

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

RESOLUTION G-3592

March 16, 2023

RESOLUTION

Resolution G-3592: Approval, with Modifications, of the California Energy Commission's Gas Research and Development Program for Fiscal Year 2022-2023.

PROPOSED OUTCOME:

- Approves in part and modifies in part the California Energy Commission's (CEC's) *Gas Research and Development Program, Proposed Budget Plan for Fiscal Year (FY) 2022-2023* with a budget of \$24 million, pursuant to California Public Utilities Commission Decision (D.) 04-08-010. This Resolution modifies the CEC's proposed \$3.6 million budget for Entrepreneur Development (CalSEED Initiative) for the reasons described below, and directs the CEC to submit a new proposal for reallocating the \$3.6 million via a Tier 2 Advice Letter.

SAFETY CONSIDERATIONS:

- The CEC's FY 2022-2023 Targeted Gas Decommissioning research theme addresses aging gas infrastructure in California that poses safety risks.¹
- The CEC's FY 2022-2023 Large-Volume Hydrogen Storage in California for Targeted Use Cases initiative addresses safety risks for hydrogen storage, including evaluation of storage integrity and leveraging emerging technologies such as monitoring sensors and reservoir modeling software.²

ESTIMATED COST:

- Approves \$24 million in ratepayer costs for Fiscal Year 2022-2023 as previously authorized by Decision (D.)04-08-010.

By Advice Letter 3-G, Filed on March 29, 2022

¹ AL 3-G at 15.

² AL 3-G at 18.

SUMMARY:

This Resolution approves in part and modifies in part the California Energy Commission's (CEC's) Gas Research and Development Program Proposed Budget Plan for Fiscal Year 2022-2023 (the FY 2022-2023 Plan). The Gas Research and Development Program (Gas R&D Program) was established pursuant to D.04-08-010. The California Public Utilities Commission (CPUC or Commission) approves the CEC's proposed \$24 million budget, which includes a 10 percent, or \$2.4 million, administrative budget.

BACKGROUND:

Procedural History

In 2002, the CPUC instituted Rulemaking (R.)02-10-001 to implement Assembly Bill 1002 (Wright, 2000).³ In that proceeding, the CPUC addressed various issues related to the design and implementation of a surcharge to fund gas public purpose programs, resulting in D.04-08-010.

D.04-08-010 establishes certain criteria for gas research and development (Gas R&D) projects to be approved under this program, specifically, that the projects:

- 1) Focus on energy efficiency, renewable technologies, conservation, and environmental issues.
- 2) Support State energy policy.
- 3) Offer a reasonable probability of providing benefits to the general public.
- 4) Consider opportunities for collaboration and co-funding opportunities with other entities.

Additionally, the Commission defines public interest Gas R&D activities as those which "are directed towards developing science or technology, the benefits of which 1) accrue to California citizens and 2) are not adequately addressed by competitive or regulated entities."⁴

D.04-08-010 also designates the CEC as the administrator of the Gas R&D Program. The CEC administers various public interest research programs and is publicly accountable,

³ Available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=199920000AB1002.

⁴ D.04-08-010 at 25.

being subject to the Bagley-Keene Open Meeting Act and the Public Records Act.⁵ The CPUC identifies areas for funding and the CEC selects projects and funding areas to achieve these goals.

D.04-08-010 reserves ultimate oversight of Gas R&D investments for the CPUC. The CPUC is responsible for adopting the Gas R&D Program, for setting the surcharge to fund it, and accountability to evaluate that gas R&D investments are prudent and benefit the ratepayers that fund the program. The Decision clarifies that the CPUC has final responsibility to “approve and resolve administration, funding, project approval, or other matters, and make a final decision.”⁶ The Decision further designates the CPUC’s Energy Division to serve as the CPUC’s advisor.

Starting with the FY 2014-2015 Gas R&D Plan, Resolution G-3484 (2013) requires the CEC to provide an accounting, by research area, of then-current unspent funds in the Gas R&D Program, including encumbrances and expiration dates. This requirement shall remain in place for each fiscal year’s proposed budget, until otherwise directed by the CPUC.

Budget

D.04-08-010 establishes a zero-based budget for the Gas R&D Program. Historically, each year the CEC has requested, and the CPUC has approved, the maximum budget increase over the previous year. Starting at \$12 million for 2005, the Gas R&D Program budget increased by the maximum annual amount allowed of \$3 million each year until 2009. In 2009, the budget reached the maximum amount allowed of \$24 million per year and has remained at this level to the present.⁷

In its FY 2022-2023 Plan, the CEC continues to request the maximum \$24 million. The CEC has historically been granted the use of 10 percent of Gas R&D funds for program administration. The FY 2022-2023 Plan similarly requests \$2.4 million, or 10 percent of the overall budget, for program administration.

⁵ D.04-08-010 at 31.

⁶ D.04-08-010 at 32.

⁷ D.04-08-010 at 38.

Request for State Fiscal Year 2022-2023

On March 29, 2022, the CEC filed Advice Letter 3-G seeking approval of its proposed FY 2022-2023 Gas R&D Plan. The Plan proposes funding for Gas R&D that the CEC states will benefit gas ratepayers by supporting the decarbonization, resilience, and safety of the gas system, and move the State closer to achieving its clean energy and climate related goals. The CEC's Plan details funding for seven research initiatives aligned with the following four themes: 1) Targeted Gas System Decommissioning, 2) Decarbonization of Gas End-Uses, 3) Energy Efficiency, and 4) Entrepreneur Development.

1. Targeted Gas System Decommissioning:

The CEC describes its Targeted Gas System Decommissioning theme as supporting California's move toward a clean energy future as the role of gas in the state changes. This theme is intended to promote electrification of gas-fueled technologies and encourage greater use of electric heat pump technologies. Under this theme, the CEC explains its initiative "Scaled-Up Gas Decommissioning Pilots and Integrated Planning Tools" expands pilots and advances integrated planning for gas system decommissioning. Overall, the CEC states that this large-scale pilot for decommissioning segments of the gas system is a form of cost-effective, safe, and equitable decarbonization.

2. Decarbonization of Gas End Uses:

The CEC describes its Decarbonization of Gas End Uses theme will help move California toward carbon neutrality by 2045, guided by Executive Order B-55-18 to achieve carbon neutrality.⁸ The initiatives proposed for this theme focus on hydrogen-related projects. The CEC explains that the research aims to decarbonize high gas consumption from the industrial sector, the electricity sector, and the transportation sector (specifically tailpipe emissions), and aid the shift to low-carbon fuels, such as green hydrogen. There are four proposed research initiatives in this theme. First, "Large-Volume Hydrogen Storage in California for Targeted Use Cases" aims to assess the technical and cost feasibility of geological hydrogen storage opportunities in California that support targeted and hard-to-decarbonize use cases. Second, "Industrial Clusters for Clean Hydrogen Utilization" would identify and characterize the optimal colocation of industries to share hydrogen infrastructure and reduce costs for hydrogen

⁸ Executive Order B-55-18: <https://www.ca.gov/archive/gov39/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf>

producers and users. Third, “Mitigate Criteria Air Pollutants in Hydrogen-Based Power Generation” aims to reduce emissions of Nitrogen Oxides and other criteria air pollutants from the combustion of high percentages of hydrogen in fuel in power generation applications. Fourth, “Advanced Hydrogen Refueling Infrastructure Solutions for Heavy Transport” aims to address barriers and stimulate early markets by improving the cost-effectiveness and performance of hydrogen refueling infrastructure technologies for heavy transport. The “Advanced Hydrogen Refueling Infrastructure Solutions for Heavy Transport” initiative addresses the same initiative in the CEC’s FY 2021-2022 Gas R&D Budget and would fund additional projects for this research.

3. Energy Efficiency:

The CEC states that the goal of the Energy Efficiency research theme is to continue reducing energy demand and greenhouse gas (GHG) emissions in buildings and the industrial, agriculture, and water sectors. The CEC indicates it will follow the California Building Decarbonization Assessment,⁹ which identifies strategies for energy efficiency. For example, the CEC states that efficient electrification of space and water heating in buildings combined with refrigerant leakage reduction can provide a greater than 40 percent reduction in GHG emissions by 2030. The initiative “Analysis of Residential Hot Water Distribution Designs,” within the Energy Efficiency theme, aims to identify technological advancements and reduce energy and water consumption for on-demand hot water recirculation pumps. The CEC notes some of these ideas include smart controls and electronically commutated motors to reduce energy and water use for water heaters in existing and new single-family homes. The CEC proposes the use of on-demand circulator pumps, which primes the hot water line only when needed and then automatically shuts off.

4. Entrepreneur Development:

The CEC proposes its Entrepreneur Development theme will create a gas R&D entrepreneurial ecosystem through the initiative “California Sustainability Energy Entrepreneur Development—Low-Carbon Gas” (CalSEED—LCG). The CEC explains this initiative will promote innovation and entrepreneurship to introduce new technology solutions to the market. CalSEED-LCG would replicate the CEC’s Electric Program Investment Charge (EPIC)¹⁰ statewide entrepreneurial ecosystem that

⁹ California Energy Commission, 2021. <https://www.energy.ca.gov/publications/2021/california-building-decarbonization-assessment>.

¹⁰ R.19-10-005. <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/infrastructure/energy-research-development-and-deployment>.

supports innovators. The CEC asserts the initiative aims to build upon the CalSEED efforts established under EPIC by funding a complementary small grants program for technologies that decarbonize existing uses of fossil gas. The CalSEED initiative would provide \$3.6 million to a third-party contractor, which would in turn provide grants to entrepreneurs for initial capital to develop their ideas. The CEC states that this initiative would fill a crucial niche in the financial landscape for clean energy entrepreneurs because venture capital firms typically favor later-stage companies and technologies, where there is less risk.

NOTICE

Notice of Advice Letter (AL) 3-G was made by publication in the Commission's Daily Calendar. The California Energy Commission states that a copy of the AL was mailed and distributed in accordance with Section 4 of General Order 96-B.

PROTESTS

Advice Letter 3-G was not protested.

DISCUSSION

The CPUC has reviewed and evaluated the CEC's Gas Research and Development Program Proposed Budget Plan for Fiscal Year 2022-2023 based on the following:

- Consistency with D.04-08-010 (2004) - Foundational Decision
- Consistency with Resolution G-3484 (2013) - Accounting Requirements
- Consistency with Resolution G-3571 (2020) - Direction for Stakeholder Engagement
- Consistency with Resolution G-3584 (2021) - Direction for Budgeting and Reporting and Research Topic Areas
- Reasonableness of Budget Request

Consistency with D.04-08-010

D.04-08-010 appoints the CEC as the administrator of the Gas R&D program to "improve gas energy efficiency and environmental quality, develop renewable technologies, and otherwise provide benefits to the public."¹¹

¹¹ D.04-08-010 at 2.

Submission of FY 2022-2023 Gas R&D Proposal

D.04-08-010 requires the CEC to provide an annual plan to the CPUC outlining its proposed Gas R&D projects. The CEC presented its draft FY 2022-2023 Plan for comment to CPUC staff on January 12, 2022.¹² Subsequently, the CEC presented its draft Plan in a public workshop on January 19, 2022 and received feedback from stakeholders. The CEC submitted its FY 2022-2023 Gas R&D Plan via a Tier 3 Advice Letter on March 29, 2022. The CPUC reviewed the CEC's plan and finds it to be submitted in compliance with D.04-08-010.

Program Requirements

D.04-08-010 requires that gas R&D projects be consistent with four requirements: 1) Focus on energy efficiency, renewable technologies, conservation, and environmental issues, 2) Support State energy policy, 3) Offer a reasonable probability of providing benefits to the general public, and 4) Consider opportunities for collaboration and co-funding opportunities with other entities.¹³ The CEC's proposed budget for FY 2022-2023 allocates the \$24 million budget to the following areas:

- Target Gas System Decommissioning Theme (\$3.5 million)
- Decarbonization of Gas End-Uses Theme (\$13 million)
- Energy Efficiency Theme (\$1.5 million)
- Entrepreneur Development Theme (\$3.6 million)
- Program Administration (\$2.4 million)

The Program Administration allocation represents 10 percent of the maximum annual budget (\$24 million).

Requirement One: "Focus on energy efficiency, renewable technologies, conservation, and environmental issues."

The CEC states that its Plan is consistent with Requirement One because it focuses on:

- Renewable technologies, incorporated into its initiatives for research themes Decarbonization of Gas End Uses and Entrepreneur Development.
- Conservation is incorporated into its initiatives for research themes in Energy Efficiency and Decarbonization of Gas End Uses.

¹² G-3571 at Ordering Paragraph 5.

¹³ D.04-08-010 at 28.

- Environmental issues are incorporated into its initiatives for research themes in Decarbonization of Gas End Uses, Energy Efficiency, and Targeted Gas System Decommissioning.¹⁴

Based on the initiative proposals described in its FY 2022-2023 Gas Plan, the Commission finds that the CEC is compliant with Requirement One.

Requirement Two: “Support State energy policy.”

The CEC describes in Chapter 2 of its FY 2022-2023 Gas R&D Plan how its Plan is consistent with State energy policies. The CEC states that its Plan supports State energy policies because it aims to achieve economywide carbon neutrality by 2045 (Executive Order B-55-18) as well as supports doubling energy efficiency by 2030 (Senate Bill 350, De León, Chapter 547, Statutes of 2015). The CEC discusses that its Gas R&D program investments will “advance these objectives by supporting R&D for the production, use, and storage of renewable, low-carbon gas as well as develop decision-support tools for gas system transition.” The CEC further explains that its Gas R&D Plan will support efficiency improvements in areas such as high-temperature industrial processes and carbon capture and use.¹⁵

Based on the research themes and initiatives described in its FY 2022-2023 Gas Plan, the Commission finds that the CEC is compliant with Requirement Two.

Requirement Three: “Offer a reasonable probability of providing benefits to the general public.”

The CEC sufficiently describes in its FY 2022-2023 Gas R&D Plan the general intention of each initiative and how the research could improve safety, affordability, environmental sustainability, and equity. The Plan’s proposed benefit breakdown for each initiative both names the benefit category and explains in general terms how the initiative addresses the goal. For example, as an equity benefit, the CEC asserts that its initiative to “Mitigate Criteria Air Pollutants in Hydrogen-Based Power Generation,” (Decarbonization of Gas End Uses theme) will help mitigate air pollutants from fossil gas power plants and industrial plants in under resourced communities. However, the CEC’s Plan, does not include quantitative estimates of potential benefits, numeric targets, a specified numeric range of potential benefits, or explain how it will measure its proposed benefits. Without such specifics, it is difficult to determine what constitutes

¹⁴ AL 3-G at 5.

¹⁵ AL 3-G at 5.

success in the initiatives except at a general level or to measure progress in asserted improvement in reliability, safety, or other benefit to demonstrate that the Plan meets Requirement Three. The CEC's FY 2022-2023 Gas R&D Plan meets Requirement Three in terms of planning to achieve benefits. However, going forward, the CEC shall demonstrate outcomes of achieving its proposed benefits for all current and future research projects including through quantitative methodologies as described in this Resolution related to the establishment of an impact analysis framework. This framework will be informed by the outcome of the EPIC proceeding's benefit-cost methodology.

This is consistent with the Commission's stated criteria in D.04-08-010 for the Gas R&D program to provide public benefits and for the CPUC's mandate to be accountable to evaluate and ensure that Gas R&D investments are prudent and benefit the ratepayers that fund the program. This is further consistent with the Commission's order in Resolution G-3586 for SoCalGas' Gas R&D program to develop a benefits analysis framework.

Requirement Four: "Consider opportunities for collaboration and co-funding opportunities with other entities."

D.04-08-010 directs the CEC to consider opportunities for collaboration and co-funding opportunities with other entities. While the CEC describes several forums in which it sought stakeholder input, the CEC does not provide any details of collaborative initiatives or co-funding opportunities. Accordingly, the Commission is unclear whether any of the CEC's proposed initiatives include collaborative or co-funding opportunities. The CEC includes a discussion of its stakeholder engagement in Appendix C and describes active coordination with SoCalGas on the initiative "Advanced Hydrogen Refueling Infrastructure Solutions for Heavy Transport."¹⁶ However, the CEC does not provide specific details for these proposed initiatives regarding collaborative or co-funding opportunities. The Commission finds the CEC is compliant with Requirement Four in its FY 2022-2023 Gas R&D Plan given discussions with SoCalGas but going forward the CEC shall provide more details on its consideration of co-funding and collaborative partnerships.

In its future Gas R&D Plans the CEC shall describe its process for seeking collaborative and co-funding opportunities, detailed proposals for such opportunities, or explain why it did not consider collaborative and co-funding opportunities. To the extent that the CEC plans initiatives that include collaboration and co-funding, it should provide

¹⁶ Appendix C at C-2.

project details on respective roles and funding levels for the partnership. The CEC shall describe these details in the body of all future Plans.

Coordination with the Investor-Owned Utilities (IOUs) and other entities

In D.04-08-010, the Commission emphasized the importance of CEC coordination and engagement with the IOUs on Gas R&D projects. For example, D.04-08-010 directs “the utilities, and other parties, [to] provide potential gas R&D projects to the administrator and the Commission for consideration and inclusion and annual gas R&D programs.”¹⁷ This demonstrates the Commission’s intent to promote broad coordination on gas R&D issues. This is particularly important as the State’s goals and strategies for decarbonization across gas and electric initiatives evolve and converge.

The CEC describes coordination with the DACAG and other stakeholders through its Public Workshop and coordination meetings. As noted, in Appendix C, the CEC explains its coordination with SoCalGas in the “Advanced Hydrogen Refueling Infrastructure Solutions for Heavy Transport” initiative. In all future Gas R&D Plans, the CEC shall explain all project coordination activities with the gas IOUs and other stakeholders prominently in the body of its Gas R&D plan. Most of the gas IOUs have their own R&D programs. Given that these IOUs manage gas-related infrastructure, it benefits ratepayers and broader state policy to demonstrate coordination across gas R&D program administrators to promote transparency, efficiency, and to avoid duplication. In all future Gas R&D plans, the CEC shall include information on coordination with the IOUs and other entities at both a high-level and project level within the CEC’s annual proposal.

Program Evaluation

D.04-08-010 states that “after four years, we will assess the reasonableness of the funding level, and the overall R&D program.”¹⁸ All CPUC resolutions approving CEC Gas R&D funding since the FY 2009-2010 funding request have reaffirmed the CPUC’s intention to evaluate this program. Since implementation of the Gas R&D program nearly 20 years ago, the Commission has awarded the CEC program administrator nearly \$400 million dollars in ratepayer funds. The CPUC has not yet performed a comprehensive program assessment of the CEC’s Gas R&D program. In compliance with D.04-08-010, we direct Energy Division staff to implement a program evaluation that assesses the reasonableness of the program’s funding level and the impacts of

¹⁷ D.04-08-010 at 28.

¹⁸ D.04-08-010 at 38.

ratepayer's investment in the overall R&D Gas program. Energy Division shall develop a scope of work and hire and manage a contractor to undertake an evaluation of the CEC's Gas R&D Program. The CEC shall allocate funding for this evaluation in its FY 2023-2024 Gas R&D plan in the amount of \$960,000, or 4%, of its annual budget.¹⁹ The CEC shall reimburse the CPUC for its contract costs to undertake the evaluation via an Interagency Agreement. Further, the Commission reserves the right to expand the scope of the evaluation to include IOU Gas R&D programs. The CPUC should undertake regular program evaluation of the CEC's Gas R&D program approximately every 5 years.

Consistency with Resolution G-3484 (2013) Accounting Requirements

Resolution G-3484 directs the CEC to include in its proposed Gas R&D budget an accounting, by research area, of then-current unspent funds in the program, including encumbered funds and expiration dates.²⁰ Guided by the criteria listed above from D.04-08-010, the research areas have historically included some variant of:

- Energy Efficiency
- Renewable Energy and Advanced Generation
- Energy Infrastructure
- Energy-Related Environmental Research
- Natural Gas Transportation

The CEC provides this information in Appendix B of its 2022-2023 Gas R&D Plan, titled "CPUC Resolution G-3484 Funding Encumbrance- Unspent Funds."²¹ The CEC's plan is compliant with the requirement from G-3484.

¹⁹ This amount is consistent with the Commission's finding of the appropriate level of funding for energy efficiency program evaluation in D.21-05-031 at page 2, and general program evaluation funding in D.10-04-029 at Section 3.

²⁰ "Encumbered funds" refers to funds that are committed to projects through an executed contract but have not yet been spent. The CEC has budget authority to encumber funds within two years of authorization. "Spent funds" refers to contracted funds that are spent on a project. "Unspent funds" refers to contracted funds that have not yet been spent on a project or funds that have not been encumbered. The CEC has budget authority to spend encumbered funds within four years of encumbering them through a contract. "Disencumbered funds" refers to previously encumbered funds that become unencumbered because the project has been terminated or was completed under budget or due to other reasons. "Supplemental funds" refers to encumbered but unspent funds that are requested for use on new projects. More detail on the definition of encumbered funds can be found here: www.ebudget.ca.gov/reference/GlossaryOfTerms.pdf.

²¹ AL 3-G at B-1.

Consistency with Resolution G-3571 (2020) Direction

Advice Letter Submission Process

Resolution G-3571 requires the CEC to submit its Gas R&D Plans in the form of a Tier 3 business letter pursuant to General Order 96-B to be served on the gas utilities' advice letter service lists. The CEC submitted its FY 2022-2023 Plan on March 29, 2022, as a Tier 3 Advice Letter through the business letter process. The CEC's FY 2022-2023 Plan complies with this requirement.

Resolution G-3571 also includes a requirement for the CEC to post all Gas R&D Budget Plans publicly on the CEC's website²² and to notify the CPUC of the web address before submitting its advice letter to the CPUC. G-3571 requires the CEC to distribute budget plans through the CEC's listservs. The CEC met all of these requirements for its FY 2022-2023 Plan.

COVID-related Requirements

Resolution G-3571 directs the CEC to consider "any research gaps that might emerge because of recent budget decreases or reallocations in response to COVID-related economic impacts and potential cofounding opportunities that the Gas R&D program can provide to limit the impact of these gaps on California energy goals."²³ In its FY 2022-2023 plan, the CEC states: "at this time the CEC is not aware of budget decreases or reallocations that may result in research gaps."²⁴ The CEC is compliant with the G-3571 order.

Coordination with CPUC Staff

Resolution G-3571 requires the CEC to coordinate with CPUC staff on its proposed Gas R&D budget plan at least three weeks in advance of the CEC's public workshop. The CEC met with CPUC staff on December 27, 2021 and January 12, 2022, prior to the CEC's public workshop held on January 19, 2022. In these coordination meetings, CPUC staff were able to ask relevant questions regarding research initiatives and provide feedback. Appendix C in the CEC's FY 2022-2023 Gas R&D Plan summarizes public comments and questions between the CEC and stakeholders, including the CPUC. In

²² "California Energy Commission Annual Reports." Available at <https://www.energy.ca.gov/data-reports/reports/energy-research-and-development-investment-plans-and-annual-reports>.

²³ Resolution G-3571, OP 8e.

²⁴ AL 3-G at 6.

future Gas R&D plans, the CEC shall explicitly state in its Plan how it incorporated CPUC and stakeholder feedback into its Gas R&D Plan. This is consistent with the Commission's intention to demonstrate that community and industry stakeholders have a meaningful impact on gas R&D investments to benefit the public good.

Coordination with CPUC Commissioners

Resolution G-3571 also requires that in all future Gas R&D budget plans, the CEC consult with the CPUC to allow the option to present the budget plan to CPUC Commissioners. While the CEC did not request to present its FY 2022-2023 Gas R&D Plan to CPUC Commissioners, it states that it welcomes the opportunity to present a budget plan to the Commissioners. For future Gas R&D Plans, the CEC shall request in advance to present its annual Gas R&D Plan to CPUC Commissioners at least sixty days in advance of submitting its Plan to the CPUC. A CEC presentation to Commissioners may occur at the Commission's regular business meeting or its regular Commissioner Emerging Technology Committee.

Disadvantaged Communities

Resolution G-3571 requires the CEC to coordinate with the DACAG and engage appropriate disadvantaged community stakeholders to provide input on its FY 2021-2022 Gas R&D Plan. While Resolution G-3571 did not specifically require the CEC to engage with the DACAG in developing its 2022-2023 Gas R&D plan, the CEC stated it met with and received comments from representatives of the DACAG on January 21, 2022 on its proposed 2022-2023 budget plan. The CEC explains that DACAG members were able to ask questions and pose concerns regarding the CEC's Gas R&D proposal. DACAG members sought clarity on the equity considerations of the initiative "Scaled-up Gas Decommissioning Pilots and Integrated Planning Tools." The CEC staff responded to DACAG members that the initiative would evaluate the distribution of expenses and benefits related to gas decommissioning to meet the state's building decarbonization goals. DACAG members also sought clarity on the equity benefits of the initiative "Advanced Hydrogen Refueling Infrastructure Solutions for Heavy Transport." The CEC staff responded to DACAG members that "preference points will be included in the solicitation for proposals that benefit disadvantaged and low-income communities"²⁵

The CEC further states that it engaged with disadvantaged community stakeholders through its public workshop as well as incorporated the DACAG's Equity Framework

²⁵ AL 3-G at Appendix C.

in the FY 2022-2023 Gas R&D Plan.²⁶ In Appendix F of its Gas R&D Plan, the CEC explains that it incorporated into its Gas R&D Plan the five key equity principles used in the EPIC program: Health and Safety, Access and Education, Financial Benefits, Economic Development, and Consumer Protection.²⁷ The CEC did not explain how it incorporated these principles into each research theme or how it will measure the success of achieving these principles. As directed above for stakeholder input, for future Plans, the CEC shall explain in future plans how community stakeholder input impacted the development of its Gas R&D Plan related to disadvantaged communities.

The Commission appreciates and commends the CEC for its continued coordination with the DACAG for its FY 2022-2023 Gas R&D proposal, despite not being specifically required to do so. In the future, the CEC shall continue to coordinate with the DACAG (to the extent it represents DACAG priorities) and disadvantaged vulnerable communities (DVCs).²⁸ The CEC shall identify all feedback it receives from the DACAG and DVCs and explicitly explain how it incorporated such feedback into research themes. This ongoing practice will help to ensure that the participation of communities and incorporation of equity issues is transparent and meaningful for future CEC Gas R&D Plans.

Consistency with Resolution G-3584 (2021) Direction for Budgeting and Reporting and Research Topic Areas

Resolution G-3584 ordered that the CEC's FY 2022-2023 Gas R&D Plan address specific concerns on the development and direction of the program. G-3584 requirements fell into two groups: budgeting and reporting and required research topic areas.

Budgeting and Reporting

G-3584 requires that in its FY 2022-2023 Gas R&D Budget Plan, the CEC report unspent funds in its Public Interest Research Development and Demonstration Natural Gas Subaccount to identify Gas R&D research funds from FY 2014-2015 to FY 2021-2022 Budget Plans that were encumbered within two years of budget approval. The CEC has

²⁶ The DACAG Framework can be found in Appendix F of the CEC's 2022-2023 Gas R&D Plan.

²⁷ AL 3-G at Appendix F.

²⁸ Disadvantaged Vulnerable Communities consist of communities in the 25% highest scoring census tracts according to the most recent version of the California Communities Environmental Health Screening Tool (CalEnviroScreen), as well as all California tribal lands, census tracts with median household incomes less than 60% of state median income, and census tracts that score in the highest 5% of Pollution Burden within CalEnviroScreen, but do not receive an overall CalEnviroScreen score due to unreliable public health and socioeconomic data. (D.20-08-046 at Ordering Paragraph 1).

two years to encumber Gas R&D program funds on projects, and an additional four years before such funds expire. After those six years, any remaining unencumbered and unspent funds may be approved for re-investment by the CPUC. G-3584 requires that for any use of encumbered and unspent funds the CEC requests for new projects, the CEC's request identifies the respective research areas for which the Commission originally authorized the funding. For the CEC's FY 2022-2023 Gas R&D Plan, this funding reporting can be found in Appendix B of its Plan. The CEC's FY 2022-2023 Plan is compliant with this requirement. For its future Gas R&D Plans, the CEC shall continue to provide information regarding the amount spent, encumbered, and uncommitted for each of its Gas R&D initiatives, including the name of the initiative identified in its approved Plan.

Required Research Topic Areas

G-3584 directed that the CEC's FY 2022-2023 Plan consider:

- a. The Assembly Bill 3232 (AB 3232) (Friedman, 2018) report.
- b. The long-term research roadmap for technology development, when available, in developing future Gas R&D plans – currently titled “Establishing a Long-Term Natural Gas Strategy to Achieve Aggressive Statewide Carbon Neutrality Goals.”

AB 3232 Report

AB 3232 requires the CEC to study opportunities for a 40 percent reduction in greenhouse gas emissions from buildings by 2030.²⁹ The CEC states that it considered the AB 3232 report in the development of its FY 2022-2023 Gas R&D Plan. The CEC states that it considered the seven key strategies³⁰ to decarbonize residential and commercial buildings outlined in the 2021 report *California Building Decarbonization Assessment*. Specifically, the CEC refers to its energy efficiency initiative, “Analysis of Residential Hot Water Distribution Designs,” as a strategy consistent with AB 3232 and

²⁹ AL 3-G at A-2.

³⁰ According to the *California Building Decarbonization Assessment*, “The seven key strategies for decarbonizing residential and commercial buildings are: Building End-use Electrification; Decarbonizing the Electricity Generation System; Energy Efficiency; Refrigerant Leakage Reduction; Distributed Energy Resources; Decarbonizing the Gas System; Demand Flexibility.” - *California Building Decarbonization Assessment*, Chapter 5 (p. 81).

the *California Building Decarbonization Assessment*. The Commission finds the CEC compliant with the AB 3232 requirement in G-3584.

Long-term Research Roadmap

The CEC states in its 2022-2023 research plan that the findings of the long-term research roadmap of technology development are not yet available to consider. The CEC expects the gas technology R&D roadmap to be a valuable resource for program planning in future years. Resolution G-3584 (2021) states that the CEC expects a draft report of the Long-Term Research Roadmap by the end of 2023 and will use these findings in the development of all future Gas R&D Program plans.³¹ In the CEC's FY 2023-2024 Plan and all future plans for which the Roadmap is not yet completed, the CEC shall provide information on the current status of the Long-Term Research Roadmap, including an anticipated timeframe for its completion and how it was used to inform the CEC's Gas R&D Plans. The Commission reaffirms that once the Roadmap is completed that the CEC should explain how the Roadmap informed the CEC's annual Gas R&D research plans.

Reasonableness of Budget Request

D.04-08-010 requires CPUC to review for the "reasonableness of the funding level, and the overall R&D program" after four years, i.e., after FY 2009-2010. As explained above, the CPUC has not yet performed a comprehensive review of the program. In the interim, we elect to maintain the CEC as the administrator and the maximum funding level at \$24 million per year. Below we address each of the following funding areas proposed in the CEC's 2022-2023 Gas R&D budget.

- Target Gas System Decommissioning (\$3.5 million)
- Decarbonization of Gas End-Uses (\$13 million)
- Energy Efficiency (\$1.5 million)
- Entrepreneur Development (\$3.6 million)
- Program Administration (\$2.4 million)

Targeted Gas System Decommissioning

The CEC proposes to allocate \$3.5 million toward its Targeted Gas System Decommissioning theme. As explained in the CEC's California Building

³¹ Resolution G-3586 at 13.

Decarbonization Assessment³² and in California's Building Energy Efficiency Standards, the state must transition away from fossil gas and toward electrification. The CEC explains that its proposed research initiatives for the Targeted Gas System Decommissioning theme supports the State goal of electrification. The Targeted Gas System Decommissioning theme also complies with Requirements One and Two of D.04-08-010, which state that CEC Gas R&D projects shall "1) Focus on energy efficiency, renewable technologies, conservation, and environmental issues, 2) Support State energy policy," respectively. We approve the \$3.5 million in funds to be allocated to the Targeted Gas System Commissioning research theme.

Decarbonization of Gas End Uses

The CEC proposes to allocate \$13 million toward the Decarbonization of Gas End Uses theme. The CEC states that the initiatives within this theme are consistent with California's goal of statewide carbon neutrality by 2045.³³ The Decarbonization of Gas End Uses theme is focused on hydrogen research, storage, utilization, and the mitigation of pollutants from the combustion of hydrogen. The use of hydrogen to decarbonize gas end-uses is consistent with Requirements One and Two of D.04-08-010, which states that CEC Gas R&D projects shall "1) Focus on energy efficiency, renewable technologies, conservation, and environmental issues, 2) Support State energy policy." We approve the funding of \$13 million to be allocated toward the Decarbonization of Gas End Uses theme.

Energy Efficiency

The CEC proposes to allocate \$1.5 million toward the Energy Efficiency theme. The Energy Efficiency theme encompasses one initiative, Analysis of Residential Hot Water Distribution Designs, which aims to increase the efficiency of hot water delivery while reducing water waste. Assembly Bill 3232 requires the CEC to assess the potential to reduce GHG emissions from homes and businesses by 40 percent of 1990 levels by 2030.³⁴ Thus, the Energy Efficiency theme is compliant with Requirements One and Two of D.04-08-010, which requires that CEC Gas R&D projects shall "1) Focus on energy efficiency, renewable technologies, conservation, and environmental issues,

³² California Energy Commission Building Decarbonization Assessment:
<https://www.energy.ca.gov/data-reports/reports/building-decarbonization-assessment>

³³ Executive Order B-55-18

³⁴ Assembly Bill 3232:

https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3232.

2) Support State energy policy.” We approve the funding of \$1.5 million to be allocated toward the Energy Efficiency theme.

Entrepreneur Development: CalSEED

The CEC proposes to allocate \$3.6 million to fund the CalSEED initiative, under the theme Entrepreneur Development. The CEC states that the Gas R&D CalSEED effort will build off of the EPIC CalSEED program and will provide small-scale funding for Gas R&D entrepreneurs. The CEC explains this program will give these entrepreneurs capital for proof-of-concept and early prototypes of decarbonization technology. In Resolution G-3555, the CPUC approved \$2.29 million for the CalSEED initiative in the CEC’s FY 2019-2020 Gas R&D Plan, which established funding for the “Natural Gas Small Grants program.” The CEC stated this initiative was aimed at providing an opportunity for entrepreneurs to apply for funding to test the feasibility of their gas concepts.³⁵

On October 13, 2022, the CPUC issued a data request to the CEC seeking additional information on the CEC’s FY 2022-2023 CalSEED proposal. The CEC responded on October 26, 2022 that funds approved in Resolution G-3555 (FY 2019-2020) remain unspent.³⁶ The CEC further explained that it has not yet executed its contract with New Energy Nexus, the third-party contractor for the FY 2019-2020 CalSEED initiative. The CEC indicates that it anticipates finalizing the contract by December 2022. In its data request response, the CEC described that it will work with New Energy Nexus to determine project awardees and that New Energy Nexus will administer the CalSEED small-grant funding to entrepreneurs. The CEC explained that the selection criteria for Gas R&D CalSEED projects has not yet been determined because the contract with New Energy Nexus has not commenced. The CEC stated that it plans to follow EPIC-developed criteria as a basis for entrepreneur selection, including entrepreneur skills and resources and long-term ratepayer benefit.³⁷ While the CEC states that it will revise the EPIC-developed criteria to be consistent with the CPUC’s direction on Gas R&D projects, the CEC does not state how the criteria will be adapted.³⁸

The CPUC confirms that the CEC has not yet spent funds for its FY 2019-2020 CalSEED initiative approved by the Commission based on the CEC’s required reporting for its budget status, found in Appendix B of the CEC’s Gas R&D FY 2022-2023 Plan. Though

³⁵ Resolution G-3555 at 21.

³⁶ The CEC’s data request response is attached in this Resolution as Attachment B.

³⁷ Attachment B, Question 2.

³⁸ Attachment B, Question 2.

the CEC explains that it will model the CalSEED Gas R&D initiative on the EPIC CalSEED initiative, the EPIC CalSEED program has not yet been evaluated to determine ratepayer benefit. EPIC proceeding R.19-05-010 is currently contemplating implementation of the next EPIC program evaluation.

The CEC should first implement and spend the \$2.29 million in funding that the Commission approved for its FY 2019-2020 Gas R&D CalSEED proposal in G-3555. This will allow the CEC to demonstrate how the CalSEED concept can be successfully implemented. The Commission appreciates the CEC's diligent guidance in providing criteria for its third-party contractor in selecting entrepreneur projects for CalSEED grant funding. For future requests for third party projects, the CEC shall employ and demonstrate similar requirements for project oversight by explaining how it will also monitor and evaluate measurable outcomes from third party grant projects. This will aid in ensuring that ratepayer investments comport with the Commission orders described in this Resolution. Accordingly, at this time, the Commission denies the CEC's request to allocate an additional \$3.6 million to the CalSEED Gas R&D initiative as part of the Entrepreneur theme.

We direct the CEC to update its FY 2022-2023 Gas R&D Plan to propose reallocation of the \$3.6 million from its Entrepreneur Development theme via its Tier 2 Advice Letter, as explained further below.

Administrative Budget

The CEC requests to utilize 10 percent of its proposed \$24 million 2022-2023 budget for administrative expenses (or \$2.4 million) as an appropriate use of ratepayer funds. The Commission approves this funding for the FY 2022-2023 Gas R&D Plan.

The CEC did not provide a detailed breakdown for its administrative budget so that the CPUC understands how administrative funds are allocated and reasonable. Therefore, in all future Gas R&D Plans, we require the CEC to provide an administrative budget breakdown that allocates designated administrative cost categories identified in the Administrative Budget Framework found in Attachment A. This Framework is consistent with Commission direction for SoCalGas' Gas R&D program in Resolution

G-3586 and as well as the categories approved in Joint EPIC Administrators' Advice Letter 6478-E.³⁹

We adopt a 10 percent administrative budget for the CEC's 2022-2023 Gas Plan as well as for future budget proposals.

Summary of CPUC Guidance for the CEC's Fiscal Year 2022-2023 Gas R&D Budget Proposal and Beyond

The CPUC approves in part the California Energy Commission's (CEC's) *Gas Research and Development Program, Proposed Budget Plan for Fiscal Year 2022-2023* with a budget of \$24 million, pursuant to D.04-08-010. This Resolution does not approve the CEC's proposed \$3.6 million budget for CalSEED, for the reasons described above, and directs the CEC to submit an updated proposal for reallocating the \$3.6 million via a Tier 2 Advice Letter.

This funding level has no precedential value regarding the overall program review or funding levels beyond FY 2022-2023, as the CEC must propose a zero-based budget for each fiscal year. Pending an assessment of the reasonableness of the overall R&D program, the maximum limit for program funding at \$24 million is reasonable.

The Commission approves the CEC's FY 2022-2023 Gas R&D plan except where noted below. The CEC shall submit a Tier 2 Advice Letter updating its FY 2022-2023 Gas R&D Plan within 60 days of the issuance of this Resolution as described in the summary below and directed in the ordering paragraphs. We direct the CEC to provide both a track-changed update to its FY 2022-2023 Gas R&D Plan along with a clean version so the CPUC and parties can easily review changes. The CEC shall include additional requirements in subsequent Gas R&D Plan submissions as described below.

Program Funding Areas

As explained above, the CPUC does not approve additional funding for the CalSEED program at this time. The CEC should first allocate CalSEED funding approved by the Commission in the CEC's FY 2019-2020 Gas R&D plan (Resolution G-3555). In any future requests for CalSEED or other third-party R&D grant funding program, in

³⁹ The CEC, PG&E, SDG&E, and SCE all serve as Administrators of the EPIC program. In D.21-11-028, the Commission ordered the Joint Administrators to propose a detailed line-item list of EPIC administrative costs that all Administrators may follow. The Commission approved Advice Letter 6478-E, which proposes this EPIC Administrative Cost Framework.

addition to its robust selection process, the CEC must demonstrate its oversight of third-party grant programs. Such oversight should demonstrate that selected projects comply with Commission orders including the ability to demonstrate quantitatively how the CEC will measure public benefits for the ratepayers who fund the Gas R&D program, as described above. The CEC shall include in its Tier 2 Advice Letter a proposal of how it will reallocate the \$3.6 million to a different gas R&D initiative consistent with the Commission's requirements and direction in this resolution.

We recommend that the CEC focuses on reallocating the CalSEED funds toward projects that have direct safety and ratepayer benefits. This may include innovations in addressing pipeline integrity which can cause prolonged outages from incidents which may lead to higher gas costs due to reduced capacity.⁴⁰ The CEC could also consider protocols for testing storage wells which may lead to reduced storage withdrawal capacity as well as potentially damaging infrastructure such as gas injection/withdrawal wells. Thus, pipeline and well integrity may be suitable for further efforts. Additionally, we recommend that the CEC focuses on gas system decommissioning, especially on pilot projects that can provide practical insights into how California can rationally prune the gas system. This is critical for the energy transition and to directly benefit the ratepayers who fund the Gas R&D Public Purpose Program.

Administrative Budget

The Commission approves the CEC's 10 percent administrative budget for FY 2022-2023. In all future Gas R&D Plans, the CEC shall provide a detailed breakdown for its administrative budget allocating identified cost to the categories outlined in the Administrative Budget Framework in Attachment A.

Benefits-Analysis Framework

Requirement Three of D.04-08-010 directs the CEC's Gas R&D Plan to "offer a reasonable probability of providing benefits to the general public." The CEC's plan does not currently include quantitative estimates of potential benefits, numeric targets, or a specified numeric range of potential benefits. Therefore, we require the CEC to apply the impacts analysis framework methodology established in the EPIC proceeding for all current and future research projects. Once the Commission approves an impacts

⁴⁰ The Natural Gas Weekly Update from the U.S. Energy Information Administration December 2022 states that pipeline constraints are contributing to high gas prices this season. Found at: https://www.eia.gov/naturalgas/weekly/archivenew_ngwu/2022/12_22/.

analysis framework for the EPIC program, that, among other things, will measure ratepayer benefits, the CEC shall apply this methodology to its Gas R&D projects.

Collaboration and Co-Funding

Requirement Four of D.04-08-010 requires the CEC to “consider opportunities for collaboration and co-funding opportunities with other entities.” The information provided in Appendix C of the CEC’s FY 2022-2023 Plan meets this requirement. However, the CEC does not describe that any of its proposed initiatives include partnership or co-funding with other entities. In its future Gas R&D Plans, the CEC must describe how it considered collaborative and co-funding opportunities and provide detail on the initiatives that include any partnerships or potential future partnerships.

Coordinating with the IOUs and Research Stakeholders

In the CEC’s FY 2022-2023 Plan, the CEC does not provide significant information on coordination with the IOUs or other entities. Coordination is essential to utilize ratepayer investment efficiently and cost-effectively in research that supports achieving the state’s goals. D.04-08-010 emphasizes the importance of coordination with the IOUs and other entities. We direct the CEC to provide more information about coordination with the IOUs for all future Gas R&D plans.

DACAG and Equity

Resolution G-3571 required, in the FY 2021-2022 Gas R&D Plan, the CEC to:
a) Coordinate with the DACAG at an earlier date to provide the DACAG with an option of a live presentation, if desired by the DACAG; b) Identify and engage appropriate disadvantaged community stakeholders to provide increased input on how to administer the program equitably.⁴¹ We reinstate this requirement for all future CEC Gas R&D plans. Further, the CEC shall provide detail in its future Plans on how it addressed DACAG and disadvantaged community stakeholders input into each relevant research theme.

Engaging with CPUC Commissioners

Resolution G-3571, approving the CEC’s FY 2020-2021 Gas R&D program, requires that in developing all future Gas R&D plans, the CEC shall “consult with CPUC staff to

⁴¹ Resolution G-3571 at Ordering Paragraph 8.

allow for the option of presenting the Natural Gas Research and Development Program: Proposed Budget Plan to the CPUC Commissioners during a CPUC Commissioner Meeting.”⁴² The CEC did not coordinate with CPUC staff to request a presentation to CPUC Commissioners. For all future Gas R&D Plans, the CEC shall coordinate with Energy Division staff at least sixty days in advance of submitting its annual Gas R&D Plan for the opportunity to present its Gas R&D Plan to CPUC Commissioners, which may include the Commission’s Emerging Technology Committee.

Evaluation of the CEC’s Gas R&D program

D.04-08-010 requires that after four years, the CPUC will assess the reasonableness of the funding level and the overall R&D program, i.e., sometime after 2009. Thus far, no such comprehensive evaluation has been completed. In its FY 2023-2024 budget, the CEC shall allocate 4% of its budget (\$960,000) for an evaluation of CEC’s Gas R&D program, which will be reimbursed to the CPUC via an Interagency Agreement. The CPUC’s Energy Division will develop a scope of work and hire and manage an evaluation contractor. Once the Evaluation is completed, CPUC staff will serve the evaluation for comment to relevant service lists, including, but not limited to, R.20-01-007, R.19-01-011, R.13-02-008, A.21-06-021, A.22-09-006, A.22-02-007, and R.19-10-005 and their successor proceedings.

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review. Any comments are due within 20 days of the date of its mailing and publication on the Commission’s website and in accordance with any instructions accompanying the notice. Section 311(g)(2) provides that this 30-day review period and 20-day comment period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day review and 20-day comment period for the draft of this resolution was neither waived nor reduced. Accordingly, this draft resolution was mailed to parties for comments, and will be placed on the Commission's agenda no earlier than 30 days from today.

⁴² Resolution G-3571 at Ordering Paragraph 5.

This Resolution was mailed on February 9, 2023. Comments were timely filed on or before March 1, 2023, by the California Energy Commission (CEC) and New Energy Nexus (NEX).

Evaluation of the CEC's Gas R&D Program

This Resolution requires the CEC to allocate \$960,000, or 4%, of its FY 2023-2024 Gas R&D Budget toward a comprehensive program evaluation. The CEC comments that this evaluation is duplicative of the CPUC's annual review and approval of the CEC's Budget Plan as well as of the CEC's ongoing reporting of Gas R&D project benefits and program-level benefits and administration processes. The CEC asserts that the evaluation budget will reduce funding for important research projects in FY 2023-2024 and that the Resolution does not provide adequate justification for using ratepayer funds that were established for research to be used for program evaluation. Accordingly, the CEC requests that this Resolution be amended to remove the CPUC's evaluation of the CEC's Gas R&D program.

The CPUC ordered in D.04-08-010 that a comprehensive program evaluation be undertaken to assess the reasonableness of the funding level, and the overall R&D program. As conceived in that decision, the Commission considers program evaluation an essential component to support research efforts and demonstrate value to gas ratepayers' investment. The purpose of the program evaluation should not be conflated with the CPUC's review of its annual budget research plan via its Tier 3 advice letter. These are two distinct and complementary processes. Therefore, the Gas R&D evaluation is not duplicative of the CPUC's review and approval of prospective planning proposals. The evaluation component is an essential component of the program feedback loop, necessary to inform program improvements and demonstrate independent findings on program impacts. Program evaluations allow Program Administrators to demonstrate, independently and collectively, verified successes, and lessons learned, which underscore the value of ratepayer benefits use of hundreds of millions of dollars of ratepayer funds. These in turn provide productive feedback to make improvements and course corrections to Gas R&D portfolio planning and implementation.

We find that evaluations are an integral part of many ratepayer funded programs and the 4% budget allotment is reasonable based on standards determined for evaluation budget proportions established for other CPUC ratepayer funded programs. The \$960,000 from the CEC's 2023-2024 Gas R&D budget represents a small fraction of

ratepayers approximately \$400 million dollars (approximately 0.0024%) invested in research since 2004 to ensure that hundreds of millions of dollars in ratepayer funds are being prudently invested.

CalSEED Program

Both the CEC and NEX oppose the Draft Resolution's denial of 2022-2023 CalSEED funding and the Resolution's requirement to reallocate the \$3.6 million to other initiatives, particularly for gas pipeline safety and integrity, and storage well operations, maintenance, and integrity. NEX is the third party that administers the EPIC CalSEED initiative and who is proposed to administer the Gas R&D CalSEED program. The CEC and NEX both comment that they employ a robust and formal oversight process to ensure CalSEED projects are demonstrating measurable benefits. The CEC and NEX point to the EPIC-funded CalSEED program to argue that the CalSEED Low-Carbon Gas program can be successfully implemented. Lastly, the CEC and NEX both comment that the CalSEED Low-Carbon Gas program is not feasible without further funding outside of the \$2.29 million already approved in Resolution G-3555 (2019).

We appreciate that the CEC and NEX provided more information on oversight of the CalSEED program. This is helpful in our understanding of the CalSEED initiative and the CEC's efforts to both implement and monitor the initiative. This Resolution's finding does not judge the merits of the CalSEED program. We find that the CEC should first commence to spend the \$2.29 million we approved for the CalSEED funding in the CEC's 2019-2020 Gas R&D Plan to demonstrate that the Low-Carbon Gas initiative is viable. In its 2019-2020 Plan, the CEC proposed this initiative as feasible to be implemented using the \$2.29 million, which the Commission approved.

While the CEC and NEX share perceived successes of the EPIC CalSEED program on the electric R&D side, the EPIC program has not been evaluated since the 2017 Evergreen Evaluation.⁴³ The CPUC's upcoming independent EPIC evaluation will also aid in providing greater insights to impacts of the CalSEED program. The CEC should, therefore, reallocate the \$3.6 million from the CalSEED initiative in its FY 2022-2023 Plan to another initiative as identified in the ordering paragraphs of this Resolution.

⁴³ The EPIC Evergreen Evaluation can be found here: <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/infrastructure/energy-research-development-and-deployment/epic-final-report-090817-compressed.pdf>

Extension for Submitting the Fiscal Year 2023-2024 Gas R&D Plan

In its comments, the CEC requests a 60-day extension to submit its FY 2023-2024 Gas R&D Plan due to the timing of this Resolution. We approve this request. The CEC's FY 2023-2024 Gas R&D Plan is now due June 1, 2023. For the FY 2024-2025 Plan and beyond, the CEC shall continue to meet the April 1 deadline, unless otherwise advised.

Quantitative Benefits Analysis Framework

The CEC comments that the Resolution's requirement to develop a quantitative benefits framework for each initiative going forward would be overly burdensome and divert necessary process and administrative resources. The CEC recommends deferring discussions on a quantitative benefits framework until the EPIC and SoCalGas frameworks are fully developed to leverage those learnings. We find the CEC's request to wait for direction from the CPUC in the EPIC proceeding before completing a Benefits Analysis Framework reasonable. The CEC shall apply the methodology for the impacts analysis framework methodology established in the EPIC proceeding to all current and future Gas R&D research projects.

Administrative Requirements

The CEC comments that the proposed administrative additions related to DACAG engagement, CPUC-CEC interagency engagement, and IOU engagement include highly detailed, prescriptive requirements that impinge on the CEC's discretion in stakeholder engagement and interagency collaboration. The CEC's request for optionality to seek and incorporate feedback from DACs/DVCs, low-income and tribal communities is at odds with the Commission's Environmental and Social Justice (ESJ) Action Plan and its goals for equity engagement. Particularly, ESJ Action Plan Goal 1, to consistently integrate equity and access considerations throughout CPUC regulatory activities, and Goal 5, to enhance public outreach and public participation opportunities for ESJ +communities to meaningfully participate in the CPUC's decision-making process and benefit from CPUC programs, demonstrate the CPUC's intention to continue to engage DACs/DVCs, low-income, and tribal communities.⁴⁴ In this case, whether to engage disadvantaged communities their feedback cannot be discretionary. The inclusion of equity outreach must be an integral component of Gas R&D planning to align with the CPUC's intentions articulated in its ESJ Action Plan. Further, it is essential that the CEC

⁴⁴ The Goals of the ESJ Action Plan can be found on page 24: <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2jw.pdf>

is coordinating with the IOUs on Gas R&D and strategic planning to ensure the sharing of information and that investment of ratepayer funds result in gas research that is targeted, efficient, and avoids duplication.

We appreciate the input that the new requirements will be time consuming for CEC Staff, which is not intended. Therefore, we clarify that the CEC should include details on how disadvantaged community stakeholder and DACAG input was incorporated into each Gas R&D Budget Plan theme (instead of each initiative).

Co-funding and Collaboration, Administrative Budget Template, Unspent Funds, and Long-Term Research Roadmap

The CEC comments that it can meet the proposed requirement for the CEC to describe its process for seeking collaborative and co-funding opportunities. Additionally, the CEC states that the Proposed FY 2023-2024 Budget Plan will include a cost-share initiative. The FY 2023-2024 cost-share initiative will use available federal funds. The Commission appreciates that the CEC will seek to leverage the availability of federal funds for Gas research. Beyond this, the CEC should always seek collaborative funding whether or not federal funds are available in collaboration with other market and stakeholder partners. The CEC should continue to prioritize collaboration and cost-sharing and explain all collaborative funding sought. How the CEC sought to optimize ratepayer funds throughout such collaboration should be detailed in each proposed annual research plan and each annual report, as directed by Requirement Four.

Overall, we appreciate the CEC's support in the CPUC's continuing guidelines and new requirements.

FINDINGS

1. The California Energy Commission (CEC) filed its Fiscal Year 2022-2023 Gas Research and Development Program budget and program plan, per Decision (D.) 04-08-010.
2. The CEC's plan generally meets the requirements of D.04-08-010, except where noted.
3. The CEC's plan sufficiently meets the Accounting Requirements of G-3484 (2020).

4. The CEC's plan sufficiently addresses the research topic areas required in G-3584 (2021).
5. The CEC's request for a 10 percent budget for administrative expenses, or \$2.4 million, is appropriate.
6. CPUC finds that the CEC appropriately allocated funding toward the themes of Targeted Gas System Decommissioning, Decarbonization of Gas End Uses, Energy Efficiency and Program Administration.
7. CPUC finds that the CEC has not spent previously approved CalSEED funding.
8. CPUC finds that the CEC should reallocate the \$3.6 million originally proposed to be allocated to the Entrepreneur Development theme.
9. CPUC finds that the CEC must apply impact analysis methodology as soon as it is adopted by the CPUC in the EPIC proceeding.
10. CPUC finds that the CEC's FY 2023-2024 and beyond Gas R&D Plans shall provide more information on collaboration and co-funding.
11. CPUC finds that the CEC's FY 2023-2024 and beyond Gas R&D Plans shall provide a detailed administrative budget breakdown in order to comply with D.04-08-010 requirement to demonstrate a reasonable Gas R&D budget.

THEREFORE, IT IS ORDERED THAT:

1. The Gas R&D program funding level for Fiscal Year 2022-2023 (AL 3-G) is \$24 million.
2. The CEC's administrative budget is capped at 10 percent of the total budget of \$24 million, or \$2.4 million.
3. In its Fiscal Year 2023-2024 Gas R&D Plan, the CEC shall allocate 4% of its budget (\$960,000) to fund a comprehensive evaluation of the CEC's Gas R&D program to be implemented Energy Division, which will develop a scope of work, issue a competitive request for proposal, and hire and manage the contractor. The CEC will reimburse the CPUC for the evaluation contract via an Interagency Agreement.
4. The CEC shall submit a Tier 2 Advice Letter within 60 days proposing how it will reallocate the \$3.6 million currently allocated toward the CalSEED program for its

FY 2022-2023 Gas R&D Plan. The CEC's new proposal must comply with the same program criteria guidelines by which the CEC developed its 2022-2023 Gas R&D Plan. The CEC shall specifically consider reallocating these funds toward gas pipeline and system integrity and gas system decommissioning.

5. In its Fiscal Year 2023-2024 Gas R&D Plan and beyond, the CEC shall:
 - a. Coordinate with the DACAG and provide the DACAG with the option of a live presentation, if desired by the DACAG. The CEC shall also identify and engage appropriate disadvantaged community stakeholders to provide increased input on how to administer the program equitably. The CEC shall include details on how disadvantaged community stakeholders and DACAG input was incorporated into each Gas R&D theme, as relevant to their input.
 - b. Consult Energy Division staff at least sixty days in advance for the opportunity to present the CEC's Gas R&D plans to CPUC Commissioners, which may include the Commission's business meeting or the Commission's Emerging Technology Committee.
 - c. Describe its process for seeking collaborative and co-funding opportunities, detailed proposals for such opportunities, or explain why it did not consider collaborative and co-funding opportunities.
 - d. Include information on coordination with the IOUs and other research stakeholders at both a high-level on coordination process and project level details of partnership, costs, and co-funding within the body of the research plan.
 - e. Allocate designated costs into the administrative budget template to break out detailed administrative costs using the template provided in Attachment A.
 - f. Provide information on the current status of the Long-Term Research Roadmap, currently titled "Establishing a Long-Term Natural Gas Strategy to Achieve Aggressive Statewide Carbon Neutrality Goals," including an anticipated timeframe for its completion. The CEC shall continue to consider the Long-Term Research Roadmap in creating its Gas R&D initiatives and describe in future plans how the Roadmap was applied to its Gas R&D plans.
6. The CEC shall apply the impacts analysis framework to be established in the EPIC proceeding to all current and future Gas R&D projects and initiatives.

7. In Fiscal Year 2023-2024 and all future plans, the CEC shall identify unspent funds proposed in previous plans in the Public Interest Research Development and Demonstration Natural Gas Subaccount. The CEC shall ensure that requests to use encumbered and unspent funds for any new projects will identify the respective research areas for which the CPUC originally authorized the funding. The CEC shall also list all spent, encumbered, and uncommitted funds organized by Gas R&D initiative. Unencumbered and unspent funds shall be utilized prior to the utilization of new and/or additional ratepayer funds.

The CEC is granted a 60-day extension to submit its Gas R&D Plan for Fiscal Year 2023-2024. The FY 2023-2024 Plan is now due on June 1, 2023. For the FY 2024-2025 Plan and beyond, the CEC shall continue to meet the April 1 deadline, unless otherwise advised.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed, and adopted at a conference of the Public Utilities Commission of the State of California held on March 16, 2023; the following Commissioners voting favorably thereon:

/s/ RACHEL PETERSON

Rachel Peterson
Executive Director

ALICE REYNOLDS
President
GENEVIEVE SHIROMA
DARCIE HOUCK
JOHN REYNOLDS
KAREN DOUGLAS
Commissioners

Attachment A

Breakdown of the CEC's Gas R&D Administrative Costs

Program Administrative Cost Budget Item	Fiscal Year 2023- 2024 (\$)
Investment Plan Development	
Project Planning and Initiation	
Project Oversight and Governance	
Stakeholder Communication, Engagement, and Outreach	
Regulatory Support Compliance	
Internal Management Coordination	
Program and Process Coordination and Improvement	
Administrative Activities	
Supervision and Personnel	
Training and Development	
Total	

Attachment B

CPUC Data Request to the CEC Regarding the CalSEED Initiative

Data Request to the CEC (California Energy Commission) Regarding the CEC Gas R&D Proposal for Fiscal Year 2022-2023 (Business Letter 3-G)

Date of Data Request: 10/13/22

Response Requested by: 10/27/22

To: Nicole Dani
California Energy Commission
nicole.dani@energy.ca.gov

Kathryn Colson
Attorney
California Energy Commission
kathryn.colson@energy.ca.gov

From: Amanda Krantz
CPUC, Energy Division
amanda.krantz@cpuc.ca.gov
(415) 703-3962

Cheryl Cox
CPUC, Energy Division
cheryl.cox@cpuc.ca.gov
(916) 327-6799

Purpose of Data Request:

This data request seeks information needed to complete review of Business Letter 3-G (BL 3-G), the CEC's Gas R&D Proposal for Fiscal Year 2022-2023. In its BL 3-G, filed on March 29, 2022, the CEC requests CPUC approval to spend \$3.6 million to allocate ratepayer funds to the Entrepreneur Development Initiative Theme, including the CalSEED initiative. CPUC staff is seeking additional information to support the CEC's request.

Please respond to each of the following questions:

1. CPUC Resolution G-3555 approved the CEC's Fiscal Year 2019-2020 Natural Gas Research and Development Program to spend \$2.29 million of Gas R&D funds for the CalSEED initiative. Using the attached table (Attachment A), please describe how ratepayer funds have been used to date by the CalSEED initiative.

Response: No funds have been spent to date on the CalSEED initiative under the Gas Research and Development Program as the contract between the CEC and New Energy Nexus (NEN) has not been executed to date. A contract between the CEC and NEN for a Gas R&D CalSEED program was approved at the June 2021 CEC Business Meeting. Also in 2021, the CEC began piloting the Energy Commission Agreement Management System (ECAMS) which included a set of streamlined terms and conditions for select grant agreements meant to improve overall grant administration efficiency. After the contract was approved at the CEC Business Meeting NEN requested the CEC include the EPIC and Gas R&D CalSEED contracts under ECAMS. However, ECAMS was initially developed for grant agreements and not contracts so the CEC and NEN have been in negotiations to adopt elements of ECAMS for contracts while ensuring any modifications were aligned with state contracting requirements from the Department of General Services. The new Terms and Conditions have been finalized and CEC staff is working with NEN to finalize the contract documents. The CEC expects the contract to be executed by December 2022.

2. Please describe the criteria that the CEC uses to guide and approve CalSEED selection of projects to ensure they comply with the CPUC's direction on Gas R&D projects.

Response: The selection criteria for Gas R&D CalSEED projects has not been developed yet since the contract with NEN has not started. Development of selection criteria will be conducted as part of the contract's first technical task. Below are the selection criteria currently used for the EPIC-funded portion of CalSEED. The CEC expects to use the EPIC developed criteria as a basis for developing the Gas R&D selection criteria but will make necessary modifications to ensure that program is consistent with CPUC's direction on Gas R&D projects.

EPIC CalSEED Selection Criteria:

Applications are evaluated first for eligibility (pass/fail) and then are scored and ranked based on three criteria: Innovation, Impact, and Teams and Readiness.

- **The Innovation criterion establishes how the proposed innovation is unique and will represent an advancement over current state-of-the-art products. Applicants will discuss any existing or anticipated products that could compete with the proposed innovation once it is fully developed and has entered the market. Finally, applicants will discuss how much private funding has been raised for work on the innovation.**
- **The Impact criterion establishes how the innovation—once fully developed and on the market—will benefit California ratepayers. This approach ensures that benefits to California ratepayers remain a central theme in all projects funded by CalSEED. The CalSEED Program is committed to increasing participation in California’s booming clean energy economy by members of underserved populations and disadvantaged communities. Proposals that have the potential to deliver real benefits—such as job creation, supply chain development, education, economic development, and reducing the need for Public Safety Power Shutoffs—stand to score higher in the evaluation process. Many early-stage innovations will not deliver meaningful ratepayer benefits in the immediate future; therefore the applicants are encouraged to include a discussion of the potential long-term impact of the innovation.**
- **The Team and Readiness criterion establishes that applicants are ready to begin work on their project upon notice of award—and have the skills and resources necessary to complete the proposed work plan on schedule and within budget.**

Based on the scores received in these three criteria, a recommendation package is formed and submitted to the CEC. CalSEED awards are approved at a CEC Business Meeting.

3. Please describe the CEC’s evaluation and oversight process used for the third party CalSEED administrator to ensure that awarded projects are likely to demonstrate benefits to gas ratepayers.

Response: As discussed above, the Gas R&D funded portion of CalSEED has not yet started so specific oversight processes have not been implemented.

Below is a description of the processes for the EPIC CalSEED program that the CEC will leverage as Gas R&D oversight processes are implemented.

EPIC CalSEED Oversight Processes:

Before any solicitations, NEN will work with the Commission Agreement Manager (CAM) to determine eligible technology areas. The CEC will review this list and edit as necessary to ensure the list complies with CPUC direction as well as any other Program goals and requirements. NEN will submit a Solicitation Package to the CAM for approval, outlining the schedule, technology areas and planned outreach materials and strategy. Upon written approval, NEN will release the solicitation to the public. NEN is responsible for organizing the CalSEED Review Committee (CRC), which is composed of diverse professionals representing groups such as, but not limited to: CEC staff, entrepreneurial incubators/accelerators, researchers, members of trades that will apply results of the project (e.g., designers, engineers), utility representatives, and venture capital firms. NEN will facilitate the CRC who will score proposals for Concept and Prototype Awards. The top scoring proposals are submitted to the CEC in a Recommendation Package which the CEC again reviews to ensure each recommended awardee's project is appropriate in accordance with the guidelines of the EPIC funding. Finally, the recommended awards are brought to a public CEC Business Meeting where Commissioners approve the awards. When this is completed, NEN starts work to create agreement contracts with the awardee.

4. Please explain what amounts of CalSEED funding approved in G-3555 have been:

- a. spent; **\$0**
- b. committed; **\$2.29 million**
- c. remain unspent or uncommitted. **\$2.29 million remain unspent; \$7.71 million remain uncommitted**

5. In the CEC-CPUC Gas monthly coordination meeting on September 28th, 2022, the CEC indicated that \$10 million of Gas R&D funds had been committed to the CalSEED contractor, New Nexus Energy. Please explain whether the CEC has committed \$10 million of ratepayer funds for the CPUC's Gas R&D program in advance of CPUC Commission approval.

Please respond with the following:

- a. Provide Energy Division staff with a copy of the contract.

- b. Identify where in the CEC's current and previous BL proposals the \$10 million is requested to be a multi-year \$10 million allocation and where the CPUC has approved a multi-year commitment to CalSEED.

Response: As discussed above, the CEC and NEN has not executed the Gas R&D CalSEED contract yet. However, as reference – attached to this response are the most recent Scope of Work, Project Schedule, and Contract Budget.

These documents are subject to revision prior to contract execution.

The FY 2019-2020 Gas Research budget plan proposes a supplemental budget of \$2.29 million to establish a Natural Gas Small Grants Program for Energy Entrepreneurs. The FY 2022-2023 Gas R&D budget plan proposed \$3.6 million for the Gas R&D funded CalSEED program.

As discussed above, the CEC's intent is to model the Gas R&D CalSEED program after the EPIC-funded CalSEED program. To that end, the CEC conducted an analysis of the expenditures related to the EPIC CalSEED program and determined that \$10 million was appropriate to fund one complete solicitation of Concept and Prototype awards along with supporting administrative costs for NEN and their project partners.

Given that the Gas R&D program has an annual budget of \$21.6 million of program funding, the CEC did not want to request the full \$10 million intended for CalSEED from a single budget year as this would significantly reduce the funding available for other initiatives.

Both the CEC and NEN understood that at the time the contract was approved at CEC Business Meeting, only a portion of the \$10 million had been approved by the CPUC and that the availability of subsequent funding would be subject to CPUC approval.

6. Please explain the overarching strategy and criteria for the CEC's multi-year \$10 million approach with CalSEED including how the following supports the CEC in achieving these goals, including the CPUC's directed objectives:

- a. The types of research projects described in the table in Attachment A.
- b. The types of CalSEED grants that the CEC will support/approve for use of the proposed \$3.6 million from its 2022-2023 Gas R&D Plan.

Response: The overarching strategy for the \$10 million contract is to build upon the success of the EPIC funded CalSEED program by funding a complementary small grant program for technologies that decarbonize existing

uses of fossil gas. As discussed in the CEC's FY 2022-2023 Budget Plan, the EPIC funded CalSEED program has demonstrated success, for example with CalSEED-supported companies attracting over \$300 million in follow-on private and public funding and the program being significantly oversubscribed.

Expanding CalSEED to gas-related technologies will support the development of the next generation of technologies to decarbonize existing uses of fossil gas. The \$3.6 million requested in the CEC's 2022-2023 Gas R&D Plan is not intended to support a specific set of preset projects, rather the funding is intended to support a portion of the overall \$10 million contract to implement CalSEED for gas-related technologies. As described above, specific program elements including supported technology areas, project selection criteria and oversight processes have not been finalized for the Gas R&D CalSEED program but will leverage processes from the existing EPIC funded CalSEED program.

To date, no projects have been funded through the Gas R&D portion of CalSEED, thus there are no projects to report on for Attachment A.

Technology areas of focus may include carbon capture; hard-to-electrify end-uses such as industrial process heating and medium- and heavy-duty transportation and producing low-carbon alternatives to fossil gas such as green hydrogen and biogas.