



**Pacific Gas and  
Electric Company™**

Valerie J. Winn  
Manager  
State Agency Relations

*Mailing Address*  
P.O. Box 770000  
San Francisco, CA 94177

*Street/Courier Address*  
77 Beale Street, Room 1060  
San Francisco, CA 94105

(415) 973-3839  
Fax: (415) 973-7226  
Internet: vjw3@pge.com

September 30, 2011

VIA E-MAIL  
**DOCKET@ENERGY.STATE.CA.US**

California Energy Commission  
Dockets Office, MS-4  
Re: Docket No. 11-RPS-01  
And Docket No. 02-REN-1038  
RPS Proceeding  
1516 Ninth Street  
Sacramento, CA 95814-5512

**11-RPS-01**

**DOCKET**

**02-REN-1038**

DATE SEP 30 2011

RECD. SEP 30 2011

**Re: Developing Regulations and Guidelines for the 33 Percent Renewables Portfolio Standard and Implementation of Renewables Investment Plan Legislation: Comments of Pacific Gas and Electric Company on the Use of Biomethane Delivered to an electric Generating Facility via the Natural Gas Pipeline System for California's Renewables Portfolio Standard**

## **I. INTRODUCTION**

Pacific Gas and Electric Company ("PG&E") appreciates the opportunity to provide comments on issues relating to the use of biomethane delivered to an electric generating facility via the natural gas pipeline system for California's Renewables Portfolio Standard ("RPS"). PG&E agrees with many of the comments at the September 20, 2011 workshop and supports the continued use of biomethane for generating RPS-eligible electricity subject to the current restrictions set forth in the California Energy Commission ("CEC") RPS eligibility guidebook. There should be no additional restrictions imposed on the source of the biomethane. Specifically, any limitations in the RPS legislation governing the location of the electric generating facility should not be extended to the inputs to energy production. Such efforts will only harm the industry's ability to meet the state's aggressive RPS goals and frustrate efforts to develop a liquid and robust biomethane market. Below PG&E also provides specific responses to questions listed in Attachments A and B to the workshop notice as an attachment to this letter. Responses to the additional questions circulated by the CEC staff are also provided. PG&E is happy to discuss these comments with the CEC staff should additional information be needed.

## II. THE 33% RPS LEGISLATION DOES NOT RESTRICT THE SOURCE OF INPUTS TO RENEWABLE ELECTRICITY GENERATION

Contrary to the proposals of The Utility Reform Network ("TURN"), the 33% RPS bill focuses solely on the location of electricity generation facilities. For any contracts executed after June 1, 2010, the facilities backing those contracts are categorized into one of three categories or "buckets." The least restrictive bucket (Bucket 1) requires an RPS-eligible electric generating facility to be located in or directly connected to a California Balancing Authority ("CBA"), or delivering electricity to the CBA without the use of substitute energy through dynamic transfers or other arrangements. The most restrictive bucket (Bucket 3) is for unbundled Renewable Energy Credits ("RECs") or electricity products not meeting the requirements of Bucket 1 or Bucket 2 (Bucket 2 is for "firmed and shaped products using incremental energy"). A proceeding is currently underway at the California Public Utilities Commission ("CPUC") to establish the requirements for each of these buckets.

TURN's suggestion that RPS-eligible energy generated using out-of-state biomethane at an in-state facility should be considered bucket 3 is flawed for many reasons. Notably the RPS statute imposes restrictions depending upon the location of the RPS-eligible electric generating resource, **not** the source of fuel for the generating resource. Section 25741 of the Public Resources Code applies no geographic limitations to biomethane as an eligible technology. Likewise, Section 399.16 does not restrict the source of inputs to electricity generation. Rather, both sections impose restrictions depending upon the location of the **renewable electrical generation facility**. As a result, in contrast to out-of-state renewable electric generation where the RECs created may be considered in any of the buckets (e.g., a facility located in Nevada, but directly connected to the California Independent System Operator is Bucket 1, while RECs created by a wind facility in the Bonneville area in Oregon may be Buckets 1, 2 or Bucket 3), in-state power plants which use biomethane to generate electricity in-state create in-state RECs, regardless of the location of the source of biomethane.

Through its proposal to restrict out-of-state biomethane, TURN apparently seeks to ensure that the actual biomethane molecules are used in a specified RPS certified generating facility to generate RPS-eligible energy. Restrictions on out-of-state biomethane will not achieve this goal. Nor is this goal reasonable or feasible in light of the reality of how natural gas flows on the gas pipeline system.

Biomethane is scheduled on pipelines from the source to pipeline systems within California to serve the generating facility. Due to the nature of natural gas and the gas pipeline system, it is generally impossible to ascertain whether any specific molecules of biogas – from in-state or out-of-state sources alike – are actually used at a particular generating facility. The only way to achieve absolute certainty is to require the fuel source to be connected directly to the generating facility. As indicated at the September 20 workshop and as discussed in greater detail below in response to question 4C regarding the gas pipeline system, the feasibility of such

interconnections would have to be evaluated on a project-by-project basis. Limiting RPS-eligible generating facilities to those directly connected to the biomethane fuel source would severely and unnecessarily constrain the available supply of biomethane, drastically reducing biomethane as a source of RPS-eligible energy.

Moreover, restricting use of biomethane to directly interconnected facilities is unnecessary in light of existing regulations that ensure appropriate tracking of biogas. Biogas, whether in-state or out-of-state, is transported in the same manner under FERC or CPUC regulations. Biogas operates under approved tariffs designed to provide an efficient economic market that allows gas to be purchased from the most economic supply point and to be transported and tracked to the point to where the gas is consumed. The pipeline companies provide tariff services for forward haul, backhaul and storage, parking/lending and imbalance management. Under FERC and CPUC rules, gas transportation is generally by displacement. Gas is injected at the receipt point and scheduled and withdrawn at the delivery point. It is impossible to require the market to provide direct point to point service without comingling of additional sources or deliveries along the path.

In addition, such restrictions would violate the Commerce Clause of the United States Constitution by placing a discriminatory burden on interstate commerce. Under the Commerce Clause, States may not unjustifiably discriminate against or burden the interstate flow of articles of commerce through economic protectionism: regulatory measures designed to benefit in-state economic interests by burdening out-of-state competitors. TURN has not articulated justifications sufficient to defend such protectionist measures.

Furthermore, notwithstanding the inherent uncertainty in tracking actual molecules of biomethane, allowing the gas pipelines to move biomethane, regardless of where it is captured, to the most efficient power plants for combusting has many benefits. First, it displaces other non-renewable fossil fuels that would have otherwise been purchased, transported in the pipeline, and combusted in the same power plants. Second, the use of biomethane at existing combined cycle gas turbine ("CCGT") generating facilities reduces the environmental impacts that would have occurred otherwise from constructing additional generating facilities, or transmission lines. Finally, it efficiently uses the existing pipeline infrastructure and markets to value and transport the gas. Burning biomethane, regardless of the source, as a fuel source at existing CCGTs increases the availability of flexible, dispatchable renewable resources. Such capability does not exist with other forms of renewable resources. Electric energy generated at a CCGT using biomethane does not increase the integration costs for renewables and helps enhance electric system reliability. Furthermore, using existing infrastructure reduces costs to customers. As noted by SCPA's representative at the September 20 workshop, SCPA members are able to procure RPS-eligible energy generated using biomethane for about \$90 per MWh all-in – a price that is very competitive when compared to other sources of renewable energy.

Thus, energy generating using biomethane – regardless of the location of the source – is and should continue to fall within the Bucket 1 category of RPS-eligible energy. Limitations to the inputs of renewable energy production will only serve to drive customer costs higher and impair the state's ability to achieve its aggressive energy and greenhouse gas emission reduction goals.

### **III. IN-STATE BIOMETHANE DEVELOPMENT IS BEST SUPPORTED THROUGH DEVELOPMENT OF LIQUID, ROBUST, AND TRANSPARENT MARKETS**

At the September 20 workshop, several parties noted the need for regulatory certainty so that the biomethane markets, both in California and other areas, will develop. PG&E agrees with many of these comments, including that there is no need to create different tariffs or rules for trading and delivering renewable biomethane versus non-renewable natural gas. Different rules will increase the costs to deliver biomethane and make it less attractive, economically, when compared to other alternatives in the marketplace.

Many developers also noted that as they develop their projects in other jurisdictions, they are building their expertise and knowledge on biomethane. This helps them lower costs, and as projects are successfully developed, the experience will translate to lower technology costs going forward, which should help to further expand the market at a lower cost to customers. Creating artificial barriers now to biomethane that comes from out-of-state will only serve to increase costs to customers and reduce the development of economic, biomethane projects.

With respect to transparency of pricing, biomethane's market value is based on the contract price for biomethane projects, typically fixed in \$/MMBtu, relative to the forward price of natural gas. The premium over the natural gas forward price reflects the cost of the renewable attributes. Conventional natural gas markets are very liquid and offer good renewable attributes price transparency for long-term biomethane transactions. If biomethane for RPS places restrictions on out-of-state biomethane, the result would be that the market would discount the value of out-of-state biomethane delivered to California relative to in-state biomethane. As a result of this protectionism, the biomethane market would be less robust. For long-term market development, it is critical to have a transparent competitive market with well-recognized pricing benchmarks. This will better help regulators assess the "green premium" for biomethane and assure that there is parity in the incentives offered to the renewables industry.

### **IV. ASSURING GAS QUALITY IS PG&E'S NUMBER ONE PRIORITY**

All natural gas utilities have a singular obligation to reliably transport and deliver merchantable natural gas of known and consistent quality that will neither be unhealthy for customer use nor injurious to utility facilities and customer equipment. Thus, the quality of gas that is received into utility pipelines is of paramount concern. Gas must be of consistent quality

and must strictly adhere to well-established gas quality guidelines in order to protect utility customers and pipelines.

Complex forms of renewable natural gas feedstocks, such as landfill gas ("LFG"), provide minimal to no source certainty of gas quality and feedstock control. Notwithstanding any pending study findings on gas quality associated with LFG, PG&E is particularly concerned with LFG as it contains a myriad of constituents of concern that are potentially harmful to our customers' health and pipeline integrity. In order to have natural gas of consistent quality, certainty of the source feedstock of the gas must be guaranteed.

The potential for customer health impacts and long-term pipeline integrity issues resulting from biogas produced from projects employing complex variable feedstocks is substantial. Any degradation of pipeline integrity due to internal corrosion would occur over time and may take years before any problems become apparent. Maintaining consistent and known gas quality will minimize the likelihood of internal corrosion in gas pipelines.

At the workshop, the Gas Technology Institute ("GTI") shared information about the results of its testing of six LFG sites and the effectiveness of technologies to analyze and remove harmful constituents of concern from LFG. PG&E is looking forward to reviewing the published results from GTI later this year. PG&E will consider this report and other similar analyses on the quality and safety of LFG in evaluating whether to accept deliveries of LFG directly into its pipelines. Most landfills in PG&E's service territory are located very near our customers, which raises the level of concern associated with acceptance of LFG. Only after PG&E's concerns about the gas quality associated with LFG are fully vetted and addressed will acceptance of LFG be considered.

These critical safety issues regarding the use of LFG must be addressed through careful evaluation by the Legislature, the CPUC, and the gas pipeline industry. The gas pipeline industry must be assured that safe processes for injection of LFG have been developed. In addition, the Legislature would have to evaluate similar concerns in determining whether to overturn Hayden's Law, which prohibits acceptance of vinyl chloride in the pipelines. Subsequently, the CPUC would have to approve pipeline tariffs allowing injection of LFG. These fundamental concerns are and should remain wholly separate from question of CEC requirements for fuel sources to generate RPS-eligible energy. It would be inappropriate and legally questionable for enhanced restrictions on out-of-state biomethane to drive the acceptance of in-state LFG.

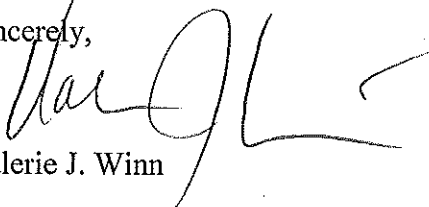
## **V. CONCLUSION**

PG&E supports a vibrant biomethane market and continued use of biomethane, regardless of the location of its source, to produce RPS-eligible energy at in-state RPS-certified electric generating facilities. As evaluations of the technologies to test and cleanse landfill gas

PG&E Comments to the CEC on Biomethane  
September 30, 2011  
Page 6

are available, and if public and gas system safety can be assured, further expansion of this market may be possible.

Sincerely,

A handwritten signature in black ink, appearing to read 'Val J. Winn', with a stylized flourish at the end.

Valerie J. Winn

cc: K. Zocchetti by email ([kzocchet@energy.state.ca.us](mailto:kzocchet@energy.state.ca.us))

## **Responses to Attachment A**

1. PG&E supports the current CEC RPS guidebook requirements regarding delivery of biomethane to the gas pipeline system in California from which the facility accepts delivery of gas, or directly to the electricity generation facility if it is located outside of California (answer 1a).
2. No, the Energy Commission should not add location restrictions for sources of biomethane for facilities participating in California's RPS. See above discussion. In particular, the 33% RPS Bill does not impose restrictions on the source of fuel or equipment for in-state generating facilities. Moreover the Energy Commission's current requirements for tracking and designating biomethane provides assurances that certified generating facilities are using biomethane to generate electricity that is counted for RPS compliance. Once those requirements are met, the product of the in-state generating facility should fully qualify as in-state generation regardless of the location of the source of biomethane.
3. The Energy Commission should retain its current requirements for backhaul and forward haul transportation agreements, as this is the industry standard for how ALL pipeline quality gas is transported in the marketplace. Imposing requirements that vary from industry standards will create additional hurdles, costs, and delays in furthering a robust biomethane market. Retaining current requirements will promote supplier diversity and increase the market size and therefore lower the cost to customers.

Moreover, restrictions limiting deliveries to forward haul transportation would restrict significantly the available supply of biomethane for RPS purposes. For example, PG&E's existing electric generating facilities capable of using biogas are located in northern California, and receive gas from the north. Restricting the use to forward haul transportation agreements means that these electric generating facilities could only receive biomethane that is produced upstream or north of the power plant for RPS purposes. As a result, in-state biomethane produced in the Central Valley, which would generally have to be backhauled to PG&E's power plants, would be disfavored. Likewise, biomethane from Southern California would never be shipped north as it is a backhaul.

Further, such restrictions do not take into account the fact that pipeline flows change direction. This can happen on a daily and seasonal basis, when supply basin production or economics changes, and/or when demands change due to weather or for many other reasons. The FERC pipeline model (discussed above) is efficient and allows for variability of flows and allows the market to be responsive to the dynamic nature of these markets, while at the same time preserving the contract.

4. Yes, delays should be allowed in the consumption of biomethane at the electric generating facility once it has been delivered to California. Delays should be permitted because the entire market structure for gas transportation and storage has developed to accommodate use of the gas when it is needed, not for simultaneous consumption. Storage provides greater flexibility for all fuel types, not just non-renewable fuels, and it would be counter-productive to make it more difficult to store renewable fuel than non-renewable fuels. Furthermore, given the focus in the electric generation arena on adding electric storage, it would make to sense to allow storage of renewable electricity but not renewable gas. Again this is consistent with how the gas market currently functions.

5. Biomethane imbalances should be treated like any other gas imbalance. Gas system imbalances occur when gas is nominated on the pipeline system, but end-users of the gas consume more or less than the nominated amount. When this occurs, true-ups are done on a monthly basis, because regardless of the timing of the imbalance, the aggregate amount of gas nominated is consumed at the plant.

Treating biomethane differently from any other natural gas will complicate the market and likely inhibit the development of this industry because establishing separate tariffs and settlement systems for biomethane will make it more expensive to transact for biomethane. Establishing separate tariffs and systems would be prohibitively expensive.

6. Applicants have records of the British Thermal Units (BTUs) of gas burned at an RPS-eligible generating facility. Records of when the gas was injected to the system and nominated to the plant are provided.

Renewable Energy Credits can then be created based on the split of renewable to non-renewable fuel burned at the plant multiplied by the total electric energy created at the facility.

As per the CEC requirements, the biomethane production at the facility is matched through pipeline nominations for delivery to California and can then be matched to volumes used in generation in that month.



## Responses to Attachment B

**Please provide an update on these barriers to in-state biomethane injection into a natural gas pipeline or any additional barriers that are not addressed.**

1. Biomethane quality standards and pipeline interconnection
  - a. California utilities do not have uniform biomethane quality standards and the standards in place may not be appropriate for biomethane, most standards were designed for natural gas injection.
  - b. Current utility tariffs require project developers to pay for the costs of the pipeline interconnection which is a large cost barrier.

RESPONSE:

The creation of a standardized gas quality tariff for biomethane-to-pipeline injection projects that does not differentiate between different feedstocks is not recommended. The gas quality from biomethane injection projects will vary with every feedstock, and with every project. Every feedstock used in a renewable gas project may present different gas quality challenges whether used as a pure feedstock or as a co-digested feedstock. Utility gas quality tariffs must remain flexible such that utilities can test for whatever constituents of concern require analysis to protect customers' health and prevent internal corrosion of pipelines. Thus, PG&E continues to support an assessment of gas quality requirements on a project-level approach.

The cost of all incremental sources of natural gas supply on utility pipelines, which includes the interconnection of new biomethane-to-pipeline injection projects, is the responsibility of project developers seeking interconnection.

2. Biomass-to-biomethane conversion technologies
  - a. The commercially available conversion technologies, such as anaerobic digestion, are generally limited to high moisture (non-woody) feedstocks.
  - b. New technologies are in development, but have high capital costs and other economic, regulatory, and development barriers.

RESPONSE:

No response.

3. Statutory and regulatory issues
  - a. Utility gas tariffs currently prohibit the injecting landfill gas into the natural gas pipeline in-state. However, utilities are not precluded from purchasing landfill gas from out-of-state sources that inject the gas into the interstate natural gas pipeline; other states allow landfill gas to be injected into their systems that deliver gas into the California system.

RESPONSE:

Out of concern for public health and safety, Hayden's Law (AB 4037, Chapter 932, Statutes of 1988 Landfill Gas-Toxicity) was enacted in California to protect the public from any potentially harmful gas from being delivered to utility customers' homes. Further studies, testing, and development of procedures are necessary before repealing this protection to ensure that LFG and accompanying constituents of concern do not harm our customers' health or cause pipeline integrity issues.

As mentioned, LFG purchased from outside of California is not physically received into PG&E's pipelines. Most landfills in PG&E's service territory are located very near to our customers, which means that customers situated directly downstream of an LFG injection point will be subjected to receiving concentrated LFG molecules, as opposed to LFG that will blend with traditional natural gas as it is transported over very long distances.

## **Responses to Supplemental Questions Regarding the Gas Pipeline System**

### **1. Biogas produced in state**

Biogas can be utilized as an energy resource or disposed of by flaring. Biogas can be used to produce energy in heating, electricity generation, and transportation applications.

#### **1A. Are there environmental benefits to using biogas for energy production vs. flaring?**

RESPONSE:

There are potential environmental benefits gained from not flaring biogas. However, depending on the use of the biogas, there may be undesirable affects in other areas that need to be studied and better understood.

#### **1B. Are there additional benefits beyond air quality?**

RESPONSE:

No response.

#### **1C. Is electricity generation the highest and best use of biogas?**

RESPONSE:

The "highest and best use" of a biogas project depends on many factors, including project location, volume of biogas production, the energy needs of the project site, etc. Each such assessment is project-specific.

### **2. How does use of pipeline quality biomethane produced from in-state sources benefit California ratepayers?**

RESPONSE:

No response.

### **3. Consider the following for biogas sources not derived from landfill gas.**

#### **3A. Please provide a description of utility gas quality standards as they relate to biomethane received into the natural gas transportation pipeline.**

RESPONSE:

PG&E's Gas Rule 21.C contains PG&E's gas quality specifications. Section 13 pertains to biogas other than LFG, and states: "Biogas refers to a gas made from anaerobic digestion of agricultural and/or animal waste. The gas is primarily a mixture of methane and carbon dioxide. Biogas must be free from bacteria, pathogens and any other substances injurious to utility facilities or that would cause the gas to be unmarketable and it shall conform to all gas quality specifications identified in this Rule." Section 14 pertains to LFG, and states: "Gas from landfills will not be accepted or transported under this Rule."

**3B. Can biomethane - not derived from landfill gas - be injected into pipelines serving California customers without causing harm to public health or degrading pipeline safety?**

RESPONSE:

It is currently not known, and has not been definitively proven, whether biomethane can be injected into pipelines serving California customers without causing harm to public health or degrading pipeline safety on a long term basis. While PG&E has some experience with renewable gas sourced from dairy manure feedstock having safely accepted such gas into its pipeline system on a short term basis, the longer term impact to the pipeline system from renewable gas sourced from dairy manure is unknown.

**4. Consider the following for biogas sources derived from landfill gas.**

**4A. Can landfill gas consistently meet the CPUC's Standards for Gas Service in the State of California General Order 58-A, which requires the concentration of vinyl chloride be limited to less than 1,170 parts per billion by volume?**

RESPONSE:

Appropriate measures will need to be developed to ensure that LFG meets whatever gas quality requirements are set forth in order to ensure that no harm comes to PG&E's customers or pipeline infrastructure.

**4B. Can landfill gas be injected into pipelines serving California customers without causing harm to public health or degrading pipeline safety?**

RESPONSE:

Further studies must be completed to allow the development and implementation of necessary procedures to ensure that LFG is suitable for injection into utility gas pipeline systems, to ensure that receipt of such gas does not result in harm to public health or degrade pipeline safety.

**4C. What are the biggest challenges to developing in state biogas resources? What are the biggest challenges to injecting biomethane, regardless of source, into the natural gas pipeline in California?**

RESPONSE:

From the gas utility perspective, unpredictable and inconsistent gas quality resulting from complex feedstocks is a significant challenge. Specific gas quality requirements must be determined on a project by project basis depending on the particular feedstocks a project will be utilizing. Also, due to seasonality, there are limitations on which pipelines in PG&E's service territory are physically capable of supporting year-round injection of gas from biogas projects due to insufficient customer demand during warmer weather.

Moreover, permissible locations to inject of biomethane must be evaluated on a project-by-project basis. As indicated at the September 20 workshop, the way in which natural gas flows on the transmission pipeline systems varies by utility and by location within

each utility's service territory. In PG&E's service territory, many of the larger backbone and local transmission systems can generally transport large quantities of gas throughout the year without much impact from winter or summer seasonality. Many smaller local transmission and distribution systems, however, particularly those pipelines located in the hot Central Valley areas, are subject to the effects of seasonality and tend to transport much smaller volumes of gas during certain times of the year. In many cases, these smaller pipelines are physically incapable of receiving significant amounts of gas because of insufficient customer demand.

