

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

AGENDA ID #15968
RESOLUTION G-3527
September 28, 2017

R E S O L U T I O N

Resolution G-3527. The California Energy Commission (CEC) requests approval of its 2017-2018 natural gas research budget.

PROPOSED OUTCOME:

- Approve the CEC's *Natural Gas Research and Development Program, Proposed Program Plan and Funding Request for Fiscal Year 2017-2018* 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 million to advance infrastructure safety and integrity. Successful research in this area will support continued safe infrastructure operation.

ESTIMATED COST:

- Approves \$24 million for Fiscal Year 2017-2018, as previously authorized by D.04-08-010.
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SUMMARY

This Resolution approves the California Energy Commission (CEC) *Natural Gas Research and Development Program Proposed Program Plan and Funding Request for Fiscal Year 2017-2018*. The 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, and provides additional implementation guidance.

BACKGROUND

D.04-08-010 (Decision) implements Assembly Bill (AB) 1002, establishing a natural gas surcharge to fund gas public purpose programs, including public interest research and development (R&D).

In 2002, the Commission instituted Rulemaking (R.) 02-10-001 to implement AB 1002. 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 R&D projects to be approved under this program.

The Decision defines public interest gas R&D (Gas R&D or Natural 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.”¹

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 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

¹ D.04-08-010 at 25.

Public Records Act.² CEC selects funding areas, which the Commission then reviews and approves.

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.”³ The Decision further designated the Commission’s Energy Division to serve as this Commission’s advisor.

The Commission has approved the CEC’s R&D program plans and budgets from 2005 to FY 2016-2017.

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.⁴ 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.

The CEC has submitted its Proposed Program Plan and Funding Request for Fiscal Year 2017-2018.

In addition to providing its research plan and budget for FY 2017-2018, the CEC also provided information on prior program activities and expenditures.

² D.04-08-010 at 31.

³ D.04-08-010 at 32.

⁴ D.04-08-010 at 38.

DISCUSSION

D.04-08-010 provides that the Commission “will assess the reasonableness of the funding level, and the overall R&D program” after four years.

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 after FY 2009-2010. The Commission has not yet developed a firm timeline for such a review but is in the process of gathering information leading up to such a review.

Pending an assessment of the reasonableness of the overall R&D program, the maximum limit for program funding at \$24 million is reasonable.

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 2017-2018. This funding level has no precedential value regarding the overall program review or funding levels beyond FY 2017-2018, as the CEC must propose a zero-based budget for each fiscal year.

Consistent with D.04-08-010, the CEC’s Natural Gas Research & Development Program focuses on research and development directed towards maximizing energy efficiency and renewable technologies, mitigating environmental effects of gas consumption, improving natural gas vehicle performance, and enhancing natural gas pipeline safety.

Consistent with the state’s Energy Action Plan loading order, the CEC’s proposed budget for FY 2017-2018 allocates the \$24 million budget to the following research areas: Energy Efficiency (\$6.6 million), Renewable Energy and Advanced Generation (\$4 million), Energy Infrastructure (\$8 million), and Natural Gas Transportation (\$3 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.

The following is a breakdown of specific areas within the four major R&D categories:

1. Energy Efficiency (\$6.6 million)

- a. Increase Efficiency and Reduce greenhouse gas (GHG) emissions from Natural Gas Using Facilities
 - i. Develop and demonstrate cost-effective retrofit opportunities to improve the overall efficiency of natural gas consuming appliances and equipment in industries and buildings.
- b. Improving Building Envelopes in Existing Buildings Cost Effectively
 - i. Develop and demonstrate cost-effective retrofit opportunities to improve the overall efficiency of existing building envelopes;
 - ii. Analyze occupant behavior and motivations to interact with the building envelope that could increase energy efficiency and have other benefits such as improved comfort;
 - iii. Advance cost-effective building envelope technologies to reduce thermal loads and control air flow.
- c. Disadvantaged Community Targeted Retrofits of Buildings in an Urban Area in the San Joaquin Valley
 - i. Address how to substantially increase energy efficiency for space heating—especially the building envelope and space, and perhaps, water heating—and maximize climate benefits in the existing building stock at the lowest possible costs;
 - ii. Consider environmental justice and equity concerns.
- d. Decarbonize the Commercial and Industrial Sectors
 - i. Evaluate feasible and cost-effective pathways for the commercial and industrial sectors by considering a combination of technology options as well as efficiency gains within each technology.

2. Renewable Energy and Advanced Generation (\$4 million)

- a. Pilots to Lower Costs and Explore the Viability of Pipeline Quality Renewable Gas from California’s Forest Biomass Resources

- i. Explore the viability of pre-commercial technologies and strategies to enable cost-effective and efficient conversion of forest waste biomass to renewable gas suitable for pipeline injection in California, taking site-specific pipeline characteristics into account.
- ii. Demonstrate a “whole system approach” of forest waste biomass conversion, from feedstock to end use, with an emphasis on improving efficiency, reducing costs, and reducing environmental impact compared to conventional systems

3. Energy Infrastructure (\$8 million)

- a. Natural Gas Infrastructure Safety and Integrity: Seismic Risk Assessment and Management of Underground Natural Gas Storage Infrastructure
 - i. Review and understand the nature and origin of earthquakes, seismic ground motions, site-specific soil-structure interactions, current seismic assessments, existing approaches to seismic risk vulnerabilities, applicable rules and regulation requirements, and seismic hazard and risk guidelines for various natural gas storage facilities in California;
 - ii. Characterize seismic sources and analyze related hazards;
 - iii. Develop and test new and advanced deterministic and probabilistic seismic risk assessment methods and models.
- b. Energy-Related Environmental Research Project 1: Developing Next-Generation Cal-Adapt Features to Support Natural Gas Sector Resilience
 - i. Deliver several high-resolution data sets, “next-generation” tools that integrate results of California’s *Fourth Climate Change Assessment*, a data download tool with preprocessing features to assist implementation of AB 2800⁵, which will

⁵ AB 2800 requires engineers and climate scientists to collaborate to help California design and build infrastructure that will withstand the unavoidable impacts of a changing climate (e.g., higher temperatures, more frequent and extreme weather events, accelerated sea rise).

require specific climate-related parameters to be calculated to support engineering design/infrastructure planning;

- ii. Provide a larger data infrastructure to accommodate the rapidly growing number of data resources, and investigate “big data” solutions that enable Cal-Adapt⁶ to maintain usability while vastly expanding computational power;
 - iii. Expand Cal-Adapt 2.0 (beta site) to summarize impacts in disadvantaged communities across hazard types and considerations of vulnerability to extreme situations.
- c. Energy-Related Environmental Research Project 2: Investigation of Options to Cost-Effectively Reduce Methane Leaks
- i. Identify the best options to reduce methane emissions from the natural gas system, including production, processing, storage, distribution, and final consumption;
 - ii. Integrate with other Energy Commission-sponsored projects designed to improve the estimation of methane emissions from the natural gas system and to identify super-emitters.

4. Natural Gas Transportation (\$3 million)

- a. Advanced Combustion Research to Reduce Emissions of Large Displacement Natural Gas Engines
 - i. Advance large displacement natural gas engine technologies (15 liter and greater) with a focus on improving engine efficiency and emission performance.
- b. Systems Optimization of Hybrid-Electric Natural Gas Vehicles to Minimize Emissions and Maximize Efficiency
 - i. Develop and demonstrate novel hybrid electric systems or improve on existing hybrid-electric systems for medium- to

⁶ Cal-Adapt is the State of California’s web-based interactive resource for visualizing climate change-related risks. It serves high-resolution regionally downscaled climate projections as well as some historical observed data, and offers a platform for developing custom decision-support tools. See <http://cal-adapt.org/>.

heavy-duty hybrid NGVs with a particular emphasis on increasing efficiency and emission performance.

The CEC also provides a detailed accounting of stakeholder input on the proposed plan, including specific changes or responses made based on that input.

CEC's continued efficient use of program R&D and administrative funds is appropriate.

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.

In the interest of transparency, Resolution G-3495 directs the CEC's proposed budgets 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 Natural 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 the Fiscal Year 2014-2015 proposed budget, the CEC has included in its proposed budget an account of then-current, unspent funds in the Natural 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 2017-18 proposal, the CEC identified \$1.35 million in unspent funds that may be applied toward future budget cycles, to reduce costs to ratepayers. The CEC does not request the \$1.35 million as a supplement to the FY 2017-18 proposed budget and will instead make a request in a future budget cycle. Since

the allocation of these funds will occur at a later date, the CEC requires no guidance at this time for their reinvestment.

The CEC's proposed budget appropriately continues to prioritize key areas as directed in G-3519, and we provide continuing guidance here.

In G-3519, we instruct the CEC to coordinate with legislatively-directed research studies stemming from the Aliso Canyon leak. We maintain that ensuring the integrity of natural gas infrastructure is a safety, human health, and environmental concern of the Commission, as well as the state.

Coordination and Consistency with ARB's Scoping Plan

The California Air Resources Board's 2017 Climate Change Scoping Plan Update ("Scoping Plan") articulates the state's GHG goals and creates a roadmap for achieving California's GHG goals. With regards to natural gas, the Scoping Plan identifies three major needs: (1) Ensure safety of natural gas system; (2) Decrease fugitive methane emissions; and (3) Reduce dependence on fossil fuel natural gas.

The CEC's proposed research initiatives are consistent with the natural gas objectives of the Scoping Plan. The Commission encourages the CEC to further consider the coordinated policy framework of scoping plans to inform future Natural Gas Research and Development Programs, ensuring that research initiatives target areas that will help achieve the State's climate and air quality goals.

The Commission emphasizes natural gas infrastructure safety in Resolution G-3507 and Resolution G-3519, and does so again in the current resolution. As CEC mentions in its current Program Plan, since 2001 several accidents involving underground gas storage facilities, including Aliso Canyon and McDonald Island, have highlighted the need to conduct more thorough inspections and protect against structural vulnerabilities of gas pipelines, wells, and storage facilities. As such, the current proposed budget of \$8 million for Energy Infrastructure, targeting seismic risk, Cal-Adapt enhancement, and methane leak

reduction, is wholly appropriate. We urge the CEC to continue to allocate a robust level of funding towards natural gas infrastructure in future budget plans.

The CEC's research initiatives should also respond to the state's goals to reduce dependence upon fossil fuel natural gas. At present, the state of emergency befalling California's forests and trees compels the Commission to create policy solutions that will effectively and efficiently eliminate present dangers of wildfire while meeting the state's climate goals. The Commission recognizes that the economic conversion of forest waste biomass to renewable gas could address California forests' current state of emergency while concurrently offsetting dependence on fossil natural gas. Developing this technology and process could radically reduce biogenic carbon emissions of biomass technologies compared to current technologies. Furthermore, harnessing excess feedstock from California's dying trees is pivotal at this time given the heightened risk of wildfires, which endanger human safety, human health, and the environment.

Targeting Emissions Intensive and Trade Exposed Facilities

In G-3519, we instruct the CEC to "plan to leverage existing research to target industries and facilities that could benefit from research advancements," including entities covered under the Air Resources Board (ARB)'s Cap-and-Trade program, as well as industries that are emissions intensive and trade exposed (EITE), identified in ARB's past and ongoing leakage studies. The intent within the previous resolution was consistent with state goals under AB 32. We continue to press the CEC to do so in the current resolution.

AB 32 requires California to minimize emissions leakage. The California Industry Assistance credit program, overseen by the Commission, disincentivizes leakage by compensating eligible industrial sectors for a portion of their carbon emission costs. Resolution G-3519 recognizes the importance of minimizing leakage within the California cap-and-trade framework, and pressed the CEC to target the research needs of reducing carbon emissions within specific emissions-intensive and trade exposed industries.

Innovation in technologies and processes that lower the cost of compliance are powerful tools. Thus, we continue to call upon the CEC to identify and target

specific research needs and address R&D challenges of high-, medium-, and low-leakage risk industries. Within energy efficiency, this may require a closer examination of the operating environments within heavy industry and manufacturing that present opportunities for creating higher overall system efficiencies.

We recognize that high-leakage risk industries are some of the most challenging to decarbonize. Thus, the CEC should be attentive to unique decarbonization solutions for all sectors and industries across all leakage risk categories.

Coordination with SB 1383

Senate Bill (SB) 1383 aims to reduce short-lived climate pollutants like methane, hydrofluorocarbon gases, and anthropogenic black carbon through coordinated action across California state agencies. Reducing these emissions can make an immediate impact on climate change and improve public health, especially in local areas like the San Joaquin Valley where climate pollutants are heavily concentrated. This bill encourages livestock and dairy operation research on dairy methane emission reduction projects, and mandates consideration of policies and incentives to significantly increase the sustainable production and use of renewable gas.⁷ The success of these initiatives could accelerate California's renewable energy portfolio while concurrently reducing the state's short-lived climate pollutants. To the extent that technological barriers and data gaps currently slow down California's push to reduce short-lived climate pollutants and achieve renewable natural gas co-benefits, the CEC should consider projects that align with the biogas-related goals of SB 1383.

State agencies and stakeholders have begun collaboration to reduce short-lived climate pollutants from livestock through the California Dairy and Livestock Greenhouse Gas Reduction Working Group (Working Group). According to the Working Group, non-digester manure management strategies and enteric

⁷ Senate Bill 1383 (2016), available at http://www.leginfo.ca.gov/pub/15-16/bill/sen/sb_1351-1400/sb_1383_bill_20160919_chaptered.htm.

fermentation require further research and research funding.⁸ This research would address the knowledge gap concerning the emissions impacts, as well as each solution's potential to reduce GHG, criteria, toxic and noxious air emissions. If this research aligns with the Natural Gas R&D's renewable energy and advanced generation goals, and does not duplicate existing research, the CEC should consider its inclusion within Natural Gas R&D's energy-related environmental research, and should continue to coordinate with these efforts.

Future Consideration: Disadvantaged Communities in the San Joaquin Valley

The Commission is attentive to the environmental and public health impacts of its decisions and policies on California's disadvantaged communities. The San Joaquin Valley has twenty of California's thirty most disadvantaged communities, according to the California Environmental Protection Agency's CalEnviroScreen.⁹ Disadvantaged communities here presently suffer some of the greatest pollution-related health impacts in the state, due to their proximity to Interstate 5 and Highway 99, two major transportation corridors, and the unique topography and meteorology of the region. R&D could also propel creative energy solutions for communities that lack access to affordable energy in the San Joaquin Valley.

The development and progression of dairy biomethane technology and processes could help address energy affordability in the San Joaquin Valley. The Commission recognizes a possible nexus between the advancement of biomethane technologies and energy affordability in the San Joaquin Valley, and promotes synergy between these two pursuits.¹⁰ Advancement of biomethane

⁸ See California Dairy and Livestock GHG Reduction Working Group Mission Statements/Deliverables/Timelines, *available at* https://arb.ca.gov/cc/shortlived/meetings/05232017/mission_statements.pdf.

⁹ See <http://oehha.maps.arcgis.com/apps/View/index.html?appid=c3e4e4e1d115468390cf61d9db83efc4>.

¹⁰ Pursuant to SB 1383, R.17-06-015 focuses on the implementation of not less than five dairy biomethane pilot projects to demonstrate interconnection to the common carrier pipeline system and allow for rate recovery of reasonable infrastructure costs. The Commission articulated within this proceeding that it will attempt to identify opportunities to increase access to affordable energy in the San Joaquin Valley. Order Instituting Rulemaking to Implement Dairy Biomethane Pilot Projects to Demonstrate

research could not only mitigate short-lived climate pollutants, but also create new energy pathways for underserved communities in the San Joaquin Valley. In this way, Natural Gas R&D could be uniquely positioned to service a technological need that could create two discrete but equally urgent policy benefits. The Commission encourages the CEC to consider targeting the knowledge gaps and technological needs of dairy and livestock biomethane in future proposals.

Budget Increase Proposal.

In Resolution G-3519, the Commission considers the necessity of greater funding for the Natural Gas Public Interest Research Program, and requests the CEC to detail the impact of current funding levels, the results and outcomes from current and prior funding levels, the current research needs, priorities, and stakeholder input that may justify increased funding, and different funding ranges that may support different levels of results or research advancements. In the current proposed research plan, the CEC reiterates that critical natural gas issues requiring research had increased in the past five years while funding for natural gas research remained constant for seven years from 2009, and has even decreased with inflation over time.

The Commission appreciates the CEC's clear delineation of major issues presently facing California's natural gas infrastructure. The Commission agrees that critical incidents like San Bruno and Aliso Canyon, system leakage of methane, the need for advancement in cost-effective renewable gas for both electricity generation and transportation, the effects of subsidence and ocean level rise on natural gas infrastructure, among others raised by the CEC are all pressing issues that demand attention and action. Thus, the Commission looks forward to a fuller consideration of the expansion of the program budget in a future formal application.

The CEC suggests expanding the timing for the Natural Gas Budget Plan from annually to triennially.

Interconnection to the Common Carrier Pipeline System In Compliance with Senate Bill 1383, R.17-06-015 at 7.

Pursuant to D.04-08-010 (Decision), the CEC, as administrator of the Natural Gas Research & Development Program, must compile a prioritized list of projects that meet the Commission's project criteria *annually*.¹¹ Although the Decision gives no detail on the rationale for the annual cycling of the program, this timeline is an established aspect of the Natural Gas R&D program. To propose any changes to the program, the CEC must bring such a proposal before Energy Division for approval.¹²

In its 2017-2018 Plan, the CEC proposes expanding the timing for the Natural Gas Budget Plan from annually to triennially. The CEC cites six major justifications for switching from an annual to a triennial Natural Gas Budget Plan:

- Planning a three-year budget increases the ability to aggregate funding across fiscal years into fewer but larger funding opportunities.
- Increased funding levels will attract a larger pool of interested research and industry participants.
- Research activities can be planned over a multi-year horizon allowing for more consistency in the research activities and more stability for the research performer.
- With investment planning every three years, there is time to initiate research activities and apply knowledge gained to the next planning process.
- The ability to plan for three years of funding enables larger project awards, increasing the potential for funded research to have a bigger impact once completed.
- A longer horizon permits more effective commercialization and technology transition processes.

The CEC asserts that the transition to a triennial cycle will expand the scale and budget of projects within this program. It states that a three-year budget creates fewer but larger funding opportunities; attracts a larger pool of interested research and industry participants; and enables larger project awards, which increase the potential for funded research to have a bigger impact once

¹¹ See D.04-08-010 at 37.

¹² D.04-08-010 at 33.

completed. These claims, if true, would help address issues brought upon by the current program budget. Thus, the Commission should reconcile to what extent a transition to a triennial cycle would mitigate the budget needs of the Natural Gas R&D program. This is an issue that the Commission should consider in tandem with the CEC's budget increase proposal for Natural Gas R&D. As such, the Commission looks forward to addressing the prospect of transitioning Natural Gas R&D to a triennial cycle in a future formal application.

One tradeoff that the Commission preliminarily observes between a one-year and a three-year investment cycle is flexibility versus consistency. The CEC asserts that projects planned over a multi-year horizon enjoy greater consistency in the research activities and more stability for the research performer.¹³ These benefits, however, may come at the expense of project flexibility that is inherent to an annual application horizon. Administrators in Electric Program Investment Charge (EPIC), the Commission's electric R&D program, have repeated the importance of maintaining flexibility in R&D for effective portfolio management and have clamored for expedited pathways for new project approval between triennial EPIC cycles.¹⁴ Their principal justification has been the need for flexibility:

EPIC administrators need flexibility to fund entirely new project opportunities that may emerge between triennial program cycles. Technological innovations can emerge and be developed rapidly, and it is important for EPIC administrators to have the flexibility to shift the focus of their EPIC funding plans towards the most relevant and up-to-date technologies and innovative products and applications that can provide the greatest benefit to California energy customers.¹⁵

¹³ Dani, Nicole. California Energy Commission. *Natural Gas Research and Development Program Proposed Program Plan and Funding Request for Fiscal Year 2017-2018* at 27.

¹⁴ See *Comments of San Diego Gas & Electric Company Regarding Flexibility to Fund New EPIC Projects*, A.14-04-034, at 3. See also *Opening Comments of Southern California Edison Company*, A.14-04-034 at 2.

¹⁵ *Opening Comments of Pacific Gas and Electric Company on Flexibility to Fund New Projects Under Electric program Investment Charge Programs*, A.14-04-034 at 1.

Before the Commission decides on the expansion of the Natural Gas R&D program to a triennial cycle, the CEC should explain the importance of project flexibility in natural gas projects, and propose how to address flexibility needs for a program with a three-year horizon. The Commission needs greater clarity on the full impact of a transition to a triennial Natural Gas budget plan.

The CEC also asserts that with the longer application process, researchers can initiate research activities and apply knowledge gained to the next planning process. This claim warrants greater explanation because the initiation of research activities and application of new knowledge are capabilities within an annual application cycle program as well. In a triennial program, learnings from a project can be applied two years after the initiation of that project, at the earliest. In an annual program, learnings from a project can be applied to a project in the next application period at the earliest, but can also be applied in any subsequent year. The CEC should further detail why a three-year horizon would facilitate more meaningful research based on previous learnings.

The CEC asserts that the longer horizon permits more effective commercialization and technology transition processes. This warrants further explanation. How does a longer horizon permit more effective commercialization and technology transition? Examples of how the current one-year program horizon has prevented natural gas R&D commercialization and technology transition would be helpful.

The CEC's Proposed Program Plan and Funding Request for Fiscal Year 2017-2018 is approved.

In accordance with D.04-08-010, the CEC provided the annual proposed R&D program for FY 2017-2018 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. The basic program areas meet the criteria for public interest gas R&D projects laid out in the Decision, the CEC reasonably selected gas R&D program areas, and the CEC reasonably allocated the program's budget to the different program areas. We authorize the

CEC's proposed \$24 million budget as described in its *Natural Gas Research, Development, and Demonstration Program, Proposed Program Plan and Funding Request for Fiscal Year 2016-2017*.

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. By stipulation of all parties, comments were filed 10 days following the mailing of this draft resolution.

FINDINGS

1. The CEC filed its Fiscal Year 2017-2018 Natural Gas R&D Program budget and program plan, per 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 2017-2018 R&D budget to the different project areas.
4. Recent state policy directives should be reflected in this plan, and this Resolution guides the plan's priorities and the CEC's treatment of the program budget accordingly.
5. 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.
6. 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 2017-2018 should be adopted for a maximum budget of \$24 million.

7. The CEC provided an account of then-current unspent funds in the Natural Gas R&D Program, including encumbrances and expiration dates.
8. Since the CEC does not request the \$1.35 million of previous-cycle unspent funds as a supplement to the FY 2017-18 proposed budget, it requires no guidance from the Commission at this time for the reinvestment of unspent funds.
9. An expansion of the Natural Gas R&D Program to a triennial cycle should be considered in tandem with an increase of the overall program budget.
10. The Commission has not yet determined the reasonableness of the overall Natural Gas R&D Program or of the funding level beyond FY 2017-2018.
11. The CEC should submit additional information in a future formal application to inform Commission review of the overall funding levels of the program, and whether timing for the Natural Gas R&D Program should expand to a triennial cycle.

THEREFORE IT IS ORDERED THAT:

1. The CEC remains the program administrator for the Natural Gas R&D program for FY 2017-2018.
2. The Natural Gas R&D program funding level for FY 2017-2018 is \$24 million. The CEC's administrative budget is 10% of these funds, or \$2.4 million.
3. The CEC shall include in its Fiscal Year 2018-2019 proposed budget an account of then-current unspent funds in the Natural Gas R&D program, including encumbrances and expiration dates.
4. In its implementation of the FY 2017-18 Natural Gas R&D Budget, the CEC shall:
 - a. Be attentive to the goals of the California Air Resources Board's 2017 Climate Change Scoping Plan Update

- b. Continue to target technology solutions that propel the decarbonization of emissions intensive and trade exposed industries
5. In future Natural Gas R&D Budget Proposals, the CEC shall identify and consider opportunities to support dairy and livestock biomethane research.
6. The CEC's *Natural Gas Research, Development, and Demonstration Program, Proposed Program Plan and Funding Request for Fiscal Year 2017-2018* 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 September 28, 2017; the following Commissioners voting favorably thereon:

TIMOTHY J. SULLIVAN
Executive Director

Appendix A

Table 1: Natural Gas R&D Budget Plan Summary FY 2017-18

PROGRAM AREAS	Proposed Budget
Energy Efficiency	\$6,600,000
Renewable Energy and Advanced Generation	\$4,000,000
Energy Infrastructure	\$8,000,000
Natural Gas-Related Transportation	\$3,000,000
Program Administration	\$2,400,000
TOTAL	\$24,000,000

Source: California Energy Commission *Proposed Program Plan and Funding Request for Fiscal Year 2017-18*.