

DOCKETED

Docket Number:	17-IEPR-10
Project Title:	Renewable Gas
TN #:	220201
Document Title:	FuelCell Energy Renewable Hydrogen IEPR Comments
Description:	N/A
Filer:	System
Organization:	FuelCell Energy, Inc./Paul Fukumoto
Submitter Role:	Public
Submission Date:	7/14/2017 3:12:42 PM
Docketed Date:	7/14/2017

Comment Received From: Paul Fukumoto

Submitted On: 7/14/2017

Docket Number: 17-IEPR-10

FuelCell Energy Renewable Hydrogen IEPR Comments

Additional submitted attachment is included below.

July 14, 2017

The Honorable Robert Weisenmiller, Chair
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Comments on 2017 IEPR-Renewable Natural Gas

FuelCell Energy, Inc. (FCE) is pleased to provide these comments in response to questions put forth by the Energy Commission to Panel 5: Emerging Technologies and Market Opportunities at the June 27 Joint Agency Workshop on Renewable Gas.

I. Introduction

FCE is a global leader in the design, manufacture, operation and service of ultra-clean, efficient and reliable fuel cell power plants. We have pioneered a number of emerging fuel cell applications, including hydrogen co-production fuel cells that produce distributed hydrogen for use in transportation applications.

The increase in publicly funded hydrogen stations requires an increase in renewable hydrogen for FCEVs. Renewable hydrogen can best reduce emissions and CO₂ from the transportation sector. We request that production of renewable hydrogen co-produced from fuel cells using an eligible renewable source be an accepted technology and integral part of the IEPR.

II. Renewable Hydrogen Co-Production from Fuel Cells

When fueled with methane-rich gas derived from an eligible renewable source, in hydrogen co-production mode our fuel cells produce renewable: 1) purified hydrogen 2) electricity, and 3) usable heat. The purified hydrogen is stored and can be used as transportation fuel for FCEVs. With a hydrogen co-production fuel cell system, electricity and heat are also produced continuously. A net renewable energy producer, addition of the renewable power revenue stream enhances the affordability of the renewable hydrogen co-produced with the power. Another enhancement to hydrogen affordability is the fact that the hydrogen is produced near filling stations, reducing transportation costs (and also reducing transportation emissions).

This emerging fuel cell application fueled directly by onsite biogas or renewable natural gas can provide disadvantaged communities with the continuous renewable energy they need while supporting the growing hydrogen transportation infrastructure and minimizing any impact to air quality with near zero emissions.

FCE's hydrogen-co-production system generates approximately 1,250 kilogram per day of hydrogen, which is adequate to service approximately 300 cars/day or 30 buses/day or the emerging heavy duty fuel cell trucks at ports. Simultaneous with the hydrogen production, the generation of 2.3 megawatts of renewable electric power, net of purifying and compressing the renewable hydrogen is available for on-site use or local distribution grid support. The hydrogen co-production is also a net water producer, eliminating the environmental strain of using local water sources to produce hydrogen.

FCE demonstrated the first hydrogen coproduction fuel cell system in Fountain Valley, California, at an Orange County Sanitation District water resource recovery facility. This system used renewable biogas from an anaerobic digester to produce electricity, heat, and purified hydrogen for a FCEV refueling station. We developed this three-year pilot project in partnership with the U.S. Department of Energy, CEC, CARB, South Coast Air Quality Management District, and a variety of others.

FCE is actively exploring commercial multi-megawatt hydrogen co-production fuel cell systems with biogas, RNG and California water resource recovery facilities to provide thousands of kilograms of renewable distributed hydrogen for California's growing fleet of fuel cell vehicles and trucks.

III. Technology Ability to Use Eligible Renewable Source Onsite

The hydrogen co-production fuel cells use digester gas directly at site or RNG transported through the existing gas distribution system at a hydrogen station. This flexibility in facility location and utilization of the eligible renewable source is important in providing a viable, growing use for renewable hydrogen in zero-emission vehicles.

The current RNG market is reaching its vehicle limitations, as evidenced in the Renewable Gas in California: Potential, Expected Growth, and Costs presentation by ICF. A larger zero-emission transportation sector can be addressed by renewable sources such as the California dairies, with the inclusion of renewable hydrogen co-production from fuel cells from these renewable fuels.

Automobile manufacturers have announced plans for commercial FCEVs. Hydrogen buses and heavy duty trucks are being demonstrated. The de-carbonization of the transportation in California needs the inclusion of renewable hydrogen co-product from fuel cells using digester gas or RNG. This benefits the state, especially providing new and developing digester gas or RNG sources such as dairies, a growing market for their eligible renewable source gas.

Sincerely,



Paul Fukumoto
Director of Business Development
pfukumoto@fce.com
(949) 636-9746