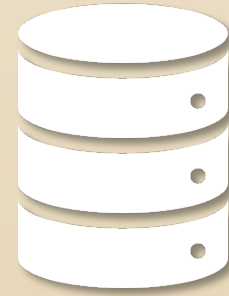
Collaboration

- Webinars
- Industry events



Information for the Landfill & LFG Energy Sector

www.epa.gov/lmop



Data

- Excel files and GIS map
- LFG energy projects
- Candidate landfills



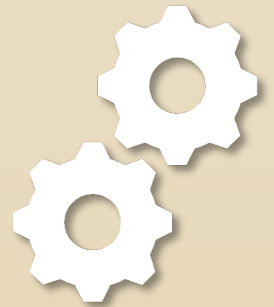
Technical Publications

- Project Development Handbook
- An Overview of RNG from Biogas
- Fact sheets



Network

- Webinars and Other Events
- 1,000+ LMOP Partners
- Listserv messages



Tools

- LFGcost-Web
- RNG Flow Rate Tool
- LFG Energy Benefits Calculator
- Conversion Tool



Contact:

Vanessa McKinney

mckinney.vanessa@epa.gov

Connect:

www.epa.gov/agstar

www.epa.gov/lmop