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California Energy Commission
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RPS Proceedings
1516 Ninth Street
Sacramento, CA 95814-5512

Docket No. 03-RPS-1078 & Docket No. 02-REN-1038

Dear Commissioners:

Cambrian Energy Development LLC (**"Cambrian"**) appreciates the opportunity to provide its comments to the August 2010 proposed draft of the Renewable Portfolio Standard Eligibility Guidebook (the **"Guidebook"**) prepared by staff of the California Energy Commission (the **"Commission"**) on which comments have been requested in connection with docket numbers 02-REN-1038 and 03-RPS-1078.

Cambrian will comment on two specific provisions of the Guidebook: (i) Article II B. 2 – Eligibility for the Renewable Portfolio Standard – Biogas, and (ii) Article II B. 4 – Eligibility for the Renewable Portfolio Standard – Fuel Cell Facilities Using Renewable Fuel.

BIOGAS INJECTED INTO PIPELINES

Response to Questions in Attachment B to Notice of Workshop - "Clarifying the RPS eligibility requirements for biogas"

In Attachment B sent with the Notice of the August 30, 2010 Workshop, the Commission asked for responses to the following questions pertaining to Injection of Biogas into Pipelines:

3. Biogas Delivery via Injection into the Natural Gas Pipeline System

Currently any biogas production facility that injects biogas into a natural gas pipeline and is able to contractually deliver through any number of physically interconnected pipelines to California or an electric generating facility (as proposed for facilities located outside California in the *Staff Draft RPS Eligibility Guidebook, Fourth Edition*) may be considered as an eligible fuel source for biogas electricity generation at an RPS-eligible facility. Biogas production facilities are not currently limited to being located in the WECC.

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a. Should the Energy Commission consider further restricting the location of eligible biogas production facilities to participate in California's RPS? If so, please suggest reasonable and verifiable parameters.
b. If other restrictions should be considered, what should those restrictions be?
c. Should the use of storage facilities be disallowed in the delivery of biogas to an RPS-eligible biogas electricity generating facility? If yes, why and under what conditions?
d. Should the use of natural gas storage facilities to store biogas in a natural gas pipeline system be treated differently than the transportation of biogas through a natural gas pipeline system? If yes, please explain.

a. *Should the Energy Commission consider further restricting the location of eligible biogas production facilities to participate in California's RPS? If so, please suggest reasonable and verifiable parameters.*

b. *If other restrictions should be considered, what should those restrictions be?*

The answer to the question a. is an emphatic and unqualified "NO." The answer to question b. is that there should be no other restrictions considered by the Commission on the eligibility of biogas production facilities.

The answer to this question by Cambrian is based upon its more than 30 years of experience in the development of 50 successful projects in landfill gas-to-energy using virtually all of the technologies available to convert landfill gas to a higher form of energy, including 3 landfill gas-to-pipeline biogas projects. Our answer is also based on our direct knowledge of the current marketplace conditions regarding landfill gas-derived biogas projects in the United States, since Cambrian is a lead participant in a national study of landfill gas-to-pipeline quality projects being funded by participants in the landfill gas industry as well as some of the largest national natural gas pipeline companies.

Although Cambrian does not possess the same in-depth knowledge about biogas projects involving digester gas-derived biogas and digested animal waste-derived biogas (which are the other categories of biogas), Cambrian believes that its comments herein are equally applicable to those industries.

How large is the biogas market within the WECC region? Had the Commission and its staff possessed the answer to this question, it would become immediately apparent why asking the question about restricting the location of biogas projects to the WECC region is unnecessary

-- unless the intent of the question is to totally ban such projects from California RPS eligibility. Based on Cambrian's prior participation in a 2009 workshop sponsored by the Commission which was conducted to determine why there were not more biomass projects being developed for the California RPS market, it is our belief that the intent of the Commission is not to prohibit the use of biogas from out-of-state facilities that is delivered for use in the production of renewable electric power. Based on inquiries Cambrian has received from both the investor-owned and publicly owned California utilities, we are certainly aware that having access to biogas injected into pipelines to efficiently produce renewable electric power is being aggressively pursued by those utilities. Biogas is also being requested by developers of fuel cell projects for the Self Generation Incentive Program in California.

How many landfill gas-derived biogas projects in the WECC region exist today or are being planned that are or could be available for delivery of biogas into California? **None.**

Why are there no landfill gas-derived biogas projects within the WECC region available for delivery of biogas into California?

1. The existence of California Health & Safety Code Sections 25420 et seq., which pertain to potential presence of vinyl chloride in landfill gas, has led to all three natural gas pipeline companies in the State of California including an absolute prohibition of landfill gas-derived biogas from being injected into their pipelines. Thus, although California has the largest landfill biomethane resource in the United States due to its large population, it has no landfill gas-derived biogas projects. Due to restrictive air permitting requirements (to achieve the environmental objective of clean air in California), it is not possible to permit landfill gas-to-electric power facilities with sufficient capacity to utilize the available biomethane resource in California, which could be utilized if landfill gas-to-pipeline biogas projects could deliver biogas into natural gas pipelines due to the low emission profiles of such biogas processing facilities.

2. Most of the other states in the WECC regions have much smaller populations and waste streams than exist in California and thus do not have landfills of sufficient size to support the substantial capital investment required for a landfill gas-derived biogas project. The only operating landfill gas-derived project in the WECC is located at the Cedar Hills Landfill outside of Seattle, Washington. That biogas is being delivered and sold to the local electric utility in the State of Washington.

3. None of the biogas fuel projects that deliver biogas into pipelines receive economic support similar to the economic support provided by the federal Section 45 tax credits that are available to wind and solar projects. Section 45 relates only to projects that directly produce electric power. By definition, biogas projects inject their energy

product into a pipeline. Although the biogas is derived from a renewable fuel source and is ultimately is used to produce renewable electric power, these projects are not entitled to receive the Section 45 tax credits. Thus, they are at an economic disadvantage to other forms of renewable energy.

4. Other economic barriers exist that may prevent the development of successful biogas projects. These can include high pipeline interconnection costs and stringent pipeline quality gas standards.

5. A further cost element that will have a significant influence on whether a biogas project can be successfully developed and operated is the cost of transporting biogas from the point of injection into a pipeline near the production location to the ultimate customer destination. If this destination is to California, the Commission's current requirement that the pipeline tariffs for transportation of gas and compression be paid across each pipeline that interconnects the biogas project to the point of delivery in the WECC region (or ultimately to California) imposes a substantial burden on projects that might otherwise provide a valuable renewable resource to California utilities. FERC recognizes and has approved of alternative means of transporting gas, including exchanges or swaps of gas, that are common in the natural gas industry. A more in-depth discussion of this topic is set forth below.

6. Compared to the other types of projects that convert landfill gas to a higher form of energy, there are very, very few biogas projects. According to data collected by the Landfill Methane Outreach Program of the U.S. EPA, of the more than 500 landfill gas-to-energy projects that have been developed and are operating in the United States, only 25 are pipeline biogas projects. As mentioned above, only 1 of those is in the WECC region.

From the foregoing, it should be easy to surmise that any further restriction of the location of biogas projects to those developed within the WECC region would, in essence, constitute a practical ban on those projects under current market conditions.

Biogas projects are the "hens teeth" of the renewable energy world. The regulatory environment should be structured to coddle, encourage and support these projects due to the significant benefits they bring. They provide the largest greenhouse gas and global warming benefit of any of the renewable energy technologies. Biogas projects also allow for the greatest efficiency of converting biomethane into renewable electric power when transported by pipeline to California for conversion to renewable electricity at a low heat rate in a highly efficient combined-cycle electric power generating facility that employs effective emission control technology. The use of biogas in this fashion allows a biologically created fuel to displace a

fossil fuel and thus helps to attain the energy independence goal announced by both the State of California and federal government.

At a time when the RPS requirement on California utilities may be increased from the 20% of generation requirement in 2010 (a goal that is not currently being met by any of the investor-owned utilities to which it applies) to 33% of generation that will now also include the publicly owned utilities, it seems counterproductive to restrict access to any renewable resource, but particularly a valuable and scarce resource such as biogas, which, at least as to landfill gas, is unavailable in California.

c. *Should the use of storage facilities be disallowed in the delivery of biogas to an RPS-eligible biogas electricity generating facility? If yes, why and under what conditions?*

d. *Should the use of natural gas storage facilities to store biogas in a natural gas pipeline system be treated differently than the transportation of biogas through a natural gas pipeline system? If yes, please explain.*

For all of the reasons set forth above, (i) there should be no disallowance or restrictions on the use of storage facilities in the delivery of biogas to an RPS-eligible biogas electricity generating facility, and (ii) there should be no different treatment of the use of natural gas storage facilities to store biogas than the transportation of biogas through a natural gas pipeline system. Any barrier that would inhibit the beneficial use of biogas in California would be detrimental to the objectives of California utilities to meet their RPS requirements and would place additional barriers to the already significant barriers that have restricted development of more biogas projects in the United States.

Comments on the Existing Requirements for Transporting Biogas Across Interconnecting Pipelines and Suggested Language for FERC-Authorized Alternative Transportation of Biogas

The Notice of Workshop includes a statement that the California Public Utilities Commission, the California Air Resources Board and the Commission intend to hold a joint workshop in the Fall of 2010 to solicit public input on modifying the RPS delivery requirements in the RPS Guidebook and, in particular, the Commission's requirements for energy delivery from RPS-eligible out-of-state facilities and how the requirements would work under tradable renewable energy credit regimes, if approved for the RPS by the CPUC or the Legislature.

Since such statement by the Commission in its notice referenced tradable renewable energy credit regimes, it was not clear if the transportation requirements mentioned only pertained to electric power, as opposed to the delivery and transportation of biogas.

As a precaution that the latter workshop will address only electric power delivery requirements, Cambrian wishes to include its suggested changes to the existing delivery requirements set forth in the Guidebook insofar as they pertain to biogas. To the extent that this issue will be addressed in the later workshop scheduled for the fall 2010, then these comments may be premature and can be received as an early comment for the fall 2010 workshop.

Cambrian recommends that the Commission amend Article II B. 2 of the Guidebook to include an alternative means of delivering or transporting biogas from the location of its production (likely a region outside of the WECC region) to either California or to a location within the WECC region. This alternative means of transportation is an "exchange" of gas, which is a method that is specifically approved by the Federal Energy Regulatory Commission (**"FERC"**) and is commonly used in the natural gas industry.

The suggested amendments to Article II B. 2 of the Guidebook are attached hereto as Exhibit A with the changes from the draft of the Guidebook dated August 2010 marked on Exhibit A.

The language adopted by FERC defining means of transportation of natural gas for purposes of the Natural Gas Policy Act of 1978 appears in 18 Federal Code of Regulations 284.1. An exchange of gas is included as such a means of transportation of gas in that definition which in its pertinent part is as follows:

§ 284.1 Definitions.

(a) Transportation includes storage, **exchange**, backhaul, displacement, or other methods of transportation.

...

The underlying business and policy reasons for the changes suggested by Cambrian are as follows:

1. The ability of a biogas project to utilize an exchange of gas to transport biogas from its point of injection into the local pipeline to a point of receipt by its or its natural gas marketer's ultimate customer in California would allow the project developer to avoid the very costly pipeline tariffs, including both transportation and fuel for compression, that must now be paid by an out-of-state biogas project. This would facilitate more biogas projects to become economic and would allow more biogas to be acquired by California utilities and other biogas consumers in California (such as fuel cell owners).

2. The Commission, in its August 2010 draft of the Guidebook, has now recognized that natural gas pipelines do not all transport natural gas from the east to the west. For

that reason, the Commission has added the following language: ***"Delivery contracts with the pipeline operators may be for delivery with or against the physical flow of the gas in the pipeline."*** This language authorizes what is commonly known in the natural gas industry as transportation by "displacement" or "backhaul." It is, in essence, an ***exchange*** of the same quantity of natural gas from one point on a pipeline to another, usually against the flow of natural gas on that pipeline. However, the transportation tariffs for such natural gas are paid to the pipeline operator in such case.

3. Once biogas has been upgraded to pipeline quality standards to meet the requirements of the natural gas pipeline into which it is injected, the methane molecules in such biogenic biogas, which represent its energy content, are indistinguishable from the methane molecules included in fossil fuel natural gas. The Commission has tacitly recognized this fact by its inclusion of the right to transport by displacement as mentioned in the previous section. Thus the method of transportation of the gas is not what determines the renewable characteristics of the gas.

4. The requirement that currently exists in the Commission's draft of the August 2010 Guidebook as to assurances that must be provided to track the transfer of all applicable renewable attributes of the biogas to the ultimate user of such biogas in a California certified facility in order to produce renewable electric power that meets the RPS requirements would continue in effect under the language suggested by Cambrian. The elements that the Commission would require to be evidenced and capable of audit that relate to the renewable characteristics of the biogas are as follows:

    a. Certification by the biogas owner that the biogas is produced at a source that qualifies under the Guidebook, e.g. landfill gas, digester gas, animal waste digester gas.

    b. Measurement of the quantity of biogas injected into the local natural gas pipeline.

        i. The receipt of such biogas by the local natural gas pipeline so that such biogas meets on a continual basis the natural gas pipeline specifications is measured by gas chromatographs and other instruments to assure compliance with such natural gas pipeline standards. The records of such quantity and quality measurements are maintained and are capable of being audited.

c. Certification by the Commission of the electric power facility in California that intends to use such biogas (comprised of the quantity of methane and the transferred renewable attributes) for the production of renewable electric power to meet the RPS requirements.

d. The "exchange" agreement of the quantity of biogas would be entered into between the biogas production owner and a natural gas marketing firm that (i) has the capacity to market the methane receive from the biogas owner in the marketplace in which it is received, and (ii) owns and can deliver a comparable quantity of gas (as measure in MMBtus) at the point of receipt either at a natural gas pipeline in California or at a natural gas pipeline in the WECC region that delivers natural gas into California. The ultimate purchasing utility in California will want assurance that the company performing the exchange function is creditworthy, reliable and capable of the continuous delivery of the quantities of methane subject to such exchange agreement. The exchange intermediary would normally be one of the major natural gas marketing firms that operate both nationally and within the California natural gas market. Such intermediary company would be identified to the Commission as part of the certification process of the electric power generating facility in California that would utilize such biogas resource.

5. Due to the very small number of biogas projects that are currently operating in the United States, none of which are in the WECC region, and the limited number of landfills, waste water treatment plant digesters and animal waste digesters capable of supporting a biogas projects and located near natural gas pipelines, there is a very small risk that the requested changes to the method of transportation of biogas to California would result in any increase in either the number of projects or the amount of biogas being delivered into California to be of concern. However, if such a risk is perceived, it is better addressed by the total amount of energy that will be accepted from out-of-state resources than by placing a geographic limit on where such biogas resources must be located in order to qualify for use in connection with RPS-eligible projects.

6. The expansion of the available means to transport biogas to California by means of an exchange of gas will aid in reducing substantial transportation costs that otherwise would be needlessly incurred to intervening natural gas pipelines. The elimination of these biogas transportation costs will help to offset the lack of tax credit and other financial support available to assist developers of biogas projects.

HYDROGEN

Cambrian also requests a small change to Article II B. 4 – Eligibility for the Renewable Portfolio Standard – Fuel Cell Facilities Using Renewable Fuel. The change requested is to include hydrogen produced by a catalytic process from landfill gas to qualify as a renewable fuel.

Cambrian is developing a project in California using technology that has been demonstrated to produce renewable hydrogen through use of a catalyst.

The requested change in the applicable language in Article II B. 4 is marked in red with bold, underlined text as follows:

> ...Hydrogen or hydrogen-rich gases derived from non-fossil fuel or feedstock through **a catalytic process or** use of power generated by an "eligible renewable energy resource...."

CONCLUSION

If there are any questions about any of the matters set forth herein, I would be happy to answer those questions by e-mail or by telephone. I also plan on attending the workshop to outline the comments made here in person.

Very truly yours,

Evan G. Williams

EGW:bhs

cc: SWANA High Btu Gas Working Group Members
Tudor Williams
Rhys Williams

2. Biogas Injected into a Natural Gas Pipeline

RPS - eligible biogas is a (gas derived from RPS - eligible fuel including such as biomass, or digester gas, and/or landfill gas). Biogas may be used to generate electricity at the fuel processing site or transported to an RPS - eligible electric generating facility. If the biogas is processed and used to generate electricity at the same site, the two processes are considered to be at the same facility and no information on the delivery of the biogas from the processor to the generator is required. If, however, the fuel is not processed and used to generate electricity at the same site, then the biogas must be delivered to the electric generating facility by one of the following methods:

1. Fuel container: The biogas is injected into a fuel container containing only biogas and then the container is transported to the generation site by a vehicle (i.e. truck); or

2. Dedicated pipeline: The biogas is injected into a pipeline running from the fuel processing facility to the generation facility with no possibility of mixture with non - RPS - eligible gas; or

3. Natural gas pipeline: The biogas is injected into a natural gas pipeline and withdrawn at the designated RPS - eligible electric generation facility. See below for additional instructions regarding delivery of biogas.

All applicants for facilities using biogas delivered to the electric generation facility must include with the certification or pre - certification application: 1) an attestation from the operator of the fuel processing facility that the biogas meets RPS eligibility requirements and that the biogas and its renewable attributes have been conveyed along with the biogas and uniquely sold for the purpose of use at the electric generating facility, and 2) an attestation from the operator of the designated electric generating facility of the intent to procure biogas fuel that meets RPS eligibility requirements for use at the designated electric generating facility. In the event that both the fuel processing and electric generating facilities are operated by the same entity, a single attestation that the fuel meets RPS eligibility requirements and that none of its renewable attributes have been sold to another entity will suffice. In addition to the certification or pre - certification application, applicants for biogas facilities must complete the Biopower supplemental application form.

The amount of RPS - eligible electricity produced shall be calculated by multiplying the generation of the facility in megawatt - hours (MWh) by the ratio of the biogas (BTU) delivered to the total gas (BTU) used by the facility. The electricity generated and gas used must be measured over an equal and overlapping period (such as MWh produced per month and gas (BTU) used in the same month). See Section II 8: Renewable Facilities Using Multiple Energy Resources, for more information on how to measure the renewable generation from multi - fuel facilities.

Biogas Delivery via Injection Into a Natural Gas Pipeline

RPS - eligible biogas may be injected into a natural gas transportation pipeline system and delivered into California (or delivered to the electric generation facility if the electric generation facility is located outside of California) for use in an RPS - certified multi - fuel facility, the resulting generation may be considered result in the generation of RPS-eligible electricity. It should be noted that the biogas must meet strict heat content and quality requirements within a narrow band of tolerance to qualify as pipeline - grade gas.

Quantifying RPS - eligible energy production requires accurate metering of the volume of biogas injected into the transportation pipeline system and the measured heat content of the injected biogas. Although blending the biogas into the transportation pipeline system mixes the biogas with other pipeline gas, biogas entering the system must be designated for use at a specific power plant or to a pipeline system owned by a publicly owned utility or other load - serving entity (LSE). Consequently, the amount and energy content (BTU) of the biogas or other RPS - eligible gas produced can be measured and either designated for use at a specific power plant or designated to a pipeline system owned by an LSE. If the biogas is designated to a pipeline system, the owner of the system must designate the facility in which the biogas will be used.

The facility to which biogas is designated must be certified as RPS - eligible, recognizing that the facility may use a blend of RPS-eligible and ineligible fuels.

For facilities that use biogas and fossil fuel or other nonrenewable fuel inputs but exceed the applicable de minimis amount of nonrenewable fuel that would allow them to count 100 percent of the electricity generated as RPS - eligible, only the portion of generation attributable to biogas will count as RPS eligible.38[12] The amount of RPS - eligible electricity produced shall be calculated by multiplying the generation of the facility (MWh) by the ratio of the energy of the biogas (BTU) injected and delivered to used and the total energy of the gases (BTU), biogas and natural gas, used by the facility. The electricity generated and gas used must be measured over an equal and overlapping period (such as electricity (MWh) produced per month and gas (BTU) used

[1] Refer to subsection 8: Renewable Facilities Using Multiple Energy Resources for RPS eligibility requirements.

in the same per month), see Section II C for more information on how to measure the renewable generation from multi - fuel facilities.

Any production or acquisition of biogas that is directly supplied to the gas transportation pipeline system and used to produce electricity may generate RPS-eligible electricity as follows:

1. The biogas must be produced from an RPS - eligible resource, such as biomass, or digester gas, or landfill gas.

2. The biogas must be injected into a natural gas pipeline system that is (i) within the WECC region, (ii) interconnected through one or more pipelines to a natural gas pipeline system in the WECC region that delivers gas into California (or delivers to the electric generation facility if the electric generation facility is located outside California), or (iii) located within the continental United States and from which transportation, as defined in 18 Code of Federal Regulations 284.1 (including exchange, backhaul and displacement), of an equivalent quantity of gas can occur to a natural gas pipeline system located within California, to a natural gas pipeline system in the WECC region that delivers gas into California (or delivers to the electric generation facility if the electric generation facility is located outside California), or to a natural gas pipeline system interconnected through one or more pipelines to a natural gas pipeline system in the WECC region that delivers gas into California (or delivers to the electric generation facility if the electric generation facility is located outside California), and the gas is
3. .delivered as specified below.

4. The applicant, or authorized party, must enter into contracts either (i) for the delivery (firm or interruptible) of the gas with every pipeline operator transporting the gas from the injection point to California (or delivers to the electric generation facility if the electric generation facility is located outside of California), or (ii) for the transportation, as defined in 18 Code of Federal Regulations 284.1 (including exchange, backhaul and displacement), of an equivalent quantity of gas to a natural gas pipeline system located within California, to a natural gas pipeline system in the WECC region that delivers gas into California (or delivers to the electric generation facility if the electric generation facility is located outside California), or to a natural gas pipeline system interconnected through one or more pipelines to a natural gas pipeline system in the WECC region that delivers gas into California (or delivers to the electric generation facility if the electric generation facility is located outside California). Delivery contracts with the pipeline operators may be for delivery with or against the physical flow of the gas in the pipeline. Contracts for transportation by means defined in 18 Code of Federal Regulations 284.1 may occur through natural gas marketing companies that act as intermediaries for purposes of such transportation. To the extent that gas is

transported through one or more natural gas pipelines, the contracted capacity must be utilized, in a manner consistent with physical delivery of gas in the pipeline system, to deliver the quantity of RPS - eligible gas that will be used at the electric generation facility.

5. The energy content produced and supplied to the transportation pipeline system must be measured on a monthly basis and reported annually, illustrated by month. Reporting shall be in units of energy (for example, MMBtu) based on metering of gas volume and adjustment for measured heat content per volume of each gas). In addition, the total amount of gas used at the RPS - eligible facility must be reported in the same units measured over the same period, and the electricity production must be reported in MWh.

6. The biogas must be used at a facility that has been certified as RPS - eligible. As part of the application for certification, the applicant must attest that the RPS-eligible biogas will be designated to that facility or nominated to the LSE - owned pipeline serving the designated facility.

7. In its annual RPS Procurement Verification report,[39] the Energy Commission will calculate the RPS - eligible energy produced using the same methodology discussed above, if it determines this is necessary.

In addition to the attestations described above, applications for RPS precertification, certification, or amendments must include an attestation from the party(ies) responsible for the delivery of the RPS - eligible biogas. This attestation should indicate that they will comply with the above conditions for delivery of RPS - eligible biogas and the fuel and its renewable attributes have been uniquely sold for the purpose of use at the designated electric generating facility. The attestation should include a description of the delivery path planned for the RPS - eligible biogas.