BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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Application of Southern California Gas Company (U904G), San Diego Gas & Electric Company (U902G), Pacific Gas and Electric Company (U39G), and Southwest Gas Corporation (U905G) to Establish Hydrogen Blending Demonstration Projects.	Application 22-09-006

UTILITY CONSUMERS' ACTION NETWORK OPENING BRIEF

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Pursuant to Rule 13.2 for the Commission's Rules of Practice and Procedure, and AJL Ferguson's E-Mail Ruling Directives and Guidance for Final Briefing,[1] The Utility Consumers' Action Network submits this opening brief.

1. INTRODUCTION

The investor-owned utilities (IOU) filed the Joint Amended Application of Southern California Gas Company (U 904 G), San Diego Gas & Electric Company (U 902 G), Pacific Gas and Electric Company (U 39 G), and Southwest Gas Corporation (U 905 G) to Establish Hydrogen Blending Demonstration Projects ("Application"). The Application requests that the Commission grant the investor-owned utilities ("IOU") $200 million to fund five hydrogen blending pilot projects. However, hydrogen blending itself conflicts with

[1] A.22-09-006, E-Mail Ruling Directives and Guidance for Final Briefing (March 9, 2026), https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M601/K895/601895956.PDF.

numerous legal and regulatory requirements.[2] On that reason alone, the Commission should deny the Application in its entirety.

Alternatively, the Commission could deny each pilot individually based on their own shortcomings. The projects each fail to conform to legal and regulatory requirements. Thus, the Application is flawed on multiple levels and should be denied.

This brief devotes one briefing section to concisely summarize shortcomings of hydrogen blending and UCAN's conclusions stemming from those shortcomings. Then the brief turns to the primary topic of San Diego Gas and Electric's ("SDG&E") $21 million blending pilot. The Commission should deny the SDG&E pilot because (1) it fails to conform to D.22-12-057 requirements, (2) it fails to fill knowledge gaps, and (3) it effectively demonstrates the inherent complexity, waste, and expense of hydrogen blending.

UCAN has coordinated with other parties to avoid duplication, and thus, does not provide an explicit review and analysis of the Application's other blending pilots in this brief. However, UCAN expressly supports Sierra Club's explanation of why the Commission should reject SoCalGas's UC Irvine Project, PG&E's Pilot, and SW Gas' Proposed Project.

2. HYDROGEN BLENDING PILOTS DO NOT BENEFIT RATEPAYERS .

Production of clean renewable hydrogen is expensive and complicated.[3] It requires a precious resource, renewable energy, to be diverted from supplying energy needs of

[2] UCAN-01R at 40:3-43:13.
[3] UCAN-01R at 4:6-21:8.

customers. It takes that renewable energy and expends a significant portion simply to produce hydrogen. Thus, the resulting clean renewable hydrogen is itself an even more rare and precious resource with significantly less embedded energy.[4]

Clean renewable hydrogen can be used to decarbonize nearly any energy end use (e.g. end-uses served by electricity and end-uses served by molecular fuels).[5] It can also be used as decarbonized hydrogen feedstock for chemical production.[6] However, only a small group of these potential end uses can be decarbonized cost effectively with clean renewable hydrogen.[7] When other decarbonization alternatives are available, they are more cost-effective solutions.[8] Of the small percentage of end uses most cost-effectively decarbonized by hydrogen, *none* of them depend on hydrogen blended into natural gas.[9]

Before blending clean renewable hydrogen with natural gas, it is 12-times more valuable than natural gas.[10] After blending hydrogen into natural gas it is less valuable than natural gas because it destroys the feedstock potential of hydrogen in favor of heat value only.[11] Hydrogen's heat value is lower than natural gas on a volumetric basis.[12] Experts find that hydrogen blending as "encourages the creation of hydrogen in the wrong places, routing

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[4] *Ibid.*
[5] UCAN-01R at 25:11-26:7.
[6] *Ibid.*
[7] UCAN-01R at 16:8-20:2, 21:6-24-4, 25:11-26:5.
[8] *Ibid.*
[9] UCAN-01R at 20:3-21-8, 24:5-21.
[10] UCAN-01R at 17:5-18:12.
[11] UCAN-01R at 13:9-14:5.
[12] UCAN-01R at 11:12-12:11.

it to the wrong users and transporting it via the wrong infrastructure. It is a costly distraction and a dead end."[13] That dead end, also increases air pollution.[14]

In summary, hydrogen blending harms Californians' health, economy, and decarbonization efforts, while returning zero benefits. Unsurprisingly, those attributes conflict with numerous code requirements including California Energy Policy (i.e., Health and Safety Code §38562.2(c)(1)), and California Public Utilities Code: § 747, § 739(d)(2), § 451, and § 382(b).[15]

Since the Commission first ordered the IOUs to submit an application to investigate the feasibility of hydrogen blending, knowledge about green hydrogen has expanded dramatically, and expert evaluations have shifted significantly. The Commission's current knowledge about hydrogen dictates a radically different view of hydrogen blending than was even possible for the previous commissioners. It is with current understanding and through its current informational lens that the Commission will evaluate the Application.

At its most basic level, the Application asks the Commission to approve $200 million for pilots that would attempt to answer the question, "Is technically possible to do something counterproductive and illegal?" No amount of money should be devoted to answering that question.

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[13] UCAN-01R at 36:22-24.
[14] UCAN-01R at 14:7-15:25.
[15] UCAN-01R at 43:10-13.

3. SDG&E'S PILOT PROJECT SHOULD BE REJECTED.

Even though the premise of the pilots is fatally flawed, the pilots also fall short of regulatory directives and can be denied on their individual failing. The following sections address why the Commission should deny SDG&E's project.

3.1. SDG&E's use of GHG-emitting hydrogen conflicts with D.22-12-057.

D.22-12-057 states that the hydrogen blending pilots must use clean renewable hydrogen.[16] The SDG&E pilot violates that requirement of D.22-12-057 by its failure to use clean renewable hydrogen as defined in D.22-12-057.[17] SDG&E falsely claims that D.22-12-057 does not require use of non-fossil sources,[18] even though D.22-12-057 clearly states that "[t]he interim definition applies to the pilot programs directed through this Decision."[19]

SDG&E's hydrogen production method uses grid electricity to produce hydrogen,[20] and grid electricity is produced with 45% natural gas-fired generation (i.e. fossil fuels).[21] D.22-12-057, definition of clean renewable hydrogen specifically bans the use of fossil fuel "as either a feedstock or production source."[22] Moreover, SDG&E's hydrogen production

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[16] D.22-12-057 at 48 ("The interim definition applies to the pilot programs directed through this Decision.").
[17] D.22-12-057 at 48, (Defines clean hydrogen as "Hydrogen which is produced through a process that results in a lifecycle (i.e., well-to-gate) GHG emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen produced *and does not use fossil fuel as either a feedstock or production energy source*.").
[18] SDGE-05 at 20, ("While the decision included this definition, the decision did not directly state that the requested demonstration projects must use clean renewable hydrogen.").
[19] D.22-12-057 at 48.
[20] SDGE-05 at 22, ("SDG&E's approach—utilizing RECs to offset grid electricity…").
[21] UCAN-01R at 26:15-19.
[22] D.22-12-057 at 48, ("We adopt the following interim definition for clean renewable hydrogen: 'Hydrogen which is produced through a process that results in a lifecycle (i.e., well-to-gate) GHG emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen produced and does not use fossil fuel as either a feedstock or production energy source.'").

process will produce up to 5-times more carbon emissions than are allowed under the clean renewable hydrogen definition found in D.22-12-057.[23]

In an attempt to justify its violation of D.22-12-057, SDG&E claims that the Commission should have allowed alternative production methods despite falsely claiming to meet D.22-12-057's clean renewable hydrogen definition.[24] SDG&E spends two and a half pages of testimony cobbling together disparate definitions of clean hydrogen but, ultimately, acknowledges that it did not ensure the electrolyzer "received only electrons generated by solar energy" because "[s]uch a configuration would have introduced significant complexity and cost and was not necessary to meet the objectives of this demonstration."[25] Clearly, despite SDG&E's objections, D.22-12-057's requirement to use its definition of clean renewable hydrogen is not optional.

Finally, SDG&E attempts to justify its pilot method of producing hydrogen by asserting that SDG&E's process is "cost-effective and administratively efficient."[26] UCAN agrees with that SDG&E evaluation, but also notes that in making that statement, SDG&E undercuts the very reason for its pilot, decarbonization.

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[23] SC-01 at 56 ("SDG&E's hydrogen could cause lifecycle emissions of about 20 kilograms CO2e per 11 kilogram of hydrogen.").
[24] SDGE-05 at 20:1-22:13, (The other production methods the SDG&E asserts are reasonable are: REC offsets, GREET loopholes, elements of the U.S. Department of Treasury definition, elements of CARB's Low Carbon Fuel Standard, and approval by hydrogen advocacy organization ARCHES.).
[25] SDGE-05 at 22:4-8.
[26] SDGE-05 at 22:10-13.

The record shows that clean renewable hydrogen is exceptionally expensive and that GHG-emitting hydrogen is less expensive.[27] Thus, it is understandable that SDG&E's method of producing less-clean hydrogen than required by D.22-12-057 is comparatively cost-effective. It would be even more cost effective to source the cheapest dirtiest hydrogen available, which would also violate D.22-12-057.

SDG&E's objections to using clean renewable hydrogen serve to demonstrate that clean renewable hydrogen is expensive and complicated to produce, and that it should be reserved for the highest value decarbonization options instead of wasted by blending the hydrogen with natural gas. By asserting that clean renewable hydrogen is too expensive to justify using, even in a pilot, SDG&E undermines its own arguments for hydrogen blending.

SDG&E's testimony shows that that its pilot design violates the clean renewable hydrogen requirement in D.22-12-057, and for that reason, the Commission should deny the SDG&E pilot.

3.2. SDG&E's pilot fails to address knowledge gaps.

The 2022 University of California Riverside Hydrogen Blending Impacts Study lists knowledge gaps regarding hydrogen blending. SDG&E's pilot fails to address those knowledge gaps.

[27] UCAN-01R at 30:13-16, ("2025 green and grey hydrogen costs: In all 12 countries evaluated, grey hydrogen costs are lower than green hydrogen costs.97 In 9 of the 12 countries, green hydrogen costs exceed $6/kg. In 8 of the 12 countries, the cost of green hydrogen is between $6/kg and $8.5/kg.").

3.2.1. The pilot is not representative of SDG&E's distribution infrastructure.

The pilot is not representative of SDG&E's distribution infrastructure.[28] SDG&E's pipeline milage is composed of several different pipe material types.[29] In contrast, SDG&E's pilot will test two versions of a single pipeline material (state-of-the-art polyethylene (PE) pipe).[30] That material type only represents approximately 40% of SDG&E's distribution pipeline.[31] SDG&E also admits that "[r]esearch to date indicates that hydrogen does not degrade PE pipes."[32] Thus, the SDG&E pilot fails to test hydrogen blending materials that make up the majority of SDG&E' system. Instead, SDG&E selected a single pipeline material that only serves to replicate well-established research.

Even on PE pipes, SDG&E's pilot fails to replicate operational infrastructure conditions. SDG&E's pilot proposes a new installation, of new pipes, pre-tested to leak-free conditions.[33] Thus, SDG&E's pilot does not reflect actual operational natural gas pipelines which contain leaks and sub-optimal joints, fittings, and other components.[34] In comparison, PG&E noted this difference in pipeline quality and installation and partially addresses it by proposing to install used pipelines in its pilot. But SDG&E's pilot fails to even do that. Thus, SDG&E's pilot falls short of representing real-world distribution infrastructure and the impacts of hydrogen on that infrastructure.

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[28] SC-02 at 12:20-13:6, 15; CADV-01 at 3-4:13 to 3-5:13.
[29] SC-02 at 12:20-13:6.
[30] SDGE-03 at 7:7-8:1.
[31] SC-02 at 12:20-13:6
[32] SDGE-03 at 7:1-2.
[33] SDGE-03 at 8:7-15.
[34] SC-02 at 10:15-11:9.

3.2.2. The pilot offers no new knowledge of end use equipment.

The pilot offers no new knowledge about end use equipment. The only end use equipment in the pilot is a new fuel cell that is designed and manufactured to be compatible with hydrogen/methane blends.[35] Because the fuel cell is new and rated for hydrogen, testing its performance will provide no data relevant to the performance of existing fuel cells in California should a hydrogen blend be introduced to their gas supply, nor will it provide data relevant to similar fuel cells of older vintages.[36]

The only new testing that SDG&E's project appears to consider is (1) odorant effectiveness and (2) impacts on meters, valves, and fittings. There is no reason for a $21 million-dollar project to only test impact on odorant effectiveness plus the operational impacts on meters, valves, and fittings. These two items could easily be transferred to other pilots if the Commission decides to approve any pilots.

3.3. SDG&E's counterarguments for approving its blending pilot are unpersuasive.

SDG&E's statements on the design of its pilot demonstrate why clean renewable hydrogen must be directed toward high value end uses instead of being wasted on hydrogen blending. SDG&E acknowledges that its process is complex, expensive, and emits GHGs.[37] SDG&E asserts that conforming to D.22-12-057-defined clean renewable hydrogen

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[35] SDGE-3R at 16 ("The end-use appliance in this Project is a new fuel cell that will be installed for this test. The fuel cell will be manufacturer approved to accept at least twenty percent hydrogen by volume. The fuel cell manufacturer will be involved in installing, commissioning, maintaining, monitoring, and decommissioning the equipment.").
[36] SC-02 at 15:22–25.
[37] SDGE-05 at 18:14-22:13.

definition would be more complex and expensive than using fossil-base hydrogen.[38] This acknowledgement aligns with the findings of numerous experts who have determined that the expense of clean renewable hydrogen dictates that it be directed to only the end uses that cannot be decarbonized any other way, and that that hydrogen blending is a "poor" or "terrible" use of hydrogen.[39]

SDG&E claims that procuring hydrogen whose production has emitted GHGs and thus requires GHG-offsets "reflects the practical realities of hydrogen production in California's evolving energy landscape."[40] SDG&E's statement implies that clean renewable hydrogen, if available at all, is not available at a reasonable cost. That alone is very troubling. SDG&E's admission demonstrates California is not ready to produce clean renewable hydrogen and certainly not ready to waste large amounts by indiscriminately injecting it into natural gas pipelines. Given SDG&E's own testimony and admissions, the Commission has insufficient factual evidence upon which to authorize proceeding with the project and thus should deny the project.

4. CONCLUSION: THE COMMISSION SHOULD REJECT HYDROGEN BLENDING PILOTS INCLUDING SDG&E'S PILOT.

An enormous amount of record evidence shows that hydrogen blending would waste ratepayer funds, would triple GHG emissions compared to alternative decarbonization options, would delay the energy transition, and would violate numerous legal and regulatory

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[38] SDGE-05 at 22, ("Such a configuration would have introduced significant complexity and cost and was not necessary to meet the objectives of this demonstration.").
[39] UCAN-01R at 35:21-36:2.
[40] SDGE-05 at 22:2-3.

requirements. Clean renewable hydrogen may be a reasonable decarbonization method for a handful of end uses, but hydrogen blending is not one of them. The record shows that this is true of blending generally and blending pilots specifically.

UCAN maintains that the most efficient and reasonable method for the Commission to address hydrogen blending and the hydrogen pilot projects would be to deny the pilots by finding that hydrogen blending is not an effective decarbonization strategy based on the record. Then, because hydrogen blending is not an effective decarbonization strategy, the Commission should deny the pilots' evaluation of hydrogen blending. This approach saves ratepayers the $200 million cost of the hydrogen pilots and will also save ratepayers the cost of future evaluations of hydrogen blending. That will give the Commission more capacity and resources to ensure ratepayers a future with safe, affordable, and clean energy.

If the Commission instead decides to deny the pilot projects individually while leaving unaddressed the merits of hydrogen blending, the Commission should deny each pilot on their individual shortcomings. For SDG&E's pilot specifically, the Commission should deny the pilot because it fails to address existing knowledge gaps, fails to propose a pilot representative of its distribution system, and fails to meet the requirements of D.22-12-05.

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