

## **Background on Wisconsin Manure Digesters**

### **Introduction**

Use of biodigesters to process manure has long been considered a best practice by farm and environmental advocates, but during the last couple of years, there has been an increase in pushback against dairy digesters in Wisconsin. This has raised some concern with farmers, who are considering adding more renewable energies, conservation practices and alternative revenue streams to their farms.

Biodigester facilities are not new, some being built as early as 1970. However, there has been a major increase in facility developments in the last decade (2010-2020). Within that timeframe, there was also an increase in federal funding. In 2024, the United States Department of Agriculture (USDA) implemented multiple ways for farmers to receive federal funding to add digesters to operations, including the Rural Development Business and Industry loan guarantee, the Value-Added Producer Grant for anaerobic digesters and the Rural Energy for America Program. Across the country, farmers are considering adding renewable energies to their operations and are encouraged by government to do so.

The purpose of this white paper is to provide members with a broad background on the use and function of manure digesters, the current issues facing farmers as they consider if or how a digester might work for their operation and provide a basis for members to consider changes or additions to WFBF policy related to digesters.

### **Background**

#### **Anaerobic Digestion**

Anaerobic digestion is a process where microorganisms break down organic material such as food scraps, manure or municipal sludge, in the absence of oxygen. This process results in two different end products: biogas and a solid residual.

Biogas, a renewable fuel primarily made of methane and carbon dioxide, can be used as a source of energy similar to natural gas to provide heat or generate electricity. The solid residual consists of solid and liquid materials. It can be land applied as is or further separated into its chemical components and liquids.

The benefits of anaerobic digestion include renewable energy generation, greenhouse gas emissions reductions, and the elimination of potentially harmful bacteria prior to applying nutrient rich organic matter to farm field as an alternative to chemical fertilizers.

#### **Digesters in Wisconsin**

In 2016, the Wisconsin Biogas survey identified 136 operating anaerobic digesters in the state. These include digesters using municipal wastewater, industrial wastewater, animal manure and other agricultural residues. Additionally, it includes the 35 operational landfills with biogas capture systems. As of January 2023, the Environmental Protection

Agency's (EPA) "AgSTAR Livestock Anaerobic Digester Database" states that Wisconsin has 36 operating dairy digester facilities, with seven additional facilities in construction. Location, size and type varies throughout the state.

The majority of livestock digester facilities are south of Highway 29, mainly along the eastern and central portion of the state. Only one facility is a dairy and swine digester, with the remaining 42 operating on dairy alone. Nearly 35% of these facilities use co-digestion, supplementing their on-farm mixture with additional process water, food wastes, agricultural residues, fats, oils and greases, and other feedstocks or a combination of those previously listed. Additionally, the size of the farms varies throughout the state with facilities operating with fewer than 200 head of livestock up to 30,000 head.

### **Farm Scale and Community Digesters**

More than 50% of the digester facilities in Wisconsin have been awarded funding through USDA. Almost all livestock digesters in the state are considered "farm scale" projects, which means only one farm's waste is used in the digester. There are five digester facilities in the state that are considered "community digesters," meaning these facilities combine multiple farms' waste to operate. Four of these community digesters are located in Dane County, with the fifth located in Brown County. Additional counties throughout the state have considered adding community digester facilities, especially in areas with karst topography.

### **Biogas End Use**

How the biogas product is used in these facilities varies throughout the state. One-third of the digester facilities use cogeneration, which is a process that uses biogas to generate electricity and heat simultaneously. Over 20% of the facilities create electricity and almost 50% of farms can connect their digesters to pipelines. Nearly all community digesters in the state connect to pipelines, with one facility generating electricity for hospitals and clinics.

### **Resistance to Digesters**

The primary objections raised largely by environmental advocates from outside the mainstream raise the specter of possible harm to the environment or public health while ignoring the realities on the ground. Concerns about the biosolid residual being land applied suggest potential harm from runoff while ignoring the fact that the alternative is land application of raw manure. Concerns are raised about possible increased emissions from leaks in facilities or gas pipelines from the anaerobic digestion process, ignoring the fact that these gasses would be released during decomposition in the field with none of the gas being captured. Additionally, complaints about increased truck traffic and the associated emissions from bringing in food scraps and other organic materials have also been raised while ignoring the reality that these materials would otherwise be trucked to a landfill. Some have raised arguments that adding digester facilities on farms leads to increasing herd sizes.

Overall, there has been a major increase in public opposition to biodigester facilities in Wisconsin and across the country. While initial objections have been raised by groups largely opposed to modern agriculture, they are having a substantial impact on public perception and understanding of what digesters do and their impact on the environment and rural landscapes.

### **WFBF Policy**

Energy (5): 17-20. *We support the research and development of methane digesters and phosphorous recovery systems as a way to create an alternative energy source and reduce the nutrient density of liquid manure resources by transferring those nutrients to stackable nutrient-rich solids phosphorus in manure and create an alternative energy source.*

Energy (6): 23-25. *We support a state and national energy policy which includes energy conservation, increased domestic production and marketing of renewable fuels and energy, including but not limited to ethanol, biodiesel, crop-based fuels, methane, water, wind and solar.*

### **Discussion Questions**

- Should WFBF continue to support and encourage farm scale biodigester facilities?
- Should WFBF support community digesters on a local level as a way for farm operations to eliminate their manure, in addition to previously used methods?
- Should facilities using co-digestion be considered an agricultural use since the facilities are using manure and supplementing with off-farm organic materials? Should these facilities be zoned agricultural?
- Should digester facilities using manure from multiple farms (community digesters) be considered an agricultural use and therefore zoned agriculturally?