



Natural Gas Vehicles for America

## **New Studies Highlight Benefits of RNG as a Transportation Fuel**

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The US Department of Energy's Argonne National Laboratory and the sustainable energy NGO Energy Vision released two case studies assessing the results of pioneering projects that were among the first to produce Renewable Compressed Natural Gas (RCNG) vehicle fuel, by using anaerobic digesters to capture the biogases from decomposing organic waste.

Energy Vision and Argonne produced the studies jointly. One study looks at Fair Oaks Farms, a large dairy cooperative in Indiana with roughly 36,000 cows. It converts manure to RCNG using a large anaerobic digester and uses the fuel to power its milk tanker trucks. The other study assesses the Sacramento BioDigester, the first food---waste digester in California to turn commercial organic waste into RCNG vehicle fuel using anaerobic digestion.

“These projects are trail blazers, and their experience bodes well for the future of renewable natural gas,” said Matt Tomich, president of Energy Vision and co---author of the case studies. “Their success can serve as models for other places with large organic waste streams, which is virtually every urban and rural setting in the country.”

According to Argonne National Labs GREET model, RCNG produced from anaerobic digestion of food waste is net---carbon *negative* over its lifecycle, including production, use and avoided emissions. That means making and using it actually results in lower atmospheric GHG than if the fuel were never made or used. RCNG derived from a food waste digester meets or exceeds international goals of reducing GHG emissions 80 percent from 2005 levels by 2050.

Nationwide, renewable natural gas has grown over 70 percent annually in recent years—facilitated by inclusion in the EPA's Renewable Fuel Standard (RFS2), which sets a minimum volume for the amount of renewable fuel that must be used in the transportation sector. Renewable natural gas production for transportation totaled 151 million GGEs in 2017, up from 125 million GGEs in 2016 and 90 million GGEs in 2015.

RCNG also saves on fuel costs and allows truck and bus fleets to operate more quietly and efficiently, generating fewer pollutants that threaten public health. Compared to diesel, it reduces carbon monoxide up to 70 percent, nitrous oxide up to 87 percent, and particulate matter up to 90 percent, as well as reducing noise up to 90 percent.

Fair Oaks Farm's digester generates enough R--CNG to displace some 1.5 million gallons of diesel, and to cut annual GHG emissions by 19,500 tons CO<sub>2</sub>e. That's a 43 percent reduction in carbon emissions per gallon of milk, a selling point that helped the company negotiate an exclusive supply agreement with the national grocery chain Kroger.

The Sacramento BioDigester was built by a public---private partnership in 2013. Atlas Disposal and other haulers collect the organic wastes from area businesses and deliver it to the digester, which produces enough RCNG to displace 500,000 gallons of diesel a year and divert up to 40,000 tons of organic waste from landfills. Atlas's subsidiary ReFuel Energy Partners uses that R--CNG to power its 30 natural gas powered refuse trucks. Atlas is committed to converting its entire refuse fleet to natural gas as older diesel vehicles retire.