



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

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Advice 5019-G
Decision D.24-11-009

Issued by
Shilpa Ramaiya
Vice President
Regulatory Proceedings and Rates

Submitted December 30, 2024
Effective March 1, 2025
Resolution



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B. Definitions: (N)

The definitions set forth in this Section B of this Rule shall only apply to this Rule and may not apply to Utility's other tariffs. Certain words beginning with capital letters that are not defined in this Rule may be defined in PG&E's Gas Rule 1 and Gas Rule 21 or as approved by Energy Division.

1. **Alternative Dispute Resolution (ADR)**
 Processes administered by the Administrative Law Judge (ALJ) Division of the Commission to help disputants resolve a conflict without a formal decision by a court or agency.
2. **Biogas**
 Gas produced from the anaerobic decomposition of organic material.
3. **Biomethane**
 Biogas that has been conditioned or upgraded to comply with this Rule's gas quality specifications. Biomethane does not include Biogas collected from a hazardous waste facility, as defined in California Health & Safety Code § 25117.
4. **Blending**
 Utility pipeline mixing with other pipeline gas to dilute conditioned or upgraded Raw Product Gas or Biogas that does not meet all gas specifications at the Interconnection Point to achieve pipeline gas quality specifications as required under the Pipeline Blending Exception Study.
5. **British Thermal Unit (Btu)**
 The standard unit for measuring a quantity of thermal energy. One Btu equals the amount of thermal energy required to raise the temperature of one pound of water one-degree Fahrenheit and is exactly defined as equal to 1,055.05585262 joule, rounded to 1,055.056 joule. A joule is equal to one watt-second.
6. **Btu [Area or District]**
 A physically identifiable area of the gas transmission and/or distribution system in which the heating value of the Gas is measured and is representative of the entire area.
7. **California Producer or Production**
 An entity which interconnects with the Utility's pipeline system to deliver Gas produced in California.
8. **CARB**
 California Air Resources Board of the California Environmental Protection Agency. (N)

(Continued)



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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. In addition, CARB/OEHHA submitted a Supplemental Report in 2023 updating health protective constituents and limits.

(T)
(T)
(T)

10. 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 CO2e per kilogram of hydrogen produced and does not use fossil fuel as either a feedstock or production energy source.

(T)

11. Commission (CPUC)

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

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.

13. Conditioning or Upgrading Facilities

Interconnector's Facilities used for Conditioning and Upgrading.

14. Constituent of Concern (Constituent)

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

15. Day(s)

Refers to calendar day(s) unless otherwise stated.

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.

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.

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

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.

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.

20. Gas Source or Source Feedstock

(N)

Sources from which biogas can be produced as identified in Table 1 Maximum Constituent Concentrations:

- Landfills – Biogas derived from Non-Hazardous landfills designated for solid-waste collection from residential, industrial, and commercial entities (Class III landfills as defined in Title 27 of CA Code of Regulations).
- Dairies – Biogas derived from the organic waste produced by dairy operations.
- Sewage Treatment – Biogas derived from the solids removed in wastewater treatment processes.
- Food/Green – Biogas derived from plants, animals, or micro-organisms consumed as food for humans or animals, including any mixed-in biodegradable organic material such as food-soiled paper or cardboard, food wrappers, and egg cartons, and from biodegradable organic material resulting from yard, landscaping, forestry and agricultural activities, consisting of leaves, grass, shrubs, plants, branches, and stumps.
- Other – Biogas derived from other feedstock sources not defined above.

(N)

21. Group 1 Compound

(T)

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

22. Group 2 Compound

(T)

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

23. 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.

(L)

(Continued)



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Sheet 7

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

24. 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.

(T)/(L)
(L)
|
|
(L)

25. 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.

(T)/(L)
(L)
|
|
(L)

26. Integrity Protective Constituents

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

(T)/(L)
(L)
|
(L)

27. 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.

(T)

28. 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.

(T)

29. Interconnector's Facilities

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

(T)

30. Issued for Construction (IFC)

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

(T)

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

(T)

32. 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.

(T)

(L)

(Continued)



GAS RULE 29 Sheet 8
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

- 33. Merchantability (T)/(L)
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. (L)
- 34. Million Standard cubic feet per day (MMScfd or MMScf/d) (T)/(L)
Volumetric flow rate of Gas measured in millions of standard cubic feet per Day. (L)
- 35. OEHHA (T)
Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency.
- 36. 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.
- 37. 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.
- 38. 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.
- 39. 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.
- 40. 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.
- 41. Thousand Standard cubic feet per day (MScfd or MScf/d) (T)
Volumetric flow of Gas measured in thousands of standard cubic feet per day.
- 42. Trigger Level (T)
The concentration or measured value of a Constituent requiring additional periodic testing and analysis. (L)

(Continued)



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Sheet 9

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

B. Definitions (Cont'd.):

- 43. Upper Action Level (T)/(L)
The concentration or measured value of a Constituent requiring an immediate shut-off of Renewable Gas supply. (L)
(L)
- 44. 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.
- 45. Wobbe Index (T)
HHV / ($\sqrt{\text{Relative Density}_{\text{real}}}$) 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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Sheet 10

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

C. Applicability / Open Access (Cont'd.):

6. Pressure Regulation and Flow

Interconnector's Facilities shall be designed, installed, and operated to protect Utility's pipeline system from exposure to pressures in excess of Utility's then current maximum allowable operating pressure and operating pressures at the Interconnection Point.

Interconnector shall monitor discharge pressure and temperature to limit and shut down, or otherwise control, its compression to ensure that it does not cause any damage to the Utility Facilities.

Interconnector shall ensure that compression does not adversely affect or impair the accuracy of Utility measurement equipment at the Interconnect Point. Interconnector shall eliminate compressor-induced pulsation or vibration in compliance with American Petroleum Industry Standards before Gas is delivered at the Interconnection Point. The Utility shall not be required to accept delivery of Interconnector's Gas if compressor-induced pulsation or vibration exists.

7. Compliance with Utility's Tariffs

Interconnector's Gas supply at the Interconnection Point shall comply with all Utility tariffs, including Gas quality specification, sampling and testing methods and nomination procedures, except as permitted under the Pipeline Blending Exception Study procedures of this Rule.

(T)

8. Authorization Required to Operate

The Interconnector and Utility shall execute interconnection, operating and balancing agreements prior to any performance, including, but not limited to, final interconnection and gas flow.

9. Separate Agreements Required for Other Services

An Interconnector requiring other Gas services from Utility, including, but not limited to, Utility intrastate transportation service, must enter into agreements with Utility for such services in accordance with Utility's CPUC-approved tariffs.

10. Services Under This Rule Limited to Interconnection

Interconnection with Utility's pipeline system under this Rule does not provide Interconnector any rights to use Utility's pipeline system for the transportation or selling of Gas, nor does it limit those rights.

(Continued)



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Sheet 11

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

C. Applicability / Open Access (Cont'd.):

11. Confidentiality

Utility and Interconnector may enter into a confidentiality or non-disclosure agreement using Utility's then-existing standard agreement, as needed to protect the confidential, critical infrastructure, and trade secret information of either party. If the Utility provides any confidential, critical infrastructure, and/or trade secret information to the Interconnector, provision of such information shall require the Interconnector to enter into a confidentiality or non-disclosure agreement using Utility's then-existing standard agreement.

12. Compliance with and Modifications to Established Deadlines

The Utility shall use reasonable efforts to meet all of the timelines provided in this Rule. In the event the Utility is not able to meet a particular timeline, the Utility shall notify the Interconnector as soon as practicable and provide an estimated completion date with an explanation of the reasons why additional time is needed. The Utility and Interconnector shall mutually agree upon a modified timeline. Should mutual agreement not be reached on a modified timeline, the Utility and Interconnector may participate in a dispute resolution process pursuant to Section N of the Rule.

D. Interconnector Request

Interconnector shall complete Utility's interconnect fact sheet and submit a written request for each scope of work: screening, engineering, procurement, and construction as further described herein.

E. Interconnection Screening

(T)

1. Applicability

Any Renewable Gas Interconnector, including an interconnecting pipeline or a supply source, may request one displacement Interconnection Screening for each project, free of charge. Any party may request, on an actual cost basis, an expansion or an additional displacement Interconnection Screening for the project, or a Pipeline Blending Exception Study which entails study of an interconnection to a specific pipeline.

2. Scope of Services

Utility will analyze the impact on its gas system of receiving Interconnector- specified new supply at specified locations.

(Continued)



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(N)

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

(N)

E. Interconnection Screening (Cont'd.):

(N)

2. Scope of Services (Cont'd.):

Utility conducts the following analysis:

- a. Preliminary, non-binding initial assessment of the nearest pipeline that has Takeaway Capacity to accommodate Interconnector's maximum injection volume/flow rate, and of a pipeline of lesser capacity closest to the Interconnector's Conditioning Facilities and its Takeaway Capacity.
- b. A preliminary pipeline route and length for interconnection to Utility's pipeline system.
- c. The then-current maximum allowable operating pressure and, if available, operating pressures of the existing Utility pipeline system receiving Gas from the Receipt Point.

3. Report

The report provided to the Interconnector summarizes the study parameters, assumptions, limitations and results of Utility's analysis. The report shall be provided by the Utility within fifteen (15) business days of its receipt of a written request and complete interconnection fact sheet.

F. Preliminary and Detailed Engineering Studies

1. Preliminary Engineering Study (PES)

a. Applicability; No Self-Performance

Upon completion of the Section E Interconnection Screening, if requested by the Interconnector in writing. Utility will perform the PES in accordance with this Section F-1 and the applicable agreement. Interconnector will not have the option of self-performing the PES.

b. Interconnector Request

Interconnector submits a written request detailing the interconnection expected minimum, average and maximum hourly production volume(s) and proposed site location(s) in addition to the information provided during the Interconnection Screening.

c. Scope of Services

Utility proposes to analyze the impact on its gas system of receiving Interconnector- specified new supply at specified location.

(N)

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

F. Preliminary and Detailed Engineering Studies (Cont'd.):

1. Preliminary Engineering Study (PES) (Cont'd.):

c. Scope of Services (Cont'd.):

Utility provides:

- i. Confirmation that the intended Utility pipeline system has sufficient physical Takeaway Capacity to safely accommodate Interconnector's specified maximum delivery volume.
- ii. Recommendation as to the pipeline route using Utility rights of way for interconnection to the gas system.
- iii. Confirmation of the then-current maximum allowable operating pressure and, if available, operating pressures of the Utility's gas system.
- iv. Potential obstructions in the pipeline route, if applicable, as determined by physical observation by Utility.
- v. Cost estimate calculated by the Utility including, but not limited to, land acquisition, site development, right-of-way, metering, gas quality, permitting, regulatory, environmental, unusual construction costs and, if applicable, operating and maintenance costs for any facility improvements. Other service costs associated with construction of the facility that are not part of already offered services could include, but not be limited to, engineering, consulting, contracting, construction costs, environmental studies.

Utility will provide a cost estimate accurate to +100%/- 50% or better based on a site visit and route evaluation for the Interconnector's project in the preliminary engineering estimate.

Because of the exclusions and limitations of this initial review, Utility does not guarantee or recommended use of the PES for any purpose, including any substantive planning or other decisions regarding the cost or viability of its project except to determine whether to proceed with a detailed engineering study. (T)

Any use by the Interconnector is solely at its own risk and should factor in the above risks and limitations.

d. Interconnector Pre-payment of Utility Cost Estimates

Interconnector is required to provide funding in advance of a PES being performed for Interconnector's proposed project. Utility personnel will charge their time and any necessary materials to analyze the project on an actual cost basis. Additional funding will be required from Interconnector to continue work if the actual costs exceed the advance.

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

F. Preliminary and Detailed Engineering Studies (Cont'd.):

1. Preliminary Engineering Study (PES) (Cont'd.):

e. Contracts

The Interconnector and the Utility must execute an agreement prior to initiating any work and Interconnector shall provide payment equal to the estimated cost of the study prior to the Utility proceeding. Within fifteen (15) business days of the Utility's receipt of a request for a PES, the Utility shall provide a draft agreement and estimated cost of the Study to the Interconnector. Payment in full of the estimated cost is required upon execution of an agreement to proceed with the analysis. The Interconnector will be responsible for the actual costs of the services; to this end, an invoice or a refund will be issued to the Interconnector at the completion or earlier termination of the PES for any difference between the actual costs and this advance.

f. PES Report

The Utility shall complete the PES within ninety (90) business days of Interconnector's payment of the estimated study cost. The report summarizes the study parameters, assumptions, limitations and results of Utility's analyses, identifies any facility improvements, and estimates the cost of construction of those improvements. The use and distribution of the PES shall be governed by the confidentiality agreement signed by the Utility and the Interconnector.

2. Detailed Engineering Study (DES)

a. Applicability; Option to Self-Perform

Upon completion of the PES or in combination with a PES, if requested by the Interconnector in writing, Interconnector will have the option of self-performing the DES, in which case:

- i. the Interconnector shall be responsible for all tasks in the DES, including but not limited to, permits, land rights, and environmental studies. (T)
- ii. The Interconnector must pay the Utility for the Utility's review and approval costs of each step of the DES process, and for each stage of construction;
- iii. Within fifteen (15) business days of notice that the Interconnector will prepare a DES, the Utility shall provide relevant guidance regarding the required content of the DES; and
- iv. The Interconnector shall pay the Utility's actual costs for reviewing and assisting with preparation of the DES, within forty (40) business days of receiving invoices from the Utility.

(Continued)



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Sheet 15

(N)

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

(N)

F. Preliminary and Detailed Engineering Studies (Cont'd.):

(N)

2. Detailed Engineering Study (DES) (Cont'd.):

a. Applicability; Option to Self-Perform (Cont'd.):

If Interconnector elects to have Utility prepare the DES, the remainder of this Section F-2 shall apply.

b. Interconnector Request

Interconnector submits a written request detailing the interconnection expected production volume(s) and proposed site location(s).

c. Scope of Services (Work)

Utility will design and engineer interconnection facilities or provide specifications, inspection and oversight of the Interconnector design and engineering of the interconnection facilities including a Receipt Point station and lateral pipeline, if applicable. Cost estimates may be generated at 30%, for long-lead material items, 60% level and at Issued for Construction level, of facility design based on the Interconnector's estimated completion date accurate to +50% / -30%.

i. Confirm pipeline route using Utility rights-of-way for interconnection to the Gas system.

ii. Confirm obstructions in the pipeline route, if applicable, as determined by physical observation by Utility.

iii. Cost estimate calculated by the Utility including, but not limited to, land acquisition, site development, right-of-way, metering, gas quality, permitting, regulatory, environmental, unusual construction costs and, if applicable, operating and maintenance costs for any facility improvements. Other service costs associated with construction of the facility that are not part of already offered services could include, but not be limited to, engineering, consulting, contracting, construction costs, environmental studies.

(N)

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

F. Preliminary and Detailed Engineering Studies (Cont'd.):

2. Detailed Engineering Study (DES) (Cont'd.):

d. Interconnector Pre-payment of Utility Cost Estimate

Engineering advances will be collected to fund the DES through commissioning and final drawings. Interconnector is responsible for making all payments in advance of Utility's performance of the interconnection work scope and for the purchase of long lead equipment. All final payments will be determined on the basis of the actual DES project costs incurred by Utility.

e. Contracts

The Interconnector and the Utility must execute an agreement prior to an analysis being performed and payment shall have been provided prior to Utility proceeding with the analysis. Within twenty (20) business days of a request for the Utility to prepare a DES, the Utility shall meet with the Interconnector to discuss project specific design parameters and the Utility shall provide the Interconnector an estimate of the cost to prepare the DES and a proposed agreement. The Interconnector will be responsible for the actual costs of the services; to this end, a refund or an invoice will be issued to the Interconnector at the completion of the DES to true-up actual costs to the estimated costs. Within fifteen (15) business days of notice that the Interconnector will prepare a DES, the Utility shall provide relevant guidance regarding the required content of the DES. The Interconnector shall pay the Utility's actual costs for reviewing and assisting with preparation of the DES, within forty (40) business days of receiving invoices from the Utility.

(T)

f. DES Report

The Utility shall complete the DES within one hundred eighty (180) business days of Interconnector's payment of the estimated study cost. The report summarizes the study parameters, assumptions, limitations and results of Utility's analyses, identifies any facility improvements, and estimates the cost of construction of those improvements. The use and distribution of the DES shall be governed by the confidentiality agreement signed by the Utility and Interconnector.

G. Procurement and Construction and Installation Options

1. Procurement of Equipment and Materials; Construction and Installation

a. Procurement and Construction and Installation Options

Interconnector may elect for Utility or Interconnector to construct and install new Receipt Point facilities. The party performing the construction and installation work will also be exclusively responsible for procuring the equipment and materials for such work. In either case, Interconnector will be subject to the procurement, construction, and installation terms and conditions provided by the Utility, including those set forth in the interconnection agreement.

(Continued)



GAS RULE 29

Sheet 17

(N)

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

(N)

G. Procurement and Construction and Installation Options (Cont'd.):

(N)

1. Procurement of Equipment and Materials; Construction and Installation (Cont'd.):

b. Commissioning Gas Quality Verification

Prior to commencing Utility operations, sampling of Interconnector's Renewable Gas shall be performed according to the procedures in Section K.5 Renewable Gas Quality and Specifications Testing, as revised from time to time.

Utility may, at Interconnector's expense, perform gas quality and equipment startup testing to verify compliance with this Rule's gas quality specifications and proper operation of gas quality monitoring equipment and enforcement system. Commissioning Gas Quality Verification, as described in this section, also applies to any new gas source supplying Renewable Gas upstream of an existing gas interconnection point.

c. Receipt Point Facilities Ownership

Receipt Point facilities provided by Utility under this Rule or transferred to Utility as part of any Interconnector design-build shall, at all times, be and remain the property of Utility.

2. Alternative Interconnection of a Renewable Gas Production Facility.

The parties may consider alternatives to Receipt Point and Utility Facilities to enable interconnection of a Renewable Gas production facility to the Utility pipeline system such as, but not limited to, the utilization of mobile and temporary resources for the delivery of Renewable Gas to the Utility pipeline system. At the Utility's sole discretion, the parties may negotiate interconnection alternatives.

H. Interconnection Request Withdrawal

1. Interconnector may withdraw its Interconnection Request at any time by written notice of such withdrawal to Utility.

2. Withdrawal shall result in the removal of the Interconnection Request from the interconnection process and Utility shall return any unspent funds less any costs to discontinue the work and return the site(s) to pre-existing conditions received from the Interconnector, if applicable.

3. In the event of such withdrawal, Utility shall provide, at Interconnector's request, any completed engineering study conducted up to the date of withdrawal of the Interconnection Request.

(N)

(Continued)



GAS RULE 29 Sheet 18
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

I Costs

1. Interconnector Cost Responsibility

The Interconnector shall pay all costs necessary to effectuate and maintain deliveries at and from the Interconnection Point, including but not limited to computer programming changes to the Utility's pipeline system, engineering, equipment and construction (valves, separators, meters, quality measurement, odorant, and other equipment), land rights and permits necessary to regulate and deliver gas to and from the Interconnection Point, and repairs, upgrades, modifications, or replacements of the Utility Facilities.

2. Expansion of Receipt Point and/or Takeaway Capacity

The Utility will expand specific Receipt Point capacity and/or Takeaway Capacity at the request and expense of the Interconnector. The Interconnector and the Utility must execute the applicable Utility agreement prior to any work commencing.

3. Operation and Maintenance

Utility shall recover its operation and maintenance costs, as determined from time to time by the Utility, associated with the operation and maintenance of the metering equipment and other related facilities at and from the Interconnection Point that are owned and operated by the Utility and that are necessary to accept Renewable Gas from Interconnector and redeliver it to End Use Customers in accordance with good industry practice, Utility's normal procedures and governmental regulations pursuant to the Utility interconnection agreement.

4. Repair, Upgrade, Modification or Replacement of Utility's Facilities

a. Utility

Utility shall provide notice, except under emergency conditions, to Interconnector if Utility determines, at Utility's sole discretion, that the Utility's Facilities, require repair, upgrade, modification or replacement to operate in compliance with applicable laws, regulations or Public Utilities Commission orders.

Utility's notice shall describe and include Utility's estimate to perform the necessary repairs, upgrades, modifications or replacements, all of which will be at Interconnector's expense as set forth in this Rule's Section I.1, and, if applicable, be prorated for each Interconnector based on each Interconnector's share of the total Interconnect Capacity.

(T)

b. Interconnector

Interconnector shall notify Utility within thirty (30) days of receipt of Utility's notice that the Interconnector requests that Utility make the necessary repairs, upgrades, modifications or replacements, which will be at Interconnector's expense.

(Continued)



GAS RULE 29

Sheet 19

(N)

RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

(N)

I. Costs (Cont'd.):

(N)

4. Repair, Upgrade, Modification or Replacement of Utility's Facilities (Cont'd.)

b. Interconnector (Cont'd.)

The Interconnector shall have the right to review and to propose reasonable changes to any Utility proposal or request to repair, upgrade, modify or replace existing equipment so long as the Interconnector's proposed changes meet industry and Utility's standards and applicable codes and neither delay implementation nor jeopardize timely safety and code compliance. Utility is, however, under no obligation, expressed or implied, to accept such proposed changes.

Interconnector shall pay Utility within sixty (60) days of the date of the Interconnector's receipt of Utility's estimate for the necessary repairs, upgrades, modifications or replacements. At Utility's sole discretion, the Parties may agree on a mutually agreeable payment schedule subject to Utility's credit requirements.

If any Interconnector fails to request in writing that Utility make the necessary repairs, upgrades, modifications or replacements within thirty (30) days of receipt of Utility's notice and fails to pay Utility's estimated costs, within sixty (60) days of receipt of Utility's estimate, then Utility shall have the right to refuse to accept that Interconnector's Gas, and may proceed to reallocate the Interconnect Capacity and costs to the remaining Interconnectors or abandon, retire, or sell the Receipt Point facilities, at its sole discretion.

Any Utility abandonment shall be at Interconnector's sole expense.

c. Reconciliation of Actual to Estimated Costs

If, at any time and upon completion of the work, the Utility costs exceed or are expected to exceed Utility estimated costs or Interconnector's payments, Utility will invoice the Interconnector for the difference between the estimate and the Utility costs. Interconnector shall pay the invoice for the remaining amount to Utility within thirty (30) days of receipt. At Utility's sole discretion, the Parties can agree on a mutually agreeable payment schedule subject to Utility credit requirements. Upon completion of the work, if the Utility costs are less than Utility's estimate, Utility will refund the difference between the paid estimate and the Utility costs within thirty (30) days of the invoice.

(N)

(Continued)



GAS RULE 29 Sheet 20
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

I. Costs (Cont'd.)

5. Incentive Programs

a. Background

Pursuant to D.15-06-029, as modified by D.16-12-043 and D.19-12-009 and expanded by D.20-12-031, the Utility shall provide a monetary incentive to eligible Biomethane Interconnections built before December 31, 2026. The monetary incentive program shall be in effect until the end of December 31, 2026, or until the program has exhausted its \$40 million funding, including the California Council on Science and Technology study costs. (T)
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(T)

b. Monetary Incentive

The monetary incentive is for up to 50% of the eligible interconnection costs incurred by a Biomethane Interconnector, up to \$3 million per interconnection for a non-dairy cluster Biomethane Interconnector and up to \$5 million per interconnection for a dairy cluster Biomethane Interconnector. A dairy cluster Biomethane interconnection project, as defined by Public Utilities Code Section 399.19(b), is a Biomethane project of three or more dairies in close proximity to one another employing multiple facilities for the capture of Biogas that is transported to a centralized processing facility and ultimately injected into the Utility pipeline through a single interconnection.

The funds authorized pursuant to D.20-12-031 may be expended once the funds approved pursuant to D.15-06-029 have been allocated to projects with an incentive reservation. (N)

Should a project in a gas utility's service territory not be operational within the three-year period established in D.19-12-009, then the funds reserved for that project shall instead be made available to the next candidate in that service territory.

If a balance remains in the funds approved pursuant to D.15-06-029 and there are no candidates remaining in that service territory on the waitlist, then the funds shall be made available to the next project on the waitlist, regardless of service territory.

If there are funds remaining at the time of program termination, Biomethane Interconnectors that have started to deliver qualifying Biomethane into the Utility's pipeline system as of the termination date of this program are eligible for an incentive payment if they otherwise meet the program criteria. (N)

c. Eligible Interconnection Costs

The monetary incentive is limited to eligible interconnection costs, which include:

i. Engineering costs (Interconnect Screening, Preliminary Engineering Study, and Detailed Engineering Study costs).

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GAS RULE 29 Sheet 21
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

- I. Costs (Cont'd.): (L)
- 5. Incentive Programs (Cont'd.):
 - c. Eligible Interconnection Costs (Cont'd.):
 - ii. Costs associated with facilities downstream of the Biomethane Interconnector's processing plants used for delivering Biomethane into the Utility or third-party pipeline system.
 - iii. Total installed costs of receipt point facilities. These facilities include, but are not limited to: meters, regulators, appurtenant facilities, quality measurement, odorization facilities, and auxiliary facilities.
 - iv. Facility enhancement costs. These enhancements include but are not limited to: enhancements to gas pipelines and other related system upgrades that are required to enable continued safe and reliable operation of Utility's system due to the addition of each Biomethane Interconnection. (L)
 - v. For dairy cluster Biomethane Interconnection, costs incurred for Biogas gathering lines to help reduce emissions of short-lived climate pollutants pursuant to Section 39730 of the Health and Safety Code shall be considered eligible costs.

Other costs associated with processing and blending upstream of Interconnection Point, including facilities serving natural gas to Biomethane Interconnector's facilities, are ineligible costs.
 - d. Eligibility of Interconnector for Monetary Incentive

To be eligible for the monetary incentive program, a Biomethane Interconnector must:

 - i. Comply with Utility's rule regarding transportation of customer-owned gas PG&E Rule 21, Transportation of Gas and this Rule.
 - ii. Comply with the standard and protocols adopted in D.14-01-034 as modified by D.16-11-008.
 - iii. Successfully interconnect to the Utility or third-party California pipeline system and meet the operational requirement as described in D.15-06-029 as modified by D.16-12-043. This operational requirement entails that the Biomethane Interconnector produce Biomethane flow for a minimum of 30 days out of a 40- day testing period, within the minimum and maximum measurement range of the meter, as specified by Utility's measurement standards and based on the meter type specified by the Utility.
 - a) Biomethane Interconnectors must declare in a written notice to the Utility at least two business days in advance, the specific start and end date of this 40- day testing period.
 - b) The 30 out of 40-day requirement is extended 1 day for each day that the Biomethane Interconnector is unable to produce flow because of an interruption of delivery as set forth in Utility's rule regarding interruption of delivery.

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GAS RULE 29 Sheet 22
RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

- I. Costs (Cont'd.): (L)
- 5. Incentive Programs (Cont'd.):
 - d. Eligibility of Interconnector for Monetary Incentive (Cont'd):
 - c) Biomethane Interconnectors may elect to restart the 40-day testing period by providing a new written notice declaring the new start and end dates at least two business days in advance of when the new 40-day testing period is to begin.
 - iv. Provide cost information to Utility for eligible costs in a timely manner, as specified by Utility. (L)
 - e. Payment of Monetary Incentive

Within 60 days following successful compliance with the 30 out of 40-day biomethane delivery requirement, the Utility will pay the Biomethane Interconnector the amount up to 50% of the eligible reconciled and undisputed portions of the interconnection costs, not to exceed \$3 million per interconnection for a non-dairy cluster Biomethane Interconnector, or \$5 million per interconnection for a dairy cluster Biomethane Interconnector. Payment will be provided to the Biomethane Interconnector if all costs have been paid in full; if there are remaining costs it shall be treated as a credit. In the event that all interconnection costs have not been reconciled by the Utility and the Biomethane Interconnector within 60 days following the successful compliance with the 30 out of 40-day Biomethane delivery requirement, the Utility shall resume paying the Biomethane Interconnector upon cost reconciliation. If additional eligible cost information becomes available within 12 months following the initial payment, the Utility shall pay to the Biomethane Interconnector up to 50% of the remaining eligible interconnection costs, not to exceed \$3 million per interconnection for a non-dairy cluster Biomethane Interconnector, or \$5 million per interconnection for a dairy cluster Biomethane Interconnector, including all previous payments. The Utility will provide notification to the CPUC Director of the Energy Division and the Biomethane Interconnector of the initial payment as well as any other potentially eligible future payments.
 - f. Monetary Incentive Reservation Application Process
 - i. Interconnector must submit the standard Incentive Reservation Application as required by D.19-12-009.
 - ii. Upon receipt of a standard Incentive Reservation Application, the Utility will note the date and time of the receipt of the application.
 - iii. Utilities must verify that the project meets the Incentive Reservation qualifications. The required qualifications are:
 - a) A completed application which includes Contact Information, Interconnecting Facility Information, and a Proposed Schedule.
 - b) Documentation of a fully executed and funded agreement to conduct a detailed engineering study.
 - c) Utilities will deliver verified Incentive Reservation Applications to the Commission's Energy Division within 5 business days of its receipt.

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GAS RULE 29
RENEWABLE GAS INTERCONNECTIONS TO PG&E'S PIPELINE SYSTEM

Sheet 23

- I. Costs (Cont'd.): (L)
- 5. Incentive Programs (Cont'd.):
 - f. Monetary Incentive Reservation Application Process (Cont'd):
 - d) Utilities will provide a quarterly report to the Energy Division within 5 business days of the end of each quarter for all applicants with a reservation on the waiting list reporting the status of the interconnection project.
 - e) Applicant's project must be operating within three years of the date of the Energy's Division's award of an Incentive Reservation to qualify to receive the incentive. (L)

J. Local Government Entity Renewable Gas Interconnectors

Local Government Entity Renewable Gas Interconnectors may be evaluated by the Utility on a case-by-case basis for the granting of contractual provisions that recognize commercial considerations unique to local government entities including, but not limited to:

- 1. Transference of title to land owned by the government entity to the Utility or, alternatively, provision of easements satisfactory to the Utility, for the purpose of establishing the Utility's Facilities;
- 2. Local Government Entity Renewable Gas Interconnectors that generally can meet contractual obligations are not required to post performance assurance; and
- 3. Allowance of additional flexibility for a Local Government Entity Renewable Gas Interconnector to make payments based on the meeting cycle of the governing body.

K. Renewable Gas Quality and Specifications

1. Base Utility Gas Specifications

Renewable Gas must meet the gas quality specifications identified in PG&E's Rule 21.C and this Rule 29, as adopted and periodically updated by the Commission.

2. Renewable Gas Constituent Concentrations:

In addition to Section K.1. requirements, the following requirements are also applicable to Renewable Gas injected into the Utility's gas system. The Biomethane rules in this section are intended to implement D.14-01-034 and D.19-05-018, including rules regarding Constituent concentration standards, monitoring and testing requirements, and reporting and record keeping requirements.

(Continued)



GAS RULE 29 Sheet 24
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

Table 1 Maximum Constituent Concentrations								
Renewable Gas Injection Constituents				Testing for Gas Source				
	Trigger Level	Lower Action Level	Upper Action Level	Non-Hazardous Landfill	Dairies	Sewage Treatment	Food/Green	Other
	mg/m ³ (ppm _v)	mg/m ³ (ppm _v)	mg/m ³ (ppm _v)					
Base Gas Quality Specifications ^a				■	■	■	■	■
Health Protective Constituents (HPC) – Cancer Risk ^b								
1,4-Dichlorobenzene	4.3 (0.69)	42 (6.75)	100 (16.07)	■	■	■	■	■
Arsenic	0.0020 (0.0006)	0.0040 (0.0013)	0.010 (0.0031)	■				■
Cadmium	0.0020 (0.0004)	0.0032 (0.0007)	0.0080 (0.0017)		■	■		■
Chromium ^d	0.0020 (0.0009)	0.0048 (0.0022)	0.012 (0.0055)	■		■		■
Ethylbenzene	20 (4)	190 (42)	490 (109)	■	■	■	■	■
N-nitroso-di-n-propylamine	0.028 (0.01)	0.24 (0.04)	0.61 (0.11)		■			■
Vinyl Chloride	0.63 (0.24)	6.3 (2.38)	15 (5.67)	■	■	■	■	■
Health Protective Constituents (HPC) - Non-Cancer Risk ^b								
Alkyl Thiols (Mercaptans) ^e	- (17)	- (170)	- (860)	■	■	■	■	■
Antimony	0.062 (0.01)	0.62 (0.12)	3.1 (0.6)	■				■
Chlorocarbons (as Cl) ^f	4.9 (3)	50 (33)	250 (167)	■	■	■	■	■
Fluorocarbons (as F) ^f	7.4 (9)	75 (93)	370 (460)	■			■	■
Hydrogen Sulfide ^e	63 (44)	860 (596)	4300 (2978)	■	■	■	■	■
Lead	0.047 (0.005)	0.47 (0.054)	2.3 (0.262)	■		■		■
Silicon Compounds (as Si) ^f	0.49 (0.41)	5.0 (4.2)	25 (21.0)	■	■	■	■	■
Sulfur Compounds (as S) ^f	13 (10)	130 (96)	640 (471)	■	■	■	■	■

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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								
Renewable Gas Injection Constituents				Testing for Gas Source				
	Trigger Level	Lower Action Level	Upper Action Level	Non-Hazardous Landfill	Dairies	Sewage Treatment	Food/Green	Other
Integrity Protective Constituents (IPC) ^c								
Ammonia	3mg/m ³ (4 ppm _v)	7 mg/m ³ (10 ppm _v)	18mg/m ³ (25 ppm _v)	■	■	■	■	■
Carbon Monoxide	0.03% (300 ppm _v)	TBD	TBD					■ ⁱ
Hydrogen ⁱ	0.1% (1000 ppm _v)	1% (10,000 ppm _v)	5% (50,000 ppm _v)	■	■	■	■	■
Mercury	0.08 mg/m ³ (0.01 ppm _v)	TBD ^g	TBD ^g	■	■	■	■	■
Siloxanes ^h	0.05 mg Si/m ³ (0.04 ppm _v)	0.1 mg Si/m ³ (0.08 ppm _v)	0.3 mg Si/m ³ (0.25 ppm _v)	■	■	■	■	■
Notes:								
a. Base Utility Gas Specifications are identified in K.1.								
b. Health Protective Constituents (HPC) are shown in Table 2 of the 2023 CARB/OEHHA AB1900 Supplemental Report.								
c. Integrity Protective Constituents are shown in Section 4.4.3.3 of D.14-01-034 and identified as integrity protective constituents.								
d. Evaluate as only total chromium.								
e. Testing requirement will be the stricter of the stated Renewable Gas values or other tariff requirements.								
f. The compounds for these chemical classes per Appendix A and Section 4.4 of the 2023 CARB/OEHHA AB1900 Supplemental Report or newest published version.								
g. The Lower and Upper Action Levels are specific to Biomethane pursuant to Decision 22-12-057 and will be reviewed in the next update proceeding.								
h. The Interconnector that meets this Rule's Section K.4.b certification requirements shall have reduced siloxanes testing requirements per K.5.e.ii.a.								
i. Lower Action Level and Upper Action Level is specific to the by-product of the biomethane production process and is not intended as a pure hydrogen blending limit.								
j. Carbon Monoxide will be tested in Bio-SNG only.								

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GAS RULE 29 Sheet 26
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 2 Cancer and Non-Cancer Risk Management Thresholds for Constituents			
Risk Management Levels	Potential Risk from Carcinogenic Cancer Risk (Chance in a million)	Non-Cancer Total Hazard Quotient	Action
Trigger Level ^a	≥ 1	≥ 0.1	Periodic Testing Required
Lower Action Level ^b	≥ 10	≥ 1	Supply shut-in and repair after three exceedances in 12 months in which deliveries occur
Upper Action Level ^b	≥ 25	≥ 5	Immediate supply shut-in and repair
Notes:			
a. Applies to individual Constituent concentrations.			
b. Applies to the sum of all Constituent concentrations over the Trigger Level.			

3. RESERVED

4. Interconnector Renewable Gas Source Certification

a. Non-Hazardous Waste Facility

Renewable Gas sourced from Hazardous Waste Landfills will not be knowingly purchased, accepted into or transported on the pipeline system.

- i. Interconnector must certify and provide documentation or other suitable proof that: the Renewable Gas source feedstock was not derived or collected from a Hazardous Waste Facility, as that term is defined in Section 25117.1 of the California Health and Safety Code, as may be amended from time to time, and Interconnector is in compliance with the following Health and Safety Code Sections 25421(g)(1) and (2), as they may be amended from time to time.

b. Siloxanes

To qualify for reduced siloxanes testing, Interconnector must execute Utility's certification attesting that:

- i. Interconnector's Biogas is sourced only from dairy, animal manure, agricultural waste, forest residues, and/or commercial food processing waste;
- ii. Products containing siloxanes are not used at Interconnector's Facilities in any way that allow siloxanes to enter the Biogas and/or Biomethane and;
- iii. Interconnector shall notify Utility within 30 days of discovery, in accordance with the notice provision of the associated interconnection agreement, that the certifications set forth in the above paragraphs are no longer true.

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GAS RULE 29
RENEWABLE GAS INTERCONNECTIONS TO PG&E'S PIPELINE SYSTEM

Sheet 27

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

5. Testing

a. Source Feedstock Based Testing

Testing shall be determined according to the source feedstock per Table 1 above. The interconnector shall specify their source feedstock. For facilities utilizing multiple gas sources or co-digestion, where smaller amounts of different gas source types are utilized to increase methane production, the facility will be required to test for all of the COCs for each source feedstock utilized.

Testing for the Health Protective Constituents shall be by the recommended methods specified in Table 3 of the 2023 CARB/OEHHA AB1900 Supplemental Report or newest published versions. Testing for Integrity Protective Constituents shall be by the sample method and lab test methods listed in Table 3 below. Feedstock Based Testing, as described in this section, also applies to any new gas source supplying Renewable Gas upstream of an existing gas interconnection point.

Table 3 Test Methods for Integrity Protective Constituents		
Constituent of Concern	Sample Method	Lab Test Method
Ammonia	Collect samples in sulfuric acid treated silica gel sorbent tubes (NIOSH Method 6015)	Visible spectrophotometry (NIOSH Method 6015)
	Collect samples in glass tubes containing carbon beads impregnated with sulfuric acid (OSHA Method ID-188)	Ion chromatography conductivity detector IC/CD (OSHA Method ID-188)
	Bubbled through impinger system containing sulfuric acid and silica gel (South Coast Air Quality Management District Method 207.1)	Ion specific electrode ISE (South Coast Air Quality Management District Method 207.1)
	Collect samples in Tedlar bag or inert cylinders	Gas chromatograph/nitrogen chemiluminescence detector GC-NCD
Carbon Monoxide	Collect samples in cylinders or canisters	Gas Chromatograph GC (EPA 3C, ASTM Methods D1946 or D7833)
Hydrogen	Collect samples in cylinders or canisters	Gas Chromatograph GC (EPA 3C, ASTM Methods D1945, D1946 or D7833)

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GAS RULE 29
RENEWABLE GAS INTERCONNECTIONS TO PG&E'S PIPELINE SYSTEM

Sheet 28

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

(N)

5. Testing (Cont'd.)

a. Source Feedstock Based Testing (Cont'd.)

Table 3 Test Methods for Integrity Protective Constituents (Cont'd.)		
Constituent of Concern	Sample Method	Lab Test Method
Mercury ^a	Bubble through aqueous acidic solution of hydrogen peroxide and aqueous acidic solution of potassium permanganate (EPA Method 29)	Cold vapor atomic absorption spectroscopy CVAAS (EPA Method 29, EPA Compendium Method IO-3.5)
	Collect samples on gold-coated silica beads (ASTM Method D5954)	Atomic absorption spectroscopy AAS (ASTM Method D5954)
	Collect samples on gold-coated silica sand trap (ASTM Method D6350)	Atomic fluorescence spectroscopy AFS (ASTM Method D6350)
Siloxanes ^b	Collect samples in cylinders or through sorbent tubes (ASTM Method D8230) or through impingers containing methanol solution.	Gas chromatograph/mass spectrometer GC/MS or gas chromatograph/atomic emission detector GC/AED (ASTM Method D8230) or gas chromatograph/ion mass spectrometer GC/IMS (ASTM Method D8455)
Biologicals	Flow samples through filtration funnel and collect on 0.2 um filters.	qPCR for APB, IOB, SRB
<p>a. Mercury represents total mercury, not only elemental mercury.</p> <p>b. Siloxanes is a total value inclusive of Trimethylsilanol, Hexamethyldisiloxane (L2), Octamethyltrisiloxane (L3), Decamethyltetrasiloxane (L4), Dodecamethylpentasiloxane (L5), Hexamethylcyclotrisiloxane (D3), Octamethylcyclotetrasiloxane (D4), Decamethylcyclopentasiloxane(D5), and Dodecamethylcyclohexasiloxane(D6).</p> <p>c. Acronyms: ASTM ASTM International EPA Environmental Protection Agency NIOSH National Institute for Occupational Safety & Health</p>		

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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.):

b. Testing Responsibility

i. Interconnector Pre-Injection and Restart Procedure Testing

Pre-injection and Restart Procedure testing for gas quality will be performed by the Interconnector using independent certified third-party laboratories. The Utility shall be notified of the sampling a minimum of five business days in advance and have the option to observe the samples being taken.

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ii. Utility Periodic Testing

The Utility will collect the samples and send the samples to an independent certified laboratory for Constituent analyses. The results will be shared with the Interconnector within two weeks of the Utility receiving the data. If it is agreed to by both parties, the Interconnector can be the periodic testing entity at the interconnection.

c. Cost Responsibility

Interconnector is responsible for Pre-Injection, Periodic Testing and Restart testing costs. If requested, any retesting for validation of results shall be done at the cost of the entity requesting the retest.

d. Utility Discretionary Testing

This Rule does not prohibit the Utility from engaging in discretionary gas or facility testing on its system at Utility's expense.

e. Pre-Injection Testing Procedure

Interconnector will conduct two successful tests for all Constituents over a two to four-week period, at least two weeks apart.

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(T)/(L)

i. Health Protective Constituents

If during the pre-injection testing, any Health Protective Constituents are found at or above the Trigger Level, the collective potential cancer or non-cancer risk must be calculated. The collective potential cancer or non-cancer risk is calculated by summing the individual risk for each Health Protective Group 2 Compound.

If the collective potential cancer risk or non-cancer risk is at or above the Lower Action Level (the cancer risk Lower Action Level is ≥ 10 in a million and the non-cancer risk Lower Action Level is a Hazard Index of ≥ 1), the Renewable Gas cannot be accepted or transported by the Utility's pipeline system.

(L)
(L)
(L)

(Continued)



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- K. Renewable Gas Quality and Specifications (Cont'd.): (L)
- 5. Testing (Cont'd.):
- e. Pre-Injection Testing Procedure (Cont'd.):
- i. Health Protective Constituents (Cont'd.):
 - The Interconnector shall make necessary modifications to lower the collective potential cancer or non-cancer risk below the Lower Action Level and restart pre- injection testing.
 - If all the Health Protective Constituents are below the Trigger Level or the collective potential cancer risk and non-cancer risk from the Group 2 Compounds are below the Lower Action Level in both pre-injection tests, the Renewable Gas may be injected into the pipeline system subject to all other requirements set forth in this Rule.
- ii. Integrity Protective Constituents
 - If any Integrity Protective Constituents are above the Lower Action Level, the Renewable Gas may not be injected into the Utility's system. The Interconnector shall make necessary modifications to lower the levels of the Integrity Protective Constituents to levels below the Lower Action Level equivalent and restart pre-injection testing. (L)
(N)
 - If Integrity Protective Constituents are at or below the Lower Action Level, the Renewable Gas may be injected into the Utility's system subject to all other requirements set forth in this Rule. (L)
(L)
- a) Reduced Siloxanes Testing (T)/(L)
 - Pursuant to Section K.4.b Renewable Gas certified for reduced siloxanes testing will be as follows: (L)
 - (i) If the pre-injection testing siloxanes levels are at or below the Trigger Level, then no periodic testing for siloxanes is required. (L)
(D)
 - (ii) If the siloxanes are above the Trigger Level, then the Renewable Gas certification for reduced testing is no longer applicable and the Interconnector will be required to comply with the periodic testing requirements for siloxanes. (T)/(L)
(L)
(L)
 - (iii) 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 Trigger Level, this Rule's full siloxanes testing requirements will apply. (T)/(L)
(L)
(T)/(L)
(L)

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

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- K. Renewable Gas Quality and Specifications (Cont'd.): (L)
- 5. Testing (Cont'd.):
 - 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 (>0.2 microns), 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 4×10^4 /scf, then Renewable Gas may be injected into the Utility's system subject to all other requirements set forth in this Rule. (L)
(T)/(L)
(T)/(L)
(L)
(L)
(T)/(L)
(L)
 - 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. (L)

(Continued)



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- K. Renewable Gas Quality and Specifications (Cont'd.): (L)
- 5. Testing (Cont'd.):
 - f. Periodic Testing (Cont'd.): (L)
 - iii. Collective risk from Cancer and Non-cancer Health Protective Constituents (T)/(L)
 - a. Cancer Risk (T)/(L)
 - The collective potential cancer risk for Group 2 Compounds is determined by summing the individual potential cancer risk for each cancer 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 (L)
 - 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-cancer 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) (T)/(L)
 - 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. (L)
 - d) If the collective risk from Cancer risk or Non-cancer risk 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. (D)
 - e) 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. (T)/(L)

(Continued)

Advice 5019-G
Decision D.24-11-009

Issued by
Shilpa Ramaiya
Vice President

Submitted December 30, 2024
Effective March 1, 2025
Resolution



GAS RULE 29 Sheet 33
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- K. Renewable Gas Quality and Specifications (Cont'd.): (L)
- 5. Testing (Cont'd.):
 - f. Periodic Testing (Cont'd.):
 - iv. Integrity Protective Constituents:
 - 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.
 - 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. (L)
 - f) When any Constituent is above the Upper Action Level, the Renewable Gas shall be immediately shut-in and subject to Restart Procedures set forth in Section K.5.g. of this Rule. (N)
(N)
 - g. Restart Procedure (L)
 - 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. (L)
 - ii. After re-starting Renewable Gas deliveries, Periodic Testing will resume based on the results of the successful test. (T)/(L)
(L)

(Continued)



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- K. Renewable Gas Quality and Specifications (Cont'd.): (L)
 - 5. Testing (Cont'd.):
 - h. Reporting and Record Keeping Requirements

Reporting and Record Keeping will be in compliance with D.14-01-034 and the CARB/OEHHA Report and includes the following:

 - i. Pre-injection testing results shall be provided by Interconnector to the Utility within five days of receiving the data. (L)
 - ii. Startup test results from the initial successfully completed Pre-injection testing shall be provided to Commission within 30 days of receiving the test data by the testing entity (Utility or Interconnector). (T)/(L)
(T)/(L)
(L)
 - iii. Maintain records of all test results for 3 years from the date when the tests were conducted by the testing entity (Utility or Interconnector). (L)
 - iv. Annual report to Commission: all test data, production rate, monitoring parameters, and shutoff events.
 - v. If the Utility is the testing entity, test results shall be provided by Utility to the Interconnector within two weeks of receiving the data. Test data that results in a shut-in shall be provided by Utility to the Interconnector within 24 hours of receiving the data. (L)
(T)/(L)
(L)
 - vi. If the Interconnector is the testing entity, the Interconnector shall provide the above information to the Utility within two weeks of receiving the data. Test data that would result in a shut-in will be provided by Interconnector to the Utility within 24 hours of receiving the data. (L)
(N)
(N)
- L. Pipeline Blending Exception Study (Blending Study) (L)
 - 1. Intent

In an effort to encourage interconnections of Renewable Gas to Utility pipelines as ordered in D.19-05-018, the Utility will review and consider each blending request thoroughly and make a determination regarding each request. Blending exception requests will be accepted if the Renewable Gas is interchangeable with historical or contractual Gas supplies after blending and will not cause increased risk or safety concerns to the Utility's employees, downstream customers or pipeline. The Interconnector requesting the Blending Study will be responsible for the cost for the Utility to conduct the Blending Study and provide a determination.
 - 2. Interconnector Blending Study Request

Interconnector may request a Blending Study to determine the Utility's downstream blending capability from an Interconnection Point, or proposed Interconnection Point, and the associated Utility monitoring and equipment enhancement costs, if any to be borne by Interconnector. (L)

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

- L. Pipeline Blending Exception Study (Blending Study) (Cont'd.): (L)
- 2. Interconnector Blending Study Request (Cont'd.):
 - Interconnector may request an exception to the Gas quality and Heating Value standards established in this rule for a Receipt Point to allow blending in the pipeline of conditioned or upgraded Raw Product Gas or Biogas that does not meet all gas specifications at the Interconnection Point to achieve pipeline gas quality specifications.
 - Interconnector may initiate a Blending Study request as part of the Interconnection Screening or a subsequent Preliminary or Detailed Engineering Study.
 - The Blending Study will evaluate feasibility of blending to determine interchangeability with historical or contractual Gas supplies and the increased risk or safety concerns to the Utility's employees, downstream customers or pipeline.
 - The Utility will evaluate whether it is safe to authorize blending following receipt of the request that shall include the following:
 - a. Desired interconnect location(s) on the Utility's system
 - b. Maximum and minimum flow rates, including seasonal variations, if appropriate
 - c. Maximum concentrations of all Constituents listed within this Rule
 - d. Maximum and minimum Heating Value and Wobbe Index
 - e. Ability of Interconnector to accept limits on flow rates
 - f. Reason for request
 - g. Information collected from Interconnection Request
- 3. Utility Evaluation
 - If blending is requested, the Utility will evaluate requests for safely blending into the pipeline to determine whether injection of any new or modified supply source can be safely injected into the Utility's pipeline system. At a minimum, the Utility will consider the following factors when determining whether an exception can be allowed:
 - a. Flow rates and directional consistency of receiving pipeline(s), including daily and seasonal variations.
 - b. Historical Gas composition and contractual Gas quality specification at the Utility's receipt points and area of influence for purposes of determining impact on a Btu District.
 - c. Current and expected future composition of Gas supplies at the Utility's Receipt Points for the purpose of determining interchangeability on customers' end use equipment and the pipeline system's future capability to accommodate supplies.

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

- L. Pipeline Blending Exception Study (Blending Study) (Cont'd.): (L)
- 3. Utility Evaluation (Cont'd.):
 - d. Potential for increased internal corrosion threat at and through the Receipt Point, Receipt Point pipeline lateral and receiving pipelines due to Gas composition.
 - e. Current and future customers in receiving pipeline flow rate, distance to these customers, time to first receiving customer, and anticipated downstream Gas demand growth.
 - f. Maximum time and distance required for complete mixing to occur under all pipeline flow conditions.
 - g. The design, operation, and overall condition of the receiving pipeline(s), including any sensitivities to Gas Constituents.
 - h. Additional monitoring, control, and/or mixing equipment that may be required to verify and ensure that adequate blending has occurred in the receiving pipeline system.

A request for gas quality exception will be undertaken as part of the Interconnection Screening or subsequent Preliminary and Detailed Engineering Studies upon receipt of all requested information. The evaluation will be completed within 30 additional business days.
- 4. Utility Report

Utility shall provide the Interconnector, within thirty (30) business days, with the acceptance or denial of blending request with the associated Interconnection Screening or subsequent Preliminary and Detailed Engineering Studies.

The Utility will notify the Energy Division of each request for exception, and state whether the request is granted or denied along with reason for denial.

 - a. Acceptance

For each granted request, the Utility shall provide a determination of the following:

 - i. Volumetric flow rate: Authorized volume for blending, or a specific volume that is less than requested, and the conditions under which flow will be limited or otherwise restricted;
 - ii. Length of time authorization valid: How long authorization for blending in the pipeline is valid before it must be re-evaluated; and
 - iii. Special conditions: Any restrictions, special conditions, and/or special equipment, as determined by the Utility, required to grant acceptance. (L)

(Continued)



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RENEWABLE GAS INTERCONNECTIONS TO UTILITY'S PIPELINE SYSTEM

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- L. Pipeline Blending Exception Study (Blending Study) (Cont'd.): (L)

 - 4. Utility Report (Cont'd.)
 - b. Denial

If denied, a written explanation of the basis for denial and all engineering evaluations and calculations prepared to evaluate the request will be provided to the Interconnector. The explanation may include, but not be limited to:

 - i. Historical pipeline flow profiles and proposed Interconnector flow.
 - ii. Historical compositions or contractual gas quality value used in the analysis.
 - iii. Customer and/or safety impact.

Information is subject to a non-disclosure agreement for confidential information, if any.
 - 5. Utility Right to Re-evaluate and Rescind Blending

The Utility shall have the continuing right at any time to re-evaluate, revise, and potentially rescind, the granted exception allowing for blending in the pipeline due to insufficient flow, ongoing operations, changes in the way the Utility manages the operation of its system, or requirements in accordance with the Utility's CPUC-approved tariffs.

- M. Discontinuance and Termination

Discontinuance of use and/or termination will be administered pursuant to the terms of the Interconnector and Utility interconnection agreement.
- N. Dispute Resolution
 - 1. The Commission shall have initial jurisdiction to interpret, add, delete, or modify any provision of this Rule and/or tariff ("Interconnection Tariff") and to resolve disputes regarding Utility's performance of its obligations under the Interconnection Tariff pursuant to this Rule.
 - 2. Any dispute arising between Utility and Interconnector (individually referred to as "Party" and collectively "the Parties") regarding Utility's or Interconnector's performance of its obligations under the Interconnection Tariffs shall be resolved according to the following procedures:
 - a. The dispute shall be documented in a written notice by the aggrieved Party to the other Party containing the relevant known facts pertaining to the dispute, the specific dispute and the relief sought, and express written notice by the aggrieved Party that it is invoking the procedures under this Section. The written notice shall be sent to the Party's email address and physical address set forth in any interconnection agreement between the Parties or the Interconnection Request, if there is no interconnection agreement. The receiving Party shall acknowledge the written notice within ten (10) Days of its receipt. (L)

(Continued)



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N. Dispute Resolution (Cont'd.):

b. The Parties shall negotiate in good faith to resolve the dispute. If a resolution is not reached in forty-five (45) Days from the date of the written notice, either 1) a Party may request to continue negotiations for an additional forty-five (45) Days or 2) the Parties may by mutual agreement make a written request for mediation to the Alternative Dispute Resolution (ADR) Coordinator in the Commission's administrative law judge (ALJ) Division. The request may be submitted by electronic mail to adr_program@cpuc.ca.gov. The dispute and its resolution shall be governed by the Commission's ADR rules and procedures. Alternatively, both Parties by mutual agreement may request mediation from an outside third-party mediator with costs to be shared equally between the Parties.

3. If resolution is not reached pursuant to this Section N., either Party may file a formal complaint before the Commission pursuant to California PUC section 1702 and Article 4 of the Commission's Rules of Practice and Procedure. Nothing in this section shall be construed to limit the rights of any Party to exercise rights and remedies under applicable Commission decision, order, rule or regulation.

4. Pending resolution of any dispute under this Section, the Parties shall proceed diligently with the performance of their respective obligations under the Interconnection Tariffs, unless the related agreements have been terminated. Disputes as to the Interconnection Request and implementation of this Section shall be subject to resolution pursuant to the procedures set forth in this Section.

5. Guidance can be provided in letter form by the Director of Energy Division or designated delegate.

6. Notwithstanding anything to the contrary set forth in this Section N, if Utility and Interconnector are parties to one or more of the agreements relating to the interconnection to the Utility's pipeline system, and any such agreement(s) includes a dispute resolution procedure, the dispute resolution procedure set forth in such agreement(s) shall control over the dispute resolution procedure set forth in this Section N.

(L)

(L)

(Continued)

Advice 5019-G
Decision D.24-11-009

Issued by
Shilpa Ramaiya
Vice President

Submitted December 30, 2024
Effective March 1, 2025
Resolution