Application No: A-12-04-024
Exhibit No: _____
Witness: Jeffrey Reed

Application of Southern California Gas Company (U904G) to Establish a Biogas Conditioning/Upgrading Service	Application 12-04-024 (Filed April 25, 2012)

CHAPTER I

POLICY SUPPORT

PREPARED DIRECT TESTIMONY OF

JEFFREY REED

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

April 25, 2012

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CHAPTER I

POLICY SUPPORT

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I. INTRODUCTION

Southern California Gas Company ("SoCalGas") requests California Public Utilities Commission ("CPUC" or "Commission") approval in this Application to offer a tariff service ("Biogas Conditioning/Upgrading Services"[1]) designed to meet the current and future needs of biogas producers seeking to upgrade their biogas for beneficial purposes such as pipeline injection, onsite power generation, or compressed natural gas filling stations. Biogas[2] that is conditioned and upgraded[3] to, or near, pipeline quality[4] is also known as renewable natural gas. SoCalGas developed the Biogas Conditioning/Upgrading Services Tariff in response to customer inquiries[5] and requests.[6]

For customers electing this service, SoCalGas proposes to design, install, own, operate, and maintain the biogas conditioning/upgrading facility on or adjacent to the tariff service customer's premises. SoCalGas will charge the tariff service customer a fully allocated cost under a long-term service agreement. SoCalGas will not own the biogas entering or the

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[1] This is a generic name for the service requested in this filing. SoCalGas will establish a formal name to be used once the service is approved by the Commission.

[2] Biogas is defined as untreated gas produced through the anaerobic digestion of organic material

[3] Conditioning is the process of removing gas impurities such as hydrogen sulfide and siloxane. Upgrading is the process of increasing heating value by removing inerts such as nitrogen, oxygen, and carbon dioxide.

[4] Pipeline quality renewable natural gas is required for pipeline injection only. A customer could require the biogas to be conditioned/upgraded to a purity level of less than pipeline quality for operating onsite power generation equipment (e.g. fuel cell), or a compressed natural gas fueling station.

[5] An inquiry is defined as an email or phone call from a customer or developer who is seeking general information about biogas.

[6] A request is defined as a customer or developer seeking Utility support in determining the economic feasibility of a biogas conditioning/upgrading project.

upgraded biogas leaving the biogas conditioning/upgrading facility. Rather, SoCalGas' role will be to provide the customer's with a tariffed service option to process the biogas and upgrade it to the level(s) specified by the tariff service customer.

As discussed in greater detail in this testimony, SoCalGas' Biogas Conditioning/Upgrading Services Tariff is consistent with, and supportive of, existing state law and Commission policy which encourages utilities to propose programs that promote the environmentally beneficial use of biogas in end-use applications. The proposed tariff service will promote the use of renewable energy, help meet Renewables Portfolio Standard ("RPS") goals,[7] and fully support the state's greenhouse gas ("GHG") emission reduction policies and objectives.

Chapter II provides a detailed description of SoCalGas' proposed Biogas Conditioning/Upgrading Services Tariff, and Chapter III provides details on accounting controls and procedures that will track, record, and segregate costs associated with SoCalGas' Biogas Conditioning/Upgrading Services Tariff.

II. PROPOSED TARIFF SUPPORTS STATE POLICY

SoCalGas' Biogas Conditioning/Upgrading Services Tariff conforms to articulated state and Commission policy encouraging environmentally beneficial uses of biogas in end-use applications. The legislature's expanded definition of "ratepayer interest" along with the passage of Assembly Bill ("AB") 32, Senate Bill ("SB") 107, SB 2 (1X), Executive Order S-06-06, and the 2011 California Bioenergy Action Plan makes it abundantly clear that the goal of the state includes aggressively promoting renewable energy and alternative transportation fuels to achieve

[7] On March 28, 2012, the California Energy Commission voted to suspend provisions for the consumption of biomethane as eligible for RPS and will limit the use of biomethane as pre-certified power plants until resolution of the suspension.

environmental goals. In so doing, SoCalGas' Biogas Conditioning/Upgrading Services Tariff will enable increased adoption of biogas and promote renewable energy sources and greenhouse gas reduction. Additionally, SoCalGas' Biogas Conditioning/Upgrading Services Tariff supports the South Coast Air Quality Management District' Rule 1110.2 and California's 2011 Integrated Energy Policy Report as discussed further below.

A. SoCalGas' Biogas Conditioning/Upgrading Services Tariff Provides Ratepayers with Environmental Benefits (Public Utilities Code § 740.8)

In 2005, changes in California law expanded the definition of ratepayer interest. Effective January 1, 2006, Public Utilities Code section 740.8 was modified to require that health and environmental benefits, greenhouse gas emission reductions, and increasing alternative fuel use be among the interests of ratepayers to be considered by the Commission in evaluating utility programs.[8]

As described more fully in the sections below, SoCalGas' Biogas Conditioning/Upgrading Services Tariff proposed in this application is consistent with §740.8 because it provides biogas producers with an option to condition and upgrade their biogas which will provide ratepayers with environmental, greenhouse gas reduction and increased alternative fuel source benefits.

[8] PUC Code § 740.8 - "As used in Section 740.3, 'interests' of ratepayers, short- or long-term, mean direct benefits that are specific to ratepayers in the form of safer, more reliable, or less costly gas or electrical service, consistent with Section 451, and activities that benefit ratepayers and that promote energy efficiency, reduction of health and environmental impacts from air pollution, and greenhouse gas emissions related to electricity and natural gas production and use, and increased use of alternative fuels."

B. SoCalGas' Biogas Conditioning/Upgrading Services Tariff Fully Supports California's Environmental Policies (AB 32 and RPS)

California has a long-standing commitment to the protection of environmental resources as evidenced by its development of policies and programs aimed at promoting renewable energy and increasing use of alternative fuels.[9]

In September 2006, Governor Schwarzenegger signed AB 32 which established California's leadership role in the effort to reduce GHG emissions.[10] The bill sets the ambitious goal of reducing statewide GHG emissions to 1990 levels by 2020 and requires the California Air Resources Board , in consultation with stakeholders including the Commission, to implement by January 1, 2012 emission reduction measures designed to achieve the maximum technologically feasible and cost-effective reductions in GHG emissions.[11] An example of an emission reduction measure pertaining to the bioenegy industry is landfill diverted organic waste that is anaerobically digested. Using the Climate Action Reserve's Organic Waste Protocol,[12] SoCalGas estimates that one economical renewable natural gas injection project has annual emission reductions of 56,250 metric tons of CO_2 equivalent ($MTCO_2e$) based on 411 tons per day of landfill diverted organic waste that is anaerobically digested.[13] This is the equivalent of taking approximately 11,000 passenger vehicles off the road.[14] Also, using a carbon credit value

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[9] See, e.g., Senate Bill (SB) 1078 (Stats. 2002, Ch. 516); Senate Bill (SB) 107 (Stats. 2006, Ch. 464).Senate Bill (SB) 2076 (Stats. 2000, Ch. 936); proposed Assembly Bill (AB) 107; Executive Order S-01-07.

[10] Assembly Bill (AB) 32 (Stats. 2006, Ch. 488).

[11] *Id*., § 38562(a).

[12] Climate Action Reserve Organic Waste Digestion Project Protocol, Version 2.0, June 29, 2011. Appendix C.4. Digestion Economics (pages 90-92)

[13] Approximately 300-500 tons of food waste per day is required to produce 1.5 million cubic feet per day of biogas

[14] EPA Greenhouse Gas Equivalencies Calculator - http://www.epa.gov/cleanenergy/energy-resources/calculator.html

of $37.50/ $MTCO_2e$[15] would produce annual carbon credits valued at approximately $2.1 million.

To complement the legislative policies set forth by AB 32, a comprehensive legislative and regulatory framework was adopted by California to support expansion of renewable electric resources and facilities. The companion legislation, SB 1078 and SB 107, established the Renewables Portfolio Standard program to promote renewable electric energy as a means of meeting the environmental goals of the state and, in particular, reducing GHG emissions.[16]

SB 1078 required that retail sellers of electricity purchase a certain percentage of electricity generated by Eligible Renewable Energy Resources. Originally, each utility was required to increase its total procurement of Eligible Renewable Energy Resources by at least 1% of annual retail sales per year so that 20% of its retail sales are supplied by Eligible Renewable Energy Resources by 2017. SB 107 accelerated the original RPS goal of procuring 20% of retail electricity sales from Eligible Renewable Energy Resources by 2017, and required investor owned utilities and other load-serving entities to increase the share of renewable energy in their respective portfolios to 20% by 2010. SB 107 recognized the importance of investments in new renewable resources and technologies in achieving this 20% goal and the overall environmental objectives of the state, directing the Commission to ensure that the most cost-effective and efficient investments in renewable energy resources are vigorously pursued. A primary goal of the legislation was the development of a fully competitive and self-sustaining supply of electricity generated from renewable sources.

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[15] Average $/MTCO2e value between 2012 and 2027 in the 2011 MPR Model

[16] Senate Bill (SB) 107, Sec. 1, § 25620.1(b)(1) and (3) (Stats. 2006, Ch. 464); Senate Bill (SB) 1078, Sec.1, §387(a) (Stats. 2002, Ch. 516).

More recently, SB 2 (1X)[17] directed the investor owned utilities to increase the share of renewable energy in their respective portfolios to 33% by 2020. The Public Utilities Code[18] supports SB2 (1X), and directs the Commission to implement the RPS program stating: "Increasing California's reliance on renewable energy resources may promote stable electricity prices, protect public health, improve environmental quality, stimulate sustainable economic development, create new employment opportunities, and reduce reliance on imported fuels."[19]

On March 26, 2012 Commissioner Peevey presented the 2011 Renewable Portfolio Standard report in his "Update to the Assembly Utilities and Commerce Committee." [20] The report indicated the large investor owned electric utilities achieved overall 20 % RPS in 2011, up from 18 % in 2010. Individually Pacific Gas & Electric achieved 20.1 %, Southern California Edison achieved 21.1 %, and San Diego Gas & Electric achieved 20.8 %. The California Public Utilities Commission is aggressively pursuing 33 % RPS goal by 2020. Commissioner Peevey reported that 75 % of the capacity needed to attain 33 % by 2020 is currently under contract with the three IOUs. SoCalGas' Biogas Conditioning/Upgrading Services will provide valuable in-state biomethane to bolster the renewable portfolio of the large IOUs and provide additional support to meet the 33% RPS goal by 2020.

On March 28, 2012, the California Energy Commission voted to suspend provisions for the consumption of biomethane as eligible for RPS and will limit the use of biomethane in pre-certified power plants until resolution of the suspension.[21] We are hopeful this issue will be

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[17] Approved and signed by Governor Brown on April 12, 2011.
[18] California Public Utilities Code § 399 et. seq.
[19] California Public Utilities Code § 399.11(b)
[20] "California Public Utilities Commission Update to the Assembly Utilities and Commerce Committee," by Commissioner Peevey, March 26, 2012.
[21] California Energy Commission Business Meeting on Wednesday March 28, 2012: "Notice to Consider Suspension of the RPS Eligibility Guidelines Related to Biomethane"

addressed this legislative session, which ends August 31, 2012, and allow in-state biomethane injected into the utility pipeline network to be eligible for RPS credit. Pending the outcome of the suspension, renewable natural gas that is injected into the utility pipeline network may be nominated to an RPS certified generation facility and applied towards a power generator's RPS goals.[22] SoCalGas estimates that the amount of renewable natural gas that can be produced by twenty Biogas Conditioning/Upgrading Services systems is approximately 15.4 million cubic feet per day. If all of this renewable natural gas were injected into the utility pipeline network and nominated to a RPS certified generation facility, it would provide enough fuel to generate approximately 100 MW of renewable power.[23] Since renewable natural gas injected into the pipeline network is consumed by natural gas fired electric generation plants this renewable energy source, unlike wind and solar energy, is fully dispatchable and does not require construction of new electric transmission lines. Furthermore, unlike solar and wind resources, electricity generated by the use of renewable natural gas is not intermittent and does not impose integration costs that characterize both wind and solar.

Additionally, greater availability of renewable natural gas for use in electricity production would further diversify California's renewable energy portfolio.

Consistent with state law and commission policy, the SoCalGas Biogas Conditioning/Upgrading Services Tariff promotes the use of renewable energy and fully supports the state's GHG emission reduction policies and objectives.

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[22] California Energy Commission, Renewables Portfolio Standard Eligibility Guidebook, Second Edition, March 2007. http://www.energy.ca.gov/2007publications/CEC-300-2007-006/CEC-300-2007-006-CMF.PDF

[23] Assumes heat rate of 6,924 btu/kWh , renewable natural gas heat value of 990 btu/scf and baseload generation plant capacity factor of 0.92.

C. SoCalGas' Biogas Conditioning/Upgrading Services Tariff Supports the California Bioenergy Action Plan's Recommendations

In April of 2006, State Executive Order S-06-06 was signed by Governor Schwarzenegger which directs state agencies to promote in-state bioenergy production and use. This legislative policy set the following targets to increase in-state production and use of bioenergy:

- Regarding biofuels, the goal was to produce a minimum of 20 percent of biofuels consumed within California by 2010, 40 percent by 2020, and 75 percent by 2050; and
- Regarding the use of biomass for electricity, the goal was to meet a 20 percent target within the established state goals for renewable generation for 2010 and 2020[24].

The 2011 California Bioenergy Action Plan[25] evaluates and considers strategies to overcome the challenges in meeting the Governor's goals[26] for bioenergy in California. The Bioenergy Action Plan addresses siting, permitting, and regulatory barriers to increase bioenergy and biofuels production, how to facilitate the ability of project developers to obtain project financing and identify funding opportunities, and ways to develop new and revised policies necessary for meeting bioenergy and biofuel goals.

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[24] Minimum of 20% of RPS should come from the use of biomass for electricity.

[25] The first *Bioenergy Action Plan* for California was published July 2006. The most recent progress report on implementation of the Plan, the *Bioenergy Action Plan: Progress to Plan*, was published in November 2009. This Progress to Plan recommended that the *Bioenergy Action Plan* be updated to address issues that still present barriers to the development and use of biomass for energy in California. Similarly, the California Energy Commission's 2009 Integrated Energy Policy Report (IEPR) recommended addressing barriers to the expansion of biopower, including regulatory hurdles and project financing. The Commission also committed in the IEPR to encouraging "additional research and development to reduce costs for biomass conversion, biopower technologies, and environmental controls."

[26] *2011 California Bioenergy Action Plan*, page 7, http://www.energy.ca.gov/2011publications/CEC-300-2011-001/CEC-300-2011-001-CTF.PDF

In order to develop the biofuel resources in California, the Bioenergy Action Plan recommends the implementation of programs such as the proposed SoCalGas Biogas Conditioning/Upgrading Services Tariff:

> "Establish multiple but well connected chain programs to use in state biomass resources for biofuel development in California. These multiple and chain programs include Biofuel Feedstock Supply, Collection, and Processing, Biofuel Technology, Biofuel and its Byproduct and Waste Monitoring, and Biofuel End-User and Market Distribution."[27]

The Bioenergy Action Plan concludes that these programs can provide GHG emission reduction benefits, and reduce dependency on fossil fuels:

> "State agencies, utilities, and stakeholders should work together to create long-term programs to help finance biopower and biofuel projects that can provide immediate greenhouse gas (GHG) emission reduction benefits and a bridge to the introduction of sustainable fuels that will reduce fossil fuel dependency and result in deeper GHG emission reductions in the future."[28]

The 2011 California Bioenergy Action Plan also states:

> "[t]here are a large number of challenges facing bioenergy development in the state. For example, existing facilities face economic challenges related to the cost of feedstock collection and transportation versus the price received for energy production, and new project developers must economically meet state and local permitting requirements in a capital-constrained financial market."[29]

SoCalGas' Biogas Conditioning/Upgrading Services Tariff will offer biogas producers a solution to address the economic challenges in today's capital-constrained financial market as

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[27] "2009 Progress to Plan - Bioenergy Action Plan for California", Page 24, http://www.energy.ca.gov/2010publications/CEC-500-2010-007/CEC-500-2010-007.PDF

[28] 2009 Progress to Plan – Bioenergy Action Plan for California, Page 28

[29] 2011 California Bioenergy Action Plan, Page 6.

SoCalGas will be responsible for the upfront capital and ongoing O&M for the biogas conditioning/upgrading facility.

D. SoCalGas' Biogas Conditioning/Upgrading Services Tariff Provides Customers with an Alternative when the South Coast Air Quality Management District "Rule 1110.2" is Enforced

In 1990, the South Coast Air Quality Management District, the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties, adopted Rule 1110.2 with the express purpose of reducing Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from the emissions of internal combustion engines. Rule 1110.2 has been amended various times over the past 22 years with the most recent amendments being on February 1, 2008 and July 9, 2010.

South Coast Air Quality Management District permits approximately 850 natural gas-fueled engines, 30 diesel engines, and approximately 66 engines fueled by landfill or digester gas (biogas).[30] Rule 1110.2 was amended February 1, 2008 to improve compliance with existing emission limits by requiring more stringent monitoring, increased recordkeeping and reporting requirements, and reduction in emission limits for NOx and VOC on both natural gas and biogas engines. The reduction in emission limits for NOx and VOC aligns with the Best Available Control Technology (BACT) and near to BACT for CO. The reduced emission limits for natural gas and biogas-fueled engines was originally enforceable by July 1, 2012, but during the amendment process of Rule 1110.2, many operators of biogas-fueled engines had concerns regarding the viability of controls on these existing engines. To address these concerns, the rule

[30] http://www.aqmd.gov/hb/2010/July/100725a.htm

and the adopting resolutions directed SCAQMD staff to conduct a technology assessment to verify the achievability of the July 1, 2012 limits.[31]

As a consequence of Rule 1110.2, the choice presented by SoCalGas' Biogas Conditioning/Upgrading Service Tariff will be especially valuable when the Rule is enforced for engines. As shown in the presentation titled "Rule 1110.2 Estimated Retrofit Costs to Achieve Proposed Biogas Limits",[32] it may become uneconomical for biogas producers to continue to generate power onsite. In that scenario, the SoCalGas' Biogas Conditioning/Upgrading Services Tariff will provide a viable alternative to these customers, such as injecting the renewable natural gas into the utility pipeline network once the Rule is enforced.

E. SoCalGas' Biogas Conditioning/Upgrading Services Tariff Helps Attain California Energy Commission 2011 Integrated Energy Policy Report Goals

On February 8, 2011, the California Energy Commission adopted the 2011 Integrated Energy Policy Report ("IEPR"). The 2011 IEPR is the latest biennial integrated energy policy report prepared by California Energy Commission as required by Senate Bill 1389 (Brown). The 2011 IEPR contains an integrated assessment of major energy trends and issues within the state of California and provides policy recommendations to conserve resources, protect the environment, and ensure reliable, secure, and diverse energy supplies.

The 2011 IEPR discusses bioenergy development and how the development of these resources has been slow:

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[31] The Technology Assessment is still in progress and the report is expected to be released in early 2012. The enforcement of the Rule will likely be pushed back from July 1, 2012 to July 1, 2014

[32] http://www.scap1.org/Air%20Reference%20Library/10-2610%20Rule%201110_2%20Retrofit%20Cost%20Presentations.pdf

> "In addition to broad policy goals for increasing renewable electricity use, California also supports development of bioenergy to help achieve the state's clean energy goals. Biopower and biogas will contribute toward the goal of 12,000 MW of local distributed energy generation, and biofuels and biogas will play important roles in reducing carbon emissions in the transportation sector. However, development of these resources has been slow. In March 2011, the Energy Commission adopted the *2011 Bioenergy Action Plan*, which noted that the biopower share of renewable electricity generation decreased from 20 percent in 2008 to 17 percent in 2010, and in−state biofuel production in 2010 represented only 5.6 percent of California's biofuel demand."[33]

As stated in the 2011 IEPR, "One of the most daunting barriers renewable energy project developers face at every level is the high upfront costs."[34] The renewable energy market can benefit from SoCalGas' Biogas Conditioning/Upgrading Services Tariff because it eliminates the need for the project developer to cover the upfront costs for a biogas conditioning and upgrading system.

If approved, SoCalGas' Biogas Conditioning/Upgrading Services Tariff will align the Commission with the recommendations of the 2011 IEPR as it will offer biogas producers an alternative solution to utilize the biogas as renewable energy, or sell it to an entity in a position to efficiently generate renewable power to achieve RPS goals.

III. CONCLUSION

SoCalGas has developed the Biogas Conditioning/Upgrading Services Tariff in response to issues faced by potential tariff service customers in converting the biogas into a usable and renewable energy source, such as high upfront capital investment requirements, lack of expertise in gas processing, ongoing O&M expenses, and gas quality risk. To help alleviate these issues, SoCalGas has developed an innovative tariff that benefits ratepayers, supports customers,

[33] CEC 2011 Integrated Energy Policy Report, CEC-100-2011-001-CMF, page 11
[34] CEC 2011 Integrated Energy Policy Report, CEC-100-2011-001-CMF, page 172

improves the environment, and assists the state in meeting program and policy goals and mandates.

For all of the reasons stated above, SoCalGas encourages the Commission to act expeditiously and approve the Biogas Conditioning/Upgrading Services Tariff as proposed.

IV. WITNESS QUALIFICATIONS

My name is Jeffrey G. Reed. My business address is 8330 Century Park Court, San Diego, California. I am a shared service employee of the Southern California Gas Company and San Diego Gas & Electric Company and serve as Director of Business Strategy and Development. At the Southern California Gas Company, I'm responsible for coordination of strategic planning and program development related to advanced technologies and I lead the Emerging Technology and Research, Development and Demonstration programs.

In a prior assignment, I was responsible for strategic planning for the Southern California Gas Company and San Diego Gas & Electric. Prior to joining SoCalGas and SDG&E, I worked as a consultant to the energy industry leading business strategy and operational improvement initiatives. I also served as a director and officer in the gas turbine and steam turbine divisions of Asea Brown Boveri ("ABB") Power Generation in Switzerland with responsibilities in technology development, product design, marketing, business development and strategic planning. Prior to that, I held various positions in a defense research and development company.

I hold a bachelor's degree in Mechanical and Environmental Engineering from the University of California, Santa Barbara, a master's degree and doctorate in Mechanical Engineering from the University of California, Berkeley and a master's degree in management from Stanford University.

I have previously testified before the Commission, and this concludes my prepared testimony.