BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Southern California Gas Company (U 904 G), San Diego Gas & Electric Company (U 902 G), and Southwest Gas Corporation (U 905 G) to Establish Hydrogen Blending Demonstration Projects.	Application 22-09-006

REPLY OF GREEN HYDROGEN COALITION TO PROTESTS OF THE UTILITY REFORM NETWORK AND SIERRA CLUB TO SOUTHERN CALIFORNIA GAS COMPANY, SAN DIEGO GAS & ELECTRIC COMPANY AND SOUTHWEST GAS CORPORATION TO ESTABLISH HYDROGEN BLENDING DEMONSTRATION PROJECTS

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On Behalf of
GREEN HYDROGEN COALITION

April 29, 2024

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Pursuant to Rule 2.6 of the Rules of Practice and Procedure of the California Public Utilities Commission (Commission), Green Hydrogen Coalition (GHC) respectfully submit this reply to Protests of the Utility Reform Network and Sierra Club to Southern California Gas Company, San Diego Gas & Electric Company and Southwest Gas Corporation to Establish Hydrogen Blending Demonstration Projects (Protests).

I. INTRODUCTION.

The Utility Reform Network (TURN)'s protest appropriately requests review to determine whether requested authorized costs are reasonable prior to permitting rate recovery. Sierra Club's protest is on the grounds that hydrogen blending is a misguided approach for decarbonizing residential and commercial buildings. GHC respectfully responds to these protests with a necessary reframing of why blending is necessary – not only as a means to decarbonize the gas sector now and in the future, but also as means to achieving deeper multi-sectoral economy-wide decarbonization.

GHC's comments are additionally supported by the attached letter from Dr. Arun S.K. Raju, the UC Riverside Principal Investor who led the CPUC sponsored Hydrogen Blending and Impacts Study in 2021. In the attached letter, Dr. Raju states: "*The ability to use California's natural gas infrastructure to transport and store renewable hydrogen will likely play an important role in facilitating a transition to a hydrogen economy and addressing greenhouse gas and criterial pollutant and toxic emissions*." Dr. Raju further notes that "*The demonstration projects*

proposed by the State's IOUs in the joint application are aimed at addressing the challenges identified in the UCR study and elsewhere. These projects will demonstrate hydrogen blending in different sections of the natural gas infrastructure, and can help identify potential safety and performance issues with materials, components, and systems. Such knowledge is essential to resolve potential issues and help inform a potential hydrogen blending and injection standard for the State's natural gas infrastructure. The proposed projects thus represent the next step in the potential transition toward the use of natural gas infrastructure to transport and distribute hydrogen."

Blending pilots are a necessary step to not only assist with immediate decarbonization of the gas sector, but are also necessary to evaluate the potential for existing gas infrastructure to serve as a viable transport mechanism to move scaled production of renewable hydrogen from low cost production facilities to end users. Availability of mass-scale delivered clean renewable hydrogen is necessary to reduce our reliance on fossil fuels economywide, and the lack of shared transport and storage infrastructure today is a key barrier to this goal.

GHC supports the development of expanded 100% hydrogen pipeline and storage infrastructure. Utilizing existing gas infrastructure as a near term means to transport hydrogen is a helpful, and needed step to begin scaling production and end use, and to encourage additional demand formation to justify the development of or total conversion of existing gas pipeline infrastructure to 100% clean and renewable hydrogen infrastructure.

II. THE COMMISSION SHOULD EVALUATE THE REASONABLENESS OF THE PROPOSED HYDROGEN BLENDING PROJECTS BEYOND THE IMMEDIATE GOALS OF BENEFITING GAS DISTRIBUTION CUSTOMERS.

The GHC respectfully recommends that the Commission evaluate the reasonableness of the proposed hydrogen blending projects through an expanded lens/framework, which includes many more benefits than just the narrowly framed goal of decarbonizing gas distribution customers.

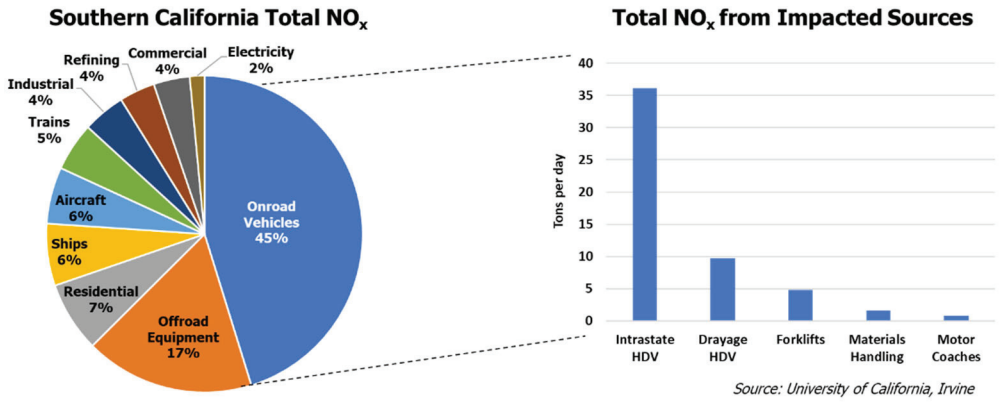
First, all ratepayers benefit from decarbonization achieved by blending clean and renewable hydrogen in existing gas pipelines by reducing the carbon intensity of pipeline gas delivered to all customers

Second and even more importantly, blending in gas pipelines also solves a vexing challenge that is inhibiting scale up of green hydrogen economy and larger scale production

projects: that is the high cost of transporting hydrogen on trucks (defacto method now). Transporting hydrogen in pipelines is a far less expensive way of moving hydrogen than via truck or rail. Even small percentages of hydrogen blending into the existing gas pipeline would represent a dramatic improvement in the throughput quantity and cost of current hydrogen transport mechanisms today.

CARB's presentation to the Joint Agency's SB 1075 implementation kickoff workshop (https://ww2.arb.ca.gov/sites/default/files/2023-09/sb-1075-workshop-090523-presentation-carb.pdf) identified a very significant role for clean and renewable hydrogen toward achieving carbon neutrality by 2045, including blending in pipelines, The goals outlined in CARBs 2022 scoping plan call for 94% reduction in liquid petroleum consumption, and an 85% reduction in total fossil fuel use across sectors. CARB also outlined a need for doubling our current electricity demand and the imperative of establishing a clean, affordable and reliable grid, identifying a need for 4x the 2022 solar and wind capacity by 2045. To achieve these goals, CARB outlined a very important role for hydrogen in California's climate plan, which includes a need to increase our hydrogen supply by 1700x. Transport of that hydrogen to multi sectoral end uses is clearly an issue, for which pipeline blending is one key near term solution.

Scaling up our clean and renewable hydrogen economy will reduce the cost of clean and renewable hydrogen and enable new applications of clean and renewable hydrogen such as for transport applications. Displacing fossil fuel use is a key focus of California's Climate Plan for 2045 – displacing gasoline and diesel combustion in the transportation and goods movement/logistics sectors will dramatically improve air quality for all Californians, as these sectors are the largest sources of emissions in California today.



Blending clean and renewable hydrogen in gas pipelines will also help decarbonize the power sector and will help us achieve the 4x increase in wind and solar capacity needed by 2045. Powerplants can immediately use blended hydrogen and natural gas to deliver clean firm dispatchable power and help ensure system reliability. If the clean and renewable hydrogen is produced from abundant, low cost renewable electricity sources and stored in the form of renewable hydrogen, the combustion of this renewable hydrogen in power plants will enable multi-day, weekly and seasonal matching of the resource to electric demand throughout the year. This has the added benefit of better utilization of existing generating and transmission assets and may help mitigate the high cost of transmission build out in the future, a major constraint identified by CAISO in their August 22, 2023 transmission planning report to the Joint Agencies.

Blending also provides a future decarbonization pathway for customers that cannot be fully weaned from gas sector, and helps these customers hedge against fossil fuel/natural gas price volatility.

Finally, the proposed blending pilots can help pave the way for greater technical understanding of the potential and feasibility of establishing a near and medium term blending standard, as well as the potential and feasibility of in the long term, converting existing natural gas pipelines to 100% clean renewable hydrogen. Findings from these pilots will help inform gas system transformation generally including understanding the cost and reliability impacts of preserving valuable existing infrastructure for decarbonized, renewable hydrogen and as a means to accelerate faster energy transition away from fossil fuels in all sectors. The GHC appreciates the Commission's timely consideration of the Joint Blending Application, as the findings from the pilot projects will take some years to develop, ultimately helping to inform the establishment of the blending standard.

III. CONCLUSION.

The Commission should aggressively continue its collaborative efforts with CARB and the legislature to forward progress with utilization of clean and renewable hydrogen to rapidly decarbonize California.

GHC thanks the Commission for its attention to the topics and recommendations discussed herein.

Respectfully submitted,

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April 29, 2024

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California Public Utilities Commission
Sacramento, CA

April 26, 2024

SUBJECT: A. 22-09-006 - AMENDED JOINT IOU HYDROGEN BLENDING DEMONSTRATION APPLICATION

To Whom It May Concern:

I am writing to support the above referenced joint Investor Owned Utility (IOU) hydrogen blending demonstration application. The College of Engineering – Center for Environmental Research and Technology (CE-CERT) is the largest research center at the University of California, Riverside (UCR) and performs multi-disciplinary, state of the art research to address society's most pressing challenges in air quality, climate change, energy, and transportation. CE-CERT is a nationally recognized leader in these areas and prides itself on its education, and public service activities. CE-CERT also has a distinguished record of conducting independent, unbiased and science-based research, testing, and technology assessments for over 30 years.

The ability to use California's natural gas infrastructure to transport and store renewable hydrogen will likely play an important role in facilitating a transition to a hydrogen economy and addressing greenhouse gas and criteria pollutant and toxic emissions. CE-CERT completed the CPUC sponsored 'Hydrogen Blending Impacts Study' in 2021 that was aimed at evaluating the major impacts of injecting hydrogen into California's natural gas pipeline infrastructure through laboratory scale experimental work and modeling analysis. Specifically, the study assessed hydrogen impacts on key phenomena including gas leakage rates from pipelines and associated components, on degradation, durability and integrity of the pipeline system, hydrogen driven embrittlement of materials and components of the pipeline system, and analysis of the degradation processes. One of the primary recommendations of the study was that real world scale hydrogen blending demonstration projects should be conducted using 5-20% hydrogen blends in order to further evaluate the long term impacts of hydrogen exposure. Such demonstrations should be conducted 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 with appropriate maintenance, monitoring and safety protocols over extended periods.

The demonstration projects proposed by the State's IOUs in the joint application referenced above are aimed at addressing the challenges identified in the UCR study and elsewhere. These projects will demonstrate hydrogen blending in different sections of the natural gas

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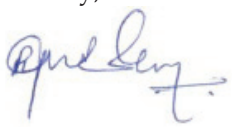
infrastructure, and can help identify potential safety and performance issues with materials, components, and systems. Such knowledge is essential to resolve potential issues and help inform a potential hydrogen blending and injection standard for the State's natural gas infrastructure. The proposed projects thus represent the next step in the potential transition towards the use of natural gas infrastructure to transport and distribute hydrogen.

Please feel free to reach out to me with any questions.

Sincerely,



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