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SIERRA CLUB-SCG-02
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DATE REQUESTED: February 9, 2026
RESPONSE DUE: February 23, 2026

QUESTION 2-1:

Attachment 1 to the Lucas Summers Testimony (aka "NREL memo") states that "this analysis relied on the best available process and emissions factor data for the baseline and use case scenarios."

QUESTION 2-1a:

Table 1 at JLMS-15 indicates a CI of 100.9 gCO2e/MJ for the carbon intensity of 90% incorporation. This figure is also provided in the NREL memo, Table 1. Please provide the source for the CI estimate of 100.9 g CO2e/MJ in Table 1 at JLMS-15.

RESPONSE 2-1a: (WBF)

Refer to the "Baseline Case" sheet in the previously provided Excel file titled "NREL GREET MODEL – WBF", cell E43.

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QUESTION 2-1b:

Note: this question is also listed as “a” in original request

Please provide the sources of all other emissions factors presented in Table 1 at JLMS-15.

RESPONSE 2-1b: (WBF)

Refer to the “Baseline Case” sheet in the previously provided Excel file titled “NREL GREET MODEL – WBF”.

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QUESTION 2-1c:

Note: This question is listed as “b” in original request

Please provide the sources of all other emissions factors presented in Table 2 at JLMS-16.

RESPONSE 2-1c: (WBF)

Refer to the “Bio-SNG Use Case” sheet in the previously provided Excel file titled “NREL GREET MODEL – WBF”.

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QUESTION 2-1d:

Note: This question is listed as “c” in original request

> The NREL Memo states “this analysis also credits the avoided emissions from the ‘business as usual’ disposal fate of the biomass from the baseline case (aka counterfactual credit).” Please state the basis for concluding emissions are “avoided” and list the sources used to estimate these “avoided emissions.”

RESPONSE 2-1d: (WBF)

The avoided emissions are the emissions associated with the baseline for the almond agricultural waste, which include a mix of air curtain burning, incorporation, dairy bedding, etc. (Table 1 at JLMS-15). They are avoided because that biomass will no longer have its previous disposal pathway and will instead be utilized in the proposed Bio-SNG plant.

Refer to the “Baseline Case” sheet in the previously provided Excel file titled “NREL GREET MODEL – WBF” for the list of sources.

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QUESTION 2-2:

Will SoCalGas monitor methane leakage in Lanes 7-10 of the proposed project? If so, what technologies will it use to measure such leakage? How frequently will such monitoring occur?

RESPONSE 2-2: (SCG)

Yes, methane leakage detection would be conducted in accordance with SoCalGas's most current gas standard for leakage survey. Because the nature of the gas standard is subject to change, and the leak detection technologies will be referenced within the standard itself, we cannot definitively state which technologies will be utilized at this point. Frequency of monitoring will be based on location, material type, and operating pressure.

QUESTION 2-3:

Will WBF monitor methane leakage in Lanes 1-6 of the proposed project? If so, what technologies will it use to measure this leakage? How frequently will such monitoring occur?

Response 2-3: (WBF)

For indoor and confined facilities, gas detectors will be installed that would immediately detect leakages from equipment to the building and trigger an immediate shutdown to assess and correct the leakage issue. For ~~out~~door piping and equipment, daily leak checks will be performed using portable gas detection equipment. For each leakage event, the total leakage amount will be estimated based on size and duration of the leakage.

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QUESTION 2-4:

The Lucas and Summers Testimony and NREL memo refer to both Bio-SNG and Bio-CNG. What, if any, is the difference between the two terms in this Application?

Response 2-4: (SCG)

As provided on JLMS at pages 13 and 14, “In the first step, the ‘well-to-pipeline’ emissions for the Bio-SNG were compared to the business as usual ‘baseline’ emissions using the standard biomass disposal methods. In the second step, the ‘well-to-wheels’ carbon intensity (‘CI’) is calculated for the compressed Bio-SNG fuel (‘Bio-CNG’) produced from this project.”

The Bio-SNG is “well-to-pipeline” and Bio-CNG is “well-to-wheels”.

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QUESTION 2-5:

In Table 3 at JLMS-17, what is the meaning of "(VO)"?

Response 2-5: (WBF)

~~VO~~ means vehicle operation, referring to biogenic CO2 emissions that are a result of vehicle operation.

QUESTION 2-6:

What technologies will be used to monitor the "direct emissions" listed in Table 2 at JLMS-16 at the WBF facility?

Response 2-6: (WBF)

Commercially available gas analyzers will be utilized to measure the direct carbon dioxide and criteria pollutant emissions from the facility. WBF uses commercial flue gas analyzers from Horiba and Testo and industry standard procedures at its current facilities. Air permit conditions may require periodic third-party testing of emissions and production and emissions data to be continuously collected and stored on the facility SCADA systems.

QUESTION 2-7:

What technologies will be used to monitor the emissions listed in Table 2 at JLMS-16 for Bio-SNG compression and transportation?

Response 2-7: (WBF)

Emissions associated with Bio-SNG compression are indirect emissions associated with electricity being used from the grid. The facility can document energy consumption associated with compression activities and apply relevant emission factors to accurately estimate resulting emissions impact. Similarly, the number of transportation miles can be tracked, and an appropriate trucking emission factor applied to determine transport-related emissions.

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QUESTION 2-8:

How will SoCalGas report the emissions from the proposed project as required by D.22-02-025?

Response 2-8: (SCG)

As provided in SoCalGas's Reply Comments Section II(A)(3) at pages 4 and 5.[1], "Section IV of the Application's Chapter 2 Corrected Revised Direct Testimony (titled "Program Reporting") nonetheless provides a roadmap for studying and monitoring emissions.[2] This includes SoCalGas working "with the Commission and/or other state agencies to develop a reporting template for the SB 1440 Pilot Project."[3] This approach is similar to that undertaken in the SB 1383 Dairy Biomethane Pilot Projects. The Commission and its constituent agencies are leading the data reporting process in such projects.[4] The Application thus contemplates monitoring, studying, and reporting emissions by proposing to utilize the existing processes used by these pilot projects, pending determination by the Commission and its constituent agencies."

1 https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M588/K915/588915254.PDF.
2 SoCalGas Chapter 2 Corrected Revised Direct Testimony (Lucas/Summers) at JLMS-20.
3 *Id*.
4 D.17.12-004, Attachment B at 4.

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QUESTION 2-9:

Please state the basis for the baseline disposal practices for each type of biomass to be used at the WBF facility, as presented in Table 1.

Response 2-9: (WBF)

As provided in Lucas/Summers Corrected Revised Direct Testimony at JLMS-14,

- In the "well-to-pipeline" analysis, the baseline emissions from the current and projected future biomass disposal practices of the CCAGA were analyzed. Without the development of the WBF Facility, these practices are expected to continue into the future.
- The almond industry and CCAGA expect the need for off-site removal of this biomass will continue to increase with time.

QUESTION 2-10:

What volatile organic compounds will the WBF facility emit?

Response 2-10: (WBF)

The volatile organic compounds from West Biofuels facilities have been quantified using EPA Method 25A which measures total hydrocarbons using a flame ionization detector. This air district approved method is utilized to quantify total volatile organic compounds but does not speciate the individual VOC compounds.

QUESTION 2-11:

SoCalGas states in its Response SC 1-5(g) that is "has not selected the decanter equipment and is unable to provide a figure [of the estimated the greenhouse gas emissions effects attributable to Lanes 7-10] at this time." SoCalGas also states that "[b]ased on some initial estimates" SoCalGas does not expect the GHGs for lanes 7-10 to be more that 1% of the estimated total CO2e emissions for Lanes 1-6."

QUESTION 2-11a:

Please state the basis for the "initial estimates" described above.

Response 2-11a:

SoCalGas's initial estimates for the electricity consumption for Lanes 7 to 10 is approximately 370,000 kWh/year. Using a GHG factor of 290.53 gCO_2/kWh[5] for the WECC region provides annual emissions of approximately 108,000 $kgCO_2$/year (or ~108 metric tons CO_2/year). The project's annual metric tons of CO_2 emissions are 11,257 with CCS and 36,415 without CCS,[6] and 108 metric tons of CO_2 represents less than 1% of either total.

[5] Figure is included in the response to Q 1-5a of Sierra Club-SCG-01.
[6] Figure is included in the response to Q 1-5d of Sierra Club-SCG-01.

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QUESTION 2-11b:

When will SoCalGas be able to provide an estimate of the greenhouse gas emissions effects attributable to Lanes 7-10?

Response 2-11b: (SCG)

SoCalGas will be able to provide an accurate estimate of the greenhouse gas emissions from Lanes 7-10 after the interconnection facility is designed and decanter equipment is selected. SoCalGas anticipates the final design and equipment selection process may take up to 24 months after the CPUC issues a final decision on this application.

QUESTION 2-11c:

When will SoCalGas select the decanter for the project?

Response 2-11c:

See response to 2-11b.

QUESTION 2-11d:

How does the decanter type impact greenhouse gas emissions?

Response 2-11d:

The decanter will produce indirect emissions as electricity is required to operate the unit.

QUESTION 2-12:

In its response to SC 1-5(f), SoCalGas states that "there are about 32,000 tons of CO2 emissions annually from the Bio-SNG plant which can be captured. Both streams have relatively high CO2 concentrations and available commercial technologies can capture CO2 from both locations."

QUESTION 2-12a:

How many tons of annual CO2 emissions from the proposed project cannot be captured?

Response 2-12a:

As provided in the response to Data Request SC 1-5(d) Table 2, WBF estimates there may be approximately 6,856 metric tons of CO_2 not captured

QUESTION 2-12b:

Please specify the available commercial technologies that can capture CO2 from the gasifier flue gas and the methanation reactor?

Response 2-12b:

WBF has not selected a specific technology or supplier, but commercially available solutions include cryogenic separation, adsorbents and membranes and combinations of these solutions tailored to the specifications of the project.

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QUESTION 2-13:

In Response to SC 1-4(b), SoCalGas cites “three projects which were developed and/or constructed by West Biofuels (2009, 2022, and 2025)”.

QUESTION 2-13a:

Please list the names of these projects.

Response 2-13a:

2009 – Woodland Biomass Research Center, Woodland, CA
2022 – Rice Hull Bioenergy Facility in Williams, CA
2025 – Hat Creek Bioenergy Facility in Burney, CA

QUESTION 2-13b:

Please indicate which, if any, of the three facilities has ever produced methane from woody biomass through Fast Internally Circulating Fluidized Bed ("FICFB") gasification technology.

Response 2-13b:

The Woodland Biomass Research Center has an FICFB gasifier and the other two facilities have reciprocating grate systems. All three facilities produce syngas (which includes some methane) from woody biomass, although this methane is not removed and refined into Bio-SNG. At the Woodland Biomass Research Center, the syngas produced by the FICFB gasifier has been tested in a pilot system for producing Bio-SNG.

QUESTION 2-13c:

Please indicate which, if any of the facilities has produced methane from woody biomass through FICFB technology in 2025. For any that did produce methane in 2025, please list in MMBTU the quantity of methane produced woody biomass from each facility in 2025.

Response 2-13c:

In 2025, syngas (which includes some methane) was generated by all three facilities during gasification and the syngas was subsequently utilized in synthesis experiments at the research center and for power production at the other two facilities.

QUESTION 2-14:

SoCalGas's Response 4 to CalAdvocates' December 8, 2025 data request includes a process flow diagram.

QUESTION 2-14a:

What emissions will be emitted from the "flare" depicted in that diagram?

Response 2-14a:

The emergency flare is used if the methanation plant becomes unavailable to take the syngas from the gasifier while the FICFB plant performs a safe controlled shut down. The flare is an enclosed thermal oxidizer and the exhaust will consist of syngas combustion products including excess air, carbon dioxide and water vapor. Emission factors for criteria pollutants from this type of flare will be estimated by the supplier during the procurement process. Since the hours of use are expected to be very low for this device (<0.5% of total), it is not expected to make a significant contribution to the facility emissions.

QUESTION 2-14b:

What emissions will be emitted from the "exhaust" depicted in that diagram?

Response 2-14b:

These emissions are included in Table 2 of Lucas/Summers corrected revised direct testimony (JLMS-16) under "Bio-SNG Plant Direct Emissions".

Table 2
Bio-SNG Use Case Carbon Intensity and Criteria Pollutant Analysis

Use Case (Bio-SNG)	CI	NOx	PM10	VOC	CO	SOx
	gCO2e /MJ	mg/MJ				
Feedstock logistics	1.55	3.80	0.25	0.41	3.03	0.07
Bio-SNG plant electricity	4.01	3.91	0.46	0.63	2.14	1.42
Bio-SNG plant direct emissions	116.55	10.26	0.83	0.71	2.33	0.31
CCS						
Bio-SNG compression and transportation	1.69	1.65	0.19	0.29	4.20	0.53
Total, g/MJ Bio-SNG	123.81	19.62	1.73	2.04	11.7	2.33

Use Case (Bio-SNG w/ CCS)	CI	NOx	PM10	VOC	CO	SOx
	g CO2e/ MJ	mg/MJ				
Feedstock logistics	1.55	3.80	0.25	0.41	3.03	0.07
Bio-SNG plant electricity	4.01	3.91	0.46	0.63	2.14	1.42
Bio-SNG plant direct emissions	23.31	10.26	0.83	0.71	2.33	0.31
CCS	7.71	5.24	0.62	0.84	2.86	1.90
Bio-SNG compression and transportation	1.69	1.65	0.19	0.29	4.20	0.53
Total, g/MJ Bio-SNG	38.27	24.86	2.35	2.88	14.57	4.23

QUESTION 2-14c:

Will the proposed project emit N2O? If so, please provide estimated annual emissions of N2O.

Response 2-14c:

The proposed project is expected to emit a small amount of N2O and this was factored into the GREET analysis. N2O is a very minor contributor to the total global warming potential for the project and is estimated as 0.059 g CO2e/MJ for both use cases.

QUESTION 2-14d:

Please provide a process flow diagram that includes carbon capture and storage.

Response 2-14d:

Carbon capture is included in Lane 4 of the Process Flow Diagram in the response to Question 4 of Cal-Advocates_SCG-A2510008-001[7] and labeled “CO2 Removal”. The stream coming out the top of the “CO2 Removal” labeled “CO2” represents the captured CO2 stream.

[7] https://www.socalgas.com/sites/default/files/2026-02/A.25-10-008_Cal_Advocates-SCG-01_Responses.pdf

QUESTION 2-14e:

SoCalGas's response to SC 1-6(f) states that "CO2 concentrates in two main streams during the Bio-SNG process, one at the gasifier flue gas and the other after the methanation reactor." Will the CO2 in flue gas stream be emitted as "exhaust" in Lane 2 of the process flow diagram?

If not, please explain how that stream of CO2 will be managed, if at all..

Response 2-14e:

CO2 in the flue stream will also be captured, labeled "exhaust" in Lane 2 of the Process Flow Diagram. There are supplier technologies being considered that separate the CO2 from this stream including adsorption and filtration.

QUESTION 2-15:

In SoCalGas's Response to SC 1-6, SoCalGas states that "West Biofuels has not made a decision on the end-use for the biomethane."

QUESTION 2-15a:

When will West Biofuels make a decision on the end use for the biomethane?

Response 2-15a:

West Biofuels plans to make a decision on the end use of the biomethane after the CPUC issues a decision on this application.

QUESTION 2-15b:

Will West Biofuels have any control over the biomethane once it enters Lanes 7-10 of the project? If so, how will West Biofuels direct the end use of the biomethane?

Response 2-15b:

West Biofuels will be the owner of the biomethane once it enters Lanes 7-10. See response to Question 2-15a regarding end use of the biomethane.

QUESTION 2-16:

In its reply brief SoCalGas states that "[e]missions associated with 'Bio-SNG plant electricity' and 'Bio-SNG compression and transportation' are calculated using statewide average grid emissions, not localized values. According to GridInfo, Fresno County and Tulare County have significantly higher renewable energy generation power generation facilities than the statewide average, approximately 85% and 95% respectively. Based on these percentages and assuming the WBF Project is receiving power from the local grid at these renewable percentages, the WBF Project would result in even lower local emissions than those reflected in Table 2 of Chapter 2 of SoCalGas's testimony." (internal citations omitted)

QUESTION 2-16a:

Please explain what SoCalGas means by the term "local grid"?

Response 2-16a:

The utility-owned electrical grid in the Fresno and Tulare County area.

QUESTION 2-16b:

Please explain what the stated 85% and 95% figures connote.

Response 2-16b:

These figures represent an estimated percentage of renewable energy generation.

QUESTION 2-16c:

Please state the basis for the assertion that "WBF Project would result in even lower local emissions than those reflected in Table 2 of Chapter 2 of SoCalGas's testimony."

Response 2-16c:

As provided in the response to Question 1-5a of Sierra Club-SCG-01, the electric grid emission factor applied in the WBF project analysis is based on WECC regional emissions. The average percentage of renewable generation for the WECC region is approximately 53%.[8] This percentage is considerably lower than the renewable generation share reported for Fresno and Tulare Counties.

[8] Argonne National Laboratory, R&D GREET 2024 Rev1 Release (May 23, 2025), available at: https://greet.anl.gov/.

QUESTION 2-16d:

What are the updated estimated emissions for Table 2 assuming only the stated “local grid” power is used to power the proposed project?

Response 2-16d:

This analysis has not been performed.

QUESTION 2-16e:

Does the WBF Bio-SNG plant intend to operate only during hours of day when solar generation occurs?

Response 2-16e:

No.

QUESTION 2-16f:

Will SoCalGas only run its Bio-SNG compression equipment during hours of day when solar generation occurs?

Response 2-16f:

No.

QUESTION 2-16g:

Does the WBF intend to operate on a microgrid powered only by the local county's power resources?

Response 2-16g:

No, because WBF's Facility will receive electrical service from the local electric utility.

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QUESTION 2-16h:

Will SoCalGas power its compression equipment on a microgrid powered only by the local county's power resources?

Response 2-16h:

SoCalGas does not plan to own compression equipment.

QUESTION 2-16i:

How are the missions from Bio-CNG transportation impacted, if at all, by the electric grid emissions?

Response 2-16i:

The Bio-SNG will need to be compressed (using electricity from the electric grid) prior to being put into the truck and this will be done by West Biofuels at its facility in Kerman.

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QUESTION 2-17:

The combined Lucas and Summers testimony states that "[p]roducing and utilizing the Bio-CNG fuel from this project is estimated to be a net carbon sink over its lifecycle with avoided emissions considered."

QUESTION 2-17a:

If the biomethane is not used for transportation end uses and instead used solely for utility procurement, will the bio-CNG be a "net carbon sink over its lifecycle."?

Response 2-17a:

It is expected to be a net carbon sink over procurement of traditional natural gas.

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QUESTION 2-17b:

Please explain what is meant by “avoided emissions” in this sentence.

Response 2-17b:

Avoided emissions are the emissions that would have occurred in the base use case as provided in the response to Question 1-5d (Table 1) of Sierra Club-SCG-01.

QUESTION 2-17c:

Please explain what is meant by “net carbon sink” in this sentence.

Response 2-17c:

The Bio-CNG serves as a net carbon sink, as its associated estimated carbon emissions are lower than the estimated emissions that would have occurred under the baseline use case scenario.

QUESTION 2-17d:

Please state the basis for concluding that producing and utilizing the Bio-CNG fuel from the proposed project will be a “net carbon sink” over its lifecycle.

Response 2-17d:

As provided in the response to Question 1-5d (Tables 1 and 2) of Sierra Club SCG-01, the estimated metric tons of CO2 (11,257 with CCS and 36,415 without CCS) emitted annually by the Bio-SNG plant are lower than the 42,000 metric tons emitted annually during the baseline use case. This reduction in annual CO2 emission compared to the baseline use case represents a carbon sink.