Renewable Natural Gas Projects Underscore Importance of Anaerobic Digestion

Blog posted on March 7, 2019 by Solutions from the Land

In California, where dairy facilities are becoming major producers of energy, recently announced developments both richly underscore the technical innovation present in today's agriculture to avoid and reduce greenhouse gas (GHG) emissions and demonstrate the value of the sector's contributions to our energy needs.

Southern California Gas Co. (SoCalGas) and biogas producer Calgren Dairy Fuels said last month that renewable natural gas produced at Calgren's dairy digester facility in Pixley, CA, is being injected into SoCalGas pipelines. The project marks the first time that carbon-negative renewable natural gas produced from cow manure has been injected directly into the largest natural gas distribution utility system in the United States.

Renewable natural gas can be used in trucks and buses, to generate electricity, fuel heating systems in homes and businesses, and for cooking.

SoCalGas says developing renewable natural gas is a smart and cost-effective solution to reducing greenhouse gas emissions from the transportation and building sectors, noting that replacing just 16 to 20 percent of traditional natural gas in the state with renewable natural gas would reduce emissions equal to electrifying 100 percent of buildings in California. Furthermore, it would be two to three times more cost-effective, especially given that it does not require expensive appliance changeouts or costly new mandates.

Calgren's facility, known as a dairy digester pipeline cluster, will collect biogas from anaerobic digesters at 12 Tulare County dairies, then clean it to produce pipeline-quality renewable natural gas. It's the first such dairy digester pipeline cluster in California and is expected to be the largest dairy biogas operation in the United States when the company adds nine additional dairies later this year.

The facility will capture the methane produced from the manure of more than 75,000 cows, preventing about 130,000 tons of greenhouse gas from entering the atmosphere each year, the equivalent of taking more than 25,000 passenger cars off the road for a year.

With the input from anaerobic digesters at what will be by the end of the year 21 dairy operations, the distributor will be capable of adding up to 2.26 billion cubic feet of renewable

natural gas – an otherwise wasted, GHG-emitting material – annually to its pipeline system, enough to fuel more than 1,200 Class 8 heavy-duty trucks.

Last October, Smithfield Foods Inc. announced plans to implement "manure-to-energy" projects across 90 percent of its hog finishing spaces in North Carolina and Utah, and nearly all the company's finishing spaces in Missouri over the next ten years. Smithfield will convert existing anaerobic treatment lagoons to covered digesters or construct new covered digesters to capture biogas that will be transported to central processing facilities and converted into renewable natural gas in North Carolina, Missouri and Utah.

The food giant's commitment to deploy technologies that convert methane – a powerful GHG that is 20 times more damaging than carbon dioxide – will not only reduce emissions, but also create economic opportunities for rural communities and produce enough renewable natural gas to heat tens of thousands of homes.

The anaerobic digestion technology that has led to the recent spurt in renewable natural gas production and distribution has been developed and gradually refined for more than a decade. There are now nearly 250 U.S. livestock operations with anaerobic digesters, compared to fewer than 150 a little more than five years ago. Research underway at universities, non-profit organizations and state and federal agencies around the nation ensure that technology growth and development continue.

Equally important to sustaining and building on the technology are government incentives, such as grants and low-interest loans through USDA's Rural Energy for America Program (REAP). State incentives like Renewable Portfolio Standards and market-development programs for anaerobic digestion by-products, including fertilizers, also boost the technology's growth.

Major developments like the Calgren and Smithfield projects reflect a sound balance of agriculture and technology. The potential they demonstrate for promoting sustainably managed livestock operations with greater efficiencies and reduced costs that only serve to improve the bottom line make them essential. The emission-reduction benefits anaerobic digestion delivers in a time of a changing climate make the technology crucial in today's agriculture, deserving of further development and funding.