STATE OF CALIFORNIA GAVIN NEWSOM, *Governor*

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE

SAN FRANCISCO, CA 94102-3298

**FILED**

06/04/21

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June 4, 2021

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**Ratesetting**

TO PARTIES OF RECORD IN APPLICATION 20-11-004:

This is the proposed decision of Administrative Law Judge Scarlett Liang-Uejio. Until and unless the Commission hears the item and votes to approve it, the proposed decision has no legal effect. This item may be heard, at the earliest, at the Commission's July 15, 2021 Business Meeting. To confirm when the item will be heard, please see the Business Meeting agenda, which is posted on the Commission's website 10 days before each Business Meeting.

Parties of record may file comments on the proposed decision as provided in Rule 14.3 of the Commission's Rules of Practice and Procedure.

The Commission may hold a Ratesetting Deliberative Meeting to consider this item in closed session in advance of the Business Meeting at which the item will be heard. In such event, notice of the Ratesetting Deliberative Meeting will appear in the Daily Calendar, which is posted on the Commission's website. If a Ratesetting Deliberative Meeting is scheduled, *ex parte* communications are prohibited pursuant to Rule 8.2(c)(4).

/s/ ANNE E. SIMON
Anne E. Simon
Chief Administrative Law Judge

AES:gp2
Attachment

Decision **PROPOSED DECISION OF ALJ LIANG-UEJIO (Mailed 6/4/2021)**

**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) Regarding Hydrogen-Related Additions or Revisions to The Standard Renewable Gas Interconnection Tariff. | Application 20-11-004 |

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# DECISION DISMISSING APPLICATION


## Summary

This decision dismisses Application 20-11-004 (Application) filed by Pacific Gas and Electric Company, Southern California Gas Company, San Diego Gas & Electric Company, and Southwest Gas Corporation (Joint Utilities). The Application is dismissed because it is incomplete, and its further consideration would be premature and inefficient. Rather, we find that a subsequent, complete application will permit more effective, efficient, and timely progress towards achieving the safe and optimal use of renewable hydrogen, a goal which we fully support.

This decision does not prejudge the merits of the Joint Utilities' proposed Hydrogen Blending Demonstration Program and Renewable Hydrogen Memorandum Accounts. Nor does this decision preclude the Joint Utilities from seeking Commission approval of a new or similar program in either Rulemaking 13-02-008 or a new application. Before they proceed, however, we direct the Joint Utilities to first collaborate with stakeholders including the California Energy Commission; University of California, Riverside; and parties in this proceeding. We provide guidance in this decision to the Joint Utilities and stakeholders regarding our expectations of a future proposed hydrogen demonstration program and funding.

Application 20-11-004 is closed.


## 1. Background

### 1.1. Factual Background

#### 1.1.1. Application

In 2013, the Commission opened Rulemaking (R.) 13-02-008 to address biomethane standards and requirements, pipeline open access rules, and related enforcement provisions (the Biomethane Rulemaking). On November 21, 2019,

the Assigned Commissioner in the Biomethane Rulemaking issued a Scoping Memo and Ruling (Rulemaking Scoping Memo). The Rulemaking Scoping Memo opened Phase 4 to address hydrogen injection standards and implement Senate Bill 1440 (Hueso, 2018).[1]

Ruling Paragraph (Scoping Ruling) 4 of the Rulemaking Scoping Memo directed Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SoCalGas), San Diego Gas & Electric Company (SDG&E), and Southwest Gas Corporation (Southwest Gas) (collectively, the Joint Utilities or Joint Applicants) to, within 12 months, file an application with the following proposed additions or revisions to the Standard Renewable Gas Interconnection Tariff (Renewable Gas Tariff):

- A definition of renewable hydrogen for purposes of the Tariff.
- A Preliminary Renewable Hydrogen Injection Standard.
- Any modification of the hydrogen standard for biomethane.
- Any modifications to the interconnection protocols and agreements.

On November 20, 2020, in response to the Rulemaking Scoping Memo, the Joint Utilities filed Application 20-11-004 (Application). In the Application, the Joint Utilities propose a definition of renewable hydrogen, but do not propose other revisions to the Renewable Gas Tariff to address the three other elements directed in the Rulemaking Scoping Memo. Rather, the Joint Utilities claim that due to limited current knowledge and testing, they cannot recommend a hydrogen injection standard without more research to address safety and reliability concerns. The Joint Utilities request authorization to submit a Tier 3

[1] Senate Bill 1440, codified by Public Utilities (Pub. Util.) Code § 650 et seq., required the Commission, in consultation with the State Air Resources Board, to consider adopting specific biomethane procurement targets or goals for each gas corporation and, if the Commission adopts targets or goals, to take certain actions to meet those targets or goals.

advice letter for approval of other revisions to the Renewable Gas Tariff in lieu of filing a supplemental application.

To address their concerns, the Joint Utilities propose that SoCalGas and SDG&E conduct a Hydrogen Blending Demonstration Program (Program) to test how various amounts of hydrogen blending impact the gas pipeline systems in SoCalGas' and SDG&E's service territories. The Joint Utilities assert that the Program will provide crucial information to help inform and guide future large-scale demonstration projects.[2]

According to the Joint Utilities, the Program primarily consists of three projects (or phases), including field studies.[3] Phase 1 would begin with hydrogen injection (or blending) into a small portion of SoCalGas' isolated plastic distribution system starting in March 2022. The plan is to increase the hydrogen blend percentage over a five-year period. Phase 2 intends to test hydrogen injection into the mixed plastic and steel pipeline distribution network. Phase 3 would be a test and demonstration of hydrogen injection into the transmission steel pipeline network. The Joint Utilities state that they have not yet planned Phases 2 and 3, but they will build upon the work of Phase 1 for Phases 2 and 3.[4]

The Joint Utilities estimate the Program would cost $31.8 million. Of this total, $24.5 million (77 percent) are capital costs and $7.3 million (23 percent) are operation and maintenance (O&M) costs.[5]

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[2] Application at 2.

[3] Application at 9. The Joint Utilities' March 30, 2021 Comments on the Administrative Law Judge (ALJ) Ruling issued on March 11, 2021 (Ruling) at 6 and 7.

[4] The Joint Utilities' March 30, 2021 Comments on the Ruling at 6 and 7.

[5] The Joint Utilities' March 30, 2021 Comments on the Ruling, Tables 1 and 2 at 18. The estimated O&M is $2.4 million for each project, or $7.3 million for the three projects.

Regarding cost recovery, the Joint Utilities request authority to establish individual Renewable Hydrogen Memorandum Accounts (Memo Accounts). The Memo Accounts for SoCalGas and SDG&E would record the incurred Program costs. The Memo Accounts for all four utilities would record the incremental costs that they also incur to develop and implement a hydrogen injection standard. The Application does not provide any estimates for the incremental costs. The Joint Utilities filed a separate joint motion requesting authority to establish the Memo Accounts effective the date of the Application.

The Joint Utilities state that costs to be recorded in the Memo Accounts may also include other costs such as, but not limited to, mitigative measures (*e.g.*, upgrades, replacements, or retrofits). No estimate is provided for those costs. Finally, the Joint Utilities assert that the Memo Accounts would preserve the utilities' ability to demonstrate reasonableness of the recorded costs and request cost recovery in their next general rate cases or other ratesetting proceedings.[6]

#### 1.1.2. Riverside Study

Scoping Ruling 6 of the Rulemaking Scoping Memo directed the Commission's Energy Division to arrange and oversee an independent technical study that would address safety concerns of hydrogen blending in utilities' gas systems. It stated an expectation that the study would specifically discuss the following eight topics:

1) A recommended maximum hydrogen percentage at which no or minor modifications are needed for natural gas infrastructure and end-use systems, and an assessment of the types of modifications that may be required for higher percentages of hydrogen.
2) An assessment of the impacts on end-use appliances, potential impact on customers' fuel costs, and safety implications.

[6] Application at 8 and 9.

3) An assessment of the impacts, including degradation, on durability of the existing natural gas pipeline system.
4) An assessment of any impact on natural gas pipeline leakage rates.
5) An assessment of any impact on valves, fittings, materials, and welds due to hydrogen embrittlement.
6) An assessment of any impact on natural gas storage facilities.
7) An assessment of any impact on pipelines under cathodic protection.
8) A survey and analysis of national and international hydrogen blending and injection studies, activities, and regulations.

Energy Division arranged for the University of California, Riverside (UC Riverside) to conduct a technical study, titled "Hydrogen Blending Impacts Study" (Riverside Study). Tasks of the Riverside Study include: (1) a literature survey, (2) the potential impact of hydrogen injection on natural gas infrastructure (based on modeling, experimental assessment, and degradation analysis), and (3) a maximum hydrogen blending potential evaluation (based on literature review, modeling, and experimental data). The Riverside Study started in 2020 and a final report is expected in September 2021.[7] The Joint Utilities are a part of the Technical Advisory Committee for the Riverside Study.[8] The funding of the Riverside Study is $1.5 million.

Scoping Ruling 7 of the Rulemaking Scoping Memo provided that parties will have an opportunity to file comments and reply comments on the Riverside Study. It states that the Commission may then determine whether to modify the hydrogen injection standards and/or interconnection protocols.

[7] Appendix A of the Ruling at A-1 and A-3.

[8] The Joint Utilities' Comments on the Ruling at 10.

### 1.1.3. CEC Research

On November 12, 2020 (just a few days before the filing of the Application), the Commission issued Resolution G-3571. This Resolution approves the California Energy Commission's (CEC's) *Natural Gas Research and Development Program, Proposed Budget Plan for Fiscal Year 2020-21* with a budget of $24 million (2020-2021 CEC Budget Plan). The authorized funds include research into the use and effects of hydrogen blends on end-use appliances (CEC End-Use Study), and a pilot test and demonstration of hydrogen blending into existing California natural gas pipelines (CEC Pilot) (collectively, the CEC Research).[9]

According to the CEC, the End-Use Study will address knowledge gaps and identify key benefits and challenges associated with using hydrogen blends in appliances.[10] The study includes laboratory experiments to identify the maximum limit of hydrogen blended in natural gas that could be safely used in existing and new appliances. The study will also examine and test the effects of hydrogen blending on various types of unmodified natural gas pipelines.[11] The CEC End-Use Study budget is a part of $3 million approved for funding two research initiatives under the Energy Efficiency section of the 2020-2021 CEC Budget Plan.[12]

The CEC Pilot will research the effects of hydrogen blending on the integrity and performance of California's gas pipeline network. The CEC Pilot will also assess gas system modifications required to maximize hydrogen

[9] Resolution G-3571 (issued on November 12, 2020), Appendix B at 27, 28, 30, and 31; and Appendix C at 35 to 37, 46, and 47.

[10] Resolution G-3571, Appendix C at 36.

[11] *Id.* at 36 and 37.

[12] *Id.* at 35.

blending levels. The CEC stated that the research will help shape and develop standards by identifying the requirements, steps, and procedures involved with interconnecting and authorizing the injection of hydrogen into the gas pipeline system in California.[13] The CEC Pilot budget is part of $9.1 million approved for funding three research initiatives under the Natural Gas Infrastructure Safety and Integrity section of the 2020-2021 CEC Budget Plan.[14] The Joint Utilities estimate the funding of the CEC Pilot to be about $5-$7 million.[15]

### 1.2. Procedural Background

We mentioned earlier that the Biomethane Rulemaking directed the Joint Utilities to file the Application to propose revisions to the Renewable Gas Tariff. The Joint Utilities in this Application propose adding a definition of renewable hydrogen to the Renewable Gas Tariff and request authority to submit a Tier 3 Advice Letter for approval of other revisions to the Renewable Gas Tariff.

By February 3, 2021 Administrative Law Judge (ALJ) Rulings in both this proceeding and the Biomethane Rulemaking, however, the Joint Utilities' proposed revisions to the Renewable Gas Tariff, including a definition of renewable hydrogen, were moved back to the Biomethane Rulemaking because they are reasonably within the scope of the rulemaking. The Rulings limit this proceeding to consideration of the remaining issues: (1) the Program and (2) the Memo Accounts.

On March 11, 2021, the ALJ issued a ruling in this proceeding directing parties to file comments on whether the Application should be dismissed (Ruling). The Ruling explained that upon review of the Application, the scope of

[13] *Id.* at 47 and 48.

[14] *Id.* At 46.

[15] Joint Utilities' March 30, 2021 Comments on the Ruling at 13.

the Riverside Study, and the scope of the CEC Research, a reasonable preliminarily finding is that the Application was premature, contained insufficient information upon which to proceed, and should be dismissed. The Ruling identified a list of primary issues of concern regarding the Program and deficiencies in the Application.

Eight parties filed comments and reply comments in response to the Ruling, of which two support and six oppose dismissal of the Application. The Commission's Public Advocates Office (Cal Advocates) and the Utility Consumers' Action Network (UCAN) support dismissal. The four Joint Utilities, the California Hydrogen Business Council (Hydrogen Council), and the Green Hydrogen Coalition (Hydrogen Coalition) oppose dismissal.

## 2. Issues Before the Commission

The initial question before us is whether the Commission should proceed with, or dismiss, this Application. For the reasons discussed below, this decision determines that the Application is incomplete, and it would be premature and inefficient to give it further consideration. We find that the most efficient approach is to dismiss this Application. A new, more complete, application will permit more effective, efficient, and timely progress toward achieving the safe and optimal use of renewable hydrogen, a goal which we fully support.

## 3. Standard of Review

All charges demanded or received by any public utility must be just and reasonable. (Pub. Util. Code Section 451.) The Commission may supervise and regulate every public utility, and may do all things which are necessary and convenient to exercise such power and jurisdiction. (Pub. Util. Code Section 701.) We review the Application in that context.

The Program may cost approximately $31.8 million, plus additional unknown costs. Even though the Joint Utilities do not request rate recovery now, we must consider whether or not the Program, as proposed, has the likelihood of its costs being reasonable, and the resulting charges to ratepayers being just and reasonable. We also do this within our broad authority to supervise utilities in pursuit of optimal outcomes for ratepayers, stakeholders, utilities, and the state. As we explain below, we find that the Program, as proposed, has too many uncertainties that may not lead to optimal outcomes, and we dismiss the Application.

## 4. Discussion and Analysis

### 4.1. Further Consideration is Premature

The Joint Utilities filed the Application consistent with the deadline set in the Rulemaking Scoping Memo; however, the Scoping Memo did not direct the Joint Utilities to include the proposed Program in the application. Nevertheless, we evaluate this portion of the Application in light of the additional events that have occurred. As discussed above, for example, the Commission has authorized funding for the Riverside Study and the CEC Research that will study the safety and reliability of hydrogen blending. The studies will include site-specific tests on existing pipeline components and systems. There is the potential for duplication and overlap between the Riverside Study and the Program, as well as the CEC Research and the Program. The Application does not provide enough details to fully explain how the Program relates to, overlaps, or supplements the other authorized research.

Not all overlap can, or perhaps should, be avoided, but we find improved coordination now offers a better opportunity for wise use of research money. Dismissing the Application will allow the Joint Applicants to focus on

coordinating with the existing studies and stakeholders to ensure that the Program does not duplicate, but rather supplements and complements, already funded research. Dismissing this application will allow the Joint Utilities to take full advantage of the lessons learned in already funded research and avoid unreasonable duplication while leveraging the results to reach our goals more quickly and cost-effectively.

The Joint Utilities propose spending about $15 million alone on Phase 1.[16] The Phase 1 proposal is for hydrogen blending in a small portion of SoCalGas' isolated plastic distribution system starting in March 2022. It is unclear how much more can be learned from this Phase 1 study compared to the Riverside Study ($1.5 million budget) and the CEC Pilot (estimated budget of $5-7 million). We find coordination between the Joint Utilities and all stakeholders regarding the existing research and any proposed new research is a better use of the next few months compared to spending time litigating this proceeding through discovery, testimony, hearings, and briefing.

In their comments on the Ruling, Cal Advocates and UCAN share the Commission's concerns and support dismissing the Application. Cal Advocates agrees that "dismissing the Application is the most efficient approach, reducing duplicative work for the Commission and parties and thereby also reducing subsequent waste of ratepayer funds."[17] UCAN concurs with the Commission's concern of potential duplication among the proposed Program and existing

[16] The Joint Utilities' Comments on the Ruling at 18. This is $12.5 million capital plus $2.445 million O&M, totaling about $15 million.

[17] Cal Advocates March 30, 2021 Comments on the Ruling at 2.

studies, as well as unreasonable use of time and resources of the Commission and parties.[18]

For the reasons explained below, we conclude that it is premature to consider this Application further in light of the existing studies.

#### 4.1.1. Duplication with the Riverside Study

The Joint Utilities state that the Program is not duplicative of the Riverside Study and the CEC Research. We are not convinced.

The Joint Utilities contend that the Program is necessary because it will test actual effects. The Riverside Study, however, will address actual effects and the results should be considered before Joint Utilities spend up to an additional $31.8 million and more.

For example, the Riverside Study will develop safety factors "based on materials tests performed under relevant and site-specific mechanical, environmental, and material conditions" and will have test data for "specific alloys/grades and hydrogen-natural gas blends."[19] The study scope includes conducting "chemical and structural analysis to assess the process, progression, and degree of impact of hydrogen embrittlement on pipelines, valves, fittings, protective coatings, and welds."[20] The analysis will be "performed through a wide range of characterization techniques including microscopy, crystallography, and spectroscopy."[21] The study will include a comprehensive assessment "on exposed and/or damaged pipelines, materials, and components

[18] UCAN's April 8, 2021 Reply comments on the Ruling at 2.

[19] The Ruling, Appendix A at A-5.

[20] *Id.*

[21] *Id.* at A-6.

tested, along with an assessment for future R&D [research and development]."[22] The approach will include both morphology analysis and elemental analysis.[23]

The results of the Riverside Study are expected in a few months. Parties in the Biomethane Rulemaking will have an opportunity to file comments and reply comments in response to the Riverside Study. The Commission will then address whether to modify the hydrogen injection standards and/or interconnection protocols or to direct additional studies.

It is an unreasonable use of the limited time and resources of the Commission and parties to consider the merits and costs of the Program and the proposed cost recovery mechanism before the Riverside Study is complete and parties' comments on that study are received and assessed. Rather, a more efficient approach is for the Joint Utilities to incorporate lessons learned from the Riverside Study into a new proposed program that avoids duplication and more quickly builds on what has been learned.

The Joint Utilities assert that, while both the Program and the Riverside Study perform literature reviews and laboratory hydrogen-blending research on topics such as appliances and leakage impacts, there is an important distinction. The Program, according to the Joint Utilities, is field testing with hydrogen injection whereas the Riverside Study is modeling with no field demonstration.[24] We find that the Riverside Study provides otherwise. The Riverside Study, for example, will develop "recommendations based on materials tests performed under relevant and site-specific mechanical, environmental, and material conditions…with test data on these properties for the specific alloys/grades and

[22] *Id.*

[23] *Id*. at A-6.

[24] The Joint Utilities' March 30, 2021 Comments on the Ruling at 10.

hydrogen-natural gas blends that are intended for operational use."[25] The Riverside Study also includes degradation analysis "to assess the process, progression, and degree of impact of hydrogen embrittlement on pipelines, valves, fittings, protective coatings, and welds…"[26] We find the Riverside Study is more than modeling and includes actual testing and experimentation.

#### 4.1.2. Duplication with the CEC Research

It is also premature to consider the Application further because the scope of the Program and CEC Research appear to cover many, if not all, of the same matters. We are concerned that the Program includes an unreasonable amount of duplication, and the Application fails to demonstrate that the Program is reasonably built upon already funded research. We find better coordination between the existing studies with a revised proposal by the Joint Utilities will improve the overall research effort and help California reach its goal with more focused spending of its research dollars.

This is true for both CEC Research projects. The CEC End-Use Study includes examining the effects of hydrogen on existing and new end-use appliances. It includes laboratory experiments. The study will include identifying the maximum concentration of hydrogen that can be handled by these appliances with and without modifications.[27]

The CEC Pilot will focus on a test and demonstration of hydrogen blending into existing California natural gas systems. The research includes: (1) coordination with gas utilities to determine an optimal use case for hydrogen blending, (2) identifying injection location(s) for interconnection, (3) conducting

[25] The Ruling, Appendix A at A-5.

[26] *Id.*

[27] Resolution G-3571, Appendix B at 27 and 28.

research on system impacts due to hydrogen, (4) obtaining permits for hydrogen blending into natural gas pipelines, and (5) evaluating the overall performance of hydrogen injections and impacts to system integrity.[28] An important element of the research is described as follows:

> There are a number of possible impacts of blending hydrogen into existing natural gas pipelines. Issues include material embrittlement, crack growth, gas permeation, interaction with reservoir caprock, sealant performance, and system leaks. Although some of these impacts have been researched individually, a research gap is identified, which necessitates the investigation of these impacts at the system level and how they affect the integrity and the overall performance of the natural gas pipeline network. In addition, the upper limit for hydrogen blending in the grid depends on the equipment connected to it, and this must be evaluated on a case-by-case basis. The case studies of hydrogen blending conducted in other states or countries may not be readily applicable to California's natural gas network since the systems were designed and constructed under different standards and conditions. Therefore, it is essential to develop hydrogen blending standards and deployment strategies tailored for California's gas system.
>
> A pilot test or demonstration of hydrogen blending into existing California gas pipeline network will help quantify the impacts, suggest optimal integrity management practices, provide deployment strategies, and minimize system modifications to accommodate various blending levels.[29]

The Joint Utilities acknowledge that the CEC Research includes initiatives focused on a test and demonstration of hydrogen blending into the existing gas system. The Joint Utilities argue that they are concerned, however, that the budget for the CEC Pilot (about $5–7 million) will not fund a large enough test to enable development of an injection standard for all of California. The Joint

[28] Resolution G-3571, Appendix C at 48.

[29] Resolution G-3571, Appendix C at 47.

Utilities are open to the CEC Research funding part of the Program, but whether or not that occurs, they state that the projects should be seen as complimentary rather than as a substitute.

We agree that the CEC Research is not as big as the estimated $31.8 million Program. Nonetheless, the Application neither persuasively shows that $5-$7 million is inadequate nor that that the correct number is $31.8 million. Moreover, we must not authorize the Program simply on an expectation that the Joint Utilities will reasonably coordinate existing research with their Program. Nor should we give preliminary approval to spend $31.8 million or more subject to later reasonableness review. As discussed further below, neither the Application nor the Joint Utilities' comments provide enough answers to merit continuing to process the Application. Rather, we determine that the Application should be dismissed and that the Joint Utilities may return with an improved proposal in either the Biomethane Rulemaking or a new application.

### 4.2. The Application is Incomplete

The Joint Utilities argue that lessons from the Program are intended to fill the gaps in knowledge that cannot be filled by either the Riverside Study or the CEC Research. Neither the Application nor the Joint Utilities' comments, however, adequately support this claim. Rather, many fundamental questions remain.

#### 4.2.1. Questions Related to the Program

The Commission is especially concerned that the Program is too unclear relative to the scope of work, timing, costs, and cost recovery. We examine each of these additional items in turn.

Scope of Work

First, the Program's scope of work is not well defined. The Joint Applicants propose three projects over five years with an estimated cost of $31.8 million. Initial testing within Project 1 is anticipated to begin around March 2022, with initial testing within Projects 2 and 3 beginning early 2023.[30] The Joint Utilities acknowledge that due to significant uncertainties associated with the Program, they have only planned the first phase of the Program and Phases 2 and 3 have not yet been planned.[31] We understand the desire to move forward quickly with hydrogen-related research. We believe the Joint Utilities taking time now to completely define the goals, objectives, timing, and overall scope offers a better promise for success than authorizing the Joint Utilities to proceed with the Program with an undefined scope of work.

We are also concerned with a seeming contradiction in the Joint Applicants' advocacy. On the one hand, they argue that specific testing on their unique systems is necessary and that they cannot rely on studies conducted by UC Riverside, CEC, or others as being applicable to their individual systems. On the other hand, they propose Project 1 be conducted in the SoCalGas service territory, with Projects 2 and 3 conducted in the SDG&E service territory.[32] It is unclear how Project 1 results on the SoCalGas system can be applied to the other three utilities, or the Phases 2 and 3 results on the SDG&E's system be applied to the other three utilities. Thus, the scope of work and its applicability to each of the four Joint Applicants is unclear. We find dismissing the Application will give the Joint Applicants time to give further thought to the scope of work and present a more well-defined proposal.

[30] Joint Utilities' March 30, 2021 Comments on the Ruling at 7 and 8.

[31] *Id.* at 7.

[32] *Id.* at 19.

Timing

Second, the Program timing is also not well defined. Project 1, according to the Joint Applicants, is intended to run up to five years (March 2022 to March 2027).[33] Project 2 may also run up to five years (early 2023 to early 2028). Project 3 is intended to run at least one year (early 2023 to early 2024 or longer).[34] Uncertainty in timing is expected, but we are not convinced that we should sacrifice a more well-defined Program for the expediency of moving forward with this Application now with a hope that the Joint Utilities will reasonably work out the details later.

Program Costs

Third, the Program costs are not well defined. While we accept some uncertainty with cost estimates for research, we expect money spent by each utility that will later be presented for cost recovery from ratepayers to be spent wisely. We decline to consider the Joint Utilities' request for preliminary authorization to spend up to $31.8 million (which would implicitly or explicitly be the case if we approve this Application as submitted) without more well-defined cost estimates, project details, or budgets. We understand that the Joint Utilities propose that all costs are later subject to reasonableness review, but we are not inclined to essentially authorize a "blank check" no matter how important the subject research.

Other Costs and Cost Recovery

Finally, we are concerned about the cost recovery proposal. Joint Applicants propose interest bearing memorandum accounts to record a range of

[33] *Id.* at 6.

[34] *Id.* at 7.

costs. As proposed, SoCalGas would record Project 1 costs of about $15 million, and SDG&E would record Project 2 and 3 program costs of about $17 million. All four utilities would also record costs not within the estimated $31.8 million spent for the Program, but which they characterize as necessary "expense and capital costs to develop and implement a preliminary renewable hydrogen injection standard required by [Scoping Ruling 7 of the Rulemaking Scoping Memo]."[35] The Joint Utilities state that these costs are anticipated to cover: (1) research and development, (2) training, (3) updates to standards and procedures, (4) engineering, (5) equipment upgrades, (6) testing of gas blends or technology, and (7) permitting and other reasonable expenditures.[36] The Joint Utilities provide no estimate for these additional costs. We are not inclined to simply establish interest-bearing Memorandum Accounts for unknown additional capital and O&M costs.

The uncertainties of the Program relative to duplication with already funded research, scope of work, timing, costs, and cost recovery hinder our ability to determine the reasonableness of the Program as proposed.

The Commission needs to have a better understanding of the reasonableness of concept and proposed Program before it authorizes the Joint Utilities to establish memorandum accounts and begin spending an undetermined amount of money.

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[35] *Id.* at 15 and 16. While the Joint Utilities generally ascribe these costs only to PG&E and Southwest Gas, it is also clear that SoCalGas and SDG&E will incur costs to develop the preliminary renewable hydrogen injection standard beyond the Program costs for Projects 1, 2, and 3.

[36] *Id.* at 16 and 17.

#### 4.2.2. Questions Related to Authorized Funding

In addition to the above concerns, the Application does not adequately identify existing research, development, and demonstration (RD&D) funds already found just and reasonable by the Commission (and recoverable from ratepayers), the uses of those funds, how existing uses might already address the goals and objectives of the Program, or the potential of using some or all of those already authorized funds for the objectives in the Program.[37] We decline to authorize more money for research if funds already authorized can be used for this purpose.

### 4.3. Dismissing the Application

#### 4.3.1. The Program Uncertainties Could Cause Longer Delay

The Joint Utilities argue that the Commission should not dismiss the Application because doing so would delay the state's progress in meeting the state's decarbonization goals.[38] The Hydrogen Coalition is concerned that dismissing the Application would cause additional delay when, according to the Hydrogen Coalition, California is already behind the progress being made by other states and nations in hydrogen blending. We disagree.

We believe continuing this proceeding may actually cause a longer delay because we find the Joint Utilities' planning for the Program is incomplete. We agree with UCAN that research studies without clear goals and objectives are unlikely to yield effective, useful results.[39] The Commission needs good data from research studies and good recommendations from utilities and parties

[37] For example, the most recent SoCalGas RD&D budget was approved by the Commission in Resolution G-3573.

[38] The Joint Utilities' March 30, 2021 Comments on the Ruling at 10.

[39] UCAN's April 8, 2021 Reply Comments on the Ruling at 2.

based on good research data to make good decisions on hydrogen injection standards. A better use of time is to first define clear goals and objectives in coordination with the existing studies.

We agree with both the Hydrogen Coalition and the Hydrogen Council that the Commission should make decisions to enable timely progress in the research of hydrogen blending. We expect that the Joint Utilities in collaboration with the Riverside Study, the CEC Research, and stakeholders can reasonably, quickly, and effectively develop and submit a demonstration plan and program for our consideration, and one that could conclude sooner than five years. For example, the Hydrogen Council recommends that the Joint Utilities conduct various phases of the Program simultaneously rather than sequentially.[40] We believe the Joint Utilities should consider ways such as this to advance the Program from up to five years, as proposed, to a shorter timeframe. As discussed more below, we consider but reject the idea of keeping this Application open.

#### 4.3.2. Keeping the Application Open is Inefficient

The Commission could keep this Application open but defer work pending the completion of the Riverside Study and parties' comments on that study. At that time the Commission could, based on the Riverside Study and comments, modify the hydrogen injection standards and/or interconnection protocols in the Biomethane Rulemaking. The Commission might also, at that time, direct the Joint Utilities to modify this Application to reflect lessons learned from the Riverside Study and parties' comments, and supplement the application to provide more information about the proposed budget, availability of funds

[40] Hydrogen Coalition's March 30, 2021 Comments on the Ruling at 3 and 9-10.

from already authorized RD&D, cost sharing among utilities, and other important details. However, we find this approach inefficient and undesirable.

Dismissing the Application now is an efficient approach because it allows the Joint Utilities to collaborate with stakeholders immediately even when the existing studies and the Biomethane Rulemaking are ongoing. The Joint Utilities can incorporate any results of the existing studies into a new program that has clear goals and objectives and is supplemental and complementary to these studies. Collaboration among stakeholders outside of a formal proceeding has no scheduling constraints or requirements to file various pleadings and allows stakeholders and parties to openly discuss new ideas, issues, and concerns without having to defend a position in a formal proceeding.

In the section below, we provide additional guidance to assist the Joint Utilities, in collaboration with stakeholders, to develop a new program that is supplemental and complementary to the Riverside Study and the CEC Research and contains sufficient detail about the proposed research activities. A new application consistent with the Commission's guidance on the Program would allow parties and the Commission to timely and efficiently review a new proposal by the Joint Utilities.

## 5. Guidance for New Application

If the Joint Utilities seek funds to examine hydrogen blending, they must present a program to address necessary research and demonstration that is just and reasonable, efficient, and cost-effective. The following guidance is not exhaustive, but gives the Joint Utilities and stakeholders direction on what we think must minimally be included in a future application.

### 5.1. Collaboration with Riverside Study and CEC Research

A future application must address the issues raised in this decision. In preparing such application, the Joint Utilities should first collaborate with stakeholders including UC Riverside, the CEC, and parties in this proceeding; and Energy Division.

It is our expectation that a new application should take into consideration the results or lessons learned from the Riverside Study and the CEC Research. It should not duplicate, but should supplement and complement both studies to leverage the results to obtain the most cost-effective use of the state's research money. If any duplication is necessary, the Joint Utilities must explain and justify duplicative tasks.

### 5.2. Applicability and Duration

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. A new application should establish a detailed timeline, a budget for Commission approval, and should provide details about each component of the proposed research program.

Future application for hydrogen-blending demonstration program on both SoCalGas and SDG&E gas pipeline networks (or other utilities) should clearly state which phases of the demonstration each utility will conduct. It should also provide time frame for each demonstration and a description of testing materials.

Any new proposed program should, if possible, be completed within two or three years.

### 5.3. Leveraging Other Research Funds

To the extent possible, any new proposed program should use existing Commission authorized funding sources for gas safety and reliability research,

including the CEC annual Natural Gas Research and Development Programs (CEC R&D Program) and Commission resolutions authorizing those programs, along with funds authorized in the Joint Utilities' general rate cases, or research and development funds authorized in other decisions.

The CEC R&D Program, authorized by Assembly Bill 1002 (Wright, 2000) and established by Decision 04-08-010, provides funding on an ongoing basis for gas research projects focusing on energy efficiency and renewable technologies, along with supporting state energy policy. Each year, the CEC requests, and the Commission approves, an annual budget for the CEC's proposed Gas R&D research initiatives. The current maximum amount for the CEC R&D Program is $24 million per year. The CEC R&D Program is funded through a surcharge set by the Commission on natural gas consumption in California. The CEC R&D Program considers opportunities for collaboration and co-funding with other entities, such as federal and local agencies.[41]

The 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. The Joint Utilities should seek opportunities to fund newly proposed research projects through the CEC R&D Program's annual budget in the coming years. This will also avoid or minimize the burden to customers of individual utilities, such as SoCalGas and SDG&E, from funding the Joint Utilities' gas research projects that benefit all Californians.

The federal government may also conduct research in hydrogen blending in partnership with state and local entities such as the Joint Utilities, and may provide funding. Any new application must show that the Joint Utilities have

[41] Resolution G-3571 at 4 and Appendix C at 11.

made every reasonable attempt to use existing and other funds before requesting new funds.

### 5.4. Total Costs

A future application must provide sufficient information on total application costs and cost recovery. It must provide a breakdown of capital and O&M costs of a new or improved program. The application must state whether the Joint Utilities are requesting or intend to request recovery of the proposed capital costs through rate base.[42] If there are any incurred costs for the proposed program, the Joint Utilities must state the performed activities and associated costs. In addition, the Joint Utilities must provide estimates of the proposed program costs and any other non-program costs. The application should also provide each utility's share of the program and non-program costs.

### 5.5. Technical Considerations

If the Joint Utilities propose a new or improved hydrogen-blending demonstration program to address knowledge gaps, after collaboration with stakeholders, the Joint Utilities must specify the extent to which research will be conducted on either distribution or transmission pipelines to test the effect of hydrogen embrittlement and the durability and integrity of pipeline materials, and components such as meters and compressor station equipment. Any proposed program should explain if and how the study will address the effect of hydrogen blending on:

[42] Under the Commission's traditional ratemaking policy, utilities earn a rate of return on capital investments or costs that the Commission finds used and useful and authorize to include them in the utilities' rate base. The Commission defines rate base as "the net investment of property, plant, equipment, and other assets that [utilities] have respectively acquired or constructed to provide utility services to their customers." (SoCalGas' and SDG&E's 2019 General Rate Case Decision 19-09-051 at 607.)

a) Pipelines: polyethylene plastics (specifically Aldyl-A), mixed materials, steel pipelines of different varieties (soft mild, and low alloy), and components.

b) Gas storage facilities: Whether hydrogen-blended gas enters gas storage facilities and its physical impact on gas storage equipment.

c) Distribution: The pressure level of the distribution system.

d) Transmission: Any constraints on use of hydrogen-blended gas in transmission pipelines due to the lower density. This evaluation will help determine if a reduction in the volume of fossil natural gas is required to remain within the capacity limits of existing pipelines.

### 5.6. Annual Reporting

We also find that if the Joint Utilities pursue a revised Program, they should provide interim reports and an opportunity for input from stakeholders over the duration of the Program. For example, the Joint Utilities may consider publishing a bi-annual or annual report on research progress on their websites and serve parties in relevant proceedings. The Joint Utilities may also consider creating a Technical Advisory Committee composed of various stakeholders.

## 6. Conclusion

The Commission finds that this Application should be dismissed. Instead, the Joint Utilities are directed to collaborate with UC Riverside, the CEC, Energy Division, and parties in this proceeding prior to filing any new application for a hydrogen demonstration program. Any new proposed program should conform with the guidance provided in Section 5 of this decision.

## 7. The Joint Utilities' Motion to Establish Memo Accounts

Because the Application is dismissed the motion to establish the Memo Accounts filed on November 23, 2021 is moot. We thereby deny the motion.

## 8. Categorization and Need for Hearings

The Commission preliminarily determined in Resolution ALJ 176-3476 that this is a ratesetting proceeding and evidentiary hearings are required. The decision dismisses the Application. Therefore, no hearings are needed.

## 9. Public Comments

Pursuant to the Rule 1.18 of the Commission's Rules of Practice and Procedure (Rule), public comments are published on the Docket Card of each Commission proceeding. There are no public comments in this proceeding.

## 10. Comments on Proposed Decision

The proposed decision of ALJ Liang-Uejio in this matter was mailed to the parties in accordance with Section 311 and comments were allowed under Rule 14.3 of the Commission's Rules of Practice and Procedure. Comments were filed on _____ by _____. Reply comments were filed on _____ by _____.

## 11. Assignment of Proceeding

Clifford Rechtschaffen is the assigned Commissioner and Scarlett Liang-Uejio is the assigned ALJ in this proceeding.

## Findings of Fact

1. The Joint Utilities request authority for SoCalGas and SDG&E to conduct the Program to test how various amounts of hydrogen blending impact the gas pipeline systems in SoCalGas' and SDG&E's service territories.
2. The Program primarily consists of three projects (or phases), including field studies.
3. Phase 1 of the Program begins with hydrogen blending into a small portion of SoCalGas' isolated plastic distribution system starting in March 2022, with increased blending amounts over a five-year period. Phase 2 intends to test hydrogen injection into the mixed plastic and steel pipeline distribution network.

Phase 3 is a test and demonstration of hydrogen injection into the transmission steel pipeline network.

4. Phases 2 and 3 of the Program have not yet been planned.

5. The Joint Utilities' estimated Program costs are $31.8 million, of which $24.5 million (77 percent) are capital costs (capital) and $7.3 million (23 percent) are O&M costs.

6. The Joint Utilities request authority to establish individual Memo Accounts. The Memo Accounts for SoCalGas and SDG&E will record the incurred Program costs.

7. The Memo Accounts for all four utilities will record the incremental costs that they also incur to develop and implement a hydrogen injection standard.

8. The Memo Accounts will also record other costs such as, but not limited to, mitigative measures (*e.g.*, upgrades, replacements, or retrofits).

9. The Joint Utilities do not provide estimates for other costs that the Joint Utilities propose to record in the Memo Accounts in addition to costs of the Program.

10. The Joint Utilities propose recovery of costs recorded in the Memo Accounts in their next general rate cases or other ratesetting proceedings.

11. The Joint Utilities filed a separate joint motion requesting authority to establish the Memo Accounts effective the date of the Application.

12. There are existing research projects that study the hydrogen blending impact to the California gas pipeline systems and/or end-use appliances: (1) the Riverside Study, (2) the CEC End-Use Study, and (3) the CEC Pilot.

13. The Riverside Study includes: (1) literature survey, (2) potential impact of hydrogen injection on the natural gas infrastructure (based on modeling, experimental assessment, and degradation analysis), and (3) maximum hydrogen

blending potential evaluation (based on literature review, modeling, and experimental data).

14. The funding of the Riverside Study is $1.5 million.

15. The Joint Utilities are a part of the Technical Advisory Committee for the Riverside Study.

16. The final report for the Riverside Study is expected in September 2021. Parties in the Biomethane Rulemaking will have an opportunity to comment on the Riverside Study.

17. The two CEC studies are part of the 2020-2021 CEC Budget Plan authorized in Resolution G-3571. Resolution G-3571 was issued on November 12, 2020, a few days before the filing of the Application.

18. The CEC End-Use Study will examine the effects of hydrogen on existing and new end-use appliances. It includes laboratory experiments identifying the maximum concentration of hydrogen that can be handled by end-use appliances with and without modifications.

19. The funding for the CEC End-Use Study is a part of the $3 million funding for the two research initiatives under the Energy Efficiency section of the 2020-2021 CEC Budget Plan.

20. The CEC Pilot will focus on a test and demonstration of hydrogen blending into existing California natural gas systems. The research includes: (1) coordination with gas utilities to determine an optimal use case for hydrogen blending, (2) identifying injection location(s) for interconnection, (3) conducting research on system impacts due to hydrogen, (4) obtaining permits for hydrogen blending into natural gas pipelines, and (5) evaluating the overall performance of hydrogen injections and impacts to system integrity.

21. The CEC Pilot budget is part of the $9.1 million funding for three research initiatives under the Natural Gas Infrastructure Safety and Integrity section of the 2020-2021 CEC Budget Plan. The Joint Utilities estimate the funding of the CEC Pilot to be about $5 - $7 million.

22. Duplication exists between the Program and the existing hydrogen blending studies.

23. The Application is incomplete. The complete scope of work, timing, the total costs of the Application, and cost recovery are unknown. The Program is too uncertain to provide reasonable assurance that it will lead to optimal outcomes.

24. A close collaboration outside of a formal proceeding among the Joint Utilities, the CEC, UC Riverside, Energy Division staff, and parties would not have scheduling constrains or requirements to file various pleadings and would allow open discussions on new ideas and concerns among stakeholders without having to defend a position in a formal proceeding.

25. The Joint Utilities' proposal does not address the applicability of the Program results to PG&E and Southwest Gas.

26. Keeping the Application open is both inefficient and likely to lead to even longer delay than dismissing the Application with guidance to Joint Utilities regarding minimal requirements for a new proposal.

27. The Application does not identify existing RD&D funds already found just and reasonable by the Commission, the uses of those funds, how existing uses might already address the goals and objectives of the Program, nor the potential of using some or all of those already authorized funds for the objectives in the Program.

## Conclusions of Law

1. Additional events have occurred after the Joint Utilities filed the Application, which it is reasonable to recognize in our consideration of how to proceed.

2. It would be premature, inefficient and unreasonable to give the Joint Utilities' requests further consideration.

3. A new program that the Joint Utilities develop in collaboration with stakeholders that is supplemental and complementary to the existing studies would likely yield better results than the Program, and would likely be a reasonable alternative to granting this Application.

4. The Joint Utilities should optimize state and federal funding opportunities for hydrogen blending research that will benefit all Californians.

5. This decision should not prejudge the merits of the Joint Utilities' Program, but it is reasonable to find that a new, more complete application will permit more effective, efficient, and timely progress towards achieving the safe and optimal use of renewable hydrogen.

6. The Application should be dismissed.

7. Application 20-11-004 should be closed.

## O R D E R

**IT IS ORDERED** that:

1. Application 20-11-004 filed by Pacific Gas and Electric Company, Southern California Gas Company, San Diego Gas & Electric Company, and Southwest Gas Corporation requesting Commission approval to conduct a Hydrogen Blending Demonstration Program and establish Renewable Hydrogen Memorandum Accounts is dismissed.

2. The Joint Utilities shall follow the guidance provided in this decision in developing any new or improved hydrogen demonstration program.

3. The Joint Motion filed on November 23, 2020 by Pacific Gas and Electric Company, Southern California Gas Company, San Diego Gas & Electric Company, and Southwest Gas Corporation requesting Commission approval to establish Renewable Hydrogen Memorandum Accounts is denied.

4. Application 20-11-004 is closed.

This order is effective today.

Dated _____, at San Francisco, California.