

West Coast Diesel Emissions Reduction Collaborative

Biomethane Conversion to Vehicle Fuel

Working with leaders from government, the private sector, and environmental groups the West Coast Diesel Emissions Reduction Collaborative (Collaborative) encourages projects that reduce diesel emissions. The Collaborative seeks to fund projects that are regional in scope, leverage other funds, result in real measurable reductions/results, and create momentum for future reductions. This document describes a potential Collaborative project in the Agricultural Sector focusing on the feasibility of Converting Biomethane to Vehicle Fuel.

Project at a Glance

- Unknown amount of NO_x, PM_{2.5}, and/or GHG reduced per unit.
- Unknown total reduction in diesel over the life of the project.
- Unknown
- Unknown number of units, e.g., trucks, pumps, etc. addressed.
- Fuel or other savings, if applicable
- Cross-media benefits, if applicable

Problem Statement

California has the largest dairy industry in the country but it is under increasing financial and regulatory pressure. California dairies have a vast hidden resource of 60 million tons a year of dairy manure. The technology is available to extract biogas, create a renewable fuel from this waste product, and use it as a substitute for diesel fuel in fleet vehicle or farm implements thereby reducing diesel emissions and improving public health. This project will examine the technical and financial feasibility of producing renewable methane from dairy biogas for use on farm as a fuel substitute in the Central area of California focusing on identifying a suitable site and partners for locating an biogas upgrading installation.

The goal of the project is to evaluate the commercial feasibility of producing and using upgraded biogas gas from California dairy manure as a substitute for diesel fuel in California's Central Valley. It is intended that the product of this study will serve as the bases for constructing a biogas upgrading plant to make a diesel fuel substitute that can be made available either on farm or locally to users of diesel fuel.

Proposed Actions

The target area for the project would be California's Central Valley. This is an extreme non-attainment area for air quality and agricultural is a significant source of the impact. There are seven tasks.

1. Assess the potential demand for dairy biogas as a diesel fuel substitute.
2. Assess the market for renewable methane as a diesel substitute, and infrastructure requirements.
3. Evaluate alternatives for collocating an upgrading plant with a methane digester.
4. Evaluate technologies for upgrading biogas quality and transporting it to market.
5. Survey and assess diesel end use applications for biogas as a fuel substitute.
6. Research available subsidies and incentives for launching this new product.
7. Perform a financial, environmental and regulatory analysis of the project.
8. Prepare cost estimate for constructing a biogas upgrading facility
9. Develop sample project solicitation

Proposed Timeline for Completing Tasks, assuming end of 2005 award

Task	Start Date	Est. Completion	Total Time
Task 1	January, 2005	May, 2005	5 months
Task 2	January, 2005	April, 2005	4 months
Task 3	January, 2005	May, 2005	5 months
Task 4	January, 2005	June, 2005	6 months
Task 5	February, 2005	July, 2005	6 months
Task 6	February, 2005	May, 2005	4 months
Task 7	June, 2005	September, 2005	4 months
Task 8	July, 2005	October, 2005	4 months
Task 9	January, 2005	October, 2005	10 months

This project will plan for implementing the recommendations of the feasibility study. The intent is to meet the needs of a growing industry that will be capture an increasing amount of biogas, either through anaerobic digestion or from covering of ponds under regulatory mandate. The goal will be to promote the capture and reuse of the gas as a substitute for vehicle fuel thereby turning an environmental liability into a value added product in the form of biogas for use as an alternative fuel. The development of markets for this product requires a concerted effort on the part of the stakeholders that is dedicated to the development of methane as a renewable energy source.

Currently, biogas from manure and renewable methane generation is promoted in varying degrees at the USDA, California Energy Commission, NYSERDA, and Wisconsin's Focus on Energy, among others. None of these organizations focuses on the specific needs of the industry and the difficulties encountered in the development of markets for the biogas itself. These include regulatory burden, lack of information for farmers and consumers, and undeveloped markets for the sale of biogas as an alternative fuel.

Other responsibilities for the project managing organization include communicating with the subcontractors, managing the administrative processes required in supporting the proposal, submitting all appropriate forms at time of granting and throughout the project, processing all invoices, reimbursement requests, and payments. We will also maintain a strong financial management system and submit all interim and final reports on time and within budget.

Anticipated Benefits

Benefits have not been quantified as little study of this issue has been performed to date. However, there are potentially very significant reductions in NO_x, CO, VOCs and PM that could occur.

Estimated Costs

Incremental cost reductions are unknown. Estimate cost of the study is \$250,000.

Collaborative Partners

Likely partners include CalStart, RCM Digesters, SWECO and IES.

More Information on the Collaborative and Contacts

The West Coast Diesel Emissions Reduction Collaborative is made up of federal government agencies from the U.S., Canada and Mexico, and state and local governments and non-profit and private sector partners from California, Oregon, Washington, Alaska and British Columbia. The Collaborative's purpose is to support voluntary diesel emissions reductions, create a forum for information sharing among

diesel emissions reductions advocates, and leverage significant new resources to expand voluntary diesel emissions reductions efforts.

The goal of the Collaborative is to leverage over \$100 million in new federal funds for diesel emissions reductions projects per year for 5 years to reduce emissions from the most polluting diesel sources in the most impacted communities and significantly improve air quality and public health. By targeting the higher polluting engines with the most cost effective strategies, we estimate that the benefits of this investment will significantly outweigh the costs.

For more information on the Biomethane Conversion to Vehicle Fuel Project, contact: Allen Dusault, Project Director, Sustainable Conservation. 415 977-0380 Ext. 303. adusault@suscon.org.

For more information on the Collaborative in general, go to www.epa.gov/air/westcoastdiesel or contact Peter Murchie, murchie.peter@epa.gov or Michelle Roos, roos.michelle@epa.gov.