

LOCAL NEWS

Boulder, Longmont look to offset emission with renewable natural gas



Longmont city employee Charles Kamenides, discussing how the anaerobic digestion works to eliminate methane and carbon emissions.



As towns and counties around the state transition to renewable energy, the Colorado Department of Public Health and Environment predicts vehicles will become the largest emitter of carbon dioxide.

In large part that is caused by lack of electric motors for heavy-duty vehicles.

In response, cities across Colorado, and along the Front Range in particular, are beginning to invest in biogas infrastructure capable of refining methane and carbon dioxide produced by decomposing organic waste into renewable natural gas compatible with vehicles.

Natural gas emits [30% less carbon dioxide](#) than diesel fuel, according to the U.S. Energy Information Administration, which means the effects of biogas refining are compounded three times over. It eliminates emissions from the decomposition of organic waste, which totals 4.1 million metric tons of carbon dioxide each year according to a draft of the [2019 Colorado Greenhouse Gas Inventory](#). And use of biogas reduces emissions from heavy-duty vehicles, which ultimately reduces the state's overall demand for fossil fuels.

"Colorado has a significant opportunity to produce and utilize renewable natural gas in medium- and heavy-duty vehicles throughout transportation systems in the state," said Will Toor, executive director of the Colorado Energy Office and former Boulder County commissioner. "With renewable natural gas, the replacement of diesel fuel and mitigation of methane emissions from agricultural, municipal and commercial waste management practices could provide meaningful climate and clean air benefits through reduced greenhouse gas and nitrogen oxide emissions."

More specifically, the Colorado Department of Energy estimated that if Colorado converted all of its organic waste into renewable natural gas, it could replace approximately 140 million gallons of diesel, or 24% of the state's total diesel consumption for transportation. In turn, annually eliminating approximately 1.4 million metric tons of carbon emissions from fuel combustion.

Lack of incentives, demand



The first is the lack of governmental incentives for developing the anaerobic digesters, which generate and collect biogas, as well as biogas treatment and biogas compression instruments that refine the biogas into renewable natural gas.

The second barrier is a lack of demand for renewable natural gas in Colorado, which limits options for financing and public-private partnerships.

“Put simply,” the report states, “a handful of local renewable natural gas production facilities could make enough fuel to supply the entire existing natural gas fleet in the state, which would barely scratch the surface of Colorado’s potential renewable natural gas production.”

The final barrier is actually getting renewable natural gas to the end-users, which requires existing gas utilities allow renewable natural gas to be injected into their pipelines.

Longmont overcame these barriers by creating a closed-loop system.

For starters, it received a \$1 million grant from the Energy/Mineral Impact Assistance Fund of the Colorado Department of Local Affairs, one of the only grants the Colorado Energy Office identified for such projects. The grant helped offset the \$8.3 million for Longmont’s new Waste Water Treatment Facility, \$5.2 million of which went toward the biogas infrastructure and a natural gas fueling station.

It also received a \$385,000 grant from the Regional Air Quality Council, to offset the costs of purchasing new garbage trucks powered by natural gas, which cost roughly \$45,000 more than a diesel-powered garbage truck.

Project efficiencies

While the upfront costs are high, once completed in the first quarter of 2020, the city will be able to eliminate nearly 100,000 gallons of diesel fuel use and reduce carbon emissions by an estimated 1,000 metric tons of per year, the equivalent of removing 200 cars from the road.

Building its own fueling station also means the city won’t have to deal with an outside utility provider.



“We find efficiencies in our project because we don’t have to spend additional money to bring the renewable natural gas to the higher standards required to inject it into Xcel Energy’s pipeline,” said John Gage, a Longmont civil engineer who is heading up the renewable natural gas project. “And, by using a fuel that’s cheaper than diesel.”

With 11 of Longmont’s garbage trucks already converted to renewable natural gas, and the final five expected to be upgraded by 2021, Charles Kamenides, Longmont’s waste services manager, estimated the city will save roughly \$300,000 a year by not having to purchase diesel.

In addition to fuel savings, Longmont also will be earning credits through the Environmental Protection Agency’s renewable fuel standard program. The annual benefit associated with those credits is \$150,000 to \$250,000 per year.

Grand Junction, which initiated a renewable natural gas program in 2014, employs 62 heavy-duty vehicles powered by natural gas, including street sweepers and public buses, offsetting 1,500 metric tons of carbon dioxide each year. Longmont and Boulder could conceivably do the same, but to deliver the gas to the end-users, Grand Junction had to construct a 5.7-mile pipeline from the wastewater treatment facility where the renewable natural gas was produced and a compressed natural gas fueling site.

While Boulder does not operate its own trash collection and did not want to build a pipeline to the nearest natural gas fueling station, it was able to offset costs by partnering with Western Disposal Services, which has agreed to purchase the renewable natural gas, and Xcel Energy, which has agreed to transport it.

Though these partnerships won’t cover Boulder’s costs, Chris Douville, coordinator of Boulder’s Water resource recovery facility, said along with the credits through the EPA’s renewable fuel standard program the biogas operation should be cash positive.

The \$4.1 million in capital construction costs, he said, will be paid out over several years, without bonding or raising utility rates, as it does not represent a major draw on the Boulder’s \$25 to \$50 million budget, depending on the year.

Even if these programs just manage break even, the opportunity to eliminate thousands of tons of carbon dioxide from the atmosphere, and improve the Front



“We’re going to see a lot more of these projects going forward,” Douville said.
“Whether it’s landfill recovery or wastewater digestion, I think we’re on the tip of a large wave of these types of projects.”



John Spina | Reporter

John Spina is a resources reporter for the Longmont area covering everything from the environment to business

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