PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION **RESOLUTION G-3546**
January 31, 2019

R E S O L U T I O N

Resolution G-3546. The California Energy Commission requests approval of its 2018-2019 natural gas research budget.

PROPOSED OUTCOME:

- Approves the California Energy Commission's (CEC's) *Natural Gas Research and Development Program, Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* with a budget of $24 million, pursuant to California Public Utilities Commission Decision (D.) 04-08-010.

SAFETY CONSIDERATIONS:

- This Resolution approves and prioritizes the implementation of the CEC's proposed budget of $8.6 million to advance natural gas infrastructure safety and integrity. Successful research in this area will support continued safe infrastructure operation.

ESTIMATED COST:

- Approves $24 million for Fiscal Year 2018-2019, as previously authorized by D.04-08-010.

SUMMARY

This Resolution approves the California Energy Commission's (CEC's) *Natural Gas Research and Development Program Proposed Program Plan and Funding Request for Fiscal Year 2018-2019.* The Program was established pursuant to Decision (D.) 04-08-010. The California Public Utilities Commission (CPUC or Commission) approves the CEC's proposed $24 million budget and provides additional implementation guidance.

BACKGROUND

Procedural History

In 2002, the Commission instituted Rulemaking (R.) 02-10-001 to implement Assembly Bill 1002 (2000)[1]. In that proceeding, the Commission 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 (R&D) projects to be approved under this program. The Decision defines public interest gas R&D (Gas R&D) activities as those which "are directed towards developing science or technology, 1) the benefits of which accrue to California citizens and 2) are not adequately addressed by competitive or regulated entities."[2]

D.04-08-010 establishes the following criteria for Gas R&D 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, and
4) Consider opportunities for collaboration and co-funding opportunities with other entities.

D.04-08-010 also designates the CEC as administrator of the R&D program. The CEC administers various public interest research programs and is publicly accountable, being subject to the Bagley-Keene Open Meeting Act and the Public Records Act.[3] CEC selects funding areas, which the Commission then reviews and approves.

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

[2] D.04-08-010 at 25.

[3] D.04-08-010 at 31.

D.04-08-010 reserves ultimate oversight for the Commission. The Commission is responsible for adopting the R&D program, and for setting the surcharge to fund the R&D program. The Decision clarifies that the Commission has final responsibility to "approve and resolve administration, funding, project approval, or other matters, and make a final decision."[4] The Decision further designated the Commission's Energy Division to serve as this Commission's advisor.

Budget

D.04-08-010 establishes a zero-based budget for the Gas R&D program, starting at $12 million for 2005, with maximum annual increases of up to $3 million per year, subject to Commission approval, up to $24 million per year.[5] Historically, each year the CEC has requested, and the Commission has approved, the maximum budget increase over the previous year. The budget ceiling reached $24 million in FY 2009-2010. The Commission has approved a $24 million budget since FY 2010-2011. In 2016, the Commission directed the CEC to file a supplementary Climate, Drought, and Safety Natural Gas Budget Plan for the re-investment of $3.6 million in previously-encumbered unspent funds, but no increase was made to the $24 million annual budget.

Request for Fiscal Year 2018-2019

On March 31, 2018, CEC submitted its request to Energy Division for Fiscal Year 2018-2019. In addition to providing its research plan and budget for FY 2018-2019, the CEC also provided information on prior program activities and expenditures.

DISCUSSION

The Commission has reviewed and evaluated CEC's *Natural Gas Research and Development Program Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* based on the following:

[4] D.04-08-010 at 32.

[5] D.04-08-010 at 38.

- Consistency with D.04-08-010
- Consistency with Resolution G-3527
- Consistency with Resolution G-3495
- Coordination with recent state policy on greenhouse gas emissions reductions
- Reasonableness of budget request

Consistency with D.04-08-010

D.04-08-010 requires the CEC to provide an annual plan to Energy Division outlining its proposed projects. In accordance with D.04-08-010, the CEC provided the annual proposed Gas R&D program for FY 2018-2019 to the Energy Division. The CEC has solicited R&D project proposal abstracts and incorporated them into the development of its plan. The Energy Division has reviewed the CEC report and found it to be submitted properly in compliance with D.04-08-010.

D.04-08-010 also requires that Gas R&D 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, and 4) Consider opportunities for collaboration and co funding opportunities with other entities. Consistent with criteria 1 – 3, the CEC's proposed budget for FY 2018-2019 allocates the $24 million budget to the following program areas: Energy Efficiency ($6.0 million), Renewable Energy and Advanced Generation ($3.0 million), Energy Infrastructure ($8.6 million), and Natural Gas Transportation ($4.0 million). The CEC also allocates $2.4 million to program administration, including technical support. Appendix A of this Resolution delineates the CEC's proposed budget allocations and Appendix B provides a table of projects for FY 2018-2019.

The basic program areas meet the criteria for public interest gas R&D projects identified in the Decision. The CEC reasonably selected Gas R&D program areas, allocated the program's budget to the different program areas, and provided a detailed accounting of stakeholder input on the proposed plan.

Consistency with Resolution G-3527 (2017)

In Resolution G-3527, the Commission directed the CEC to:

- Ensure coordination and consistency with goals of the Air Resources Board's 2017 Climate Change Scoping Plan Update by 1) Ensuring safety of the natural gas system; 2) Decreasing fugitive methane emissions; and 3) Reducing dependence on fossil fuel natural gas
    - Allocate a robust level of funding towards natural gas infrastructure to reach both safety and environmental goals
    - Examine the reduction of dependence on fossil fuels through conversion of forest waste biomass to renewable gas
- Continue targeting of Emissions Intensive and Trade Exposed Facilities consistent with state goals under Assembly Bill 32
- Ensure coordination with Senate Bill 1383 with a focus on the San Joaquin Valley
    - Consider synergy between dairy and livestock biomethane technology and processes and energy affordability for disadvantaged communities in the San Joaquin Valley

In its FY2018-2019 proposal, the CEC has appropriately addressed the guidance provided in G-3527.

Consistency with Resolution G-3495 (2014)

Resolution G-3495 directs the CEC's proposed budget to include an account, by research area, of then-current unspent funds in the program, including encumbrances and expiration dates.

The CEC has two years to encumber[6] Gas R&D funds with projects, and an additional four years before such funds expire. After those six years, remaining funds must be approved for re-investment by the Commission. Beginning with

[6] Encumbered funds are funds committed to projects but which have not yet been spent (see www.ebudget.ca.gov/reference/GlossaryOfTerms.pdf).

the Fiscal Year 2014-2015 proposed budget, the CEC has included in its proposed budget an account of then-current, unspent funds in the Gas R&D program, including encumbrances and expiration dates. The intent of this requirement is to show that the CEC has spent its cumulative authorized budgets in the areas in which the money was authorized and to provide an accounting of the status of cumulative unspent funds. This requirement shall remain in place for each fiscal year's proposed budget, until otherwise directed by the Commission.

In its FY 2018-19 proposal, the CEC identified $1.96 million in unspent funds that may be applied toward future budget cycles, to reduce costs to ratepayers. Since the CEC does not request the $1.96 million of previous-cycle unspent funds as a supplement to the FY 2018-19 proposed budget, it requires no guidance from the Commission at this time for the reinvestment of unspent funds.

Coordination with recent state policy on greenhouse gas emissions reductions

The Commission aims to ensure the coordination of the CEC's FY2018-2019 Gas R&D plan with recent state policy. Senate Bill 100 (2018)[7] sets the goal of having 100 percent of total retail sales of electricity in California come from zero-carbon resources and eligible renewable energy resources by December 31, 2045. Executive Order B-55-18[8] establishes the goal of achieving statewide carbon neutrality no later than 2045. Although the legislation and Executive Order were finalized after the CEC submitted its 2018-2019 plan, both policy drivers have large-scale implications for the future of the natural gas sector, so it is important to consider them in this Resolution. We find the CEC's 2018-2019 project plan to be consistent with recent state policy addressing greenhouse gas emission reductions.

Reasonableness of Budget Request

D.04-08-010 provides for Commission review of the "reasonableness of the funding level, and the overall R&D program" after four years, i.e., sometime

[7] Available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB100

[8] Available at https://www.gov.ca.gov/wp-content/uploads/2018/09/9.10.18-Executive-Order.pdf

after FY 2009-2010. The Commission is in the process of developing a timeline for such a review and is gathering information for this purpose.
In the interim, we elect to maintain the same administrator (the CEC) and maximum funding level at $24 million per year. We approve the CEC's proposed budget of $24 million for FY 2018-2019. This funding level has no precedential value regarding the overall program review or funding levels beyond FY 2018-2019, 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 CEC's request for administrative expenses ($2.4 million, or 10 percent of the total proposed budget) is appropriate and in line with historical program administration costs. We adopt this limit and require the CEC to adhere to it and encourage the CEC to continue to keep such expenses at 10 percent or less for future budget proposals. CEC's continued efficient use of program R&D and administrative funds is appropriate.

Additional Guidance

The Commission appreciates the CEC's recognition that "there is an immediate need to research how natural gas use must change to meet California's GHG emission goals"[9] and encourages the CEC to incorporate into the FY2019-2020 Gas R&D plan an explicit long-term strategy for the role of Gas R&D in the more aggressive statewide decarbonization goals set by Senate Bill 100 and Executive Order B-55-18. An area of potential exploration is how Gas R&D can be used to develop technologies to ease the transition away from natural gas towards less carbon intensive sources. Related is the policy goal of building electrification put forth in Assembly Bill 3232 (2018)[10]. Given the prevalence of natural gas as a residential and commercial heating source and the extensive natural gas infrastructure in buildings, there is a clear need for research in this area if the decarbonization goals are to be met.

[9] *Natural Gas Research and Development Program: Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* at 21.

[10] Available at https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB3232

In its FY 2018-2019 plan, the CEC included projects that directly targeted, or had components that benefitted, disadvantaged communities. While CEC sought feedback from disadvantaged communities, they did not receive any direct feedback. To support the development of future Gas R&D plans, the Commission directs the CEC to enhance its engagement with disadvantaged communities.

The CEC should also continue to align its plans with Senate Bill 100 and Executive Order B-55-18 to ensure R&D supports state goals for greenhouse gas emissions reductions.

The CEC's *Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* is approved

We authorize the CEC's proposed $24 million budget as described in its *Natural Gas Research and Development Program: Proposed Program Plan and Funding Request for Fiscal Year 2018-2019*.

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 and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

All parties in the proceeding have stipulated to reduce the 30-day waiting period required by PU Code section 311(g)(1) to 20 days. Accordingly, this matter will be placed on the first Commission's agenda twenty days following the mailing of this draft resolution. Comments were due on January 10, 2019. No parties submitted comments.

FINDINGS

1. The California Energy Commission (CEC) filed its Fiscal Year 2018-2019 Natural Gas Research and Development Program budget and program plan, per Decision (D.) 04-08-010.
2. The CEC's proposed R&D project areas meet the criteria set forth in D.04-08-010.
3. The CEC reasonably selected Gas R&D project areas, and reasonably allocated the Fiscal Year 2018-2019 R&D budget to the different project areas.
4. The CEC's request for administrative expenses ($2.4 million, or 10 percent of the total proposed budget) is appropriate and in line with historical program administration costs.
5. The CEC's proposed R&D plan and budget in its *Natural Gas Research, Development, and Demonstration Program, Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* should be adopted for a maximum budget of $24 million.
6. The CEC provided an account of then-current unspent funds in the Gas R&D Program, including encumbrances and expiration dates.
7. Since the CEC does not request the $1.96 million of previous-cycle unspent funds as a supplement to the FY 2018-19 proposed budget, it requires no guidance from the Commission at this time for the reinvestment of unspent funds.
8. The Commission has not yet determined the reasonableness of the overall Natural Gas R&D Program or of the funding level beyond FY 2018-2019.

THEREFORE IT IS ORDERED THAT:

1. The CEC remains the program administrator for the Natural Gas R&D program for FY 2018-2019.
2. The Gas R&D program funding level for FY 2018-2019 is $24 million. The CEC's administrative budget is 10% of these funds, or $2.4 million.
3. In future Gas R&D budget plans, the CEC shall:

a. Enhance its engagement with disadvantaged communities

b. Continue to align plans with Senate Bill 100 and Executive Order B-55-18

4. The CEC's *Natural Gas Research and Development Program: Proposed Program Plan and Funding Request for Fiscal Year 2018-2019* is approved for a budget of $24 million.

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 January 31, 2019; the following Commissioners voting favorably thereon:

/s/*ALICE STEBBINS*
ALICE STEBBINS
Executive Director

MICHAEL PICKER
President
LIANE M. RANDOLPH
MARTHA GUZMAN ACEVES
CLIFFORD RECHTSCHAFFEN
GENEVIEVE SHIROMA
Commissioners

Appendix A

Table 1: Natural Gas R&D Budget Plan Summary FY 2018-19

PROGRAM AREA	**PROPOSED BUDGET**
Energy Efficiency	$6,000,000
Renewable Energy and Advanced Generation	$3,000,000
Energy Infrastructure	$8,600,000
Natural Gas-Related Transportation	$4,000,000
Program Administration	$2,400,000
TOTAL	**$24,000,000**

Source: California Energy Commission *Proposed Program Plan and Funding Request for Fiscal Year 2018-19*.

Appendix B

Table 2: Natural Gas R&D Proposed Projects FY 2018-19

PROGRAM AREA	PROJECT	DESCRIPTION
Renewable Energy and Advanced Generation	Improved Functionality and Readiness of Advanced Distributed Generators for Fire Risk Regions and Critical Facilities	Funds precommercial technologies and strategies that address the technical and economic barriers related to deploying clean and efficient DG, CHP, and CCHP systems as a key power enabler in high-fire-risk regions and at critical facilities, and as a key component of an integrated modern energy system. Systems should be capable of black start and grid islanding, meaning the systems can start without the need of grid power and continue to operate in order to restore power to a critical facility. Precommercial technologies should include other enhancing features.
Renewable Energy and Advanced Generation	Central Valley Agricultural Waste Resources to Energy	Proposes R&D that will support precommercial technologies and strategies to enable cost effective and economic energy conversion of agricultural residues in the Central Valley as an alternative to open pile burning and flaring. R&D emphasizes conversion of agricultural wastes to biogas and biomethane or RNG production focusing on development strategies that will make such bioenergy conversion economic for smaller farms. Projects must demonstrate "whole system approach" from feedstock to end use. End uses must prioritize energy production for the most economical use, potentially including renewable electricity, renewable natural gas for pipeline injection, or renewable natural gas for vehicle fuel, depending on the location of the feedstock. Technologies should focus on improving efficiency, reducing costs, and reducing environmental impact compared to conventional systems and should be demonstrated at a farm in the Central Valley of California.

Energy Efficiency	Reduce Natural Gas Use for GHG Emission Intensive Industries	Initiative focuses on industrial and other facilities that emit more than 10,000 metric tons of greenhouse gases annually. Research focuses on developing and demonstrating technologies that could reduce natural gas, GHG, and other air pollutants cost effectively.
Energy Infrastructure-Safety	Technologies for Natural Gas Infrastructure Damage and Failure Prevention	Develop and use technologies for automating data capture with advanced sensors to collect field data that can be used in the future to predict potential failures and address barriers for the full deployment of these technologies by the utilities
Energy Infrastructure-Safety	Modeling Mechanical Failure Potential	Use predictive models to better assess potential systemwide mechanical failures with the help of site data
Energy Infrastructure-Safety	Improving Automated Shutoff for Natural Gas Infrastructure	Develop, test, and demonstrate automatic shutoff technologies to limit the consequences from breaks or ruptures caused by impacts, high pressure, or other causes
Energy Infrastructure-Environment	Measuring the Emissions Benefits of Renewable Natural Gas	Measure methane and other air pollutant emissions at sites before and after energy projects are implemented to generate RNG at those sites (or compare to similar sites)
Energy Infrastructure-Environment	Fostering Natural Gas Sector Resilience	Provide scientifically sound basis for designing, implementing, and tracking natural gas resilience strategies
Natural Gas-Related Transportation	Develop High Efficiency, Low Emission, Production-Read Heavy-Duty Natural Gas Engines for Long Haul Applications	Research will build on previous transportation research on engine efficiency improvements to develop production ready prototype engines that exhibit high-efficiency, near-zero emissions, and manufacturability

Natural Gas-Related Transportation	Research Natural Gas Compression Ignition to Achieve Comparable Performance to Diesel	Proposes research to demonstrate the viability of natural gas compression ignition engines, focusing on engine-level R&D with potential for validation through vehicle demonstration. Projects will aim to achieve performance and efficiency comparable to diesel in addition to low NOx and particulate matter emissions comparable to spark ignited natural gas engines

Source: California Energy Commission *Proposed Program Plan and Funding Request for Fiscal Year 2018-19*.