PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298

Pacific Gas & Electric Company
GAS (Corp ID 39)
Status of Advice Letter 4413G
As of August 27, 2021

Subject: Modifications of Gas Rule 29 to Provide Lower and Upper Action Level Specifications, Pursuant to Decision (D.) 20-12-031.

Division Assigned: Energy

Date Filed: 04-01-2021

Date to Calendar: 04-05-2021

Authorizing Documents: D2012031

Disposition:	**Accepted**
Effective Date:	**05-01-2021**

Resolution Required: No

Resolution Number: None

Commission Meeting Date: None

CPUC Contact Information:

edtariffunit@cpuc.ca.gov

AL Certificate Contact Information:

Annie Ho
415-973-8794
PGETariffs@pge.com

PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298

To: Energy Company Filing Advice Letter

From: Energy Division PAL Coordinator

Subject: Your Advice Letter Filing

The Energy Division of the California Public Utilities Commission has processed your recent Advice Letter (AL) filing and is returning an AL status certificate for your records.

The AL status certificate indicates:

Advice Letter Number
Name of Filer
CPUC Corporate ID number of Filer
Subject of Filing
Date Filed
Disposition of Filing (Accepted, Rejected, Withdrawn, etc.)
Effective Date of Filing
Other Miscellaneous Information (e.g., Resolution, if applicable, etc.)

The Energy Division has made no changes to your copy of the Advice Letter Filing; please review your Advice Letter Filing with the information contained in the AL status certificate, and update your Advice Letter and tariff records accordingly.

All inquiries to the California Public Utilities Commission on the status of your Advice Letter Filing will be answered by Energy Division staff based on the information contained in the Energy Division's PAL database from which the AL status certificate is generated. If you have any questions on this matter please contact the:

Energy Division's Tariff Unit by e-mail to
edtariffunit@cpuc.ca.gov

Erik Jacobson
Director
Regulatory Relations

Pacific Gas and Electric Company
77 Beale St., Mail Code B13U
P.O. Box 770000
San Francisco, CA 94177

Fax: 415-973-3582

April 1, 2021

Advice 4413-G
(Pacific Gas and Electric Company ID U 39 G)

Public Utilities Commission of the State of California

Subject: **Modifications to Gas Rule 29 to Provide Lower and Upper Action Level Specifications, Pursuant to Decision (D.) 20-12-031.**

Purpose

Pursuant to (D.) 20-12-031 *Adopting the Standard Renewable Gas Interconnection and Operating Agreement,* Ordering Paragraph (OP) 11, Pacific Gas and Electric Company ("PG&E") hereby submits this Tier 2 Advice Letter to modify Gas Rule 29, Renewable Gas Interconnections and provide lower and upper action level specifications for biologicals in Renewable Gas.

Background

Rulemaking (R.) 13-02-008 was opened on February 13, 2013, to implement Assembly Bill (AB) 1900 (Gatto, 2012) which required the California Public Utilities Commission (Commission or CPUC) to take certain action with respect to biogas and biomethane. Health and Safety Code § 25421(c) required the Commission to adopt biomethane standards that specify the concentration of allowable constituents in biomethane injected into a common carrier pipeline. The adoption of the biomethane standards is to ensure the protection of human health, and to ensure pipeline and pipeline facility integrity and safety.

Health and Safety Code Section § 25421(a) specifies that the process for creating and updating biomethane standards starts with the Office of Environmental Health Hazard Assessment (OEHHA), in consultation with the California Air Resources Board (CARB) and other agencies, that shall compile a list of constituents of concern that could pose risks to human health and that are found in biogas. This review and update procedure is to take place every five years, or earlier if new information becomes available.

D.14-01-034 adopted the original biomethane standards pursuant to the process established by AB 1900. OP 7 of D.14-01-034 requires the Joint Utilities to file an

application at the Commission to formally update biomethane standards within five years from the effective date of the decision. Additionally, OP 8 of D.14-01-034 states that either OEHHA or CARB can send a letter to the Commission requesting updates to the biomethane standards if they deem necessary prior to the five-year mark. OP 9 of D.14-01-034 requires the Joint Utilities to specify the lower and upper action levels for ammonia, biologicals, hydrogen, mercury, and siloxanes as part of the process of updating biomethane standards for the first time.

The Joint Utilities requested and received a waiver of their five-year filing obligation by the Commission's Executive Director on December 10, 2018, given that CARB had not published any updated guidance for constituents of concern at that time. OP 11 of D.20-12-031 ordered the Joint Utilities to specify lower and upper action levels for ammonia, biologicals, hydrogen, mercury, and siloxanes as soon as practicable as CARB had not published updated guidance in response to OEHHA's report of January 2020.

OP 11 of D. 20-12-031 states:

> Pacific Gas and Electric Company, Southwest Gas Corporation, Southern California Gas Company, and San Diego Gas & Electric Company shall provide upper and lower action level specifications in a joint filing to be submitted to the Commission no later than April 1, 2021 for biologicals and January 1, 2022 for ammonia, mercury, and siloxanes. Upper and lower action levels of hydrogen will be established pursuant to Phase 4 of this proceeding.

Pursuant to direction provided by Energy Division staff on March 19, 2021, the Joint Utilities were instructed to submit separate advice letters instead of a joint filing. This allows each utility to submit their own tariff sheet modifications, which would not be possible with a joint advice letter filing.

Tariff Revisions - Proposed Revision to Gas Rule 29

Rationale for Eliminating Biologicals as an Integrity Protective Constituent

PG&E has participated as a member company in multiple projects with the Gas Technology Institute (GTI), commissioning several studies around microbially induced corrosion (MIC) with the support of other operators. Using information gained from these studies, GTI developed a genetic based testing method with demonstrated speed and accuracy which is referred to as the quantitative polymerase chain reaction method or qPCR1. Using this method, SoCalGas performed extensive testing on Renewable Gas

[1] qPCR: quantitative Polymerase Chain Reaction, genetic MIC identification method developed by the GTI using the National Association of Corrosion Engineers (NACE) Standards TIM0106-206 and TM0212-2018.

which flows directly into their pipeline system.[2] Simultaneously, SoCalGas performed in-situ testing by inserting a corrosion coupon at one of these receiving points where biological results were evident. Inserted coupons were inspected in regular intervals for evidence of MIC for 7 years. No evidence of MIC was observed in the coupons, and the level of biologicals measured was at or below 4x104/scf.

In addition, GTI has collected many data points since 2009 from multiple sources of Renewable Gas and that the MIC has been effectively removed by the renewable gas cleanup technology.

Based on this information, PG&E in conjunction with SoCalGas and SWG, have concluded that it is appropriate to request eliminating the specification for a Biological upper action level and lower action level, and simply require at pre-injection testing before startup at levels lower than observed during in-situ testing.

Requested Revisions to Gas Rule 29

In accordance with OP 11, PG&E proposes the following updates to Gas Rule 29 for trigger level, lower action level and upper action levels for biological constituents as listed below.

- Delete Biologicals from Table 1, Maximum Constituent Concentrations
- Delete Note 7 in Table 1, Maximum Constituent Concentrations

To implement these updates for biological constituents and to ensure the renewable gas is commercially free of bacteria, PG&E requests approval to amend Gas Rule 29 and add the following language in the Pre-injection Testing Procedure.[3]

K.5.e.ii.b) Biologicals

> (i) Renewable Gas must be commercially free of bacteria which cause corrosion, also referred to as biologicals.
>
> (ii) To ensure Renewable Gas is commercially free of biologicals, the Interconnector will test for total bacteria including but not limited to Acid-producing Bacteria (APB), Sulfate-reducing Bacteria (SRB), and Iron-oxidizing Bacteria (IOB) by quantitative polymerase Chain Reaction (qPCR) method during pre-injection testing. If the total bacteria results are at or below $4x10^4$/scf, then Renewable Gas may be injected into the Utility's system subject to all other requirements set forth in this Rule.

[2] PG&E does not current have renewable gas projects interconnected to its gas system as of the date of this advice filing.
[3] See Attachment A for an updated version of Gas Rule 29.

Protests

*****Due to the COVID-19 pandemic and the shelter at home orders, PG&E is currently unable to receive protests or comments to this advice letter via U.S. mail or fax. Please submit protests or comments to this advice letter to EDTariffUnit@cpuc.ca.gov and PGETariffs@pge.com*****

Anyone wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile or E-mail, no later than April 21, 2021, which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest shall also be sent to PG&E either via E-mail or U.S. mail (and by facsimile, if possible) at the address shown below on the same date it is mailed or delivered to the Commission:

Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-3582
E-mail: PGETariffs@pge.com

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

Effective Date

PG&E believes this Advice Letter is subject to Energy Division disposition and should be classified as Tier 2 (effective after staff approval) pursuant to General Order (GO) 96-B. PG&E respectfully requests that this Tier 2 advice submittal become effective on regular notice, May 1, 2021, which is 30 calendar days after the date of submittal.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service list for R.13-02-008. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: http://www.pge.com/tariffs/.

/S/
Erik Jacobson
Director, Regulatory Relations

Attachment

cc:
Service List R.13-02-008
Love Asiedu-Akrofi, Energy Division
Karin Sung, Energy Division
Nick Zanjani, Energy Division

California Public Utilities Commission

ADVICE LETTER SUMMARY

ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (ID U39 G)

Utility type:
☐ ELC ☑ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Annie Ho
Phone #: (415) 973-8794
E-mail: PGETariffs@pge.com
E-mail Disposition Notice to: AMHP@pge.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 4413-G

Tier Designation: 2

Subject of AL: Modifications of Gas Rule 29 to Provide Lower and Upper Action Level Specifications, Pursuant to Decision (D.) 20-12-031.

Keywords (choose from CPUC listing): Compliance

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.20-12-031

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL:

Confidential treatment requested? ☐ Yes ☑ No

If yes, specification of confidential information:
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? ☐ Yes ☑ No

Requested effective date: 5/1/21

No. of tariff sheets: 6

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: Gas Rule 29

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

[1]Discuss in AL if more space is needed.

Clear Form

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Erik Jacobson, c/o Megan Lawson
Title: Director, Regulatory Relations
Utility Name: Pacific Gas and Electric Company
Address: 77 Beale Street, Mail Code B13U
City: San Francisco, CA 94177
State: California Zip: 94177
Telephone (xxx) xxx-xxxx: (415)973-2093
Facsimile (xxx) xxx-xxxx: (415)973-3582
Email: PGETariffs@pge.com

Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Clear Form

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
37074-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 25	36421-G
37075-G*	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 29	36425-G
37076-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 30	36426-G
37077-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 31	36427-G
37078-G*	GAS TABLE OF CONTENTS Sheet 1	36999-G
37079-G*	GAS TABLE OF CONTENTS Sheet 8	36903-G

GAS RULE 29 Sheet 25
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

2. Renewable Gas Constituent Concentrations (Cont'd.):

a. Renewable Gas must conform to the specifications listed in Table 1 and Table 2 (Cont'd.):

Table 1 (Cont'd.)
Maximum Constituent Concentrations

Integrity Protective Constituents (IPC) [3]						
Ammonia	0.001%	TBD [5]	TBD [5]	●	●	●
Hydrogen	0.10%	TBD [5]	TBD [5]	●	●	●
Mercury	0.08 mg/m^3	TBD [5]	TBD [5]	●	●	●
Siloxanes[8]	0.01 mg Si/m^3	0.1 mg Si/m^3	TBD [5]	●	●	●

(D)

Notes:
1. Base Utility Gas Specifications are identified in K1.
2. Health Protective Constituents (HPC) are shown in Table V-3 of the CARB/OEHHA Report.
3. Integrity Protective Constituents are shown in Section 4.4.3.3 of D.14-01-034 and identified as pipeline integrity protective constituents.
4. Other organic sources, includes all Biogas sources other than landfill and dairy manure, including but not limited to, a sewage treatment plant or wastewater plant ("Publicly Owned Treatment Works" or "POTW").
5. The Lower and Upper Action Levels will be established in the next update proceeding.
6. Testing requirement will be the stricter of the stated Renewable Gas values or other tariff requirements.
7. The Interconnector that meets this Rule's Section K.4.b certification requirements shall have reduced siloxanes testing requirements. Utility, at its discretion and at its own cost, may still test pursuant to Utility's applicable tariff rules. If the Utility test results show the siloxanes levels exceed the Lower Action Level, the full siloxanes testing requirements will apply as described in this Rule.

(D)
(T)

Table 2
Collective Risk from Carcinogenic and Non-Carcinogenic Constituents

Risk Management Levels	Risk from Carcinogenic Constituents (chances in a million)	Hazard Index from Non-Carcinogenic Constituents	Action
Trigger Level [1]	≥ 1.0	≥ 0.1	Periodic Testing Required
Lower Action Level [2]	≥ 10.0	≥ 1.0	Supply shut-in after three exceedances in 12 months in which deliveries occur
Upper Action Level [3]	≥ 25.0	≥ 5.0	Immediate supply shut-in

1. Applies to individual Constituent concentrations.
2. Applies to the sum of all Constituent concentrations over the Trigger Level.
3. Applies to individual Constituent concentrations or to the sum of all Constituent concentrations over the Trigger Level.

(Continued)

GAS RULE 29 Sheet 29
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.): (N)

e. Pre-Injection Testing Procedure (Cont'd.):

ii. Integrity Protective Constituents (Cont'd)

b) Biologicals

(i) Renewable Gas must be commercially free of bacteria which cause corrosion, also referred to as biologicals.

(ii) To ensure Renewable Gas is commercially free of biologicals, the Interconnector will test for total bacteria including Acid-producing Bacteria (APB), Sulfate-reducing Bacteria (SRB), and Iron-oxidizing Bacteria (IOB) by quantitative polymerase Chain Reaction (qPCR) method during pre-injection testing. If the total bacteria results are at or below $4x10^4$/scf,, then Renewable Gas may be injected into the Utility's system subject to all other requirements set forth in this Rule. (N)

f. Periodic Testing :

i. Group 1 Compounds

a) Group 1 Compounds will be tested once every 12-month period in which injection occurs.

b) Any Group 1 Compounds with a concentration below the Trigger Level for two consecutive annual tests will be tested once every two-year period in which injection occurs.

c) A Group 1 Compound will become a Group 2 Compound if testing indicates a concentration at or above the Trigger Level and will be tested quarterly.

ii. Group 2 Compounds

a) Testing for Group 2 Compounds will be quarterly (at least once every three- month period in which injection occurs).

b) Any Group 2 Compound with a concentration below the Trigger Level in four consecutive quarterly tests will become a Group 1 Compound and will be tested once every 12-month period in which injection occurs.

c) If any constituent is above the Upper Action Level, the Renewable Gas shall be shut-in until the concentration level is below the Lower Action Level, after which it will be subject to the Section .K.5.g. Restart Procedure.

iii. Collective risk from Carcinogenic and Non-carcinogenic Health Protective Constituents

(L)

(Continued)

GAS RULE 29 Sheet 30
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.):

f. Periodic Testing (Cont'd.):

iii. Collective risk from Carcinogenic and Non-carcinogenic Health Protective Constituents (Cont'd.):

a. Cancer Risk (Cont'd) (L)

The collective potential cancer risk for Group 2 Compounds is determined by summing the individual potential cancer risk for each carcinogenic Constituent of Concern. Specifically, the cancer risk is calculated using the ratio of the concentration of the Constituent in the Renewable Gas to the health protective ("trigger") concentration value corresponding to one in a million cancer risk for that specific Constituent and then summing the risk for all the Group 2 Compounds. (for reference, see CARB/OEHHA Report submitted in R. 13-02-008, p. 67) (L)

b) Non-Cancer Risk

The collective non-cancer risk is calculated using the ratio of the concentration of the constituent in Renewable Gas to the health protective concentration value corresponding to a hazard quotient of 0.1 for that specific non-carcinogenic constituent, then multiplying the ratio by 0.1, and then summing the non-cancer chronic risk for these Group 2 compounds. (for reference, see CARB/OEHHA Report submitted in R.13-02-008, p. 67)

c) If the result is at or above the Lower Action Level on three occurrences in a 12-month period, the Renewable Gas shall be immediately shut-in until the levels are below the Lower Action Level, after which it will be subject to the Restart Procedures.

d) If quarterly testing over four consecutive tests demonstrates that the collective risk from Carcinogenic and Non-carcinogenic Constituents is below the Lower Action Level, then the testing period will change to once every 12- month period during which injection occurs for each Constituent in the group.

e) If annual testing demonstrates that collective risk from Carcinogenic and Non- carcinogenic Group 2 Compounds is at or above the Lower Action Level, then testing will revert to quarterly.

f) If the collective risk from Carcinogenic or Non-carcinogenic Constituents, is at or above the Upper Action Level, the Renewable Gas shall be shut-in until the concentration is below the Lower Action Level, after which it will be subject to the Restart Procedures.

g) If Interconnector's Renewable Gas is refused in accordance with this Rule, testing for all Group 1 and Group 2 Compounds will then be performed according to the Restart Procedure. (L)

(Continued)

GAS RULE 29 Sheet 31
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.):

f. Periodic Testing (Cont'd.):

iv. Integrity Protective Constituents: (T)/(L)

a) Constituents shall be tested once every 12-month period in which injection occurs.

b) Any Constituent with a concentration at or below the Trigger Level during two (2) consecutive annual periodic tests shall be tested once every two-year period in which injection occurs. (L)

c) If periodic testing demonstrates that any Constituent is above the Trigger Level, then it will be tested quarterly.

d) If the Constituent is above the Trigger Level, then it will be tested quarterly until there are four (4) consecutive quarterly tests at or below the Trigger Level, then it will be reduced to once every 12-month period in which deliveries occur.

e) When any Constituent is above the Lower Action Level three times in a 12- month period, the Renewable Gas shall be immediately shut-in and subject to Restart Procedures set forth in Section K.5.g. of this Rule.

g. Restart Procedure

i. Interconnector will repeat the Pre-Injection Testing Procedure until one successful test of all Constituents is completed, when any of the following occurs:

a) There is a change in the Gas source at the facility or a change of the Gas processing equipment design (other than for functional equivalence) that the Commission determines will potentially increase the level of any Constituent over the previously measured baseline levels.

b) A shut-in of the Renewable Gas into the pipeline because there are three exceedances of the Lower Action Level in a 12-month period of the same Constituent.

c) A shut-in of the Renewable Gas into the pipeline because a Constituent concentration or the collective cancer or non-cancer risk is above the Upper Action Level.

ii) After re-starting Renewable Gas deliveries, Periodic Testing will resume based on the results of the successful test.

(Continued)

GAS TABLE OF CONTENTS

(Continued)

GAS TABLE OF CONTENTS

(Continued)

Advice 4413-G
April 1, 2021

Attachment 2

Redline Tariffs

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GAS RULE 29 Sheet 25 (N)
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM (N)

K. Renewable Gas Quality and Specifications (Cont'd.): (N)

2. Renewable Gas Constituent Concentrations (Cont'd.):

a. Renewable Gas must conform to the specifications listed in Table 1 and Table 2 (Cont'd.):

Table 1 (Cont'd.)
Maximum Constituent Concentrations

Integrity Protective Constituents (IPC) [3]						
Ammonia	0.001%	TBD [5]	TBD [5]	●	●	●
~~Biologicals~~	~~4 x 10^4 / Scf (qPCR per APB, SRB, IOB[7] group) and commercially free of bacteria of > 0.2 microns~~	~~TBD [5]~~	~~TBD [5]~~	●	●	●
Hydrogen	0.10%	TBD [5]	TBD [5]	●	●	●
Mercury	0.08 mg/m^3	TBD [5]	TBD [5]	●	●	●
Siloxanes[7][8]	0.01 mg Si/m^3	0.1 mg Si/m^3	TBD [5]	●	●	●

Notes:
1. Base Utility Gas Specifications are identified in K1.
2. Health Protective Constituents (HPC) are shown in Table V-3 of the CARB/OEHHA Report.
3. Integrity Protective Constituents are shown in Section 4.4.3.3 of D.14-01-034 and identified as pipeline integrity protective constituents.
4. Other organic sources, includes all Biogas sources other than landfill and dairy manure, including but not limited to, a sewage treatment plant or wastewater plant ("Publicly Owned Treatment Works" or "POTW").
5. The Lower and Upper Action Levels will be established in the next update proceeding.
6. Testing requirement will be the stricter of the stated Renewable Gas values or other tariff requirements.
~~7. Acid-producing Bacteria (APB), Sulfate-reducing Bacteria (SRB), and Iron-oxidizing Bacteria (IOB).~~
8[7]. The Interconnector that meets this Rule's Section K.4.b certification requirements shall have reduced siloxanes testing requirements. Utility, at its discretion and at its own cost, may still test pursuant to Utility's applicable tariff rules. If the Utility test results show the siloxanes levels exceed the Lower Action Level, the full siloxanes testing requirements will apply as described in this Rule.

Table 2
Collective Risk from Carcinogenic and Non-Carcinogenic Constituents

Risk Management Levels	Risk from Carcinogenic Constituents (chances in a million)	Hazard Index from Non-Carcinogenic Constituents	Action
Trigger Level [1]	≥ 1.0	≥ 0.1	Periodic Testing Required
Lower Action Level [2]	≥ 10.0	≥ 1.0	Supply shut-in after three exceedances in 12 months in which deliveries occur
Upper Action Level [3]	≥ 25.0	≥ 5.0	Immediate supply shut-in

1. Applies to individual Constituent concentrations.
2. Applies to the sum of all Constituent concentrations over the Trigger Level.
3. Applies to individual Constituent concentrations or to the sum of all Constituent concentrations over the Trigger Level. (N)

(Continued)

GAS RULE 29 Sheet 29
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.): (N)

e. Pre-Injection Testing Procedure (Cont'd.):

ii. Integrity Protective Constituents (Cont'd)

b) Biologicals

(i) Renewable Gas must be commercially free of bacteria which cause corrosion, also referred to as biologicals.

(ii) To ensure Renewable Gas is commercially free of biologicals, the Interconnector will test for total bacteria including Acid-producing Bacteria (APB), Sulfate-reducing Bacteria (SRB), and Iron-oxidizing Bacteria (IOB) by quantitative polymerase Chain Reaction (qPCR) method during pre-injection testing. If the total bacteria results are at or below $4x10^4$/scf,, then Renewable Gas may be injected into the Utility's system subject to all other requirements set forth in this Rule. (N)

f. Periodic Testing :

i. Group 1 Compounds

a) Group 1 Compounds will be tested once every 12-month period in which injection occurs.

b) Any Group 1 Compounds with a concentration below the Trigger Level for two consecutive annual tests will be tested once every two-year period in which injection occurs.

c) A Group 1 Compound will become a Group 2 Compound if testing indicates a concentration at or above the Trigger Level and will be tested quarterly.

ii. Group 2 Compounds

a) Testing for Group 2 Compounds will be quarterly (at least once every three- month period in which injection occurs).

b) Any Group 2 Compound with a concentration below the Trigger Level in four consecutive quarterly tests will become a Group 1 Compound and will be tested once every 12-month period in which injection occurs.

c) If any constituent is above the Upper Action Level, the Renewable Gas shall be shut-in until the concentration level is below the Lower Action Level, after which it will be subject to the Section .K.5.g. Restart Procedure.

iii. Collective risk from Carcinogenic and Non-carcinogenic Health Protective Constituents

(L)

(Continued)

GAS RULE 29 Sheet 30
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.):

f. Periodic Testing (Cont'd.):

iii. Collective risk from Carcinogenic and Non-carcinogenic Health Protective Constituents (Cont'd.):

a. Cancer Risk (Cont'd) (L)

The collective potential cancer risk for Group 2 Compounds is determined by summing the individual potential cancer risk for each carcinogenic Constituent of Concern. Specifically, the cancer risk is calculated using the ratio of the concentration of the Constituent in the Renewable Gas to the health protective ("trigger") concentration value corresponding to one in a million cancer risk for that specific Constituent and then summing the risk for all the Group 2 Compounds. (for reference, see CARB/OEHHA Report submitted in R. 13-02-008, p. 67) (L)

b) Non-Cancer Risk

The collective non-cancer risk is calculated using the ratio of the concentration of the constituent in Renewable Gas to the health protective concentration value corresponding to a hazard quotient of 0.1 for that specific non-carcinogenic constituent, then multiplying the ratio by 0.1, and then summing the non-cancer chronic risk for these Group 2 compounds. (for reference, see CARB/OEHHA Report submitted in R.13-02-008, p. 67)

c) If the result is at or above the Lower Action Level on three occurrences in a 12-month period, the Renewable Gas shall be immediately shut-in until the levels are below the Lower Action Level, after which it will be subject to the Restart Procedures.

d) If quarterly testing over four consecutive tests demonstrates that the collective risk from Carcinogenic and Non-carcinogenic Constituents is below the Lower Action Level, then the testing period will change to once every 12- month period during which injection occurs for each Constituent in the group.

e) If annual testing demonstrates that collective risk from Carcinogenic and Non- carcinogenic Group 2 Compounds is at or above the Lower Action Level, then testing will revert to quarterly.

f) If the collective risk from Carcinogenic or Non-carcinogenic Constituents, is at or above the Upper Action Level, the Renewable Gas shall be shut-in until the concentration is below the Lower Action Level, after which it will be subject to the Restart Procedures.

g) If Interconnector's Renewable Gas is refused in accordance with this Rule, testing for all Group 1 and Group 2 Compounds will then be performed according to the Restart Procedure. (L)

(Continued)

GAS RULE 29 Sheet 31
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

K. Renewable Gas Quality and Specifications (Cont'd.):

5. Testing (Cont'd.):

f. Periodic Testing (Cont'd.):

iv. Integrity Protective Constituents: (T)/(L)

a) Constituents shall be tested once every 12-month period in which injection occurs.

b) Any Constituent with a concentration at or below the Trigger Level during two (2) consecutive annual periodic tests shall be tested once every two-year period in which injection occurs. (L)

c) If periodic testing demonstrates that any Constituent is above the Trigger Level, then it will be tested quarterly.

d) If the Constituent is above the Trigger Level, then it will be tested quarterly until there are four (4) consecutive quarterly tests at or below the Trigger Level, then it will be reduced to once every 12-month period in which deliveries occur.

e) When any Constituent is above the Lower Action Level three times in a 12- month period, the Renewable Gas shall be immediately shut-in and subject to Restart Procedures set forth in Section K.5.g. of this Rule.

g. Restart Procedure

i. Interconnector will repeat the Pre-Injection Testing Procedure until one successful test of all Constituents is completed, when any of the following occurs:

a) There is a change in the Gas source at the facility or a change of the Gas processing equipment design (other than for functional equivalence) that the Commission determines will potentially increase the level of any Constituent over the previously measured baseline levels.

b) A shut-in of the Renewable Gas into the pipeline because there are three exceedances of the Lower Action Level in a 12-month period of the same Constituent.

c) A shut-in of the Renewable Gas into the pipeline because a Constituent concentration or the collective cancer or non-cancer risk is above the Upper Action Level.

ii) After re-starting Renewable Gas deliveries, Periodic Testing will resume based on the results of the successful test.

(Continued)

PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV

AT&T
Albion Power Company

Alta Power Group, LLC
Anderson & Poole

Atlas ReFuel
BART

Barkovich & Yap, Inc.
California Cotton Ginners & Growers Assn
California Energy Commission

California Hub for Energy Efficiency Financing

California Alternative Energy and Advanced Transportation Financing Authority
California Public Utilities Commission
Calpine

Cameron-Daniel, P.C.
Casner, Steve
Cenergy Power
Center for Biological Diversity

Chevron Pipeline and Power
City of Palo Alto

City of San Jose
Clean Power Research
Coast Economic Consulting
Commercial Energy
Crossborder Energy
Crown Road Energy, LLC
Davis Wright Tremaine LLP
Day Carter Murphy

Dept of General Services
Don Pickett & Associates, Inc.
Douglass & Liddell

East Bay Community Energy Ellison Schneider & Harris LLP Energy Management Service
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz & Ritchie
Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
Kelly Group
Ken Bohn Consulting
Keyes & Fox LLP
Leviton Manufacturing Co., Inc.

Los Angeles County Integrated Waste Management Task Force
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

Office of Ratepayer Advocates
OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
San Diego Gas & Electric Company

SPURR
San Francisco Water Power and Sewer
Sempra Utilities

Sierra Telephone Company, Inc.
Southern California Edison Company
Southern California Gas Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
TerraVerde Renewable Partners
Tiger Natural Gas, Inc.

TransCanada
Utility Cost Management
Utility Power Solutions
Water and Energy Consulting Wellhead Electric Company
Western Manufactured Housing Communities Association (WMA)
Yep Energy