

Case Studies Examine Renewable Natural Gas ‘Trail Blazers’

by **Joseph Bebon** - February 2, 2018



The U.S. Department of Energy’s Argonne National Laboratory and the sustainable energy nonprofit group Energy Vision have released two case studies of successful projects that were among the first to produce renewable compressed natural gas (R-CNG) vehicle fuel using anaerobic digesters to capture biogases from decomposing organic waste.

Energy Vision and Argonne produced the studies jointly. One [study](#) looks at Fair Oaks Farms, an Indiana dairy cooperative with roughly 36,000 cows. It converts manure to R-CNG 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 R-CNG vehicle fuel using anaerobic digestion.

“These projects are trail blazers, and their experience bodes well for the future of renewable natural gas,” says Matt Tomich, president of Energy Vision. “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.”

“R-CNG can achieve the greatest GHG reductions of any transportation fuel today – 70 percent or more as compared to gasoline or diesel,” says Marianne Mintz of Argonne National Laboratory’s Energy System Division.

Mintz and Tomich co-authored the case studies.

As the partners explain, R-CNG derived from organic waste is chemically similar to geologic compressed natural gas (CNG) and can be used in the same applications: heating/cooling, generating electricity, or fueling vehicles. But unlike fossil CNG, it’s a renewable fuel. According to Argonne’s GREET (Greenhouse gases, Regulated Emissions, and Energy use in Transportation) model, R-CNG 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 results in lower atmospheric greenhouse gas (GHG)

than if the fuel were never made or used. R-CNG derived from a food waste digester meets or exceeds international goals of reducing GHG emissions 80% from 2005 levels by 2050.

The partners says that, nationwide, renewable natural gas has grown over 70% annually in recent years – facilitated by inclusion in the U.S. Environmental Protection Agency’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 gasoline gallon equivalents (GGEs) in 2017, up from 125M GGEs in 2016 and 90M GGEs in 2015, the partners add.