



ANL Dairy and Food Waste Digester Case Studies Shine Light on RNG

February 5, 2018



Fair Oaks Dairy Farm biogas upgrading plant
(image: Greenlane)

Two Case Studies released by the US Department of Energy's Argonne National Laboratory and the sustainable energy NGO Energy Vision highlight the environmental and economic benefits of generating transportation fuel from bio-waste. The studies focus on two successful projects that were among the first to produce Renewable Natural Gas (RNG) vehicle fuel using anaerobic digesters to capture biogases from decomposing organic waste.

Energy Vision and Argonne produced the studies jointly, authored by Matt Tomich, president of Energy Vision and Marianne Mintz, Energy Systems Division of ANL.

“R-CNG can achieve the greatest GHG reductions of any transportation fuel today — 70% or more as compared to gasoline or diesel,” said Mintz.

The first study — *Cow Power: A Case Study of Renewable Compressed Natural Gas as a Transportation Fuel* — looks at Fair Oaks Farms, an Indiana dairy cooperative with roughly 36,000 cows. It converts manure to renewable CNG (R-CNG) using a large anaerobic digester, and uses the fuel to power its milk tanker trucks.

Extract from the Cow Power study:



Ruan Transportation hauls milk with a fleet of RNG-powered Kenworth T660 class 8 tractors.

“Project partners ampCNG and Fair Oaks Farms—involvement in the largest (and still only) operational dairy digester-to-R-CNG vehicle fuel project in the United States—conclude that all the technologies utilized are commercial and working well.”

The second study — *Waste-to-Fuel: A Case Study of Converting Food Waste to Renewable Natural Gas as a Transportation Fuel* — assesses the Sacramento BioDigester, the first food-waste digester in California to turn commercial organic waste into R-CNG vehicle fuel using anaerobic digestion.

Extract from the Waste-to-Fuel study:

“The environmental, health, and energy security benefits associated with diesel displacement and landfill diversion are significant. Direct and indirect emissions reductions resulting from the production and use of R-CNG (made via anaerobic digestion of food and green waste) as a transportation fuel mean that, on a lifecycle basis, the fuel is net-carbon negative. Therefore, R-CNG not only meets but exceeds the international goal to reduce global greenhouse gas emissions 80% from 2005 levels by 2050.”

“These projects are trail blazers, and their experience bodes well for the future of renewable natural gas,” said Tomich. “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.”