

**SOUTHERN CALIFORNIA GAS COMPANY  
SIERRA CLUB DATA REQUEST SC-SCG-01  
A.22-09-006**

**DATE REQUESTED: SEPTEMBER 20, 2022  
RESPONSE SUBMITTED: OCTOBER 12, 2022**

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**QUESTION 1:**

Testimony Chapter 1, at pages 9–10 states that end-use gas customers “are increasingly interested in reducing their environmental impact” and that “these customers increasingly demand access to renewable energy.”

- a) Has SoCalGas conducted any customer surveys to measure interest in hydrogen blending among end-use customers? If yes, please provide the survey questions and responses.
- b) What is the basis for the statement that gas end-use customers “increasingly demand access to renewable energy”?

**RESPONSE 1:**

- a) SoCalGas objects to the phrase “conducted any customer surveys” as vague, ambiguous, overbroad, and irrelevant because these statements are not based on customer surveys.

Subject to these objections, SoCalGas answers as follows: See Response 1(b) below. During the project, SoCalGas intends to collaborate with the University of California (UC) Irvine to develop customer engagement materials. Please refer to Chapter 2 testimony page 18 for a description of stakeholder engagement and reporting.

- b) Based on SoCalGas’ experience and understanding, the increased customer demand for access to renewable energy includes growing public awareness regarding renewable energy generation technologies, federal and state climate and energy policies and goals towards decarbonization, decreasing technology cost, regulatory incentives, and business-driven sustainability targets.

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**QUESTION 2:**

Testimony Chapter 2, page 17 states that “SoCalGas successfully tested residential end-use equipment for hydrogen compatibility up to 20%.”

- a) Has SoCalGas already conducted testing on the specific residential end-use equipment that would operate on a hydrogen blend in the proposed pilot project?
- b) What was the total cost of the testing, and what was the source of funding to cover the cost of the testing?
- c) Did SoCalGas test the actual end-use equipment on the site of the project, or did it generally test equipment of the same model located elsewhere? If SoCalGas tested equipment on-site, did it test every piece of equipment in the buildings participating in the project, or a selection of them?
- d) Has SoCalGas conducted testing of nonresidential (i.e., commercial) end-use equipment?
- e) Please identify all end-use equipment that was tested, and all results of the testing for each piece of end-use equipment.

**RESPONSE 2:**

- a) SoCalGas has successfully blended up to 20% hydrogen through a closed loop natural gas system complete with natural gas residential appliances at its Engineering Analysis Center and Centralized Testing Facility.<sup>1</sup>
- b) The total project cost of testing, including labor and materials costs, was approximately \$40,000. Project expenditures were settled under the Gas Engineering – Engineering Analysis Center’s operating and clearing costs. The Engineering Analysis Center is a physical laboratory with purposes that include research and testing of gas quality variations, such as hydrogen and renewable natural gas impacts on appliances.
- c) SoCalGas generally tested equipment of similar type to what has been proposed in the UC Irvine project proposal.
- d) This testing did not include any non-residential appliances.
- e) Tested appliances included a stove, wall furnace, and forced-air unit. Testing results showed that the appliances were compatible with up to 20% hydrogen blends.

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<sup>1</sup> SoCalGas Newsroom, *SoCalGas Among First in the Nation to Test Hydrogen Blending in Real-World Infrastructure and Appliances in Closed Loop System* (September 30, 2021); available at: <https://newsroom.socalgas.com/press-release/socalgas-among-first-in-the-nation-to-test-hydrogen-blending-in-real-world>.

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**QUESTION 3:**

The Joint Application to Establish Hydrogen Blending Demonstration Projects explains on page 8 that the projects are “modeled after the HyDeploy initiative” from the United Kingdom.

- a) What procedures to monitor, report, or mitigate NOx emissions from end uses did the HyDeploy initiative use?
- b) Please provide all documents related to the HyDeploy Initiative that SoCalGas considered as it developed its proposed project.

**RESPONSE 3:**

- a) The HyDeploy blending trial at Keele University was utilized as a conceptual model to establish the SDG&E and SoCalGas projects. The trial emphasized partnership with world-class research institutions, utilizing campus demonstrations, and collaboration through project planning, construction, testing and demonstration, and stakeholder engagement. Based on the available information, we are not aware if monitoring or mitigation of NOx emissions from end uses was part of the HyDeploy demonstration.
- b) Documents reviewed are publicly available on the HyDeploy website.<sup>2</sup>

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<sup>2</sup> HyDeploy, *Pioneering the safe use of blended hydrogen in gas networks to reduce carbon emissions*; available at: <https://hydeploy.co.uk/>.

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**QUESTION 4:**

Testimony Chapter 2, page 8 explains that this pilot is consistent with the UC Riverside recommendation to conduct a blending demonstration “in a section of the infrastructure that is isolated or is custom built to include commonly present materials, vintages, facilities, and equipment of the generic California natural gas infrastructure.”

- a) Did SoCalGas consider performing its project in a custom-built setting? If not, why not?
- b) Please provide all cost estimates for pilots with custom-built infrastructure.
- c) If SoCalGas did consider performing its project in a custom-built setting, why did it decide not to use custom-built infrastructure?
- d) To what extent does the setting of SoCalGas’ project involve the range of commonly present materials, vintages, facilities, and equipment of the generic California natural gas infrastructure? Please identify the materials, vintages, facilities, and equipment that are commonly present in California’s natural gas infrastructure and which of those materials, vintages, facilities, and equipment are present in the infrastructure that would be exposed to a hydrogen blend in the proposed pilot.
- e) For each type of material, vintage, facility, and equipment that is common in SoCalGas’ infrastructure that is not included in the infrastructure at the proposed pilot site, please explain why SoCalGas selected a site without that infrastructure. For instance, if the pilot site does not have API 5L X42 and X52 steel pipes, why did SoCalGas select a site without those materials?

**RESPONSE 4:**

- a) SoCalGas did not consider performing the project in a custom-built setting. A primary goal of this blending demonstration is to utilize a “real world” project site to collect critical operational data and experience required to inform the development of a statewide hydrogen injection standard. Further, it provides the opportunity for direct university collaboration as well as customer education and feedback.
- b) Cost estimates for pilots with custom-built infrastructure have not been prepared. See Response 4a.
- c) Not applicable.
- d) SoCalGas objects to this request as vague, ambiguous, overbroad, and misstates the Application’s testimony.

In the spirit of discovery, and subject to these objections, SoCalGas responds as follows: A survey of commonly present materials, vintages, facilities, and equipment of

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the generic California natural gas infrastructure at the project site will be conducted in the planning phase of the project. Details of the SoCalGas gas system materials makeup can be found in annual distribution reports to the Pipeline and Hazardous Materials Safety Administration.<sup>3</sup> SoCalGas' proposed project with UC Irvine includes both steel and plastic pipelines and components that comprise the vast majority of the distribution pipeline system.

- e) SoCalGas objects to this request as vague, ambiguous, overbroad, and misstates the Application's testimony.

SoCalGas did not intend to exclude certain common materials and components during project site selection. Type of infrastructure materials and components was one of multiple factors considered in project site selection. Additional considerations included strength of partner and willingness to collaborate, ability to isolate a section of the distribution system to conduct controlled demonstrations, and site availability and access for the required duration of study. In recognition that it would be unlikely to find a project partner and site that met all considerations and additionally included all common infrastructure materials, the proposed project site was selected so that a reasonable base of distribution infrastructure materials would be under study, and that the Applicants' (SoCalGas, SDG&E, and Southwest Gas) respective projects would be complimentary with respect to diversity of materials. Given the significant number of materials and components within the gas infrastructure, additional laboratory research can help address technical unknowns to support and complement the demonstration projects. With an understanding that knowledge gaps will remain regarding some materials and components, a hydrogen blending injection standard would delineate applicable components. Using a phased approach, additional system components may be incorporated into the standard as they become well understood.

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<sup>3</sup> U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data*; available at: <https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids>.

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**QUESTION 5:**

Testimony Chapter 2, page 5 lists types of equipment that will receive the hydrogen blend, including “ovens, furnaces, water heaters, dryers, and boilers.” Please provide a full inventory of all end-use equipment that will receive the hydrogen blend in the project, including the number of each type of appliance that will operate on a hydrogen blend. For each piece of end-use equipment, please identify the appliance type, make and model, year of manufacture, and campus building where it is located.

**RESPONSE 5:**

The requested information is not readily available. A full inventory of end-use equipment will be established in the planning phase of the project.

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**QUESTION 6:**

Testimony Chapter 2, pages 9–10 states that the electrolyzer used to produce hydrogen will use “water and electricity.”

- a) What source of electricity does SoCalGas plan to use to power the electrolyzer?  
Please explain what measures, if any, SoCalGas intends to take to power the electrolyzers with renewable energy.
- b) What source of water does SoCalGas plan to use for the electrolyzer?

**RESPONSE 6:**

- a) This project electrolyzer will utilize grid electricity provided by UC Irvine aligned with the Regents of the University of California Sustainable Practices Policy.<sup>4</sup>
- b) This project electrolyzer will utilize potable water provided by UC Irvine.

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<sup>4</sup> University of California – Policy on Sustainable Practices; available at:  
<https://policy.ucop.edu/doc/3100155/SustainablePractices>.

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**QUESTION 7:**

Testimony Chapter 2, page 11 notes that there is an “unlikely event that modifications are required to customer appliances” prior to injecting hydrogen.

- a) Does SoCalGas intend to report all modifications to appliances prior to blending?
- b) During the asset inspection process, how does SoCalGas intend to determine whether a modification is necessary? What factors would indicate that a modification is needed?

**RESPONSE 7:**

- a) If modifications are deemed necessary, they will be communicated to UC Irvine in advance of blending. A summary of modifications made (if applicable) will be communicated in periodic reports provided to the CPUC.
- b) Modification of assets will be determined based on available information from the manufacturer of the asset, SoCalGas’ current knowledge of hydrogen blending impacts, previous experience with hydrogen blending testing as they may apply to similar assets, and any available information from the manufacturer of the asset. Examples of modification considerations include, but are not limited to, known material compatibility and abnormal operating conditions.

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**QUESTION 8:**

Testimony Chapter 2, Table 2, on pages 13–14 states that customer equipment checks for emissions, including NOx, would be accomplished by “perform[ing] measurement on emissions from hot water and space heaters” at a frequency “to be determined.”

- a) Why isn't SoCalGas proposing to monitor all equipment?
- b) What frequency periods is SoCalGas considering for monitoring of NOx?
- c) What emissions other than NOx does SoCalGas plan to measure?
- d) What monitoring equipment and processes does SoCalGas intend to use to monitor NOx emissions, or other air pollutants? Please provide technical specifications and cost data for any equipment that SoCalGas is considering.

**RESPONSE 8:**

- a) Customer equipment checks for emissions will be based on equipment that is currently regulated by South Coast Air Quality Management District (South Coast AQMD). SoCalGas proposes to monitor emissions on equipment that is subject to South Coast AQMD rules.
- b) Frequency periods will be formalized during the project planning stage of the project.
- c) Barring any equipment or technology restrictions, SoCalGas plans to measure emissions other than NOx, including carbon monoxide (CO), oxygen, (O2), and carbon dioxide (CO2) emissions.
- d) Specific technologies have not yet been determined for monitoring emissions.

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**QUESTION 9:**

Testimony Chapter 2, Table 2, on page 13, states that leak surveys would be conducted “monthly; and as needed for customer service calls.”

- a) Did SoCalGas consider installing sensors to continuously monitor pipelines and equipment for leaks?
- b) Did SoCalGas consider conducting leak surveys on a weekly basis?
- c) What is the basis for setting leak surveys on a monthly basis, as opposed to a different frequency?
- d) Please identify the equipment SoCalGas intends to use for leak detection.
- e) Will the leak detection equipment have the capability of detecting leaks of hydrogen that are not accompanied by leaks of methane and other molecules that are larger than gaseous hydrogen?

**RESPONSE 9:**

- a) SoCalGas will assess and formalize monitoring of pipelines and equipment in the planning stage of the project after survey of pipelines and detection equipment review is complete.
- b) SoCalGas will formalize leak survey intervals after the initial survey of pipelines is complete and the survey data is assessed.
- c) A monthly frequency of leak surveys is more rigorous than the current survey cycle requirement of the proposed pipelines. However, SoCalGas will assess and formalize leak survey frequency after the initial survey of pipelines is complete and the data is assessed.
- d) See Response 9a.
- e) See Response 9a.

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**QUESTION 10:**

Who is liable for any damage to customer-owned appliances and infrastructure resulting from the project?

**RESPONSE 10:**

SoCalGas does not anticipate damage to customer equipment based on lab experiments conducted by SoCalGas. Testing protocols will be established to mitigate the risk of damage to customer-owned appliances. Contractual arrangements will be negotiated with the university during the planning phase of the project.

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**QUESTION 11:**

D.21-07-005, page 25, states that “[t]he Joint Utilities should closely collaborate with the CEC to maximize the funding opportunities from the CEC R&D Program for research projects that address knowledge gaps.”

- a) How has SoCalGas collaborated with the CEC in developing and funding this project?
- b) Please provide all communications between SoCalGas and CEC staff regarding development of the project and alternative research projects that could address knowledge gaps related to hydrogen blending.

**RESPONSE 11:**

- a) SoCalGas is a partner on GFO 21-503<sup>5</sup> (Examining the Effects of Hydrogen in End-Use Appliances for Large Commercial Buildings and Industrial Applications) and GFO 21-507<sup>6</sup> (Targeted Hydrogen Blending in Existing Gas Network for Decarbonization). None of them support live blending demonstration projects due to the lack of a pipeline hydrogen injection standard in California.
- b) SoCalGas objects to this request as vague and ambiguous as the meaning of the term “all communications” in this context. It is also overbroad, seeking information and/or documents that are irrelevant.

In the spirit of discovery, and subject to these objections, SoCalGas responds as follows: In March 2021, SoCalGas and SDG&E presented on the “Proposed Hydrogen Blending Demonstration Program” at the CEC Scoping Workshop – Upcoming Solicitation Regarding Pilot test and Demonstration of Hydrogen Blending into Existing California Natural Gas System.<sup>7</sup>

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<sup>5</sup> California Energy Commission, *GFO-21-503 – Examining the Effects of Hydrogen in End-Use Appliances for Large Commercial Buildings and Industrial Applications*; available at:

<https://www.energy.ca.gov/solicitations/2021-09/gfo-21-503-examining-effects-hydrogen-end-use-appliances-large-commercial>.

<sup>6</sup> California Energy Commission, *GFO-21-507 – Targeted Hydrogen Blending in Existing Gas Network for Decarbonization*; available at: <https://www.energy.ca.gov/solicitations/2022-01/gfo-21-507-targeted-hydrogen-blending-existing-gas-network-decarbonization>.

<sup>7</sup> California Energy Commission, *Scoping Workshop – Upcoming Solicitation Regarding Pilot test and Demonstration of Hydrogen Blending into Existing California Natural Gas System*; available at: <https://www.energy.ca.gov/event/workshop/2021-03/scoping-workshop-upcoming-solicitation-regarding-pilot-test-and>.

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**QUESTION 12:**

D.21-07-005, page 25, states that “[a]ny new application must show that the Joint Utilities have made every reasonable attempt to use existing and other funds before requesting new funds,” including funding from the federal government. What attempts has SoCalGas made to use existing and other funds for this project, including funds from the federal government, before requesting new funds?

**RESPONSE 12:**

Please refer to A.22-09-006, Joint IOU Hydrogen Blending Demonstration Application Page 11.

**APPLICANTS’ REASONABLE ATTEMPTS TO USE EXISTING COMMISSION FUNDS AND FROM OTHER SOURCES**

In D.21-07-005, the Commission directed Applicants to make reasonable attempts to use existing Commission-authorized funding and other funds, including the CEC R&D Program and federal funding, to the extent possible. First, Applicants are unaware of Commission-authorized funding for hydrogen blending pilot projects. Similarly, Applicants could not have secured funding from the CEC R&D Program. Although the CEC has issued two hydrogen blending solicitations, they were focused on the power generation and industrial sectors; these solicitations have also explicitly excluded “hydrogen blending in live pipelines due to the lack of a pipeline hydrogen injection standard in California.” Applicants are also unaware of any federal funding opportunities for live blending pilot projects in natural gas pipelines; the existing federal funds under the Infrastructure Investment and Jobs Act of 2021 (IIJA) are focused on fostering the development of clean hydrogen hubs, advancing equipment manufacturing and recycling, and improving the efficiency of electrolysis. Therefore, Applicants did not have other available funding for their proposed Projects.

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**QUESTION 13:**

D.21-07-005, pages 23–24, state that “[a] new application must address the applicability of the results to not only SoCalGas’ and SDG&E’s gas pipeline networks, but also PG&E’s and Southwest Gas’s systems, as well.” How does the application address the applicability of the results to PG&E’s system?

**RESPONSE 13:**

PG&E operates an extensive gas distribution system that is comprised of like materials and components as the SoCalGas proposed project.<sup>8</sup> SoCalGas intends to work collaboratively with the other utilities (SDG&E, Southwest Gas, and PG&E) to define the hydrogen blending injection standard, inclusive of PG&E’s feedback from research and project results.

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<sup>8</sup> U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration, *Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data*; available at: <https://www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids>.

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**QUESTION 14:**

D.21-07-005, page 26, suggest that the Joint Utilities consider “creating a Technical Advisory Committee composed of various stakeholders” for a revised hydrogen blending project. Did SoCalGas consider creating a Technical Advisory Committee composed of various stakeholders? If yes, please identify the members of the Technical Advisory Committee, how members were selected, and when the committee formed. If no, why not?

**RESPONSE 14:**

A Technical Advisory Committee has not been established and will be considered pending application approval by the CPUC.

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**QUESTION 15:**

D.21-07-005, page 27, directs the Joint Utilities to “collaborate with UC Riverside.”

- a) How has SoCalGas collaborated with UC Riverside in developing the project?
- b) Please provide all communications between SoCalGas and UC Riverside staff regarding development of the project and alternative research projects that could address knowledge gaps related to hydrogen blending.

**RESPONSE 15:**

- a) SoCalGas objects to this request because it mischaracterizes D.21-07-005 in that it did not require collaboration with UC Riverside. The decision only required collaboration in the event that the application was filed before the UC Riverside hydrogen blending study was published.

In the spirit of discovery, and subject to these objections, SoCalGas responds as follows:

The Joint Utilities were part of the UC Riverside’s study Technical Advisory Committee and used the learnings from their effort to guide our project proposal scope.

- b) SoCalGas objects to this request because it mischaracterizes D.21-07-005 in that it did not require collaboration with UC Riverside. The decision only required collaboration in the event that the application was filed before the UC Riverside hydrogen blending study was published. This request is also vague and ambiguous as to the meaning of the term “all communications” in this context, and it is overbroad, seeking information and/or documents that are irrelevant.

In the spirit of discovery, and subject to these objections, SoCalGas responds as follows:

Shortly after the CPUC published the independent study conducted by UC Riverside, the UC Riverside team hosted a presentation for the Joint Utilities to review the team’s findings and recommendations. This included UC Riverside’s recommendation for the utilities to conduct real-world hydrogen blending demonstration projects.

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**QUESTION 16:**

How many miles of existing SoCalGas pipe will the project's hydrogen blend be flowing through?

- a) Please provide a breakdown of all possible pipeline materials the hydrogen blend will flow through, and how many miles of each material the hydrogen blend will flow through.

**RESPONSE 16:**

The proposed project scope at UC Irvine includes approximately 3,500 feet of distribution steel pipeline and 360 feet of plastic pipelines.

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**QUESTION 17:**

Does SoCalGas consider the customer appliances present in the buildings that will be connected to the project representative of the range of appliances installed in residential and commercial buildings throughout its service area? If yes, on what basis?

**RESPONSE 17:**

Yes, we consider them representative of the types of appliances found in commercial and residential buildings in the service area, based upon the different type of equipment pieces noted in Chapter 2, page 5. A full inventory of representative appliances will be established in the planning stage of the project, with an understanding that, as suggested by the UC Riverside report, these results should be complemented with further analysis, and laboratory testing for non-represented appliances.

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**QUESTION 18:**

Testimony Chapter 2, page 5 states that the buildings receiving the hydrogen blend “include Mesa Arts Building, Mesa Court Housing (29 halls and 3 towers), Mesa Office Building, Alumni Center, art studios, and a food court.”

- a) How many people live in Mesa Court Housing?
- b) What types of housing are included in Mesa Court Housing (e.g., dormitories, apartments, etc.)?
- c) Who can live in Mesa Court Housing (e.g., students, staff, students’ family members)?
- d) Have SoCalGas or UC Irvine conducted surveys of Mesa Court Housing residents to measure interest or concerns regarding participation in the hydrogen blending project? If yes, please provide the questions and responses to the surveys.
- e) Will residents of Mesa Court Housing be permitted to opt out of the experiment if they do not want to participate?
- f) How far in advance of the project start date do SoCalGas and/or UC Irvine intend to notify the occupants and employees in the participating buildings that they will be participating in the hydrogen blending project?
- g) Are children under the age of eighteen permitted to live in Mesa Court Housing?
- h) Are there childcare facilities located in any of the participating buildings?
- i) What offices are located in the Mesa Office Building (e.g., faculty offices, university administration, etc.)?
- j) How many employees work in each of the six specified locations (Mesa Arts Building, Mesa Court Housing, Mesa Office Building, Alumni Center, art studios, and food court)?
- k) How many UC Irvine students occupy, work in, or take classes located in the six specified locations?
- l) How many people does the food court serve on an average weekday when school is in session?
- m) If SoCalGas does not have data about how many people live, work, or regularly visit the buildings it intends to use in the hydrogen blending project, why not?
- n) Please provide blueprints for all buildings in the proposed project site.

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**RESPONSE 18:**

- a) Detailed occupancy and demographic data will be established during the planning stage of the project, pending CPUC approval of the application.
- b) Housing type will be established in the planning phase after contract execution with UC Irvine during the planning stage of the project, pending CPUC approval of the application.
- c) See Response 18a.
- d) Surveys have not been conducted. A detailed communication plan will be established during the planning stage of the project, pending CPUC approval of the application.
- e) Blended gas will not be entering the individual housing units so opt-out is not applicable.
- f) See Response 18d.
- g) See Response 18a.
- h) See Response 18a.
- i) See Response 18a.
- j) See Response 18a.
- k) See Response 18a.
- l) Data will be established during the planning stage of the project once the project has been approved by CPUC.
- m) See Response 18l.
- n) SoCalGas is not in possession of any responsive blueprints. UC Irvine building blueprints are proprietary information to UC Irvine and will only be obtained if there is a project need during project development.

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**QUESTION 19:**

Testimony Chapter 2, page 15 states: “Since hydrogen will lower the heating value of the gas supplied to UCI, SoCalGas plans to apply retroactive volumetric adjustments to UCI’s bill to accurately charge UCI based on therm usage.”

- a) Does SoCalGas expect that it will need to provide a greater volume of gas to participants in the pilot project to meet the same heating needs due to the lower heating value of the hydrogen blend the Company will deliver? If yes, how does SoCalGas intend to increase the volume of gas it supplies to these customers? Please identify any additional pipeline capacity SoCalGas intends to install or any other structural changes the Company intends to make to accommodate the delivery of a less energy-dense gas in this pilot.

**RESPONSE 19:**

Exact calculations of gas volumes won’t be known until the project is fully developed. The proposed project will investigate the appliance performance impact, if any, related to the heating value properties of blended gas. Demonstration results will determine if a greater volume of gas is required and inform potential structural changes, if any, though at this time additional pipeline capacity is unexpected.

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**DATE REQUESTED: SEPTEMBER 20, 2022  
RESPONSE SUBMITTED: OCTOBER 12, 2022**

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**QUESTION 20:**

Testimony Chapter 2, page 18 states that SoCalGas intends to provide education, outreach, and survey materials in coordination with UC Irvine that “are timely, meaningful, and address concerns.”

- a) Does SoCalGas intend to communicate the potential for higher NOx emissions from participants’ appliances burning a hydrogen blend? If yes, what messages does SoCalGas intend to convey on this topic? If not, why not?
- b) Does SoCalGas intend to communicate risks of leakage or pipeline embrittlement in its educational materials? If yes, what messages does SoCalGas intend to convey on this topic? If not, why not?
- c) Does SoCalGas intend to communicate the potential indoor air quality impacts from the hydrogen blending project? If yes, what messages does SoCalGas intend to convey on this topic? If not, why not?
- d) How far in advance of the project does SoCalGas plan to provide educational resources to participants?
- e) Will feedback received at the “public forums” (Testimony Chapter 2, page 18:16) be incorporated into the project design?
- f) Please provide all educational resources that SoCalGas intends to provide for participants.
- g) Does SoCalGas intend to include information on the energy- and carbon-intensity of hydrogen production in its educational resources? If yes, what messages does SoCalGas intend to convey on this topic? If not, why not?
- h) Does SoCalGas intend to include information comparing emissions reductions from hydrogen blending to emissions reductions from electrification of building end uses in its educational resources? If yes, what messages does SoCalGas intend to convey on this topic? If not, why not?

**RESPONSE 20:**

- a) SoCalGas intends to communicate relevant benefits and risks associated with the project and to develop communications materials in the planning stage of the project. SoCalGas contemplates that these materials will cover such relevant benefits and risks.
- b) See Response 20a.

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- c) See Response 20a.
- d) The timing of educational materials will be formalized post-CPUC approval of the project in the planning stage of the project.
- e) Materials and resources to be developed during the project, such as public webinars and forums, have not been formalized.
- f) See Response 20e.
- g) The scope of this project proposal is to collect critical data and information to inform the development of a statewide hydrogen injection standard for blending hydrogen into the natural gas system.
- h) See Response 20g.

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**QUESTION 21:**

Testimony Chapter 2, page 18:7–9 states that SoCalGas intends to work with UC Irvine “to develop best practices for survey design and public outreach to understand how to best affect behavioral and attitudinal outcomes to changing energy technologies.”

- a) What behavioral changes does SoCalGas want to encourage in customers receiving a hydrogen blend in their gas supply? Why?
- b) What attitudinal outcomes does SoCalGas intend to affect, and how?

**RESPONSE 21:**

Pre-project, SoCalGas does not presume specific behavioral and attitudinal changes related to hydrogen blended gas need to be encouraged or affected. Rather, SoCalGas seeks to assess present customer understanding, perceptions, and needs surrounding changing energy technologies.

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**QUESTION 22:**

Did SoCalGas consider any alternative strategies for decarbonizing the proposed project site, including converting gas-fired equipment to electric appliances? Please provide all records related to the cost and feasibility of replacing gas equipment at the project site with electric appliances and any other alternative decarbonization strategies.

**RESPONSE 22:**

SoCalGas' project site was selected with the intent to perform a hydrogen demonstration project to inform a hydrogen blending injection standard. Therefore, alternative site decarbonization strategies are outside of the scope of the project.