

Application: A.23-06-XXX
Witness: Armando Infanzon
Chapter: 1

**PREPARED DIRECT TESTIMONY OF ARMANDO INFANZON
ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY
(POLICY)**

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

June 30, 2023

TABLE OF CONTENTS

I. PURPOSE1

II. LEVERAGING SOCALGAS’S EXISTING GAS SYSTEMS TO INJECT BIOMETHANE DERIVED FROM WOODY BIOMASS COULD HELP ACCELERATE THE DEVELOPMENT OF A CLEAN FUELS NETWORK.....1

 A. Introduction.....1

 B. Converting Woody Biomass into Clean Fuels Can Help California Achieve Its Climate and Air Quality Goals by 20453

 C. Real World Demonstration Scale Testing Will Support the Development of Woody Biomass Facilities4

III. SOLICITATION PROCESS AND STATE AGENCY COORDINATION5

 A. Solicitation Process Consistent with SB 1383 Dairy Pilot Solicitation5

 B. State Agency Coordination of Pilot Projects6

IV. CONCLUSION.....6

V. QUALIFICATIONS8

1
2
3
4
**PREPARED DIRECT TESTIMONY OF
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(POLICY)**

5
I. PURPOSE

6 Southern California Gas Company (“SoCalGas”) seeks approval of an application
7 proposing a Senate Bill (“SB”) 1440 gasification¹ pilot project (“SB 1440 Pilot Project”) that
8 utilizes woody biomass to produce and inject biomethane into the SoCalGas pipeline system
9 (“Application”). Pursuant to the California Public Utilities Commission’s (“Commission”) Decision (“D.”) 22-02-025 (“SB 1440 Decision”), Ordering Paragraph (“OP”) 43, SoCalGas
10 submits the Application seeking approval of the SB 1440 Pilot Project. Data from the SB 1440
11 Pilot Project can provide key technical, operational, and safety information to support the
12 development of gasification processes, the methanation process, and/or pipeline infrastructure.
13

14 The purpose of this chapter’s testimony is to provide the policy justification and context
15 for how the SB 1440 Pilot Project can be an essential component of California’s carbon neutral
16 energy economy, as well as describe the immediate need to eliminate the burning of agricultural
17 waste to reduce short-lived climate pollutants (“SLCP”) and criteria air pollutants. This
18 testimony will elaborate on how the SB 1440 Pilot Project will support state energy policy
19 objectives and reduce statewide greenhouse gas (“GHG”) emissions.

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**II. LEVERAGING SOCALGAS’S EXISTING GAS SYSTEMS TO INJECT
BIOMETHANE DERIVED FROM WOODY BIOMASS COULD HELP
ACCELERATE THE DEVELOPMENT OF A CLEAN FUELS NETWORK**

23
A. Introduction

24 SoCalGas supports California’s climate and energy goals, including SB 32,² achieving
25 carbon neutrality by 2045 (E.O. B-55-18),³ and fulfilling the 100% Clean Energy Act of 2018 by

1 Gasification is thermal conversion of organic materials at elevated temperature and reducing conditions to produce primarily permanent gases, with char, water, and condensables as minor products. See National Renewable Energy Laboratory (NREL) “An Introduction to Biomass Thermal Conversion”, available at: <https://www.nrel.gov/docs/gen/fy04/36831e.pdf>.

2 California Senate Bill 32 (Pavley, 2016), available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB32.

3 Executive Dept., State of California, “Executive Order B-55-18 To Achieve Carbon Neutrality” available at: <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>.

1 2045 (SB 100).⁴ In alignment with the state of California’s plan for economy-wide
2 decarbonization,⁵ SoCalGas recognizes that both clean molecules and clean electrons, as well as
3 a diverse energy technology toolkit to produce both of them at scale, will likely be required to
4 reach carbon neutrality while providing safe, reliable and resilient energy.

5 The sources and quantities of waste biomass in California (available for biomass
6 conversion) are estimated to increase due to changes in existing practices, policies, and growth in
7 population. The annual quantity of agricultural and municipal solid waste biomass available for
8 biomass conversion is estimated to grow due to a variety of reasons: SB 1383 mandated landfill
9 diversion goals,⁶ anticipated population growth,⁷ and agricultural practice changes due to climate
10 change.⁸ Forest biomass, including shrub and chaparral plants, is estimated to increase due to
11 requirements to address wildfire mitigation, habitat improvement activities, and increasing forest
12 biomass utilization.⁹ Development of projects to convert woody biomass to biomethane in
13 SoCalGas’s service territory, in addition to providing a clean fuels production pathway, can
14 complement woody biomass management efforts.¹⁰

15 Biomass generated from forest, agricultural, and wood waste management can be used to
16 generate biofuels, including bio-synthetic natural gas (“Bio-SNG”).^{11,12} This fuel can be

⁴ California Senate Bill 100 (De León, 2018), available at:

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB100.

⁵ CARB, *2022 Scoping Plan for Achieving Carbon Neutrality* (December 2022), available at:

<https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>.

⁶ CalRecycle Short-lived Climate Pollutants (SLCP): Organic Waste Reductions, available at:

<https://www2.calrecycle.ca.gov/Docs/Web/118371>.

⁷ Public Policy Institute of California, “California’s Future Population.” 2020, available at:

<https://www.ppic.org/wp-content/uploads/californias-future-population-january-2020.pdf>.

⁸ California Air Resources Board (“CARB”) Concurrence with the San Joaquin Valley Air Pollution Control District’s 2020 Staff Report and Recommendations on Agricultural Burning through August 31, 2021, available at:

https://ww2.valleyair.org/media/5lan5hsx/jun-2021-sjv-ag-burn-concurrence-letter_final.pdf.

⁹ Agreement for Shared Stewardship of California’s Forest and Rangelands between the State of California and the USDA, Forest Service Pacific Southwest Region, available at:

<https://www.gov.ca.gov/wp-content/uploads/2020/08/8.12.20-CA-Shared-Stewardship-MOU.pdf>.

¹⁰ *Id.* at 6.

¹¹ D. 22-02-025 at 2, fn. 1: “Bio-SNG derives from non-combustion thermal conversion, such as pyrolysis and gasification, of exclusively organic material. The feedstocks generally consist of woody biomass, such as forest waste, agricultural waste, and urban wood waste. Bio-SNG is defined in the R.13-02-008 Phase 4A Staff Proposal as follows: ‘A mixture composed primarily of methane, carbon dioxide, and water produced by chemical conversion (catalytic methanation) of purified and conditioned renewable syngas. Also contains low concentrations of carbon monoxide, hydrogen, and other minor constituents.’”

¹² For purposes of this Testimony, Bio-SNG and biomethane are considered the same.

1 upgraded and injected into SoCalGas’s pipelines to further decarbonize the gas supply and
2 satisfy demand across a broad range of end uses, such as power generation and transportation
3 fuel in vehicles. Additional byproducts generated from the gasification and pyrolysis processes
4 include soil amendments such as biochar,¹³ along with gases and liquids that can be used in other
5 industries such as argon and nitrogen.¹⁴

6 **B. Converting Woody Biomass into Clean Fuels Can Help California Achieve**
7 **Its Climate and Air Quality Goals by 2045**

8 In 2017, approximately 6 tons per day of particulate matter that are 2.5 microns or
9 smaller in size (“PM_{2.5}”) were produced by open agricultural burning statewide, of which about
10 36 percent or 2 tons occurred in the San Joaquin Valley.¹⁵ The total average annual emissions
11 from 2015 to 2019 due to open burning were 1,435 tons of oxides of nitrogen (“NO_x”), 1,956
12 tons of PM_{2.5}, 1,738 tons of volatile organic compounds (“VOC”), and 2,087 tons of particulate
13 matter that are 10 microns or smaller in size (“PM₁₀”).¹⁶ Agricultural residue burning
14 contributes to approximately 3% of non-forestry black carbon (included in SLCP black carbon)
15 statewide.¹⁷ The San Joaquin Valley Air Pollution Control District (“SJVAPCD”), with
16 concurrence with the California Air Resources Board (“CARB”), recommends a near-complete
17 phase-out of open burning for the majority of crop categories by January 1, 2025. CARB has
18 committed to partnering with the SJVAPCD to help increase the ability of the agricultural
19 industry to comply with these mandates including pursuing non-burning alternatives, such as the
20 use of woody biomass in low-carbon biofuel uses.¹⁸ New and existing biomass plants utilizing
21 gasification and pyrolysis can provide a key outlet for agricultural materials.

13 The University of Tennessee Extension “What is Biochar and How Different Biochars Can Improve
Your Crops” (2019), available at: <https://extension.tennessee.edu/publications/Documents/W829.pdf>.

14 San Joaquin Renewables projects products, more information available at:
<https://sjrgas.com/products/>.

15 CARB, Staff Recommendations San Joaquin Valley Agricultural Burning Assessment, February 5,
2021, available at: https://ww2.arb.ca.gov/sites/default/files/2021-02/Staff_Recommendations_SJV_Ag_Burn.pdf.

16 San Joaquin Valley Air Pollution Control District “2020 Staff Report and Recommendations on
Agricultural Burning”, December 17, 2020, available at:
<https://www.valleyair.org/BurnPrograms/open-burn-report-progress/documents/2020-ag-burning-staff-report/2020-Ag-Burn-Report.pdf>.

17 CARB GHG SLCP inventory, 2013 available at: <https://ww2.arb.ca.gov/ghg-slcpc-inventory>.

18 San Joaquin Valley Air Pollution Control District “Supplemental Report and Recommendations on
Agricultural Burning”, June 17, 2021, available at: <https://ww2.valleyair.org/media/aldmsd0b/final-supplemental-report-and-recommendations-on-agricultural-burning.pdf>.

1 The total quantity of agricultural residue biomass available in 2025 is estimated to be
2 approximately 10.4 million bone dry tons (“BDT”) per year and 2045 is estimated to be 12.7
3 million BDT per year.¹⁹

4 **C. Real World Demonstration Scale Testing Will Support the**
5 **Development of Woody Biomass Facilities**

6 Woody biomass utilization has played a role in California’s energy portfolio in the past,
7 although not without significant challenges. The majority of California’s biomass conversion
8 facilities were built in the 1980s, are direct combustion, and are in need of upgrades. Facilities
9 are shutting down or idling due to expiring power contracts. Expiring contracts are often not
10 renewed as bioenergy generation prices struggle to compete with less expensive sources of
11 power.²⁰ Biomass utilization for bioenergy and biofuel development has faced technical and
12 economic challenges, *e.g.*, it is expensive to haul heavy, moisture-rich, low-energy-density wood
13 over long distances.²¹

14 To SoCalGas’s knowledge, there are no operating projects in the United States that
15 convert woody biomass to biomethane using gasification besides demonstration or small-scale
16 projects. Combining gasification, syngas conditioning, methanation, and pipeline injection
17 technologies is evolving, requiring long-term operation and studies for large-scale deployment to
18 address the growing supply of woody biomass and the need to utilize it in an environmental-
19 friendly fashion.

20 Through the recent signing and passage of Assembly Bill (“AB”) 3163, the definition of
21 biomethane was expanded to include methane produced from the non-combustion thermal
22 conversion of woody biomass.²² This legislation enables the injection of biomethane from non-
23 combustion thermal conversion into a common carrier pipeline, such as the SoCalGas
24 transmission and distribution system, pipelines for sale to the open market, specifically due to

¹⁹ Lawrence Livermore Laboratories, “Getting to Neutral: Options for Negative Carbon Emission in California” at 31 (Revision 1, Aug. 2020), available at: https://gs.llnl.gov/sites/gf/files/2021-08/getting_to_neutral.pdf.

²⁰ CalFire, CNRA, and CalEPA, “California Forest Carbon Plan, Managing Our Forest Landscapes in a Changing Climate” May 2018, section 10.3.2. available at: <https://resources.ca.gov/CNRALegacyFiles/wp-content/uploads/2018/05/California-Forest-Carbon-Plan-Final-Draft-for-Public-Release-May-2018.pdf>.

²¹ *Id.*

²² AB 3163 (Salas, 2020); available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB3163.

1 low-carbon intensity, including the transportation markets. Project economics for biomethane
2 production from biomass gasification could improve because the product can be used as a
3 transportation fuel, thereby generating significant value via Renewable Identification Numbers
4 (“RINs”) from the federal Renewable Fuel Standard (“RFS”) and credits via California’s Low
5 Carbon Fuel Standard (“LCFS”).

6 Biomethane-related pilot projects, as the one proposed in the Application, have
7 successfully been demonstrated in the dairy cluster pilots established by D.17-12-004 (“SB 1383
8 Pilot Projects”). The Selection Committee (CARB, California Department of Food and
9 Agriculture (“CDFA”), and Commission) selected four projects located in SoCalGas’s service
10 territory and two projects in Pacific Gas and Electric Company’s (“PG&E”) service territory.
11 The SB 1383 Pilot Projects required specific data to be collected by the Selection Committee and
12 the California Energy Commission (“CEC”) for a period not to exceed 15 years providing a
13 robust data set from which to analyze and make future recommendations.

14 Similar to mitigating methane emissions from the state’s dairy industry, the SB 1440
15 Pilot Project will demonstrate and provide significant data regarding mitigating emissions from
16 agriculture waste and wood waste while providing biomethane into the SoCalGas pipeline
17 network. Woody biomass to energy projects can be strategically located to maximize the amount
18 of waste processed from the different available waste streams. Project data will inform both state
19 and local stakeholders on future funding opportunities to encourage innovation in the energy
20 production and carbon capture markets.

21 **III. SOLICITATION PROCESS AND STATE AGENCY COORDINATION**

22 **A. Solicitation Process Consistent with SB 1383 Dairy Pilot Solicitation**

23 Except for the Selection Committee releasing the SB 1383 Pilot Projects solicitation in
24 2018, SoCalGas emulated the solicitation documents and process that the Commission
25 established for the SB 1383 Pilot Projects.²³ The solicitation process utilized to select at least
26 one SB 1440 Pilot Project (“SB 1440 Solicitation”) closely followed the SB 1383 solicitation
27 process and SoCalGas’s standard supply management procurement requirements. The SB 1383

²³ Solicitation for SB1383 Dairy Pilot Projects by Selection Committee, available at:
https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_website/content/utilities_and_industries/energy/energy_programs/gas/natural_gas_market/dairypilotssolicitation.pdf.

1 Pilot Projects solicitation documents were updated to reflect the differences between the process
2 to convert anaerobically digested dairy biogas to biomethane versus the process to convert non-
3 combusted, thermally converted woody biomass to biomethane.

4 **B. State Agency Coordination of Pilot Projects**

5 OP 43 of D.22-02-025 mandated SoCalGas to coordinate placement of woody biomass
6 projects with the pilot projects authorized for the Department of Conservation (“DOC”) through
7 SB 155. On April 1, 2022, SoCalGas met with the DOC and the California Natural Resources
8 Agency (“CNRA”) to discuss if SB 155 and the SB 1440 Pilot Projects could be strategically
9 placed to qualify under both pilot projects.

10 During a meeting on June 7, 2022, SoCalGas also met with the Commission’s Energy
11 Division to discuss the Application requirements and anticipated SB 1440 Pilot Project potential
12 feedstocks and locations.

13 Furthermore, since December 2022, SoCalGas has been a member of the Wood
14 Utilization Working Group, which concluded meetings in March 2023 with findings and
15 recommendations presented to the Wildfire and Forest Resilience Task Force. The SB 1440
16 Pilot Projects and recommendations to develop the market for woody biomass to energy projects
17 were part of the agenda during meetings and documents of the workgroup. Members of the
18 workgroup include state, federal, and tribal governments,²⁴ local advocacy groups,²⁵ business,
19 academia, and non-governmental organizations.²⁶

20 **IV. CONCLUSION**

21 SoCalGas is filing this Application as ordered under D.22-02-025 requiring SoCalGas
22 and PG&E to propose at least one pilot project to support eliminating agricultural waste burning

²⁴ Governmental members included: DOC, U.S. Forest Service, California Infrastructure and Economic Development Bank, Cal Fire, Air Resources Board, Office of Planning and Research, Governor’s Office of Business and Economic Development, California Energy Commission, Cal Recycle, Sierra Nevada Conservancy, Housing and Community Development, and Scotts Valley Band of Pomo Indians.

²⁵ Local advocacy members included: Sierra Business Council, Rural County Representatives of California, and California Law Empowering Renewable Energy Inc.

²⁶ Business, Academia, and NGOs included: Bioenergy Association of California, California Biomass Energy Alliance, California Forestry Association, Blue Forest Conservation, The Nature Conservancy, PG&E, University of California Cooperative Extension, American Wood Council, and Lawrence Livermore Laboratory.

1 and SLCP reduction.²⁷ Gasification and pyrolysis of woody biomass to biomethane is an
2 important and developing tool in California’s clean energy toolkit. If properly employed, it
3 could help accelerate the use of clean fuels in many sectors, lead to several co-benefits such as
4 wildfire mitigation, create local economic opportunity, improve air quality and the health of
5 ecosystems, while allowing for a resilient and cost-effective energy transition for all
6 Californians. The requirements for agricultural waste handling can be used as an effective
7 storage of carbon and a clean fuel source. California will need a variety of gasification and
8 pyrolysis projects to accommodate the growth of feedstock availability in the near- and long-
9 term timeframes.

10 If approved, the SB 1440 Pilot Project described in this Application could enable and
11 catalyze numerous other biofuels efforts in the state, including a variety of programs, policies,
12 and proceedings supported by the State Legislature, the Governor’s Office, and leading state
13 agencies. SoCalGas is committed to collaborative knowledge sharing and coordination
14 throughout the SB 1440 Pilot Project.

15 In approving the Application, the Commission could enhance California’s leadership on
16 woody biomass handling and methane emissions reductions in North America, support the
17 activities and efforts of the state’s leading energy, environmental, and economic development
18 agencies and the Legislature, and position the state to benefit from federal funding and private
19 investment for market development of diverse biofuels.

20 This concludes my prepared direct testimony.

²⁷ D.22-02-025 at 45.

1 **V. QUALIFICATIONS**

2 My name is Armando Infanzon. My business address is 555 West 5th Street, Los
3 Angeles, California 90013. I am employed by Southern California Gas Company as Director of
4 Business Development. My present responsibilities are the project development of clean fuels
5 infrastructure including hydrogen, carbon capture, utilization and sequestration and distributed
6 energy resources. I also manage the Federal Energy Retrofit Program (FERP) for SoCalGas.
7 Between 2011-2014, I served as Smart Grid Policy Manager for San Diego Gas and Electric
8 (SDG&E) representing the company on regulatory and legislative issues at state and federal
9 level. I served as a witness for SDG&E's Energy Storage Procurement Application (A.14-02-
10 006). I have been employed by Sempra Energy, SDG&E and/or SoCalGas since 1998 and have
11 held various management level positions covering an array of different areas including business
12 development, regulatory and energy policy, economic analysis, financial planning, corporate
13 finance, and asset management. I received a bachelor's degree in accountancy from the
14 Autonomous University of Baja California in 1997 and a master's degree in business
15 administration from San Diego State University in 2000.