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MUSCATINE SEEKS TO TURN FOOD WASTE INTO VEHICLE FUEL

Receiving station first step in creating natural gas as a vehicle fuel

MUSCATINE, Iowa – Food, oils, grease. The spoils of food preparation and consumption. Deposited into the trash by most people these remnants are eventually transported to landfills where it decomposes and turns into methane gas, a greenhouse gas that is 30 times more potent as a heat trapping gas as carbon dioxide.

Fans of the “Back to the Future” movie franchise will remember the DeLorean invented by Doc Brown. In Part II of that franchise, Doc returns from the future with a modified DeLorean that has a fusion device powered by waste products. That future, in a sense, is here now.

Jon Koch, director of the Water Pollution Control plant (WPCP) for the City of Muscatine, has been instrumental in the development of facility at the plant to receive FOG (food, oils, and grease) and turn them into CNG (Compressed Natural Gas) or RNG (Renewable Natural Gas) as some call it. The process, Koch says, is beneficial to the environment and to the City.

“Municipal waste rarely makes enough gas to make it worthwhile to do anything extra with,” Koch said. “Our food has already been digested once and if you throw it back into the digester a second time to squeeze out every last bit of energy there is not much there.”

But when you add waste food that has not gone through any other processes, you get a lot of gas and that is the key to the creation of CNG. You just have to figure out what to do with it after you create it.



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“We had a study done and shared the results with the Council that asked the question ‘Okay you are going to make the gas but what are you going to do with it when you are done’,” Koch said.

The result was a plan to build a receiving station for the FOG material and use the tipping fees to help subsidize the process.

“You have to build the receiving station first and see how much gas you are going to make,” Koch said. “We can fund the receiving station just on the tipping fees coming in and we can pay back the \$2.53 million cost to build in seven to 10 years.”

So you create CNG, now what? One idea was to produce electricity but that was rejected because the City of Muscatine already has a power plant and the cost of cleaning the gas, buying the turbines needed, and upkeep on the facility would push the window for paying back the investment to 20-30 years. Another idea was to pump the gas into the Kinder Morgan natural gas pipeline. This idea was also not cost effective because of the distance from the WPCP to the pipeline, the necessity for cleaning the gas to strict guidelines and testing it frequently, and the necessity to buy a compression unit bigger than the one needed to make natural gas.

“Both of these ideas would eventually make money for the City but we needed to see what would give us the biggest bang for the buck,” Koch said. “And that is making natural gas and then selling it as a vehicle fuel.”

This project was his message to Iowa legislators in Washington, D.C., when he visited with them at the end of March during National Water Week. Most of the individuals attending the conference and speaking with their representatives brought messages seeking no cuts to funding or messages that mirrored similar messages brought a year ago.



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“I brought a different message to them and they were really excited to hear about the project,” Koch said.

Most of the efforts to create CNG from food waste can be found in larger cities such as Los Angeles or San Francisco according to Koch. Des Moines also has a large project to turn waste into natural gas which they pump into a nearby pipeline. Other locations take advantage of next door dairy farms or breweries to convert food waste into natural gas.

“But they (Des Moines) are not using food waste nor are they creating natural gas for a vehicle fuel,” Koch said. “Muscatine is just about the only city of its size to be putting together a project such as this and it is drawing a lot of interest. Other places are dipping their toes into the water but no one has a project ready to go like we do.”

Koch hopes that Muscatine can claim part of a \$14.7 million settlement with Volkswagen AG over their diesel cheating scandal. Iowa is slated to receive \$21 million of that settlement and Koch wants part of that money. Three million would be nice, Koch noted, but he would take a million to start.

“Once we build the receiving station we will basically be out of money for construction,” Koch said. “So we have to look for loans, bonds, or a portion of that VW settlement to build the infrastructure needed to take the gas that comes out of the digesters and turn it into reusable fuel for vehicles.”

That VW money could also help purchase the first natural gas powered garbage truck, police car, or city fleet vehicle.

“We are in a position to do something great for the environment, great for the City, and great for the community,” Koch said. “We have commitments for bringing food waste to us and we have companies interested in buying that natural gas for their vehicles. It is tough, however, to plan



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an infrastructure for producing this vehicle fuel when you have just interest by companies and not commitments to buy the gas.”

Still the expectations are high that the process of generating renewable natural gas as a vehicle fuel will succeed in Muscatine and bring another shining star to the entrepreneurship of Muscatine.