

Indiana Developer Turns Manure into Renewable Energy

JEFF PARROTT, The Elkhart Truth

GOSHEN, Ind. (AP) — A developer is bringing a new project to Elkhart County aimed at reducing the environmental impact of dairy farms and helping the nation's efforts to reduce greenhouse gas emissions.

Brian Furrer is building a \$7 million facility on a former gravel mining site in rural southwest Goshen that will turn cow manure into electricity. The project, called Green Cow Power, will be up and running by September if construction goes smoothly, [The Elkhart Truth](#) [1] reported.

The facility at 24242 C.R. 40 is believed to be the eighth such operation in Indiana. It's not the first one in the county to turn animal waste into energy, but it will be the largest. Culver Duck, a duck processor near Middlebury, also operates such a digester, using the blood, heads, tails and innards — the parts not used for food products — to generate methane that makes electricity.

Culver Duck produces about 800 kilowatts per hour of electricity, which is less than one-third of the 3 mwh that Green Cow plans to send into the grid.

Furrer has done this before. His company, Bio Town Ag, operates a larger facility in the White County town of Reynolds, about 25 miles north of Lafayette. It's producing about twice the electricity that the town of Reynolds uses.

He committed to the Reynolds project in 2005, started construction in 2010 and became operational in 2011.

Furrer, from White County, said he decided to try the concept in Elkhart County because it has so many dairy farms and it's served by electric utility NIPSCO. By contrast, Rural Electric Membership Corporations, or REMCs, serve many rural areas but haven't been willing to pay high enough prices for electricity, he said.

"NIPSCO is doing the best job of working with dairy farmers of anyone in the state," Furrer said. "We needed a dairy farm, a lot of cows, and we needed NIPSCO, so that's why we're here."

The utility industry calls such energy "biomass" and is looking to buy more biomass, solar and wind energy, all renewable sources, as new federal environmental regulations allow less use of coal. Through its Feed-in Tariff Program, NIPSCO bought about 6,200 megawatts in the program's first year, 2011, and last year bought about eight times as much, or 49,000 megawatts — enough to power about 6,000 homes per year, said NIPSCO spokeswoman Kathleen Szot.

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Biomass power generation grew about five-fold, rising from 6,200 to 31,600 megawatts during that time.

Renewable sources in the FIT pilot program still make up a tiny fraction of electricity produced in coal- and natural gas-heavy Indiana, about 0.3 percent last year, but that will change eventually, Furrer predicted.

"We're going to use less dirty coal in this country," Furrer said. "That is just a fundamental fact of life. We have a governor that's fighting that and U.S. legislators and state legislators, but the reality is we're going to reduce our carbon footprint in this country. We're going to do it through many different mechanisms. This is one mechanism that's going to help."

Furrer said the Reynolds facility has been a success, but he and his staff are still learning how to improve it. If things go well at Green Cow Power, he will look to launch another project elsewhere. He declined to say where.

"It has a huge amount to do with how well we can make the digester perform," Furrer said, noting that some anaerobic digesters have lost money while others barely break even. Based on what he's learned in Reynolds, he figures it will take about seven years to recoup the \$7 million in capital costs.

"It's a biological process and there's not a tremendous amount of science behind the biology of methane digestion," he said. "When we have trouble, it's really difficult to troubleshoot it."

For example, in Reynolds last winter, methane production fell way off.

"We never figured out what caused the problem and we're not sure what we did to fix it," Furrer said. "We made a few changes and it came back up and it's working great again."

At Green Cow Power, the manure will be pumped into two underground sealed tanks, called anaerobic digesters, that hold a combined 5 million gallons. Bacteria break down the manure and methane gas is separated. Heat from the methane gas powers engines that turn generators to make electricity.

Solids from the waste will be separated, dried and used as bedding for the cattle barns. Leftover liquids will be sent into a 25-million-gallon open lagoon, where it will be stored until the dairy farmers can spread it on crops as fertilizer. Manure will remain in the digester for 22 days.

Furrer said there should not be much odor coming from the lagoon because fatty acids, which cause the most odor, are removed in the digester.

At Reynolds they're trying to perfect the process so that it results in water that's clean enough for cattle to drink. In Goshen that water might be used to grow crops if the process works.

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"You have to remember that astronauts recycle their own urine," Furrer said with a chuckle. "If they can do it ."

The digester will need about three semitrailers full of manure per day. Supplying it will be local dairy farmer Brent Martin and some of his relatives, who are partners and investors in the project. Their five dairies all are within a roughly 3-mile radius of the site.

Martin said he has about 1,000 cows and hopes to win state approval to increase that number to 1,700 once the facility is operational. He said the change should help him avoid some state environmental regulation violations he's had in the past.

In 2006, Martin pleaded guilty to a Class D felony charge of unlawful discharge of a deleterious substance, after prosecutors alleged he illegally spread manure on a frozen field. He received a one-year suspended jail sentence.

In Martin's most recent routine inspection by the Indiana Department of Environmental Management on May 19, the inspector found three violations at his dairy operation at 66569 C.R. 13 near Goshen, according to IDEM records.

Liquid manure had breached the wall of a storage structure, there was no marker in an open manure lagoon indicating how deep the manure was, and Martin's barn did not contain written records documenting his required self-monitoring of the condition of his manure storage system. He has 60 days to correct the violations.

Martin and his relatives will no longer be storing as much manure in open lagoons on their properties.

"The digester needs a lot of manure every day, and now we got a place to go with it," Martin said. "It's going to be a good thing."

The U.S. Environmental Protection Agency is so supportive of the concept that it's created a separate agency to promote it called AgStar.

Furrer notes his project benefits the environment in three ways:

Methane, a contributor to greenhouse gas, doesn't escape into the atmosphere.

Fossil fuels aren't being used for electricity, so there's no carbon release into the atmosphere.

Potassium and phosphorous are infinitely recycled as crop fertilizer, rather than being mined.

County Commissioner Mike Yoder, a dairy farmer, agreed.

"It's kind of nice to see something being built in the area producing methane from dairy farms," Yoder said. "It's a very large facility. There's a lot of manure being produced in that area. It's a very environmentally friendly way to handle that

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manure."

Yoder said he and two neighboring farms in 2006 considered building such a facility, on a smaller scale, but said NIPSCO at that time was offering too low of a rate to justify the \$1 million construction expense.

Yoder said the county will monitor the condition of C.R. 40 and other roads near the facility to make sure they can handle the increased truck traffic coming to and leaving the facility, but he doesn't anticipate problems.

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