The Report of the Task Force to Study Anaerobic Digesters for Agricultural Use and Application in the State

August 2012

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I. Introduction

A. Purpose of Report

The purpose of the Legislative Task Force to Study Anaerobic Digesters for Agricultural Use and Application in the State was to study all of the following:

- The use of anaerobic digesters and the impact of anaerobic digesters on the state;
- How the use of anaerobic digesters may impact the environment;
- How the use of anaerobic digesters is regulated in other states;
- The use of anaerobic digesters in a cooperative setting; and
- The overall impact of state laws governing the use of anaerobic digesters on agriculture, residents, and local governments in the state.

The Task Force was required to prepare and submit to the General Assembly, not later than August 1, 2012, a report of the findings of the Task Force and recommendations concerning the use of anaerobic digesters and the impact of that use on the state. Additionally, the Task Force is required to submit to the General Assembly, not later than October 1, 2012, a report of the findings of the Task Force and recommendations concerning revisions of state law governing anaerobic digesters.

B. Statute Establishing Task Force and Reporting Requirements

The pertinent language in Sub. H.B. 276 of the 129th General Assembly regarding Task Force membership, duties, and submission of reports is as follows:

SECTION 3. (A) The Legislative Task Force to Study Anaerobic Digesters for Agricultural Use and Application in the State is hereby established. The Task Force shall consist of the following members:

(1) Two members of the House of Representatives appointed by the Speaker of the House of Representatives as follows:
(a) One member shall be from the majority party.
(b) One member shall be from the minority party.
The Speaker shall designate one of the members appointed by the Speaker as co-chairperson of the Task Force.

(2) Two members of the Senate appointed by the President of the Senate as follows:
(a) One member shall be from the majority party.
(b) One member shall be from the minority party.
The President shall designate one of the members appointed by the President as co-chairperson of the Task Force.

(3) The following members appointed by the Speaker of the House of Representatives:
(a) One member representing the Ohio Farm Bureau Federation;
(b) One member representing the Ohio Soybean Association;
(c) One member representing the Ohio Environmental Council or another environmental advocacy organization in the state;
(d) One member who is an agronomist and actively working with farmers in a distressed watershed in the state;
(e) One member who is an attorney who is licensed to practice law in the state and who has knowledge of the topics being studied by the Task Force.

(4) The following members appointed by the President of the Senate:
(a) One member representing the livestock industry in the state;
(b) One member representing the anaerobic digester industry in the state;

(c) One member representing the public;
(d) Two members representing local governments in the state.

(5) The Director of Agriculture or the Director's designee;

(6) The Director of Natural Resources or the Director's designee;

(7) The Director of Environmental Protection or the Director's designee.

(B) Appointments shall be made not later than thirty days after the effective date of this section. A vacancy on the Task Force shall be filled in the same manner as the original appointment. Members of the Task Force shall serve without compensation.

(C) The Task Force shall study all of the following:

(1) The use of anaerobic digesters and the impact of anaerobic digesters on the state;

(2) How the use of anaerobic digesters may impact the environment;

(3) How the use of anaerobic digesters is regulated in other states;

(4) The use of anaerobic digesters in a cooperative setting;

(5) The overall impact of state laws governing the use of anaerobic digesters on agriculture, residents, and local governments in the state.

(D) The Task Force shall prepare and submit the following reports to the General Assembly:

(1) Not later than August 1, 2012, a report of the findings of the Task Force and recommendations concerning the use of anaerobic digesters and the impact of that use on the state;

(2) Not later than October 1, 2012, a report of the findings of the Task Force and recommendations concerning revisions of state law governing anaerobic digesters.

Upon issuance of the report under division (D)(2) of this section, the Task Force shall cease to exist.

(E) The co-chairpersons of the Task Force shall hold meetings at times that the co-chairpersons or a majority of the Task Force considers appropriate. The Task Force shall not hold a meeting unless it provides at least twenty-four hours' notice to news media organizations that have requested such notification.

(F) The Task Force shall prepare and maintain minutes of its meetings. The minutes are public records for the purposes of section 149.43 of the Revised Code.

(G) For the purposes of this section, the Legislative Service Commission shall provide professional and technical support to the members of the Task Force that are appointed to it by the Speaker of the House of Representatives and the President of the Senate under divisions (A)(1) and (2) of this section.

C. Task Force Members

Members of the Task Force included:

- Senator Cliff Hite (Co-Chair)
- Representative Jim Buchy (Co-Chair)
- Senator Capri Cafaro
- Representative Dennis Murray

- Cathy Alexander - Ohio Environmental Protection Agency
- Mike Bailey - Ohio Department of Agriculture
- Frank Burkett - Ohio Farm Bureau
- Leah Curtis - Attorney
- Matthew DeTemple - Representing Local Government
- Karl Gebhardt - Ohio Department of Natural Resources
- William Knapke - Public Representative
- Mel Kurtz - Representing Anaerobic Digester Industry
- Joe Logan - Ohio Environmental Council
- Tom Menke - Agronomist
- Rich Myers - Representing Local Government
- Adam Ward - Ohio Soybean Association
- Chris Weaver - Representing the Livestock Industry

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II. Task Force Meetings

A. Meeting Agendas

MEMORANDUM

TO: Members of the Anaerobic Digester Task Force
FROM: Senator Cliff Hite
DATE: June 22, 2012
RE: Meeting Date

The Anaerobic Digester Task Force will meet:

Thursday, June 28, 2011
10:30 AM
Majority Conference Room

AGENDA
Meet and Greet
Discussion of questions as outlined in H.B. 276

MEMORANDUM

TO: Members of the Anaerobic Digester Task Force
FROM: Senator Cliff Hite
DATE: June 28, 2012
RE: Meeting Date

The Anaerobic Digester Task Force will meet:

Thursday, July 5, 2012
1:00 PM
Statehouse Room 116

AGENDA

Testimony Regarding taskforce requirements per H.B. 276

MEMORANDUM

TO: Members of the Anaerobic Digester Task Force
FROM: Senator Cliff Hite
DATE: July 6, 2012
RE: Meeting Date

The Anaerobic Digester Task Force will meet:

Tuesday, July 10, 2012
2:00 PM
Statehouse Room 116

AGENDA

Testimony Regarding taskforce requirements per H.B. 276

MEMORANDUM

TO: Members of the Anaerobic Digester Task Force
FROM: Senator Cliff Hite
DATE: June 28, 2012
RE: Meeting Date

The Anaerobic Digester Task Force will meet:

Wednesday, July 11, 2012
9:00 AM
Statehouse Room 116

AGENDA

Testimony Regarding taskforce requirements per H.B. 276

B. Public Testimony

quasar energy group

July 5, 2012

Good afternoon and thank you for allowing me to present expert testimony to the anaerobic digestion taskforce. As the committee member representing the anaerobic digestion industry, I am honored to be part of the state's concerted effort to explain the impact of this transformational technology.

quasar energy group is a Cleveland, Ohio based anaerobic digestion and renewable energy company. Our technology manages agricultural waste while producing renewable energy and valuable fertilizer. quasar's second facility was constructed in 2009 in partnership with The Ohio State University on the Ohio Agricultural Research and Development Center (OARDC) campus in Wooster. OARDC is powered by quasar's renewable electricity which is providing more than half of their annual consumption. quasar has seven operational digesters in Ohio and plans to break ground on six more this year.

Sustainable operating practices are key to creating a new profit center for Ohio's agricultural community. House Bill 276 paves the way for Ohio's livestock producers to vertically integrate their operations by generating energy from manure and regional organic residuals via anaerobic digestion. A typical farm digester has roughly a 5 year return on investment when processing both manure and merchant material as well as electricity and fuel to significantly reduce farm operating expenses.

ADS – Electric & Fuel	
System Capacity:	980,000 gallons
Basic System Cost (no CNG):	$2.25 M
Total System Cost (with CNG):	$3.225 M
Inputs (consumption):	60% manure, 40% other
Electricity:	720 kWh
Fuel (CNG):	200,000 gallons per year
EBITDA (project only):	$578,700
Simple Payback:	5.4 x

Anaerobic digestion advances manure management practices, creates new profit centers for farmers, and promotes a cleaner environment. quasar will be announcing how anaerobic digestion can mitigate nutrient runoff challenges with the addition of a nutrient separation technology option in distressed watersheds such as Ohio's Grand Lake St. Mary's (GLSM). quasar is prepared to construct a project with matching funds provided through the US Department of Agriculture's Natural Resources Conservation Service (NRCS) in GLSM to demonstrate the impact of anaerobic digestion with nutrient recovery technology – a technology that we anticipate replicating across the country. These projects fundamentally improve the long term financial health and viability of livestock operations and enhance the ecology in nutrient sensitive areas, giving Ohio's agricultural producers a competitive edge.

When we consider the potential impact of anaerobic digesters it is hard not to recognize that we are talking about much more than encouraging sustainable agricultural operations. We are talking about impacting Ohio's food processing companies, waste water treatment plants, manufacturing plants,

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public and private vehicle fleets, electric and natural gas utilities, and Ohio consumers who benefit from all of these activities.

For instance, it is no coincidence that a company like Danron has located the world's largest yogurt manufacturing plant in Minster, Ohio and Campbell's Soup has located one of the world's largest soup manufacturing plants in Napoleon, Ohio. These are only two of many examples which explain why Ohio is the 4th largest food manufacturing state in the Union. These companies are here because Ohio offers access to the essential ingredients required to manufacture their products. What if Ohio's legislative and regulatory leadership initiated a continuous improvement process and seized the opportunity to facilitate the development of a waste/residual management and renewable energy industry that would significantly reduce these companies' operating expenses? Wouldn't that encourage businesses to move here, stay here and grow here?

The charge of this task force is to study anaerobic digesters for agricultural use and application in the state. Anaerobic digestion is the starting point for sustainable solutions with economic benefits that will affect every Ohio resident. It starts with your help - Ohio's legislators and regulatory agencies can lead by proactively engaging in a continuous improvement policy. Legislators need to make a concerted effort to bring all stakeholders to the table, to evaluate the opportunities and embrace the possibilities for collaboration on a state level. If you and I do our jobs – if this task force gets legislators and regulators to consider the BIG opportunity for this technology - we are going to set in motion a transformation that will be truly meaningful for Ohio.

Thank you for allowing me to offer this testimony to the anaerobic digestion task force. I would be pleased to address any questions at this time.

Mel Kurtz
President

ENHANCING OHIO'S AGRICUTLURAL FUTURE

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8. **Legislators & Regulators:** Coordinate with stakeholders to continually update policies and regulations to match technology

OHIO FARM BUREAU

Forging a partnership between farmers and consumers.
•Working together for Ohio's farmers•

Testimony to the Legislative Task Force to Study Anaerobic Digesters for Agricultural Use and Application in the State
July 10, 2012

Good afternoon, I am Dale Arnold, Director of Energy, Utility and Local Government Policy with the Ohio Farm Bureau Federation.

The Ohio Farm Bureau Federation encompasses over 214,000 member families. We have active members directly involved in farming and agribusiness, as well as associate members who support Farm Bureau objectives. Many associates own, manage or are employed by large industries and small businesses. Farm Bureau members live in rural, suburban and urban neighborhoods throughout Ohio. Next to labor, energy is the largest expense on most farming operations. Many of our associate members are concerned about electric and fuel costs, too.

Farm Bureau is active with utilities, government, energy service providers, research and consumer groups developing new technology, demand side management, regulatory policy, education and community planning, all focusing on energy. We work with others to examine issues, evaluate programs and create effective strategies helping farm, business and residential consumers control energy costs.

Work with self-help energy aggregation groups has given us an appreciation for cooperative business management; a working knowledge of energy markets, and a keen understanding of community issues.

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Phone: 614.249.2400 • Fax: 614-249-2200 • Web site: www.ofbf.org

When it comes to energy development, there are no silver bullets. Farm Bureau policy supports a *Diversified Energy Portfolio.* We provide leadership in developing a collaborative approach to energy development employing advanced and renewable technology. We support advancement in oil & gas production, coal, nuclear and renewable technologies to address Ohio's energy needs. All parties must work together to upgrade and enhance technologies that will help communities address energy issues.

For anaerobic digesters, and biomass to maximize their impact in providing Ohioans more and better opportunities to control their energy costs; I ask that task force members consider the following:

Technology

Anaerobic digesters have changed over the years. Early digesters were designed and installed as custom-made, location specific systems using one feedstock and one source of bacteria. Weather, storm damage and temperature conditions dictated that the success rate for keeping one operational long term along the 40th parallel was around 40 percent.

Custom-made, location specific systems have given way to ones built using uniform parts and plans that can be used in a variety of locations. They take direct hits from adverse weather and remain operational. New systems employ a variety of bacteria cultures simultaneously, allowing one digester to accommodate a variety of feed stocks. Today's systems are more robust.

Economies of Scale

Economics need to move in pace with technology. Most systems have feedstock needs near 1000 animal units and investment requirements approaching $1000 per animal unit. We are talking about $1 million per unit, making the cost for many systems out of reach for many individual farms and small businesses. We need to accommodate two options.

Smaller units – Technology needs to advance to the point where systems can be installed and economically operated in locations with feed stock availability around 150 animal units.

Larger units – Technology needs to advance to the point where larger, community scale systems can be installed and operated in locations where additional cost for feed stock acquisition, transportation and storage are lessened. Size still matters; logistics need to be addressed.

Product Utilization

Digesters are systems where output could be used on-site and/or sold for off-site use. Additional work needs to be done to get products to market. Methane could need refining and pressurization to make it pipeline ready, utility grade for market delivery. Investment in dispensers and vehicle upgrades are required to use methane as a motor fuel.

Methane fuels on-site electric generation. *Customer friendly interconnection* needs to be further developed for producers and energy service providers to sell generation to all types of utilities efficiently, effectively and profitably.

Solid matter produced as a result of the process has value. While many are looking at its use as fertilizer and soil supplements, research needs to be done find other product streams. Use of these materials as an additional form of solid biofuel could be an option.

Linkage

For digesters to more actively contribute to a *Diversified Energy Portfolio,* all potential "team" members need to be recruited. Feed stock is available from agriculture, food processors, municipal waste management and others. Technology allows us to mix cultures and feed stocks. We need to create formulations that maximize methane and solid matter production.

Work is required showing how digesters could collaborate with coal, nuclear, shale gas, renewables, demand side management, energy efficiency and smart grid technologies to address energy requirements. Work needs to be done with industry leaders, service providers, consumer groups and government agencies to achieve these ends. Linkage needs to continue.

Conclusion

When it comes to energy development, there are no silver bullets. An appreciation for rapid changes in technology, fulfilling needs for individual and multiple locations, tackling logistics, community planning and recruiting stakeholders beyond the traditional agribusiness realm are vital to ensure that anaerobic digesters fully contribute to a *Diversified Energy Portfolio.*

Thank you for your time, consideration and support.

Ohio AgriBusiness Association

Anaerobic Digester Task Force
Testimony by Christopher Henney
July 10, 2012

Chairman Hite and members of the Anaerobic Digester Task Force, thank you for inviting me to present testimony today regarding the nature of cooperatives and how this business structure might be used to encourage the construction and use of anaerobic digesters in Ohio. I am Chris Henney, President and CEO of the Ohio AgriBusiness Association (OABA). OABA is a state non-profit trade association representing the wholesale and retail suppliers of plant nutrients and plant protection materials, the grain warehousing industry, the feed industry, the seed industry and other supply-side agribusiness in Ohio. Our membership ranges from small locally owned and operated businesses to large international firms; including both privately owned and cooperative firms.

Many of our cooperative members date back to the early 20th century and were often organized originally for the marketing of agricultural commodities, as well as for group purchasing power of agricultural inputs such as fertilizer. Over the last 10 – 15 years we have seen a large amount of consolidation amongst agricultural cooperatives. These mergers occur for the same reasons other business entities consolidate: increased purchasing power, reduced cost of production and a reduction in back office expense, for example.

According to the U.S. Department of Agriculture's Rural Development Agency, agricultural cooperatives have recently been receiving fresh attention as interest in local foods, farmers markets and community-supported agriculture has grown. There have also been experiments with variations on the traditional co-op business model, including new-generation processing co-ops and producer-owned limited liability corporations (LLCs). Renewable energy production, including anaerobic digesters, is an example of this renewed interest.

So what exactly is a cooperative? Dan Frederick, Program Leader of the Law, Policy & Governance Cooperative Resources Management Division of USDA, writes that a cooperative is a business owned and democratically controlled by the people who use its services. Any net profits are distributed equitably based upon the members' use of the co-op's services. Compare this to investor-owned businesses, whose net profits are distributed as dividends based on ownership, whether or not the shareholder uses the corporation's products or services. The cooperative provides a mechanism for farmer members to lower their input costs through the cooperative's economies of scale, to get services otherwise not available, to obtain

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quality supplies at the right time, to have access to markets or for other mutually beneficial reasons, and to gain bargaining power.

The following legal definition is found in Ohio Revised Code Chapter 1729 Ohio Cooperative Law:

Chapter 1729.01 Ohio cooperative law definitions
As Used in this chapter:

(A) "Agricultural cooperative" means a cooperative to which all of the following apply:
(1) The cooperative engages in any activity in connection with the propagation, raising, producing, harvesting, storing, drying, handling, processing, or marketing of agricultural products; procuring equipment and supplies or providing services for producers and others; bargaining; and any activity related to the foregoing.
(2) Producers or agricultural cooperatives exercise more than fifty per cent of the voting control of the cooperative.
(3) The cooperative does at least fifty per cent of its business with producers or agricultural cooperatives.

"Agricultural Products" is further defined in ORC 1729 (B) to include a number of items including dairy, livestock and poultry, and the "produce or byproducts of any of such products."

As you can see, Ohio cooperative law would most definitely allow farmers to organize for the sake of pooling manure for an anaerobic digester. It is also important to note that the idea of cooperatively pooling manure is not new. One of our cooperative members in the Grand Lake St. Mary's region already brokers manure on behalf of its members. The cooperative purchases poultry manure, samples it and then sells it as an agricultural fertilizer outside of the watershed. This same cooperative has also investigated constructing an anaerobic digester, but found that it is not economically feasible under current circumstances. While poultry manure is dry and easy to haul, swine and dairy manure has a significant amount of liquid making it difficult and expensive to haul very long distances, 5 – 10 miles is about the limit from an economic standpoint. This particular cooperative even looked at creating a pipeline system from one farm to another, but eventually ruled that out as well. There is continued interest though in owning or co-owning an anaerobic digester if it would provide value to their members and be economically feasible.

The main issue at hand here is not whether farmers can organize themselves as a cooperative to pool their manure for an anaerobic digester, but rather if it makes economic sense for them to do so. There are many factors that need consideration, but the ability to organize as a cooperative (or to utilize an existing cooperative) is not one.

Thank you for the opportunity to testify before this task force and thank you for the leadership shown on this issue, in particular by State Representative Jim Buchy amongst others here today. I welcome questions at this time.

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III. Task Force Report

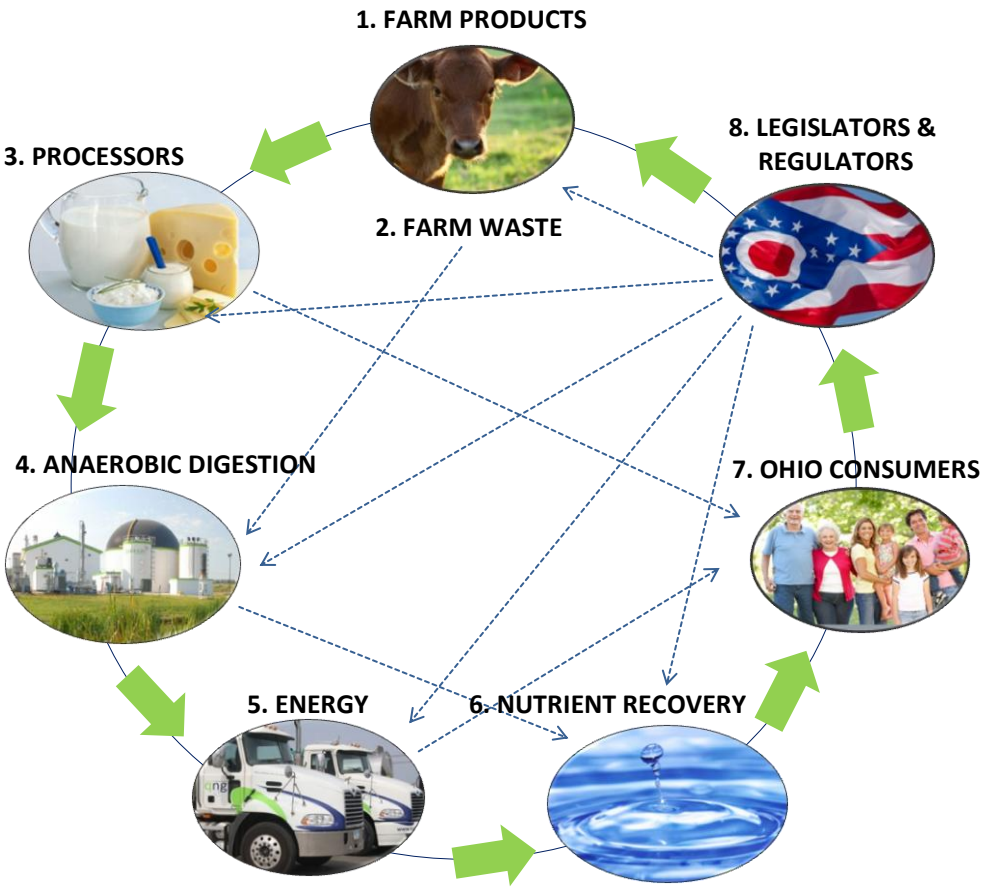
(1) The use of anaerobic digesters and the impact of anaerobic digesters on the state −

Anaerobic digesters are particularly effective at stabilizing manure and reducing methane emissions, but also can provide other air and water pollution control opportunities as well as opportunities for financial savings or additional revenue sources. Digesters do not reduce the nutrient content of the manure that goes into them, but instead provide pretreatment of organic components. This process may lend itself to additional treatment methods that potentially may improve nutrient management. Following processing, manure nutrients will remain in the digester effluent and may be harvested and transported to be used off-site.

On farms, this technology enables a farmer to manage manure while creating a new revenue source from "tipping fees" that the farmer charges for processing residual wastes that are not generated on the farm. Resultant biogas can be converted to electricity that can be sold to the utility grid and/or used to offset farm consumption of electricity. Biogas also can be cleaned and injected into a natural gas pipeline or compressed for use as motor vehicle fuel. Furthermore, waste water treatment plants that purchase electricity that has been generated by a digester on a farm are taking advantage of a lower cost option that will enable municipalities to avoid additional expenses.

There are numerous anaerobic digesters in the state of Ohio. Construction of several more are planned for the future, which will result in a total of between 10 and 15 digesters in the state.

ENHANCING OHIO'S FUTURE



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(2) How the use of anaerobic digesters may impact the environment −

Biogas recovery systems at livestock operations can be a cost-effective source of clean, renewable energy that reduces greenhouse gas emissions. Digesters have had a positive effect on environmental issues within the state by controlling odors. An important area of research includes further treatment of digester effluent, which could be useful in cleaning the water that comes from digesters so that it potentially could be discharged into lakes and streams. Digesters can reduce greenhouse gas emissions through the capture and reuse of methane. Including qualified waste products with manure in digesters would positively impact the environment by eliminating both the need for those products to be disposed of in landfills and the utilization of less desirable disposal methods. Additionally, when used as a motor vehicle fuel, compressed natural gas (CNG) burns 60% cleaner than gasoline or diesel fuel.

It is important to identify industries, in addition to agriculture, that will responsibly and effectively use the nutrient products of digestion to ensure that the digester alleviates, or is neutral to, environmental challenges, rather than contributing to them. The more important issue is ensuring that the ability to install and use a digester is available to more farmers and that there is a clear and consistent process for oversight, regulation, and use.

(3) How the use of anaerobic digesters is regulated in other states −

Digesters may be subject to several regulatory requirements, including federal and state permitting for solid wastes and air and water quality. Permitting is generally done at the state level.

State Permitting Requirements for Anearobic Digesters

The table below summarizes the air, solid waste, and water permitting requirements of the specified states as of July 2011 for on-farm anearobic digester systems according to the United States Environmental Protection Agency.[1]

STATE	AIR PERMITS	SOLID WASTE PERMITS	WATER PERMITS
California	The California Air Resources Board (CARB) oversees 35 districts; each district has different requirements depending on attainment status. For example, in San Joaquin Valley, manure AD systems must fill out applications describing the equipment that will be installed with the AD system. Combustion devices may require permits if they will be over federal thresholds. If organic waste is added, the type of organic waste may cause additional permit requirements. *Responsible agency:* California Air Resource Board	For solid waste, anaerobic digestion of compostable material is regulated under the Compostable Materials Handling Operations and Facilities Regulatory Requirements. If the feedstock if not compostable, the required permit will depend on the feedstock and amount as well as the AD system location. Some AD systems are exempt (depending on location), if they digest only "agricultural material" with less than 500 yd^3 of "green material" (which may be up to 10 percent food material by volume) at any given time, and do not sell or give away more than 1,000 yd^3 of compost annually. Facilities with up to 12,500 yd^3 of "green material" at any one time will require a permit if any food waste is included.	The majority of farms in California are in the Central Valley Region. This region has developed general permits for dairy manure and co-digestion AD systems and centralized dairy manure and co-digestion AD systems. The general permits were developed based on an Environmental Impact Report (218 pp, 10 MB) that was developed for AD systems at dairies. *Responsible agency:* California Department of Water Resources

[1] http://www.epa.gov/agstar/tools/permitting.html.

		Operations with more than 12,500 yd^3 need to obtain a permit. *Responsible agency:* CalRecycle	
Idaho	Air permits are required only if a combustion device is present and operating above federal thresholds *Responsible agency:* Idaho Department of Environmental Quality	AD systems processing only manure are regulated by the Idaho State Department of Agriculture. AD systems processing organic waste other than manure are regulated under Idaho Department of Environmental Quality's Solid Waste Management Rules as a processing facility. *Responsible agency:* Idaho State Department of Agriculture Idaho Department of Environmental Quality	The Idaho State Department of Agriculture has jurisdiction over the construction and management of dairy and CAFO waste systems. If the AD system directly discharges to U.S. waters, an NPDES permit is required. *Responsible agencies:* Idaho State Department of Agriculture Idaho Department of Water Resources
Illinois	Air permits are required only if a combustion device is present and operating above federal thresholds. *Responsible agency:* Illinois Environmental Protection Agency	AD systems processing only manure are exempt from solid waste permitting requirements. AD systems processing manure from other farms or other organic materials from off-site are considered a waste processing facility and require a permit unless it meets certain exemptions. . *Responsible agency:* Illinois Environmental Protection Agency	Information on water permitting requirements for AD systems is not publicly available at this time. *Responsible agency:* Illinois Environmental Protection Agency

Indiana	Air permits are required only if a combustion device is present and operating above federal thresholds. *Responsible agency:* Indiana Department of Environmental Management	There are no solid waste permitting requirements for AD systems processing only manure. *Responsible agency:* Indiana Department of Environmental Management	Indiana law defines a confined feeding operation (CFO) as any animal feeding operation engaged in the confined feeding of at least 300 cattle, 500 horses, or 600 swine or sheep, or 30,000 fowl, such as chickens, turkeys or other poultry. The Indiana Department of Environmental Management (IDEM) regulates these confined feeding operations, under IC 13-18-10, the Confined Feeding Control Law. Under this law, CFOs are required to meet citing and design requirements. They do not need to develop a site-specific NMP, but they must follow prescribed NMPs. AD systems processing only manure require no additional permits. AD systems processing other organic wastes in addition to manure may be required to perform additional screening of either the AD influent or effluent. *Responsible agency:* Indiana Department of Environmental Management

Michigan	Generally, manure AD systems are exempt from air permitting requirements unless they are combusting onsite and the combustion device produces more than 1 pound of sulfur dioxide an hour or has a heat input capacity of greater than 10 million Btu per hour. There is no difference in air permitting if organics are included. *Responsible agency:* Michigan Department of Environmental Quality	There are no solid waste permitting requirements for AD systems processing only manure. If a material other than manure is added to the AD system, authorization may be required before composting or land applying the solids; each operation is encouraged to work with the Michigan Department of Environmental Quality to determine what might be required. Some materials are exempted from permitting including food processing residuals, syrup from ethanol production, and grease trap wastes that do not contain septage and fish wastes. To be exempt, the AD must accept less than 20 percent other organics. *Responsible agency:* Michigan Department of Environmental Quality	AD systems accepting only manure are generally not required to obtain additional water discharge permits; permitted CAFOs must include the AD system in their NMP. If other organics will be included in the AD system, a permit or authorization might be required for land application. It is recommended that the facility contact the Michigan Department of Environmental Quality's Water Bureau to discuss the requirements. *Responsible agency:* Michigan Department of Environmental Quality
Minnesota	Air permits are required only if a combustion device is present and operating above federal thresholds. *Responsible agency:* Minnesota Pollution Control Agency	AD systems processing only manure have no solid waste permitting requirements. The agency's approach to permitting AD systems that process manure and other organic waste would be to include the solid waste requirements in an	If the AD system processes only manure, it must meet the requirements of a CAFO permit or a general state disposal system permit. If the AD system includes other organic wastes, it requires an individual permit. *Responsible agency:*

		individual permit that also includes the water permit information. *Responsible agency:* Minnesota Pollution Control Agency	Minnesota Pollution Control Agency
New York	Air permits are required only if a combustion device is present and operating above federal thresholds. *Responsible agency:* New York State Department of Environmental Conservation	Farms that manage their own manure or manure from other farms and have a CAFO permit from the Department of Environmental Conservation's Division of Water do not need a Part 360 permit for organics recycling from the Division of Solid & Hazardous Materials. Farms may take in up to 40 percent food processing waste by volume of the AD if they register under Part 360. If the AD system is processing more than 40 percent food processing waste, a permit *Responsible agency:* New York State Department of Environmental Conservation	Generally, if the farm is a CAFO, the CAFO permit will cover the AD system and no additional water permit will be required, even if the farm is processing food processing waste. *Responsible agency:* New York State Department of Environmental Conservation

Oregon	AD systems with combustion devices operating below federal thresholds require a Simple Air Contaminant Discharge permit if the system emits at least 10 tons per year of NO_x or CO or 5 tons per year of PM. AD systems with combustion devices operating above federal thresholds require a Standard Air Contaminant Disc. *Responsible agency:* Oregon Department of Environmental Quality harge permit.	Under current state solid waste regulations, facilities accepting solid waste other than manure and utilizing technologies to convert solid waste to useful products and chemicals (e.g., biofuels such as ethanol and oil, or electricity from combusted methane) are considered to be treatment facilities. Therefore, a Solid Waste Treatment Facility permit is required. *Responsible agency:* Oregon Department of Environmental Quality	For AD systems processing only manure, permitted CAFOs would not need an additional permit; the AD systems would just need to be incorporated into the existing permit and NMP. AD systems without CAFO permits may require a water permit, depending on the facility specifics. For AD systems processing other organic wastes in addition to manure, the state agency would review the system to determine which permits apply. Current AD systems at permitted CAFOs that accept other organics have not required additional permits. *Responsible agency:* Oregon Department of Environmental Quality
Pennsylvania	Agricultural AD systems are exempt from permitting unless they have an engine or boiler operating above federal thresholds. The inclusion of other organics has no effect on the requirements. *Responsible agency:* Pennsylvania Department of Environmental	AD systems, including those that digest food processing waste, do not require a solid waste permit for land application. *Responsible agency:* Pennsylvania Department of Environmental Protection	All PA farms producing or using manure are required to have a NMP. Most AD systems (including those that digest only manure and those that digest manure in addition to other organics) require a Water Quality Part II permit. *Responsible agency:* Pennsylvania Department of Environmental Protection

	Protection		
Texas	Air permits are required if a combustion device is present and operating above federal thresholds. In addition, facilities that are operating below federal thresholds but with more than de minimis levels of emissions require state authorization in the form of Permits by Rule (PBR). *Responsible agency:* Texas Commission on Environmental Quality	AD systems are permitted on a case-by-case basis. The state agency should be contacted to determine the requirements. *Responsible agency:* Texas Commission on Environmental Quality	Permitting requirements are case specific depending on the location, how the AD system fits within the permitted activity, and what types of materials are being digested. The state agency should be contacted to determine the requirements. *Responsible agency:* Texas Commission on Environmental Quality

Vermont	Generally, AD systems do not require a permit provided they meet the following requirements: the combustion device meets federal thresholds; the engine exhaust stack is vented a minimum of 4 feet above the nearest roof; the backup combustion device meets the requirements of 40 CFR Part 60, Subpart A 60.18; and the emissions source is registered with the agency in accordance with Vermont Air Pollution Control Regulations Subchapter VIII (PDF) (178 pp, 560K). The inclusion of substrates other than manure typically does not require additional permits, but each substrate is reviewed on a case-by-case basis. *Responsible Agency:* Vermont Department of Environmental Conservation	AD systems processing only manure do not require a permit. If food residuals are added, the state solid waste program would permit the system. *Responsible Agency:* Vermont Department of Environmental Conservation	AD systems are regulated by the Vermont Agency of Agriculture. AD systems including only manure do not require any additional permits. If other organic wastes are included, an indirect discharge permit for land application of the effluent may be required. For projects with land application, the Agency of Natural Resources coordinates with the Agency of Agriculture to determine available manure pit capacity for the additional organics effluent as well as nutrient loading limits for the farm. Indirect discharge permits are issued to the generators of the other organics, with the approved farms identified in the appendix of the permit. *Responsible Agencies:* Vermont Agency of Agriculture Vermont Agency of Natural Resources

Washington	There is currently a bill under consideration to create an air permitting exemption for AD systems. As proposed, to be considered for the exemption, the system must contain at least 50 percent manure, have a heat input less than 10 million Btu/hr, and have sulfur emissions that are 0.1 percent or less of total emissions. *Responsible agency:* Washington State Department of Ecology	AD systems that contain at least 50 percent manure and no more than 30 percent other organic waste may operate under an exemption from solid waste handling permits. Systems not subject to the exemptions must obtain a permit. Washington State University has a fact sheet on co-digestion (PDF) (6 pp, 479K), which discusses the permit. *Responsible agency:* Washington State Department of Ecology	AD systems operating at permitted CAFOs do not need an additional permit if the system is digesting only manure. If the system is digesting other organic wastes in addition to manure, the NMP must be modified to reflect these wastes. *Responsible agency:* Washington State Department of Ecology
Wisconsin	AD systems might require an air permit if a combustion device is present and operating at levels above the federal thresholds. The same permit requirements must be met regardless of the inclusion of other organics. *Responsible agency:* Wisconsin Department of Natural Resources	A CAFO operator must obtain approval before including any additives other than manure to an AD system. Additional permit requirements may apply (PDF) (4 pp, 227K) if the additives comprise more than 10 percent of the total volume of material in the AD system or if the state determines that the additives warrant it. *Responsible agency:* Wisconsin Department of Natural Resources	AD systems operating at permitted CAFOs do not need additional permits if the system is digesting only manure. If the system is digesting other organic wastes in addition to manure, authorization is needed and a permit may be required. *Responsible agency:* Wisconsin Department of Natural Resources

(4) The use of anaerobic digesters in a cooperative setting −

Under the Ohio Cooperative Law, the legal business structure for a cooperative already exists. Merchant and community digesters will reduce financial risk and increase financial rewards. Being centrally located to high concentrations of livestock farms will reduce regulatory monitoring costs, improve public confidence, increase energy volumes and values, and maintain access to low cost fertilizer. State and local governments may have a role in encouraging both formal cooperative arrangements and informal arrangements that emphasize cooperation from both the horizontal supply chain and the vertically related businesses. Further work by this Task Force could include evaluating whether changes in current law would facilitate this cooperation or if satisfactory regulation and oversight are already in place.

(5) The overall impact of state laws governing the use of anaerobic digesters on agriculture, residents, and local governments in the state −

There is a belief that with coordinated efforts within the agriculture and agribusiness world, economic rewards can be gained by all.

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