

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



**Pacific Gas & Electric Company**  
**GAS (Corp ID 39)**  
**Status of Advice Letter 4716G**  
**As of March 30, 2023**

Subject: Gas Rule 29 - Standard Renewable Gas Interconnection Updates to Lower and Upper Action Levels for Hydrogen

Division Assigned: Energy

Date Filed: 02-17-2023

Date to Calendar: 02-27-2023

Authorizing Documents: D2212057

<b>Disposition:</b>	<b>Accepted</b>
<b>Effective Date:</b>	<b>02-17-2023</b>

Resolution Required: No

Resolution Number: None

Commission Meeting Date: None

CPUC Contact Information:

[edtariffunit@cpuc.ca.gov](mailto:edtariffunit@cpuc.ca.gov)

AL Certificate Contact Information:

Stuart Rubio  
(951)965-8905  
[PGETariffs@pge.com](mailto: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- Disposition of Filing (Accepted, Rejected, Withdrawn, etc.)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](mailto:edtariffunit@cpuc.ca.gov)**

February 17, 2023

**Advice 4716-G**

(Pacific Gas and Electric Company ID U 39 G)

Public Utilities Commission of the State of California

**Subject:** Gas Rule 29 – Standard Renewable Gas Interconnection Updates to Lower and Upper Action Levels for Hydrogen

**Purpose**

Pursuant to Ordering Paragraphs 5 and 6 in Decision (D.) 22-12-057, *Decision Directing Biomethane Reporting and Directing Pilot Projects to Further Evaluate and Establish Pipeline Injection Standards for Clean Renewable Hydrogen*, Pacific Gas and Electric Company (“PG&E”) hereby submits this Tier 1 Advice Letter to modify Gas Rule 29, Standard Renewable Gas Interconnection, to include the definition of Clean Renewable Hydrogen and to provide Lower and Upper Action Levels for hydrogen in renewable gas.

**Background**

On February 13, 2013, Rulemaking (R.) 13-02-008 was opened to implement Assembly Bill (AB) 1900 (Gatto, 2012), which added Health and Safety Code (HSC) § 25421 and requires the California Public Utilities Commission (Commission or CPUC) to take certain actions with respect to biogas and biomethane.

Specifically, HSC § 25421(c) requires 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.

Pursuant to OP 11 of D.20-12-031, Advice Letter 4545-G was filed December 30, 2021 proposing Trigger Level, Lower Action Level (LAL), and Upper Action Level (UAL) constituent specifications for ammonia, mercury and siloxanes. The proposed levels were subsequently adopted in PG&E Gas Rule 29. OP 11 of D.20-12-031 further noted that LAL and UAL for hydrogen will be established pursuant to Phase 4 of R.13-02-008.

In alignment with Phase 4 of R.13-02-008 and OP 6 of D.22-12-057 this advice letter, updates LAL and UAL for hydrogen in renewable gas.

Additionally, OP 5 of D.22-12-057 ordered a definition for Clean Renewable Hydrogen, defined in OP 4 of the same decision, to be added to the Standard Renewable Gas Interconnection Tariff. This Advice Letter implements the requested modifications to PG&E's gas rule.

### **Proposed Lower and Upper Constituent Specifications**

PG&E, in conjunction with the other gas utilities, adopts the following LAL and UAL constituent specifications for hydrogen as shown in Table 1 below.

**Table 1**

	<b>Current</b>	<b>Proposed</b>	<b>Proposed</b>	<b>Proposed</b>
<b>Constituent</b>	<b>Trigger Level</b>	<b>Trigger Level</b>	<b>Lower Action Level</b>	<b>Upper Action Level</b>
Hydrogen	0.10%	0.10% (No Change Proposed)	1.00%	5.00%

PG&E notes concern of potential integrity and safety risk in the adopted trigger levels that would legally permit renewable gas with up to 5% hydrogen to enter its system while additional monitoring takes place. This concern is supported by the UC Riverside study: "Hydrogen is known to have serious detrimental effects on underground porous reservoirs. Twenty different hydrogen related phenomena have been observed that have negative effects on porous reservoirs' performance as storage facilities for methane-hydrogen blends. The most serious of these is bacterial growth and activity, resulting in loss of gas volume, potential for H<sub>2</sub>S production and damage to the reservoir itself."<sup>1</sup>

Per current definitions of Trigger Level, Lower Action Level, and Upper Action Level, only renewable gas measured to be in excess of 5% hydrogen by volume may be immediately shut in at the receipt point. However, PG&E acknowledges (1), the intent of the commission: "adopted action levels provide an additional safety protocol, and they do not change the existing trigger level standard of 0.1 percent",<sup>2</sup> and (2), the possibility for future updates to the adopted action levels.

With adoption of the new LAL and UAL for hydrogen, PG&E recognizes that while the LAL and UAL are listed under the specifications for Renewable Gas, they are specific to hydrogen that is a by-product of the biomethane production process. The Renewable Gas Interconnection Tariff is not intended to include a pure hydrogen blending limit at this time;

<sup>1</sup> UC Riverside Study, Raju & Martinez Morales (2022) at 15

<sup>2</sup> Decision 22-12-057 at p. 51

and the hydrogen TL, LAL, UAL are only for biomethane injection containing trace amounts of hydrogen, up to the 0.10% TL.

### **Proposed Tariff Revisions to Gas Rule 29**

- Add interim definition of Clean Renewable Hydrogen: Hydrogen which is produced through a process that results in a lifecycle (i.e., well-to-gate) greenhouse gas emissions rate of not greater than 4 kilograms of CO<sub>2</sub>e per kilogram of hydrogen produced and does not use fossil fuel as either a feedstock or production energy source.
- Add hydrogen Lower Action Level and Upper Action Level of 1% and 5% by volume, respectively, to Table 1 – Maximum Constituent Concentrations. These values are marked with footnote 5.
- Modify footnote 5 from “The Lower and Upper Action Levels will be reviewed in the next update proceeding.” to “The Lower and Upper Action Levels are specific to Biomethane and will continue to be reviewed.”
- Remove footnote 5 from within table 1 for the LAL and UAL values for ammonia and siloxanes. Footnote 5 remains for Hydrogen and Mercury.

### **Protests**

Anyone wishing to protest this submittal may do so by letter sent electronically via E-mail, no later than March 9, 2023, which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division  
ED Tariff Unit  
E-mail: EDTariffUnit@cpuc.ca.gov

The protest shall also be electronically sent to PG&E via E-mail at the address shown below on the same date it is electronically delivered to the Commission:

Sidney Bob Dietz II  
Director, Regulatory Relations  
c/o Megan Lawson  
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 and 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**

Pursuant to General Order (GO) 96-B, Rule 5.1, and OPs 5 and 6 of D.22-12-057, this advice letter is submitted with a Tier 1 designation. PG&E requests that this Tier 1 advice submittal become effective upon date of submittal.

**Notice**

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically 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/

Sidney Bob Dietz II  
Director, Regulatory Relations

**Attachments:**

Attachment 1: Affected Tariffs  
Attachment 2: Redline Tariff Revisions

cc: Service List R.13-02-08  
Nick Zanjani, Energy Division



# 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 (U 39 G)

Utility type:

ELC       GAS       WATER  
 PLC       HEAT

Contact Person: Stuart Rubio  
Phone #: (951)965-8905  
E-mail: PGETariffs@pge.com  
E-mail Disposition Notice to: stuart.rubio@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) #: 4716-G

Tier Designation: 1

Subject of AL: Gas Rule 29 - Standard Renewable Gas Interconnection Updates to Lower and Upper Action Levels for Hydrogen

Keywords (choose from CPUC listing): Compliance, Tariffs, Rules

AL Type:  Monthly  Quarterly  Annual  One-Time  Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.22-12-057

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: N/A

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: 2/17/23

No. of tariff sheets: 9

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: see attachment 1

Service affected and changes proposed<sup>1</sup>: N/A

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

<sup>1</sup>Discuss in AL if more space is needed.

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

California Public Utilities Commission  
Energy Division Tariff Unit Email:  
[EDTariffUnit@cpuc.ca.gov](mailto:EDTariffUnit@cpuc.ca.gov)

Contact Name: Sidnev Bob Dietz II. c/o Megan Lawson  
Title: Director, Regulatory Relations  
Utility/Entity Name: Pacific Gas and Electric Company  
  
Telephone (xxx) xxx-xxxx: (415)973-2093  
Facsimile (xxx) xxx-xxxx:  
Email: PGETariffs@pge.com

Contact Name:  
Title:  
Utility/Entity Name:  
  
Telephone (xxx) xxx-xxxx:  
Facsimile (xxx) xxx-xxxx:  
Email:

CPUC  
Energy Division Tariff Unit  
505 Van Ness Avenue  
San Francisco, CA 94102

Clear Form

Cal P.U.C. Sheet No.	Title of Sheet	Cancelling Cal P.U.C. Sheet No.
38401-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 1	36397-G
38402-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 5	36401-G
38403-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 6	36402-G
38404-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 7	36403-G
38405-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 8	36404-G
38406-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 9	36405-G
38407-G	GAS RULE 29 RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM Sheet 25	37633-G
38408-G	GAS TABLE OF CONTENTS Sheet 1	38396-G
38409-G	GAS TABLE OF CONTENTS Sheet 8	37635-G



**GAS RULE 29** Sheet 1  
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

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(Continued)



**GAS RULE 29**

Sheet 5

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

9. CARB/OEHHA Report

The report entitled Recommendations to the California Public Utilities Commission Regarding Health Protective Standards for the Injection of Renewable Natural into the Common Carrier Pipeline, prepared by Staff of the California Air Resources Board and the Office of Health Hazard Assessment. The CARB/OEHHA Report was submitted in Rulemaking (R.)13-02-008 and adopted in Decision (D.) 14-01-034.

10. Clean Renewable Hydrogen (Interim)

Hydrogen which is produced through a process that results in a lifecycle (i.e., well-to-gate) greenhouse gas emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen produced and does not use fossil fuel as either a feedstock or production energy source.

(N)  
|  
(N)

11. Commission (CPUC)

The Public Utilities Commission of the State of California, sometimes referred to as the Public Utilities Commission (PUC), CPUC, or Commission.

(T)

12. Conditioning or Upgrading

The removal of non-compliant components from Biogas or Raw Product Gas, or the addition of other gases, in order to meet Utility pipeline quality gas specifications. Blending is not considered to be a form of Conditioning or Upgrading.

(T)

13. Conditioning or Upgrading Facilities

Interconnector's Facilities used for Conditioning and Upgrading.

(T)

14. Constituent of Concern (Constituent)

A chemical or compound that may negatively impact the Merchantability of Renewable Gas.

(T)

15. Day(s)

Refers to calendar day(s) unless otherwise stated.

(T)

16. Displacement Receipt Point Capacity

Utility pipeline system improvements which increase the takeaway capacity from a Receipt Point but do not increase the overall downstream capacity of the Utility's pipeline system. The addition of Displacement Receipt Point Capacity increases the ability of the Utility to receive gas from a particular Receipt Point or zone in competition with other gas supplies delivered into the Utility's pipeline system.

(T)

17. End Use Customer (Customer)

Ultimate consumer of gas using Utility intrastate transportation services on either a bundled, commodity and intrastate transportation basis or an intrastate transportation only basis.

(T)

(L)

(Continued)



**GAS RULE 29**

Sheet 6

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

- 18. Expansion Receipt Point Capacity (L)/(T)  
Utility pipeline system improvements which increase the takeaway capacity from a Receipt Point and the overall downstream capacity of the Utility's pipeline system. (L)
- 19. Gas (T)  
Any mixture of combustible and non-combustible gases used to produce heat by burning that can be accepted into a Utility pipeline without any compromise to operational safety or integrity. It shall include, but not be limited to, natural gas, renewable gas, biomethane, manufactured gas, or a mixture of any or all of the above. It shall meet the Utility's quality specifications, tariffs, rules, and other applicable regulations.
- 20. Group 1 Compound (T)  
Any Health Protective Constituent with a concentration below the Trigger Level.
- 21. Group 2 Compound (T)  
Any Health Protective Constituent with a concentration at or above the Trigger Level.
- 22. Hazardous Waste Landfill (T)  
For the purposes of this Rule, Hazardous Waste Landfill shall be given the same definition as provided in the California Health and Safety Code, including facilities permitted by the California Department of Toxic Substances Control.
- 23. Health Protective Constituents (T)
  - 1. Carcinogenic (cancer risk): Any Constituent determined by the State of California to cause cancer, as listed below in Table 1, Maximum Constituent Concentrations.
  - 2. Non-carcinogenic (non-cancer risk or chronic risk): Any Constituent determined by the State of California to cause non-cancer health risk, as listed below in Table 1, Maximum Constituent Concentrations.
- 24. Heating Value (T)  
Total heating value of the gas normally measured on a gross dry higher heating value (HHV) basis (unless otherwise specified), and is defined as the number of British Thermal Units (Btu) evolved by the complete combustion, at constant pressure, of one standard cubic foot of gas with air, the temperature of the gas, air and products of combustion being 60 degrees Fahrenheit and all of the water formed by the combustion reaction being condensed to the liquid state.
- 25. Integrity Protective Constituents (T)  
Constituents that may impact the integrity of the Utility's pipeline system as listed in Table 1 Maximum Constituent Concentrations.

(Continued)

<i>Advice</i>	4716-G	<i>Issued by</i>	<i>Submitted</i>	February 17, 2023
<i>Decision</i>	D.22-12-057	<b>Meredith Allen</b>	<i>Effective</i>	February 17, 2023
		<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	





**GAS RULE 29**

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

- 34. OEHHA (T)  
Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency.
- 35. Raw Product Gas or Feedstock Gas (T)  
Gas from biogenic or other renewable sources, such as Biogas, biomass, or power to Gas from renewable electricity, before conditioning or upgrading to comply with this Rule's Gas quality specifications.
- 36. Receipt Point(s) or Points of Receipt (T)  
The place(s) where Interconnector delivers, or has delivered on its behalf, Gas into the Utility's pipeline system.
- 37. Renewable Gas (T)  
Gas from biogenic or other renewable sources, such as Biogas, biomass, or power to Gas from renewable electricity that has been conditioned or upgraded to comply with this Rule's Gas quality specifications, including Biomethane.
- 38. Renewable Gas [Interconnector or Producer or Supplier] (Interconnector) (T)  
Party physically interconnecting or interconnected with the Utility and effectuates the delivery of Renewable Gas through new or modified facilities, including any third-party delivering renewable gas into the utility pipeline either directly or through one or more intermediary pipelines, and effectuates the delivery of Renewable Gas through new or modified facilities.
- 39. Takeaway Capacity (T)  
Utility's physical takeaway capability downstream of the outlet of the Utility Facilities at the Interconnection Point. Takeaway Capacity for any particular day may be affected by physical flows from other Receipt Points, physical pipeline and/or storage conditions for that Day, and end-use demand on the Utility's pipeline system, and will be solely determined by the Utility.
- 40. Thousand Standard cubic feet per day (MScfd or MScf/d) (T)  
Volumetric flow of Gas measured in thousands of standard cubic feet per day.
- 41. Trigger Level (T)  
The concentration or measured value of a Constituent requiring additional periodic testing and analysis.
- 42. Upper Action Level (T)  
The concentration or measured value of a Constituent requiring an immediate shut-off of Renewable Gas supply.

(Continued)

<i>Advice</i>	4716-G	<i>Issued by</i>	<i>Submitted</i>	February 17, 2023
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**GAS RULE 29**

Sheet 9

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

- 43. Utility Facilities (T)

Facilities owned and operated by Utility, including but not limited to, pipelines, appurtenant facilities, meters, regulators, quality measurement, other equipment and related system upgrades at and from the Interconnection Point, for receipt into Utility's pipeline system in the State of California pursuant to the Utility's interconnection agreement.

- 44. Wobbe Index (T)

HHV / ( $\sqrt{\text{Relative Density}}$ ) as defined in Section 2.20 in the 2009 American Gas Association (AGA) Report No. 5 Natural Gas Energy Measurement.

C. Applicability / Open Access

- 1. Applicability

The Utility shall provide nondiscriminatory open access to its system to any party for the purpose of physically interconnecting with the Utility and effectuating the delivery of Renewable Gas, subject to the terms and conditions set forth in this Rule and the Utility's applicable interconnection, operating, and balancing agreements.

- 2. End Use Customer Priority

The interconnection and physical flows shall not jeopardize the integrity of, or interfere with, the normal operation of the Utility's pipeline system and provision of service to its End Use Customers.

- 3. Scheduling and Nominations

The Receipt Point shall be established as a transportation scheduling point, pursuant to the provisions of Utility's transportation of customer owned Gas tariff.

- 4. Interconnect Capacity and Takeaway Services

The maximum physical capacity of the interconnection will be determined by the sizing of the Receipt Point components, including the metering and odorization capacities, but is not the capacity of the Utility's pipeline system to transport gas away from the Interconnection Point and is not, nor is it intended to be, any commitment by the Utility of Takeaway Capacity. The Utility separately provides takeaway services, including the option to expand system capacity to increase takeaway services, through its otherwise applicable tariffs.

- 5. Daily Available Receipt Capacity

The available receipt capacity for any particular day may be affected by physical flows from other Points of Receipt, physical pipeline and storage conditions for that day, and end-use demand on the Utility's pipeline system.

(Continued)

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**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) <sup>3</sup>						
Ammonia	0.0004% (3mg/m <sup>3</sup> )	0.001% (7mg/m <sup>3</sup> )	0.0025% (18mg/m <sup>3</sup> )	●	●	●
Hydrogen	0.10%	1.0% <sup>5</sup>	5.0% <sup>5</sup>	●	●	●
Mercury	0.08 mg/m <sup>3</sup>	TBD <sup>5</sup>	TBD <sup>5</sup>	●	●	●
Siloxanes	0.05 mg Si/m <sup>3</sup>	0.1 mg Si/m <sup>3</sup>	0.3 mg Si/m <sup>3</sup>	●	●	●

**Notes:**

- Base Utility Gas Specifications are identified in K1.
- Health Protective Constituents (HPC) are shown in Table V-3 of the CARB/OEHHA Report.
- Integrity Protective Constituents are shown in Section 4.4.3.3 of D.14-01-034 and identified as pipeline integrity protective constituents.
- 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").
- LAL and UAL is specific to the by-product of the biomethane production process and is not intended to include a pure hydrogen blending limit.
- Testing requirement will be the stricter of the stated Renewable Gas values or other tariff requirements.
- 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.

(T)

(T)

(T)

(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 <sup>1</sup>	≥ 1.0	≥ 0.1	Periodic Testing Required
Lower Action Level <sup>2</sup>	≥ 10.0	≥ 1.0	Supply shut-in after three exceedances in 12 months in which deliveries occur
Upper Action Level <sup>3</sup>	≥ 25.0	≥ 5.0	Immediate supply shut-in

- Applies to individual Constituent concentrations.
- Applies to the sum of all Constituent concentrations over the Trigger Level.
- Applies to individual Constituent concentrations or to the sum of all Constituent concentrations over the Trigger Level.

(Continued)





**GAS TABLE OF CONTENTS**

Sheet 8

FORM	TITLE OF SHEET	CAL P.U.C. SHEET NO.
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**Rules**

Rule 28	Mobilehome Park Utility Upgrade Program.....	36153,36261,36155,36156, .....36157,37278,36159,36160-G	
Rule 29	Renewable Gas Interconnections to Utility's Pipeline System .....	<b>38401</b> ,36398,36399,36400, ..... <b>38402,38403,38404,38405,38406</b> ,36406,37632,36408,37283,36410,36411, ..... 36412,36413,36414,36415,36416,36417,36418,36419,37284, <b>38407</b> ,36422, ..... 36423,36424,36425,36426,36427,36428,36429,36430,36431,36432-G	(T) (T) (T)

**Maps, Contracts and Deviations**

SERVICE AREA MAPS:

Gas Service Area Map.....	31641-G
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LIST OF CONTRACTS AND DEVIATIONS:

..... 20211,13247,13248,28466,17112,22437, 37275, 37276,13254,14426,13808,35193, ..... 20390,16287,29333,29053,29334,14428,13263,14365,32879,35654,34830,13267-G
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**Sample Forms**

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## **Attachment 2**

Redline Tariff Revisions



**GAS RULE 29**

Sheet 1

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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

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Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted  
Effective  
Resolution

September 28, 2020  
October 28, 2020



**GAS RULE 29**

Sheet 1

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Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted  
Effective  
Resolution

September 28, 2020  
October 28, 2020



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

Sheet 5

(N)  
(N)

B. Definitions (Cont'd.):

(N)

9. CARB/OEHHA Report

The report entitled Recommendations to the California Public Utilities Commission Regarding Health Protective Standards for the Injection of Renewable Natural into the Common Carrier Pipeline, prepared by Staff of the California Air Resources Board and the Office of Health Hazard Assessment. The CARB/OEHHA Report was submitted in Rulemaking (R.)13-02-008 and adopted in Decision (D.) 14-01-034.

10. Clean Renewable Hydrogen (Interim)

Hydrogen which is produced through a process that results in a lifecycle (i.e., well-to-gate) greenhouse gas emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen produced and does not use fossil fuel as either a feedstock or production energy source.

~~10-11.~~ Commission (CPUC)

The Public Utilities Commission of the State of California, sometimes referred to as the Public Utilities Commission (PUC), CPUC, or Commission.

~~14-12.~~ Conditioning or Upgrading

The removal of non-compliant components from Biogas or Raw Product Gas, or the addition of other gases, in order to meet Utility pipeline quality gas specifications. Blending is not considered to be a form of Conditioning or Upgrading.

~~12-13.~~ Conditioning or Upgrading Facilities

Interconnector's Facilities used for Conditioning and Upgrading.

~~13-14.~~ Constituent of Concern (Constituent)

A chemical or compound that may negatively impact the Merchantability of Renewable Gas.

~~14-15.~~ Day(s)

Refers to calendar day(s) unless otherwise stated.

~~15-16.~~ Displacement Receipt Point Capacity

Utility pipeline system improvements which increase the takeaway capacity from a Receipt Point but do not increase the overall downstream capacity of the Utility's pipeline system. The addition of Displacement Receipt Point Capacity increases the ability of the Utility to receive gas from a particular Receipt Point or zone in competition with other gas supplies delivered into the Utility's pipeline system.

~~16-17.~~ End Use Customer (Customer)

Ultimate consumer of gas using Utility intrastate transportation services on either a bundled, commodity and intrastate transportation basis or an intrastate transportation only basis.

(N)

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Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted  
Effective  
Resolution

September 28, 2020  
October 28, 2020



**GAS RULE 29** Sheet 5 (N)  
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM (N)

17.18. Expansion Receipt Point Capacity

Utility pipeline system improvements which increase the takeaway capacity from a Receipt Point and the overall downstream capacity of the Utility's pipeline system.

(Continued)

<i>Advice</i>	4315-G	<i>Issued by</i>	<i>Submitted</i>	September 28, 2020
<i>Decision</i>	20-08-035	<b>Robert S. Kenney</b>	<i>Effective</i>	October 28, 2020
		<i>Vice President, Regulatory Affairs</i>	<i>Resolution</i>	



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

B. Definitions (Cont'd.):

(N)

18-19. Gas

Any mixture of combustible and non-combustible gases used to produce heat by burning that can be accepted into a Utility pipeline without any compromise to operational safety or integrity. It shall include, but not be limited to, natural gas, renewable gas, biomethane, manufactured gas, or a mixture of any or all of the above. It shall meet the Utility's quality specifications, tariffs, rules, and other applicable regulations.

19-20. Group 1 Compound

Any Health Protective Constituent with a concentration below the Trigger Level.

20-21. Group 2 Compound

Any Health Protective Constituent with a concentration at or above the Trigger Level.

21-22. Hazardous Waste Landfill

For the purposes of this Rule, Hazardous Waste Landfill shall be given the same definition as provided in the California Health and Safety Code, including facilities permitted by the California Department of Toxic Substances Control.

22-23. Health Protective Constituents

1. Carcinogenic (cancer risk): Any Constituent determined by the State of California to cause cancer, as listed below in Table 1, Maximum Constituent Concentrations.
2. Non-carcinogenic (non-cancer risk or chronic risk): Any Constituent determined by the State of California to cause non-cancer health risk, as listed below in Table 1, Maximum Constituent Concentrations.

23-24. Heating Value

Total heating value of the gas normally measured on a gross dry higher heating value (HHV) basis (unless otherwise specified), and is defined as the number of British Thermal Units (Btu) evolved by the complete combustion, at constant pressure, of one standard cubic foot of gas with air, the temperature of the gas, air and products of combustion being 60 degrees Fahrenheit and all of the water formed by the combustion reaction being condensed to the liquid state.

24-25. Integrity Protective Constituents

Constituents that may impact the integrity of the Utility's pipeline system as listed in Table 1 Maximum Constituent Concentrations.

(N)

(Continued)

Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted September 28, 2020  
Effective October 28, 2020  
Resolution



**GAS RULE 29**

Sheet 7

(N)

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

(N)

B. Definitions (Cont'd.):

(N)

25-26. Interconnect Capacity

The metering, regulation and odorization daily capacity of the Utility Facilities, which is not necessarily the Takeaway Capacity and is not, nor is it intended to be, any commitment by Utility of Takeaway Capacity.

26-27. Interconnection Point

The point where the Utility Facilities and Interconnector's Facilities physically interconnect for delivery of Gas by Interconnector to, and receipt thereof by, Utility.

27-28. Interconnector's Facilities

The Gas pipeline facilities constructed and operated by an Interconnector up to the Interconnection Point.

28-29. Issued for Construction (IFC)

Drawings and documents which are used for construction work and activities.

29-30. Local Government Entity Renewable Gas Interconnector (Government Entity) A city or county as defined by Article XI of the California Constitution.

30-31. Lower Action Level

The concentration or measured value of a Constituent, used to screen Renewable Gas during the initial gas quality review and ongoing periodic testing, requiring a shut-off of Renewable Gas supply if exceeded three times in a 12-month period.

31-32. Merchantability

The ability to purchase, sell, or market Gas. The Gas shall not contain dust, sand, dirt, gums, oils, microbes, bacteria, pathogens and/or other substances at levels that would be injurious to Utility facilities or which would present a health and/or safety hazard to Utility employees, customers, and/or the public or that would cause Gas to be unmarketable.

32-33. Million Standard cubic feet per day (MMScfd or MMScf/d)

Volumetric flow rate of Gas measured in millions of standard cubic feet per Day.

(N)

(Continued)

Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted September 28, 2020  
Effective October 28, 2020  
Resolution



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

Sheet 8

(N)  
(N)

B. Definitions (Cont'd.):

(N)

~~33-34.~~ OEHHA

Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency.

~~34-35.~~ Raw Product Gas or Feedstock Gas

Gas from biogenic or other renewable sources, such as Biogas, biomass, or power to Gas from renewable electricity, before conditioning or upgrading to comply with this Rule's Gas quality specifications.

~~35-36.~~ Receipt Point(s) or Points of Receipt

The place(s) where Interconnector delivers, or has delivered on its behalf, Gas into the Utility's pipeline system.

~~36-37.~~ Renewable Gas

Gas from biogenic or other renewable sources, such as Biogas, biomass, or power to Gas from renewable electricity that has been conditioned or upgraded to comply with this Rule's Gas quality specifications, including Biomethane.

~~37-38.~~ Renewable Gas [Interconnector or Producer or Supplier] (Interconnector)

Party physically interconnecting or interconnected with the Utility and effectuates the delivery of Renewable Gas through new or modified facilities, including any third-party delivering renewable gas into the utility pipeline either directly or through one or more intermediary pipelines, and effectuates the delivery of Renewable Gas through new or modified facilities.

~~38-39.~~ Takeaway Capacity

Utility's physical takeaway capability downstream of the outlet of the Utility Facilities at the Interconnection Point. Takeaway Capacity for any particular day may be affected by physical flows from other Receipt Points, physical pipeline and/or storage conditions for that Day, and end-use demand on the Utility's pipeline system, and will be solely determined by the Utility.

~~39-40.~~ Thousand Standard cubic feet per day (MScfd or MScf/d)

Volumetric flow of Gas measured in thousands of standard cubic feet per day.

~~40-41.~~ Trigger Level

The concentration or measured value of a Constituent requiring additional periodic testing and analysis.

~~41-42.~~ Upper Action Level

The concentration or measured value of a Constituent requiring an immediate shut-off of Renewable Gas supply.

(N)

(Continued)

Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted September 28, 2020  
Effective October 28, 2020  
Resolution



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

Sheet 9 (N)  
(N)

B. Definitions (Cont'd.):

(N)

4243. Utility Facilities

Facilities owned and operated by Utility, including but not limited to, pipelines, appurtenant facilities, meters, regulators, quality measurement, other equipment and related system upgrades at and from the Interconnection Point, for receipt into Utility's pipeline system in the State of California pursuant to the Utility's interconnection agreement.

4344. Wobbe Index

HHV / ( $\sqrt{\text{Relative Density}}$ ) as defined in Section 2.20 in the 2009 American Gas Association (AGA) Report No. 5 Natural Gas Energy Measurement.

C. Applicability / Open Access

1. Applicability

The Utility shall provide nondiscriminatory open access to its system to any party for the purpose of physically interconnecting with the Utility and effectuating the delivery of Renewable Gas, subject to the terms and conditions set forth in this Rule and the Utility's applicable interconnection, operating, and balancing agreements.

2. End Use Customer Priority

The interconnection and physical flows shall not jeopardize the integrity of, or interfere with, the normal operation of the Utility's pipeline system and provision of service to its End Use Customers.

3. Scheduling and Nominations

The Receipt Point shall be established as a transportation scheduling point, pursuant to the provisions of Utility's transportation of customer owned Gas tariff.

4. Interconnect Capacity and Takeaway Services

The maximum physical capacity of the interconnection will be determined by the sizing of the Receipt Point components, including the metering and odorization capacities, but is not the capacity of the Utility's pipeline system to transport gas away from the Interconnection Point and is not, nor is it intended to be, any commitment by the Utility of Takeaway Capacity. The Utility separately provides takeaway services, including the option to expand system capacity to increase takeaway services, through its otherwise applicable tariffs.

5. Daily Available Receipt Capacity

The available receipt capacity for any particular day may be affected by physical flows from other Points of Receipt, physical pipeline and storage conditions for that day, and end-use demand on the Utility's pipeline system.

(N)

(Continued)

Advice 4315-G  
Decision 20-08-035

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted September 28, 2020  
Effective October 28, 2020  
Resolution



**GAS RULE 29**  
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) <sup>3</sup>						
Ammonia	0.0004% (3mg/m <sup>3</sup> )	0.001% (7mg/m <sup>3</sup> ) <sup>5</sup>	0.0025% (18mg/m <sup>3</sup> ) <sup>5</sup>	■	■	■
Hydrogen	0.10%	<del>1.0%</del> TBD <sup>5</sup>	<del>5.0%</del> TBD <sup>5</sup>	■	■	■
Mercury	0.08 mg/m <sup>3</sup>	TBD <sup>5</sup>	TBD <sup>5</sup>	■	■	■
Siloxanes	0.05 mg Si/m <sup>3</sup>	0.1 mg Si/m <sup>3-5</sup>	0.3 mg Si/m <sup>3-5</sup>	■	■	■

**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- ~~LAL and UAL is specific to the by-product of the biomethane production process and is not intended to include a pure hydrogen blending limit. The Lower and Upper Action Levels will be reviewed 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.

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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 <sup>1</sup>	≥ 1.0	≥ 0.1	Periodic Testing Required
Lower Action Level <sup>2</sup>	≥ 10.0	≥ 1.0	Supply shut-in after three exceedances in 12 months in which deliveries occur
Upper Action Level <sup>3</sup>	≥ 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)

Advice 4545-G  
Decision 20-12-031

Issued by  
**Robert S. Kenney**  
Vice President, Regulatory Affairs

Submitted December 30, 2021  
Effective April 13, 2022  
Resolution

**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.  
Braun Blaising Smith Wynne, P.C.  
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  
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  
Downey Brand LLP  
Dish Wireless L.L.C.

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

GenOn Energy, Inc.  
Green Power Institute  
Hanna & Morton  
ICF

iCommLaw  
International Power Technology  
Intertie

Intestate Gas Services, Inc.

Johnston, Kevin  
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  
McClintock IP  
McKenzie & Associates

Modesto Irrigation District  
NLine Energy, Inc.  
NRG Solar

OnGrid Solar  
Pacific Gas and Electric Company  
Peninsula Clean Energy

Pioneer Community Energy

Public Advocates Office

Redwood Coast Energy Authority  
Regulatory & Cogeneration Service, Inc.

Resource Innovations

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  
Stoel Rives LLP

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