

Company: Southern California Gas Company (U 904 G)
Proceeding: 2019 General Rate Case
Application: A.17-10-007/008 (cons.)
Exhibit: SCG-221

SOCALGAS

REBUTTAL TESTIMONY OF SHARON TOMKINS

(CUSTOMER SERVICES - TECHNOLOGIES, POLICIES & SOLUTIONS)

JUNE 18, 2018

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



TABLE OF CONTENTS

I.	SUMMARY OF DIFFERENCES	1
II.	INTRODUCTION	1
	A. ORA	1
	B. Sierra Club and Union of Concerned Scientists (SC-UCS).....	2
III.	REBUTTAL TO PARTIES’ O&M PROPOSALS.....	3
	A. Non-Shared RD&D O&M Expense.....	4
	1. Research, Development and Demonstration Disputed Cost.....	4
	a. ORA	4
	i. SoCalGas Response to ORA RD&D Recommendation.....	5
	ii. SC-UCS incorrectly opines that both SoCalGas RD&D expenditures should be reduced and that the SoCalGas’ RD&D program should be eliminated	8
	iii. SoCalGas remains the appropriate entity to administer its RD&D program.....	9
	iv. SC-UCS made numerous erroneous claims regarding power-to-gas technology.....	9
	2. Policy & Environmental Solutions (P&ES) Disputed Cost.....	14
	a. ORA	14
	b. SC-UCS.....	14
	B. Shared Services O&M	14
	1. Policy & Environmental Solutions Disputed Cost.....	15
	a. ORA Shared P&ES O&M Expenses.	15
	b. SC-UCS Shared P&ES O&M Expenses.....	15
	i. SoCalGas’ request for P&ES group is appropriate.....	15
	ii. SC-UCS Repeatedly and Erroneously Impugns Policy & Environmental Solutions’ Activities	16
	2. Business Strategy and Development Cost	19
	a. ORA Shared Business Strategy and Development O&M Expenses.	19
	b. SC-UCS Shared Business Strategy and Development O&M Expenses.	19
IV.	CONCLUSION.....	19
V.	WITNESS QUALIFICATIONS.....	20

APPENDIX A - 2018-05-09 Letter from DOE

APPENDIX B - CSULA Scope of Work Proposal

APPENDIX C - Selected Comment Letters from SoCalGas to State and Local Agencies

APPENDIX D - Power to Gas Highlights

APPENDIX E - ACC-OC Climate Action Plan Comment Letter Provided in response to Data Request Sierra Club-UCS-004 Q16

APPENDIX F - GLOSSARY OF TERMS

1 **SOCALGAS REBUTTAL TESTIMONY OF SHARON TOMKINS**
2 **(CUSTOMER SERVICES - TECHNOLOGIES, POLICIES & SOLUTIONS)**

3 **I. SUMMARY OF DIFFERENCES**

4 **TABLE ST-1**
5 **Comparison of SoCalGas and Intervenors**
6 **TY 2019 Estimated Operating & Maintenance (O&M) Expenses**

Total O&M - Constant 2016 (\$000)			
	Base Year 2016	Test Year 2019	Change
SOCALGAS	14,626	19,234	4,608
ORA	14,626	14,792	166
Sierra Club-UCS	Unspecified		

7 **II. INTRODUCTION**

8 This exhibit: (1) adopts the direct testimony of Lisa L. Alexander supporting Customer
9 Services – Technologies, Policies & Solutions;¹ and (2) provides rebuttal testimony addressing
10 the following testimony from two parties related to Southern California Gas Company’s
11 (SoCalGas) request:

- 12 • The Office of Ratepayer Advocates (ORA) as submitted by Ms. Crystal
13 Yeh.²
- 14 • Sierra Club and Union of Concerned Scientists (SC-UCS) as submitted by
15 James O’Dea and Rachel Golden.³

16 **A. ORA**

17 ORA issued its report on Customer Service Technologies, Policies and Solutions
18 (CSTP&S) on April 13, 2018.⁴ The following is a summary of ORA’s positions:

¹ October 6, 2017, Prepared Direct Testimony of Lisa L. Alexander, Ex. SCG-21.

² April 13, 2018, ORA Report on the Results of Operations for San Diego Gas & Electric Company Southern California Gas Company Test Year 2019 General Rate Case, Ex. ORA-17.

³ May 14, 2018, Prepared Testimony of James O’Dea On Behalf of Union of Concerned Scientists and Rachel Golden on Behalf of Sierra Club on The Test Year 2019 General Rate Case Applications of San Diego Gas and Electric and Southern California Gas Company, Ex. SC-UCS-01.

⁴ Ex. ORA-17 (Yeh).

- Non-Shared Expenses: ORA uses a five-year average (2012-2016) as the basis for its Test Year (TY) 2019 forecast for Research, Development & Demonstration (RD&D) expenses and recommends a TY 2019 revenue requirement of \$9.886 million; \$4.443 million less than the SoCalGas zero-based forecast for TY 2019.
- ORA does not oppose SoCalGas' TY 2019 forecast of \$0.898 million for its non-shared Policy & Environmental Solutions workgroup.
- ORA does not oppose SoCalGas' TY 2019 forecast of \$4.008 million for its shared services workgroups.

B. Sierra Club and Union of Concerned Scientists (SC-UCS)

SC-UCS filed its testimony on May 14, 2018.⁵ SC-UCS' estimate for SoCalGas' Non-Shared RD&D O&M expenses is not specified and no methodology is identified for determining an estimate. SC-UCS appears to have two positions regarding the SoCalGas RD&D program, first recommending a decrease in SoCalGas' RD&D funding commensurate with any increase in the California Energy Commission's (CEC) Natural Gas R&D program fund⁶ and later suggesting that SoCalGas should no longer administer a R&D program.⁷ SC-UCS' estimate for SoCalGas Policy & Environmental Services O&M expenses is not specified and no methodology is identified for determining an estimate.

SoCalGas estimates are reasonable

As shown in my direct testimony, SoCalGas' costs in this area are based on sound estimates of its revenue requirements at the time of testimony preparation.

Before addressing specific areas of ORA and SC-UCS' testimony, I want to be clear on what will not be addressed in my testimony and why.⁸ SC-UCS makes numerous policy arguments throughout its testimony about why California should move to "widespread

⁵ Ex. SC-UCS-01 (O'Dea).

⁶ Ex. SC-UCS-01 (O'Dea) at 41:1113.

⁷ Ex. SC-UCS-01 (O'Dea) at 45:27 to 46:2.

⁸ Please also note that the fact that I may not have responded to every issue raised by others in this rebuttal testimony does not mean or imply that SoCalGas agrees with the proposal or contention made by these or other parties.

1 electrification of end uses of energy – such as transportation or space and water heating – that
2 currently use natural gas and other fossil fuels.”⁹ While SoCalGas disagrees with SC-UCS’
3 policy claims, this is not the appropriate venue for that discussion.

4 Should the state determine that widespread electrification of end uses is its singular
5 policy direction – which it has not done – there would need to be a state-wide formalized process
6 to address the ramifications, including among other things, customer impacts, costs, how
7 switching fuel sources will be paid for, and impacts to energy reliability. This has not occurred.
8 Were it to occur, that would be the appropriate forum for SC-UCS to advocate its policy
9 position.

10 There is good reason why such a statewide proceeding has not yet occurred --
11 California’s laws and policies do not indicate that natural gas usage will be eliminated in the
12 foreseeable future. While there are targets for electrifying vehicles, there is no adopted timeline
13 for electrification of other end uses. In fact, California Air Resources Board (CARB) did not
14 include building electrification in California’s 2017 Climate Change Scoping Plan, which is
15 focused on meeting California’s 2030 Greenhouse Gas (GHG) reduction targets.¹⁰

16 **III. REBUTTAL TO PARTIES’ O&M PROPOSALS**

17 **TABLE ST-2**
18 **Comparison of SoCalGas and Intervenors**
19 **TY 2019 Estimated Non-Shared O&M Expenses**

Total Non-Shared Services (NSS) O&M - Constant 2016 (\$000)			
	Base Year 2016	Test Year 2019	Change
SOCALGAS	11,410	15,226	3,816
ORA	11,410	10,784	(626)
SC-UCS		Unspecified	

20
⁹ Ex. SC-UCS-01 (O’Dea) at 5:2-4.

¹⁰ CARB considered, but did not adopt SC-UCS’ position on building electrification in developing the 2030 Scoping Plan Update. SC-UCS advocated for Alternative 1, which focused on direct regulation of emissions sources, including a call for building electrification (SC-UCS submitted comments on behalf of multiple parties, advocating Alternative 1 for the Scoping Plan Update on April 10, 2017).

1 TY 2019 expenses of \$9.886 million; \$4.443 million less than the
2 SoCalGas zero-based forecast for TY 2019.¹³

3 **i. SoCalGas Response to ORA RD&D Recommendation**

4 **SoCalGas' Natural Gas RD&D Program is Necessary to Meet State Goals**

5 SoCalGas disagrees with ORA's rationale for reducing the RD&D program forecast.
6 The SoCalGas RD&D program is uniquely situated to supplement and complement other RD&D
7 programs. SoCalGas' service territory includes the only two Environmental Protection Agency
8 (EPA) designated extreme non-attainment areas for 8-hour ozone concentrations in the U.S.,¹⁴
9 which includes the South Coast Air Quality Management District (SCAQMD) and the San
10 Joaquin Valley Air Pollution Control District (SJVAPCD). SoCalGas' RD&D program has
11 partnered with these air districts to execute research efforts to reduce criteria pollutants from the
12 transportation sector as well as stationary sources like electric generators and customer end-use
13 appliances.

14 The SoCalGas RD&D program was recently commended by the Department of Energy
15 (DOE) for its work with researchers at Pacific Northwest National Lab (PNNL) on the
16 development and commercialization of a novel solar hydrogen production technology that "can
17 lower carbon emissions in natural gas applications."¹⁵ According to the DOE, "This
18 demonstrates an important example of moving technology from the Laboratory to the
19 marketplace, one that offers important benefits for our Nation and its citizens."¹⁶

20 Our RD&D program has also identified research areas not addressed by other California
21 R&D programs. For instance, power-to-gas technology, a unique technology that bridges the
22 gap between the electric grid and the natural gas system, does not fit neatly into either the CEC's
23 Natural Gas R&D program nor its Electric Program Investment Charge (EPIC) R&D program.
24 And SoCalGas' RD&D program has greater flexibility than other R&D programs to fund
25 research by subject matter experts outside of California, including renewable energy researchers

¹³ Ex. ORA-17 (Yeh) at 42.

¹⁴ See, <https://www3.epa.gov/airquality/greenbook/hbtc.html>.

¹⁵ See attached DOE letter dated May 9, 2018, included as Appendix A.

¹⁶ *Id.*

1 at the National Renewable Energy Lab (NREL) in Golden, Colorado; energy and environment
2 researchers at PNNL in Richland, Washington; and pipeline safety and reliability researchers at
3 the Gas Technology Institute in Des Plaines, Illinois.

4 SoCalGas' RD&D program complements other R&D programs such as the CEC's
5 Natural Gas R&D program. SoCalGas has a long history of cooperating with the CEC in
6 developing solicitation guidelines as well as helping the CEC gets solicitations from a robust
7 pool of applicants. CEC research demonstration efforts also require customer host sites and
8 SoCalGas plays a crucial role in leveraging relationships with customers to find optimal host
9 sites in collaboration with the CEC. Furthermore, CEC research demonstrations have co-funding
10 requirements which, in many cases, would not be met without support from the SoCalGas
11 RD&D budget. This co-funding mechanism provides additional vetting of applicants, providing
12 greater certainty that projects offer a benefit to customers and a reasonable probability of
13 success. CEC solicitations prioritize projects that demonstrate at least 60% in-state spending.¹⁷
14 SoCalGas often brings technology providers from out of state and helps them meet in-state
15 spending requirements by adding co-funding, expertise, and providing facilities for testing and
16 meetings.

17 **A Zero-Based, Forward Looking, Forecasting Methodology Should be Utilized**

18 SoCalGas disagrees with ORA on the proposed change in forecasting methodology and
19 the reduction in funding levels. ORA provides no testimony disputing the facts or accuracy of
20 the RD&D needs assessment and analysis presented in my direct testimony's "Technology
21 Needs Assessment Summary," upon which the SoCalGas TY 2019 forecast is based. In
22 particular, ORA does not address the growing need for technology development to address air
23 emissions reductions, criteria pollutants, climate mitigation, RG, system reliability, and integrity.

24 A five-year average forecasting methodology is not appropriate for RD&D and was not
25 used in previous General Rate Case (GRC) cycles. Instead a zero-based methodology,
26 developed from a forward-looking assessment of RD&D needs, is a more appropriate basis for
27 forecasting this work group than historical averaging. SoCalGas has utilized the zero-based
28 forecast method in at least its previous two GRC cycles (A.10-12-006 and A.14-11-004). As

¹⁷ See, http://www.energy.ca.gov/research/documents/naturalgas_faq.pdf at 8.

1 discussed in my direct testimony the SoCalGas RD&D program is funded through a one-way
2 balancing account, and is funded across each GRC cycle and trued up at the end of each GRC
3 cycle.¹⁸ This ensures any unspent RD&D funds at the end of the current GRC cycle, SoCalGas
4 will propose in its next GRC proceeding to return the unspent funds in rates to customers.
5 Overspent funds may not be recovered from ratepayers and shareholders will absorb the balance
6 in the event actual expenses exceed authorized levels.

7 ORA's TY 2019 forecast made a reduction based on a five-year average of spending but
8 did not apply this reduction evenly across all program areas. ORA forecasts for the Clean
9 Generation, Clean Transportation, and Low Carbon Resources RD&D categories represent 57%,
10 78% and 53% respectively of the SoCalGas TY 2019 forecasts and are offered without any
11 discussion.¹⁹ ORA made no effort to address the increased RD&D drivers in those areas
12 provided in direct testimony, supporting appendices and workpapers. These include the need to
13 reduce nitrogen oxides (NOx) and greenhouse gas (GHG) emissions in both generation and
14 transportation applications as well as the growing need for technology solutions to support
15 increased RG resources, and the integration of renewable generation. ORA's unsupported
16 forecasting methodology is arbitrary. Therefore, the SoCalGas forecast of \$14.329 million
17 should be adopted as proposed.

18 **Sierra Club and Union of Concerned Scientists**

19 It is unclear from SC-UCS' testimony what expenses for SoCalGas' Non-Shared RD&D
20 O&M it believes should be reduced and SC-UCS provides no methodology for determining an
21 estimate. SC-UCS' testimony can be summarized as follows:

- 22 • Need for SoCalGas RD&D: SC-UCS has stated that implementation of
23 natural gas research and development ("R&D") is best left to the CEC,²⁰
24 which already has a ratepayer-funded natural gas R&D program. SC-UCS
25 identifies three areas of concern regarding the SoCalGas RD&D program,
26 but offers no evidence that the SoCalGas RD&D program is inconsistent

¹⁸ Ex. SCG-21 (Alexander) at 9:17-19.

¹⁹ Ex. ORA-17 (Yeh) at 42:7.

²⁰ Ex. SC-UCS-01 (O'Dea) at 2:24.

1 with California Public Utilities Code (PUC) Section 740.1 governing
2 research, development, and demonstration programs proposed by
3 electrical and gas corporations.

4 **ii. SC-UCS incorrectly opines that both SoCalGas RD&D**
5 **expenditures should be reduced and that the SoCalGas'**
6 **RD&D program should be eliminated**

7 SoCalGas disagrees with SC-UCS' statement that "[t]o the extent the California Public
8 Utilities Commission) CPUC believes overall levels of ratepayer-funded natural gas R&D should
9 be maintained, the CEC allocation could increase with a corresponding decrease to the SoCalGas
10 program."²¹ The CEC has proposed an increase in funding for research²² but, at this time, has
11 not submitted a formal request to the CPUC to expand the program budget. Even if it had, that
12 does not mean there should be a corresponding reduction in SoCalGas' RD&D request. As
13 explained above, our RD&D program is supplementary to and complementary of other RD&D
14 programs, including CEC's.²³

15 In fact, CEC's request to expand the natural gas R&D program supports a corresponding
16 increase in our RD&D funding. Similar to SoCalGas' request, CEC's increased funding request
17 is based upon new legislation, mandates, and goals to reduce GHGs, increase energy efficiency,
18 increase renewable generation, and improve freight sustainability.²⁴ State goals are aggressive
19 and new technological solutions are required. More research funding is necessary in order to
20 advance the technologies that will help meet state goals. Current CEC solicitations often have
21 projects pass the selection criteria but do not move forward due to solicitation funding limits.²⁵

²¹ Ex. SC-UCS-01 (O'Dea) at 41:11-13.

²² See, http://www.energy.ca.gov/research/notices/2018-01-25_workshop/2018-01-25_NG_R-n-D_Expansion_Presentation.pdf at 8.

²³ See *id.* at 5 (CEC remarking that its funded programs must meet certain criteria including that they be "not adequately addressed by competitive or regulated entities.")

²⁴ *Id.* at 7.

²⁵ See, http://www.energy.ca.gov/contracts/GFO-16-304_NOPA_Phase2_Groups1-4_Amended.pdf. Projects 1-4 passed and were funded, projects 5-8 passed, but were not funded.

1 **iii. SoCalGas remains the appropriate entity to administer**
2 **its RD&D program**

3 SoCalGas disagrees with the following opinion proffered by SC-UCS:

4 *I ... do not believe SoCalGas should continue to administer an R&D program.*²⁶

5 As previously discussed, the SoCalGas RD&D program is both supplementary and
6 complementary to the CEC Natural Gas R&D program. SC-UCS incorrectly claims that
7 SoCalGas' RD&D program has misled the public with use of ratepayer funds. SC-UCS points to
8 an expenditure made with funds allocated in the TY 2016 GRC and asserts that SoCalGas has
9 inappropriately utilized funds allocated to the RD&D program to bolster its public image.²⁷ SC-
10 UCS is wrong. The funds provided to support California State University—Los Angeles
11 Combustion Engineering Research were a justified expenditure under Public Utilities Code
12 Section 740.1. The funds will provide ratepayer benefits as they will increase the amount of
13 combustion research done in state and give university students valuable experience in emissions
14 reduction strategies and emissions measurement technologies.²⁸ This research has the potential
15 to drastically reduce both smog-forming criteria pollutants and GHG pollutants. SC-UCS claims
16 that publicizing this use of funds misleads the public when in fact the public statement served as
17 educational outreach done to inform the public that a new resource was made available to the
18 students of a state college.

19 **iv. SC-UCS made numerous erroneous claims regarding**
20 **power-to-gas technology**

21 SC-UCS singles out power-to-gas in their critique of the RD&D program. Putting to one
22 side the fact that: (1) the power-to-gas sub-program request is a small component of the overall
23 RD&D program, representing less than 12% of the TY 2019 proposed funding, and (2) the
24 overall RD&D program proposal includes research into low NOx emission vehicles, fuel cells,
25 carbon capture and utilization, and pipeline safety, our power-to-gas program encompasses a

²⁶ Ex. SC-UCS-01 (O'Dea) at 45:27 to 46:2.

²⁷ Ex. SC-UCS (O'Dea) at 42:10-12.

²⁸ See Appendix B for the associated scope of work.

1 broad set of technologies that can be used to convert excess renewable power into gaseous fuels.
2 A number of videos describing the concept of power-to-gas are available online.²⁹

3 Power-to-gas technology includes systems for producing renewable hydrogen for use as a
4 vehicle fuel or in industrial applications. The research areas identified in the technology needs
5 assessment include studying how power-to-gas systems could be optimized and deployed to 1)
6 support the electric grid under increased intermittent renewable power production and 2) produce
7 hydrogen for direct vehicle fueling, blending into the natural gas pipeline system, or storage for
8 later use to return electricity to the grid through a fuel cell.

9 Solar and wind resources are only available when the sun shines and the wind blows.
10 Much of the electricity from these renewable resources is generated at times of the day when
11 customer demand for electricity is lower.³⁰ More simply, supply and demand can be
12 mismatched. Without a cost-effective way to store excess solar and wind power for when
13 demand is higher, it can go to waste. Or, California utilities may be forced to pay other states to
14 take the excess electricity so in-state power lines don't get overloaded.³¹

15 California has an excess of cheap wind and solar power. For instance, the California
16 System Operator (CAISO) reported curtailing almost 95 GWh of wind and solar, enough
17 electricity to power more than 13.5 million homes for a year,³² in April of 2018, up 8% over the
18 previous year.³³ Rather than waste this energy potential through curtailment or exporting it to
19 other states, power-to-gas can harness this renewable energy for Californians to use at a later
20 time when wind and solar are not available to meet energy demands.

21 Power-to-gas provides a solution to this problem. It mitigates the waste and maximizes
22 renewable resources by capturing the excess supply of wind and solar electricity. That's the

²⁹ See, e.g., <http://www.europeanpowertogas.com/videos>.

³⁰ See, <https://www.greentechmedia.com/articles/read/the-california-duck-curve-is-real-and-bigger-than-expected#gs.jMSr6Zk>.

³¹ See, <https://ww2.kqed.org/science/2016/04/04/what-will-california-do-with-too-much-solar/>.

³² See, https://www.eia.gov/consumption/residential/reports/2009/state_briefs/pdf/ca.pdf.

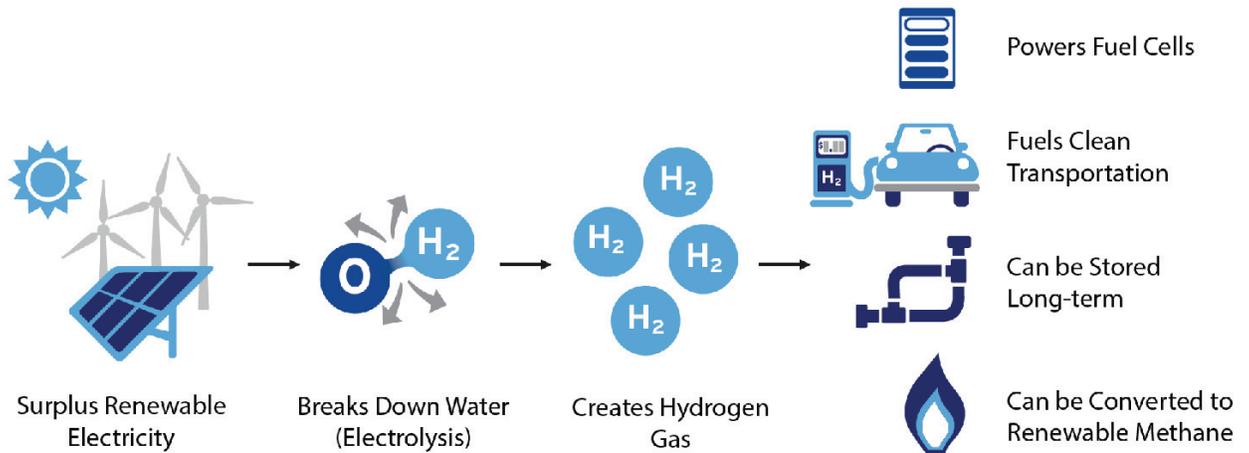
³³ See, <http://www.caiso.com/Documents/HistoricalCurtailment.pdf>.

1 power in power-to-gas. It then converts this surplus electricity into the gas – carbon-free
2 hydrogen. That carbon-free hydrogen can then be converted into renewable methane.

3 Both hydrogen and renewable methane can be put into the existing natural gas system to
4 reduce the use of traditional fossil natural gas. They can also be stored indefinitely for later use,
5 unlike batteries, which lose power over time.

6 **FIGURE ST-1**

7 **Power-to-Gas can fuel clean transportation, power fuel cells, or be converted into**
8 **renewable methane**



10 This means power-to-gas provides a large-scale, long-term renewable energy storage
11 solution.³⁴ It can save the sunshine for the proverbial rainy day. Power-to-gas helps advance the
12 state's greenhouse gas reduction and clean energy goals. It's also more flexible, scalable and
13 cost-effective than other storage technologies.³⁵

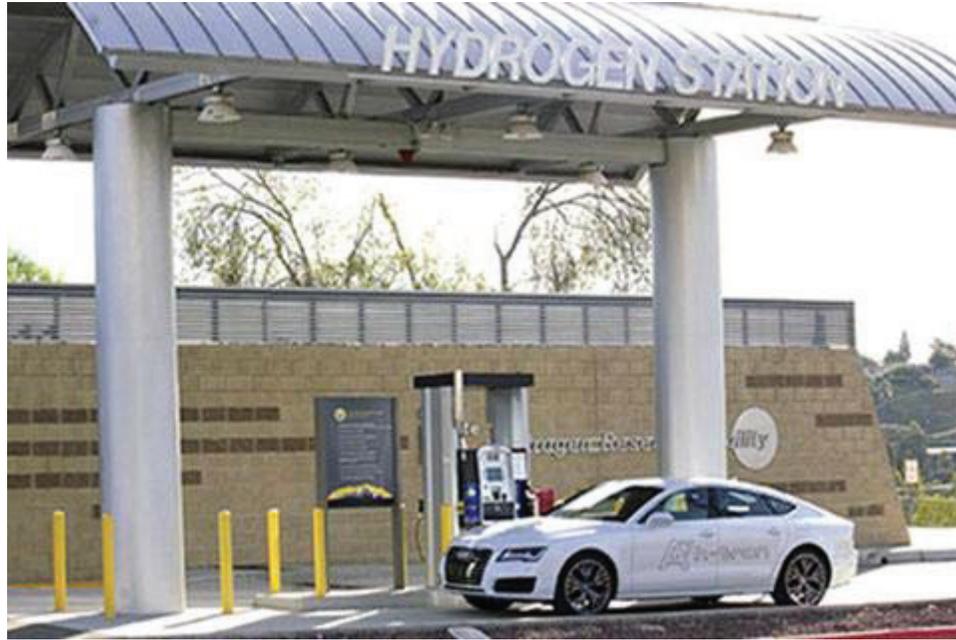
14 Power-to-gas can be deployed in a wide range of applications. A hydrogen fueling
15 station, like the one at California State University--Los Angeles, that uses an electrolyzer to
16 produce hydrogen is an example of a power-to-gas application. Researching this power-to-gas
17 pathway supports the CEC and CARB in their effort to achieve the goal of 100 hydrogen fueling
18 stations by 2020 as set forth in Assembly Bill (AB) 8.

³⁴ See, http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-10/TN219923_20170626T180524_Emanuel_Wagner_Comments_Economics_of_Power_to_Gas.pdf.

³⁵ See, <http://www.renewableenergyworld.com/articles/2014/07/hydrogen-energy-storage-a-new-solution-to-the-renewable-energy-intermittency-problem.html>.

1 **FIGURE ST-2**

2 **Hydrogen vehicle fueling station on the campus of California State University, Los Angeles**



3
4
5 Power-to-gas technology can also support development of biogas projects in California.
6 At a biogas plant, an upgrading system refines the raw biogas, typically a mixture of methane
7 and carbon dioxide, by removing the carbon dioxide. Power-to-gas technology can use excess
8 renewable power to convert this carbon dioxide stream to renewable natural gas to increase the
9 output of the biogas plant. This process is being demonstrated at the BioCat Project in
10 Copenhagen, Denmark, which uses an electrolyzer and a biological methanation system to
11 generate renewable gas for the direct injection into a local gas distribution grid.³⁶

³⁶ See, <http://biocat-project.com/about-the-project/technology-components/>.

1 **FIGURE ST-3**

2 **The BioCat project in Copenhagen, Denmark. The power-to-gas component can be seen in**
3 **the foreground. In the background, a wind turbine and anaerobic digesters are visible.**



4
5 Power-to-gas, a unique technology that bridges the gap between the electric grid and the
6 natural gas system, has garnered attention across the globe.³⁷ The SoCalGas RD&D program has
7 worked to bring this technology to California to support the state's ambitious renewable energy
8 production and emissions reduction goals. Accordingly, SC-UCS' recommendations with
9 respect to SoCalGas' RD&D program should be disregarded.

³⁷ See Appendix D.

1 **1. Policy & Environmental Solutions Disputed Cost**

2 **TABLE ST-5**
3 **Comparison of SoCalGas and Intervenors**
4 **TY 2019 Shared Services P&ES O&M**

Shared Services P&ES O&M - Constant 2016 (\$000)			
	Base Year 2016	Test Year 2019	Change
SOCALGAS	2,026	2,508	482
ORA	2,026	2,508	482
SC-UCS	Unspecified		

5 **a. ORA Shared P&ES O&M Expenses.**

6 ORA does not challenge SoCalGas’ forecast for Shared P&ES O&M expenses. The
7 Commission should adopt SoCalGas’ forecast as reasonable.

8 **b. SC-UCS Shared P&ES O&M Expenses**

9 SC-UCS did not provide a specific forecast for Shared or Non-Shared Policy and
10 Environmental Solutions (P&ES) O&M expenses. SC-UCS’ testimony can be summarized as
11 follows:

- 12 • SoCalGas’ P&ES group has aggressively sought to block measures by state
13 agencies and local governments that would reduce reliance on fossil fuels by
14 replacing natural gas end uses with electric options.³⁸
- 15 • SoCalGas should not recover the costs of activities before state agencies and local
16 governments related to the development of climate policy and greenhouse gas
17 reduction measures.³⁹

18 **i. SoCalGas’ request for P&ES group is appropriate**

19 SC-UCS asserts that “widespread electrification of end uses of energy...that currently use
20 natural gas or other fossil fuels”⁴⁰ is required for California to achieve its GHG reduction goals.
21 As I explained at the beginning of my rebuttal testimony, a utility’s GRC is not the appropriate

³⁸ Ex. SC-UCS-01 (O’Dea) at 11:2-6.

³⁹ Ex. SC-UCS-01 (O’Dea) at 1:12-14.

⁴⁰ Ex. SC-UCS-01 (O’Dea) at 5:2-4.

1 venue to have a policy discussion on the benefits of widespread electrification of end uses of
2 energy.

3 Natural gas and natural gas infrastructure will play a key role in supporting California’s
4 decarbonization policies by continuing to enable increased integration of renewable energy,
5 supporting significant GHG emission reductions in the transportation sector and facilitating the
6 delivery of captured biomethane from organic sources for productive use.

7 Given the extensive utilization of natural gas and the embedded investment in the
8 equipment and piping that consumers have made, it is unlikely that a rapid shift away from
9 natural gas will occur in the foreseeable future. Before a large-scale shift away from natural gas
10 could happen, much debate must occur to determine the costs to accomplish this, how it will be
11 paid for, and whether the benefits are worth the investment. SoCalGas plays an important role in
12 helping customers and other stakeholders understand how policy implementation will affect
13 them.

14 **ii. SC-UCS Repeatedly and Erroneously Impugns Policy**
15 **& Environmental Solutions’ Activities**

16 SC-UCS erroneously impugns P&ES’ activities, repeatedly suggesting that P&ES are not
17 honest actors. Such portrayal is not accurate. While there are numerous examples of this
18 inaccurate portrayal in SC-UCS’ testimony, my testimony presents only a handful for illustrative
19 purposes.

20 For example, SC-UCS claims, that the “Policy Group has aggressively sought to block
21 measures by state agencies and local government that would reduce reliance on fossil fuels by
22 replacing natural gas end uses with electric options.”⁴¹ It is appropriate for SoCalGas to present
23 our and our customers’ view with respect to measures being discussed. Such discussion allows
24 state agencies and local governments to take them into consideration in making informed and
25 balanced decisions.

26 SC-UCS selectively quotes several of the 17 comment letters that SoCalGas submitted to
27 state and local government agencies.⁴² After reviewing the letters in full, it becomes apparent
28 that SC-UCS’ selective quoting fails to capture the breadth of the discussion put forward by

⁴¹ Ex. SC-UCS-01 (O’Dea) at 11:4-6.

⁴² Ex. SC-UCS-01 (O’Dea) at 11:20-22.

1 SoCalGas in these comments.⁴³ SoCalGas has consistently offered comments on the importance
2 of considering policies under existing law as CEC considers new means to meet GHG reduction
3 goals. For example, SoCalGas' June 30, 2017 letter on the 2030 Energy Efficiency Targets
4 Workshop highlighted existing CPUC and CEC policy on fuel switching and fuel substitution, as
5 well as the discussion on renewable gas as another strategy consistent with CARB's Scoping
6 Plan and Short-lived Climate Pollutant Plan.⁴⁴

7 Similarly, SoCalGas submitted comments on two draft CEC staff papers on August 3,
8 2017. Again, SoCalGas provided comments and questions on energy metrics, cost-effectiveness
9 and treatment of departing load. We also highlighted the importance of considering SB1383 and
10 other state policies as they developed the energy efficiency goals for utilities.⁴⁵ With regards to
11 renewable natural gas, we noted "Replacing the use of fossil natural gas with renewable gas could
12 be an effective "fuel-substitution" measure—not only to reduce GHGs associated with energy use,
13 but also to reduce methane emissions from organic sources, which account for over 80% of
14 California's methane emissions."⁴⁶

15 SC-UCS similarly mischaracterize SoCalGas' activities before local government. For
16 example, SC-UCS incorrectly contends that, in engaging with the City of Pasadena on bus
17 procurement, P&ES attempted to "push local governments to procure natural gas buses over
18 electric options."⁴⁷ A full review of P&ES's comments show that SoCalGas requested that the
19 City of Pasadena "should consider that transit agencies including Los Angeles County
20 Metropolitan Transportation Authority (LA Metro), San Diego Metropolitan Transit System,

⁴³ I have included as Appendix C a copy of the SoCalGas' state and local government agency letters that SC-UCS attached to its testimony. These letters have been organized individually and numbered for ease of reference.

⁴⁴ See attached Comments on the IEPR Staff Workshop on 2030 Energy Efficiency Targets, Docket number 17-IEPR-06 –Doubling Energy Efficiency Savings letter dated June 30, 2017, Appendix C at ST-C-63.

⁴⁵ See attached Comments on the CEC Staff's Two Draft Papers on SB 350 Energy Efficiency Savings Doubling Tariffs, Docket number 17-IEPR-06 –Doubling Energy Efficiency Savings letter dated August 3, 2017, 2017, Appendix C at ST-C-C68.

⁴⁶ *Id.* at ST-C-71.

⁴⁷ Ex. SC-UCS-01 (O'Dea) at 21:4-5.

1 Orange county Transportation Authority, and Santa Monica’s Big Blue Bus have thoroughly
2 studied the use of near-zero emission natural gas buses running on renewable gas, and have
3 found that they provide significant emissions benefits at an acceptable cost. LA Metro’s recent
4 study found that the use of near-zero engines with renewable natural gas is the most cost-
5 effective strategy by an order of magnitude for reducing NOx and GHG as compared to using
6 battery electric or fuel cell powered buses.”⁴⁸

7 SC-UCS selective use of quotes does not include SoCalGas’ statement, “SoCalGas
8 encourages the City of Pasadena to adopt a diverse energy portfolio that includes multiple fuels
9 and technologies to meet California’s energy needs and climate targets in a cost-effective
10 manner.”⁴⁹

11 Similarly, in comments to the Association of California Cities -- Orange County on the
12 organization’s climate action plan, SoCalGas recommends that the Association “considers the
13 following principles for cities seeking to draft and implement Climate Action Plans: Aim to
14 create technology-neutral goals and policies; Cities should not pick technology winners and
15 losers, and rather should strive to create performance standards vs mandates; Advocate for cost-
16 effective solutions to reduce carbon emissions; Consider full-life-cycle emissions vs simplified
17 environmental metrics.”⁵⁰

18 SC-UCS’ characterization of P&ES’ activities is incorrect. Agencies and local
19 governments conduct workshops and issue draft documents seeking comments from all
20 stakeholders to ensure they get a broad cross section of opinions to inform their decisions.
21 P&ES provides insight on natural gas customers and technologies that are important, and often
22 unique, for decision-makers to consider.

23 Consequently, SC-UCS’ recommendations with respect to SoCalGas’ P&ES group
24 should be disregarded.

⁴⁸ Comment Letter to Anita Cerna, Senior Planner, regarding the City of Pasadena Draft Climate Action Plan, January 23, 2018, Appendix C at ST-C100.

⁴⁹ *Id.* at 3.

⁵⁰ Undated comment letter to Kelsey Brewer, Policy Analyst, Association of California Cities – Orange County, Appendix E at ST-E-2.

1 **V. WITNESS QUALIFICATIONS**

2 My name is Sharon Tomkins. My business address is 555 W. Fifth Street, Los Angeles,
3 California. I am the Vice President of customer solutions and communications for SoCalGas, a
4 Sempra Energy regulated California utility. I am responsible for delivering clean, low emissions
5 energy solutions for commercial, industrial and residential customers; and delivering the
6 information, programs and services to meet customers' energy needs and support state
7 environmental and social policy objectives. My business portfolio includes renewable gas, near
8 zero emissions transportation, emerging technologies, research and development, energy
9 efficiency, conservation and low-income assistance programs as well as media, customer and
10 employee communications. Previously at the company, I held increasingly responsible
11 management roles as the Assistant General Counsel and VP General Counsel.

12 Previously, I was a partner at O'Melveny & Myers LLP, where I was a founding member
13 of the global law firm's energy, natural resources and environmental practice, representing
14 clients in a variety of litigation, regulatory and appellate proceedings. Before joining O'Melveny
15 & Myers, I clerked in the U.S. Court of Appeals, Sixth Circuit, for the Honorable Danny J.
16 Boggs.

17 I am currently serving on the boards of directors of the California Minority Counsel
18 Program, Los Angeles Library Foundation, Constitutional Rights Foundation and Civil Justice
19 Association of California. I previously served on the boards of the Conference of California
20 Public Utility Counsel, Women's Lawyers Association of Los Angeles and Uncommon Good.

21 I hold a bachelor's degree in English, with High Distinction, from Pennsylvania State
22 University, and graduated Order of the Coif from the University of Southern California's Gould
23 School of Law.

APPENDIX A

2018-05-09 Letter from DOE



The Secretary of Energy
Washington, DC 20585

May 09, 2018

[REDACTED]
Southern California Gas
555 West 5th Street, GTT19A3
Los Angeles, California 90013

Dear Mr [REDACTED]

Congratulations on your 2018 Award for Excellence in Technology Transfer by the Federal Laboratory Consortium (FLC). Every day, the Department of Energy's (DOE) National Laboratories positively impact American lives in amazing ways. This is thanks to people like you who make discoveries and bring us unimaginable innovations using your grit and ingenuity.

This year, the FLC recognizes nine DOE teams from more than 300 Federal Laboratories, research centers, and facilities in the FLC membership. I am delighted to join FLC in recognizing Pacific Northwest National Laboratory's (PNNL) effort in developing and transferring the Solar Thermochemical Advanced Reactor System (STARS) to the STARS Technology Corporation (STC). The technology harnesses solar energy to power compact chemical reactors that produce liquids and gases for transportation, electricity generation, and other industrial processes.

The compact STARS system collects and sends concentrated sunlight into a compact reactor. The process converts a record-setting 70 percent of the received solar energy into chemical energy. Participating in the Energy I-Corps business training program helped PNNL researchers form STC and license necessary patents. PNNL and STC partnered with SoCalGas to show how STARS can lower carbon emissions in natural gas applications. This demonstrates an important example of moving technology from the Laboratory to the marketplace, one that offers important benefits for our Nation and its citizens.

Congratulations again on your FLC Award, and thanks once more for your dedication to the Department and your service to the Nation.

Sincerely,

A handwritten signature in black ink that reads "Rick Perry".

Rick Perry

APPENDIX B
CSULA Scope of Work Proposal

Proposal for Combustion Education and Research at California State University, Los Angeles

Jeff Santner and Ted Nye
10 November, 2017

Introduction

Southern California Gas Company has expressed interest in sponsoring academic activities at CSULA with the major goal of educating undergraduates in combustion. To meet this objective, we propose a combination of senior design projects, laboratory and coursework modifications, and/or the pursuit of fundamental scientific research performed by undergraduates. Instruction, development work, experiments, and testing would be performed at CSULA. As an industrial partner, it is anticipated that SoCalGas would support this effort with financial resources, testing support when on-campus facilities are not sufficient, and technical expertise/experience as needed. The intended outcome of this effort is to create engineering graduates with familiarity in combustion science and technology as a means to continue and promote Southern California's global leadership in sustainable, clean energy in an environment needing state-of-the-art air quality management.

Senior Design Projects

Every ABET-accredited engineering department requires students to complete a capstone project, many times referred to as Senior Design. CSULA's Senior Design course is a full-year class for Electrical and Mechanical Engineering students where they must apply their analytical skills on a practical, real-world problem. In the 2017-2018 school year, there were 195 EE and ME students working on 40 projects with 14 industry partners.

There are no textbooks for this course, no homework, no tests. It's about producing results in the same manner one would see in a professional environment. This means the designs and analyses must meet functional requirements, be on schedule, and be on budget. Much like a residency program to get supervised experience, the students learn to manage their project, work together on teams, and experience a complete design cycle from initial concept through final verification testing and product demonstration. Students must apply their previous undergraduate coursework and show competency using computer resources such as CAD or analysis tools. Students attend a weekly lecture where they learn about a diverse set of subjects such as project management, interpersonal communication, systems engineering, intellectual property, product liability, and a number of technical topics. In addition to their team meetings, they meet with a faculty advisor weekly and industry liaison as needed. Each semester ends with students presenting their work in an oral design review and with a final written report.

Corporate sponsors of Senior Design projects are encouraged to contribute \$25,000 annually per project. This typically includes costs for prototype parts and materials, faculty support, program consumables (such as 3D printer materials, posters, supplies, etc), and paying for program overhead functions such as support staff and program launch and Expo events. Corporate funding for any university effort is typically provided either through a contract with a negotiated Statement of Work or as a

philanthropic, tax deductible grant. A grant affords the college more discretionary use of the funding and is more efficient since it is billed with much less university overhead. Sponsors receive full use of the results and IP produced by their student teams, and get the benefit of evaluating each student for potential employment purposes.

We propose several combustion-related Senior Design projects. We welcome further projects proposed by SoCalGas and/or modifications to these projects as needed.

1) Sensitivity of NO_x Formation to Fuel Variability

Natural gas delivered by SoCalGas is required to meet Rule 30 (section I), which specifies aspects of composition such as heating value, content of impurities (water, hydrogen sulfide, mercaptan, total sulfur, carbon dioxide, oxygen, inerts, solids, liquids, hazardous substances), hydrocarbon dew point, Wobbe Number, Lifting Index, Flashback Index, and Yellow Tip Index. However, composition may still vary within this specification due to inputs into the pipeline from new sources, such as Renewable Natural Gas (RNG) or tight gas. Furthermore, suppliers often use RNG that does not comply with Rule 30 at the point of production rather than processing the gas to meet specifications and enter the pipeline.

Students working in this project would test the effects of fuel composition on NO_x emission with a particular burner of interest to SoCalGas (water heater, cooking equipment, etc.). NO_x emissions will be measured over a range of fuel compositions that meet Rule 30, as well as compositions of typical RNG that cannot be allowed to enter the pipeline. The effects of fuel composition will be modeled using a reactor network in Cantera software to determine the chemical pathways responsible for NO_x emissions with different gas composition.

The major costs of this project are the burner, fuel samples, and the exhaust gas analyzer. The exhaust gas analyzer may be outside the price range of this project, so that we will have to borrow an analyzer from SoCalGas or another institution.

2) Design of an Efficient Low-NO_x Cooking Burner

NO_x emissions from commercial food service are currently unregulated, but this is expected to change in the near future in the south coast region of California. Food service burner design is a great opportunity for a senior design project because there is large room for improvement, and the burners operate at relatively low power compared to industrial burners.

Students in this project will learn the fundamentals of combustion chemistry as it relates to NO_x production, and the concepts behind low-NO_x natural gas burners in other more mature applications, such as combined cycle gas turbines and water heaters. They will create several burner designs and manufacture them in our machine shop, or alternatively, investigate potential 3D Additive Manufacturing technology that can readily produce complex internal structures and cavities to promote controlled-uniform flow rates or promote mixing.

Their burners will be designed to easily interface with the exhaust gas analyzers at SoCalGas so that the students can test their designs during a site visit with minimal downtime to SoCalGas testing activities. Efficiency will be measured at CSULA with a simple experiment measuring the fuel usage needed to boil a known quantity of water in a typical cooking setup.

The major cost will be the time and equipment commitment during testing at SoCalGas. The minor costs are equipment such as tubing, mounting hardware, valves, flow measurement, and materials for machining. Design and manufacture of burners is relatively cheap using our presently available software licenses, machine shop, and 3D printers.

3) Development of a Combustion Experiment for an Undergraduate Course

With our heat transfer, fluid mechanics, and thermodynamics upper-division curricula, lab experiments become an essential element to help students understand the physics and develop a sense for real-world behavior. Several past Senior Design projects have consisted of students designing, analyzing, and building lab hardware, developing the control electronics and instrumentation, and finally, developing the learning steps required for the target course students to conduct the experiments. For example, Figure 1 shows an ocean wave tank built by students in 2045-15 school year to study the fluid mechanics of wave action breaking over ground barriers.

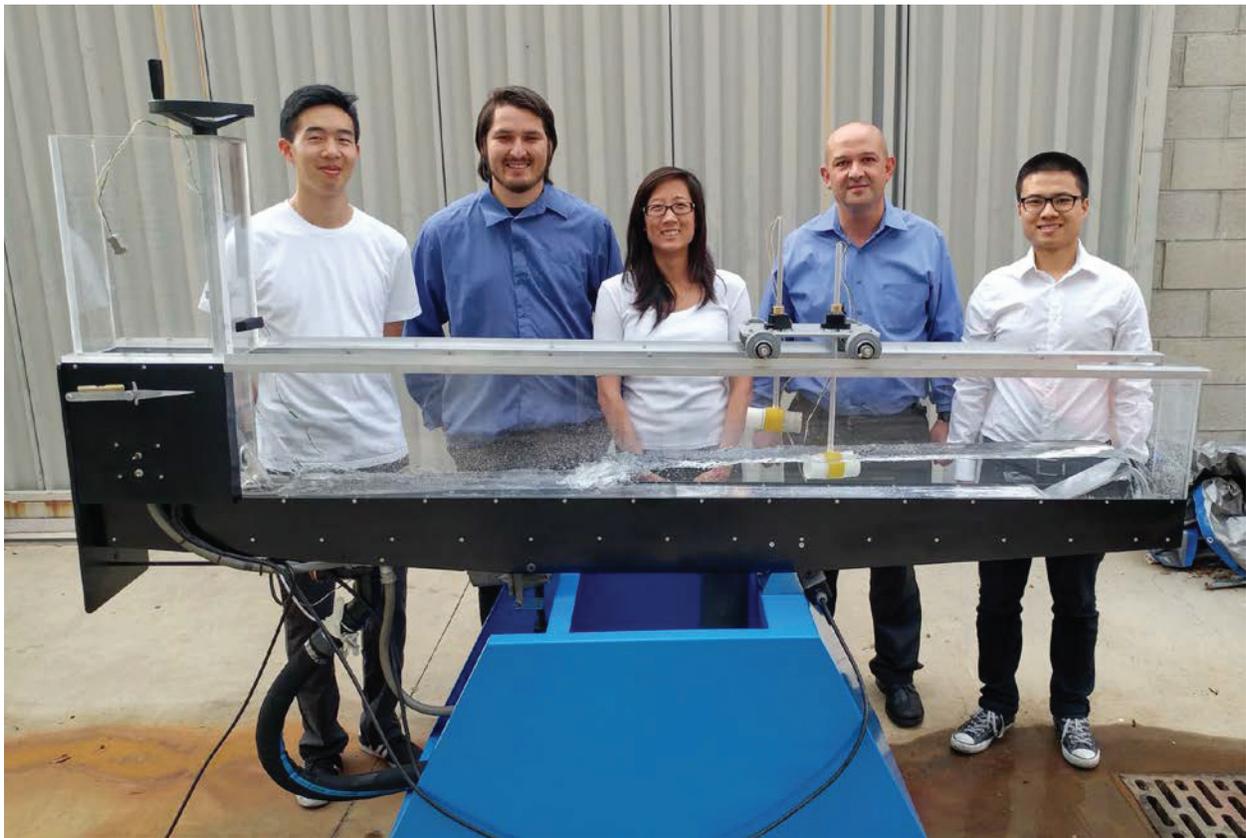


Figure 1. Wave Jumper Experimental System Designed by Senior Design Students for Fluid Mechanics Course Laboratory

Coursework

Dr. Jeff Santner will propose a new combustion course listed in the catalog under ME 4540 – Special Topics in Engineering. This is the typical designation for new elective courses. If the course is popular, then it will gain its own course number and title in the catalog. The combustion course will be available to undergraduate and graduate students who have completed Thermodynamics with a C or better. It will likely cover the following topics:

- **Thermodynamics review** – internal energy, enthalpy, entropy, heat, work, ideal gas law, first and second laws of thermodynamics.
- **Thermochemistry** – concepts of heating value, enthalpy of formation, chemical equilibrium, stoichiometry, flame temperature.
- **Chemical Kinetics** – Arrhenius kinetics, chain reactions, pressure dependence.
- **Simple reaction mechanisms** – hydrogen, methane, NTC behavior of large hydrocarbons.
- **Premixed flames** – flame speed, structure, stability, effects of turbulence, detonation.
- **Diffusion flames** – burner stabilization, droplets, solids.
- **Ignition and extinction** – Ignition delay time, effects of temperature, pressure, composition, flame stabilization and blowoff, flammability limits.
- **Pollutants** – Formation and environmental effects of NO_x, SO_x, and Soot. Exhaust treatment.
- **Fuels and applications** – Octane Number, Cetane number, emissions, impurities, additives

Funding from SoCalGas will be used for several experiments throughout the combustion course. Although this course will not be an official laboratory course, it may include some small experiments and demonstrations, for example:

- **Bomb calorimetry** – Students will measure the heat of combustion of various fuels
- **Effects of equivalence ratio and dilution on flame speed** – Students will use a modified Bunsen burner to create a stable flame with fuel, air, and inert composition controlled by needle valves and measured with gas flow meters. They will measure the flame speed based on the cone angle over a range of compositions and total flow rates.
- **Effects of equivalence ratio and dilution on premixed flame structure** – Students will use a Hencken burner to create a stable flat flame with fuel, air, and inert composition controlled by needle valves and measured with gas flow meters. Flame structure will be investigated by traversing a type B thermocouple through the flame using a manual screw drive. Students will measure flame thickness and flame temperature while learning about high temperature thermocouple methods and radiation correction techniques.
- **Diffusion flame structure** – A Burke-Schuman burner will be used to investigate the effects of Peclet number and fuel/oxidizer composition on flame structure.

The bomb calorimetry and premixed flame structure experiments may additionally be useful for the required thermal systems laboratory course, where students perform experiments related to heat transfer and thermodynamics.

There is potential opportunity for SoCalGas expert guest lecturers to participate in the course that would bring key perspective to crucial or emerging issues with the local gas or air quality community.

Research

Funding from SoCalGas will also be used in Dr. Jeff Santner's laboratory for fundamental combustion research. CSULA does not offer Ph.D. degrees, but faculty research is maintained with students in order to advance faculty careers, prepare undergraduates and masters students for research in industry and academia (R&D and Ph.D. programs), and bring prestige and recognition to the university.

Possible projects:

- **Computational study on the effects of non-thermal HCO on previously measured reaction rates.** Recent work has shown that an extremely important combustion intermediate, HCO, may decompose to H + CO before it is stabilized. This strongly affects computed flame speeds for a variety of fuels. This study will re-analyze measurements of HCO reactions in the literature in order to extract new reaction rates that include the direct effects of prompt HCO decomposition. This work can be extended to re-analyze reactions whose measured reaction rates are indirectly affected by prompt HCO decomposition, as well as re-optimizing reaction mechanisms to include these effects.
- **Fundamental computational studies on engine knock and mild ignition in rapid compression machines.** This project would continue ongoing collaboration between Dr. Santner and Dr. S Scott Goldsborough at Argonne National Laboratory. They are investigating end-gas ignition caused by compression from flame propagation. This work is applicable to fundamental combustion experiments (rapid compression machine) as well as applications (engine knock). Fundamental drivers of these phenomenon, such as heat release rate and thermodynamic properties, are linked to global fuel properties, such as octane number, through theoretical and numerical analyses. Funding would pay for undergraduate involvement in this ongoing research as well as improved computational resources.
- **Sensitivity of NO_x formation to fuel variability.** This project would extend a proposed senior design project to measure the NO_x concentration profile at different locations within a flame and exhaust. This information will be used to refine existing chemical models of NO_x formation in flames. Gas samples would be extracted from within the flame and exhaust gas using a custom gas sampler and temperature probe, with samples analyzed by FTIR or other NO_x measurement technique. Fundamental results for comparison with models would require a burner with a well-defined boundary condition, such as a Hencken burner, while parametric trend-finding studies may be performed using applications-relevant burners.

Summary

CSULA would welcome an opportunity to build a more collaborative and productive relationship with SoCalGas. This could involve Senior Design projects, advancing combustion topics into existing courses, creating an elective combustion course, and by conducting research into SoCalGas relevant topics. In return, SoCalGas would participate in guiding or shaping our academic efforts, have access to students for internship or full-time employment, and gain the public benefits from supporting a California State University. We look forward to continued feedback and collaboration to create the next generation of well-versed engineering graduates.

APPENDIX C

Selected Comment Letters from SoCalGas to State and Local Agencies

Roadmap for Appendix C

Letter Number	Page Numbers	Sierra Club Attachment 6 Label	Letter Date	SC-UCS Selected Comment Letters from SoCalGas to State and Local Agencies :
	ST-C1	N/A - SoCalGas Cover Page		
	ST-C2	N/A - SoCalGas Roadmap		
	ST-C3	Sierra Club-UCS Cover Page		
1	ST-C4 to ST-C9	Attachment 6(a)	2/1/2016	Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy RTP/SCS
2	ST-C10 to ST-C18	Attachment 6(b)	7/8/2016	SoCalGas and SDG&E, Written Comments to CARB on the 2030 Target Scoping Plan Update Concept Paper (July 8, 2016)
3	ST-C19 to ST-C31	Attachment 6(c)	7/18/2016	SoCalGas, Comments to South Coast Air Quality Planning Section of CARB on Proposed 2016 State Strategy for the State Implementation Plan (July 18, 2016)
4	ST-C32 to ST-C36	Attachment 6(d)	9/7/2016	SoCalGas and SDG&E, Written Comments to CARB on the Scoping Plan Update Workgroup on the Energy Sector (Sept. 7, 2016)
5	ST-C37 to ST-C43	Attachment 6(e)	11/21/2016	SoCalGas, Written Comments to CARB on the 2030 Target Scoping Plan Update November 7, 2016 Workshop (Nov. 21, 2016)
6	ST-C44 to ST-C48	Attachment 6(f)	2/15/2017	CEC Docket No. 17-IEPR-06, SoCalGas, Comments on the Joint Agency IEPR Workshop on 2030 Energy Efficiency Targets (Feb. 15, 2017)
7	ST-C49 to ST-C52	Attachment 6(g)	3/20/2017	CEC Docket No. 17-EPIC-01, SoCalGas, Comments on the 2018-2020 EPIC Investment Plan Funding Initiatives (Mar. 20, 2017)
8	ST-C53 to ST-C60	Attachment 6(h)	4/10/2017	SoCalGas, Comments to CARB on the 2017 Climate Change Scoping Plan Update (Apr. 10, 2017)
9	ST-C61 to ST-C67	Attachment 6(i)	6/30/2017	CEC Docket No. 17-IEPR-06, SoCalGas, Comments on the IEPR Staff Workshop on 2030 Energy Efficiency Targets (June 30, 2017)
10	ST-C68 to ST-C75	Attachment 6(j)	8/3/2017	CEC Docket No. 17-IEPR-06, SoCalGas, Comments on CEC Staff's Two Draft Papers on SB 350 Energy Efficiency Savings Doubling Targets (Aug. 3, 2017)
11	ST-C76 to ST-C81	Attachment 6(k)	9/6/2017	CEC Docket No. 17-BSTD-01, SoCalGas, August 22, 2017 Proposed 2019 Building Energy Efficiency Standards ZNE Strategy Presentation Comment Letter (Sept. 6, 2017)
12	ST-C82 to ST-C88	Attachment 6(l)	9/21/2017	CEC Docket No. 17-IEPR-06, SoCalGas, Comments on CEC Draft Commission Report on SB 350: Doubling Energy Efficiency Savings by 2030 (Sept. 21, 2017)
13	ST-C89 to ST-C99	Attachment 6(m)	11/13/2017	CEC Docket No. 17-IEPR-01, SoCalGas, Comments on the Draft 2017 Integrated Energy Policy Report (Nov. 13, 2017)
14	ST-C100 to ST-C102	Attachment 6(n)	1/23/2018	City of Pasadena - Planning Division Draft Climate Action Plan
15	ST-C103 to ST-C117	Attachment 6(o)	2/7/2018	CEC Docket No. 17-IEPR-01, SoCalGas, Comments on the Proposed Final 2017 Integrated Energy Policy Report (Feb. 7, 2018)
16	ST-C118 to ST-C120	Attachment 6(p)	undated	City of Indio Development Services Department - Planning: Indio General Plan Update
17	ST-C121 to ST-C124	Attachment 6(q)	undated	City of Redlands Development Services Department - City of Redlands Draft Sustainable Community Element

A.17-10-007/A.17-10-008

**PREPARED TESTIMONY OF DR. JAMES O'DEA
ON BEHALF OF UNION OF CONCERNED SCIENTISTS AND
RACHEL GOLDEN ON BEHALF OF SIERRA CLUB**

ATTACHMENT 6



A  Sempra Energy utility

February 1, 2016

Draft 2016 RTP/SCS Comments
 Attn: Courtney Aguirre
 Southern California Association of Governments
 818 W. 7th Street, 12th Floor
 Los Angeles, CA 90017

Dear Hasan Ikhata,

SoCalGas welcomes the opportunity to comment on the Southern California Association of Government's ("SCAG") Regional Transportation Plan/Sustainable Communities Strategy ("RTP/SCS"). We appreciate the time and effort SCAG staff has spent working with various stakeholders and subject matter experts in developing this plan.

As a preliminary matter, SoCalGas appreciates SCAG's ongoing focus on public health and air pollution, specifically the challenges of ozone reduction for Southern California, which is reflected in the RTP/SCS. At SoCalGas we also remain focused on the end goal – emission reduction – whether it be reducing ozone for public health or reducing greenhouse gas ("GHG") emissions for global health. At the same time, we believe SCAG should take advantage of the best of what innovation can deliver, and welcome technology advancements that move us toward our collective goals.

Pathways to Reach the State's Greenhouse Gas Reduction Goal

SoCalGas emphasizes the importance of natural gas to the California environment and economic health. We continue to work with our customers and technology developers to identify clean technology solutions through energy efficiency programs, customer education and outreach initiatives, and by supporting near-term and long-term technology development that can reduce both GHG and criteria pollutant emissions and better meet our customers' changing energy needs. SoCalGas seeks to meet a range of customer needs, including serving traditional and new uses such as heating, power generation and transportation fueling, as well as continuing to leverage natural gas resources to deploy industry leading energy efficiency, conservation and emerging technology programs.

Diversity in the State's energy portfolio is also important for prudent risk management to support resiliency in the energy infrastructure as a climate adaptation strategy and should be a factor in the overall analysis of future pathways. As weather becomes more extreme from droughts, wildfires, hurricanes and El Nino events, there are risks to overreliance on one source of energy. Hurricane Sandy provided an example where every system dependent on electricity was jeopardized, from the refueling

pumps at gasoline stations to the water pumps for putting out fires. Developing micro-grids supported by natural gas distributed technologies can operate for a limited timeframe separate from the grid; they can create more diversity in the electric grid since the natural gas system is mostly underground and relatively immune to extreme weather events.

Further, the natural gas energy sector continues to create jobs and grow our economy. In California, the existing natural gas energy industry supports (directly and indirectly) more than 250,000 jobs and adds over \$36 billion to the State's economy. Future natural gas infrastructure improvement projects offer significant job opportunities and contribute to the local and State economy. Additionally, the manufacturing, industrial, and building sectors rely on natural gas as a low-cost energy source to run profitable operations. SoCalGas alone employs more than 8,000 Southern Californians and, in 2014, spent \$571.4 million with diverse suppliers encompassing 48.4 percent of SoCalGas' procurement. SoCalGas' natural gas energy efficiency programs have created approximately 8,000 jobs in California.

Natural Gas Fuel and Technology

We appreciate that the RTP/SCS includes a clear, recognized role for near-zero emission natural gas vehicles in both the near term and long term, especially in the goods movement sector. The RTP/SCS allocates \$74.8 billion in goods movement strategies, which include **“reducing environmental impacts by supporting the deployment of commercially available low-emission trucks and locomotives; and in the longer term advancing technologies to implement a zero- and near-zero emission freight system” (page 7)**. Supporting the deployment of commercially ready technologies that significantly reduce criteria pollutants and greenhouse gas emissions is critical to meet SCAG's regional goals.

With the recent California Air Resources Board (“CARB”) certification of the Cummins Westport Innovations (“CWI”) near-zero emissions engine, California has the opportunity to reduce NOx emissions by 90% from heavy duty trucks.¹ The RTP/SCS should include a discussion on this near-zero emission CWI engine, which was certified recently with lower NOx and methane emissions. CARB established an Optional Low NOx Standard to incent engine development of trucks with emissions in the range of 0.02 to 0.1 grams of NOx per brakehorse power (“g/bhp”). The SCAQMD refers to 0.02 g/bhp as power plant equivalent emissions because electric vehicles may have zero tailpipe emissions but if full life cycle emissions are considered they are not zero emission. The near-zero CWI engine actually certified to emissions of 0.01 g/bhp, which means a natural gas truck or bus would have lower overall emissions than an equivalent battery electric truck.

The commercialization of this *game changing* technology for heavy-duty trucks and buses is a vital step in meeting our air quality goals and improving health in disadvantaged communities along Southern California's transportation corridors. CWI's first near-zero 8.9L engine can be utilized by transit fleets, waste haulers and some regional goods movement trucks. This provides an opportunity for transit and waste hauling fleets in Southern California to continue using compressed natural gas (“CNG”) buses with even greater environmental benefits- achieving emission levels below electric buses and trucks. Commercialization of this technology also provides opportunities for transit districts in the northern and eastern portions of SCAG's region to transition to cleaner fleets today, as many of Southern California

¹ <http://www.cumminswestport.com/press-releases/2015/near-zero-nox-emissions-isl-g-natural-gas-engine-proprietarytechnology-capable-of-reducing-nox-emissions-by-90>

transit agencies have already done. All of these fleets can move to near-zero levels with the acquisition of the new CWI engine. Further, with the use of increasing volumes of renewable natural gas (RNG), the transit sector has the potential to drive the carbon intensity of its emissions *below* electric buses. We can do this in the next several years and not wait 20 years a generation before we begin to realize these emission reductions.

In addition, CARB has included deployment of low emission, low-carbon fueled trucks, such as low NOx, RNG fueled trucks as part of their 2014 Scoping Plan Update on how to meet the AB32 2020 GHG reduction goals.² The 2016 RTP/SCS should clearly articulate this pathway.

In addition to the certified 8.9L engine, CWI is also working on applying the same technologies to a larger engine, which can be commercialized for the goods movement sector in the next twelve to eighteen months. Goods movement is an important economic driver in Southern California. Maintaining cost effective solutions for long-haul drayage truckers will help the region remain competitive and meet stringent emissions goals.

The Goods Movement Environmental Strategy quotes, **“the regional strategy supports the deployment of commercially available low emission trucks and locomotives while centering on continued investments into improved system efficiencies. For example, the region envisions increased market penetration of technologies already in use, such as heavy-duty hybrid trucks and natural gas trucks.”** (pg. 101). We look forward to partnering with SCAG and membership organizations to making this a reality.

Sustainable Freight and Transport Sector Opportunities

SoCalGas supports that the RTP/SCS recognizes the role of natural gas in locomotive sector. The Long-Term Emission-Reduction Strategies for Rail quotes, **“Opportunities for near-zero emissions include incorporating liquid natural gas tender cars and after treatment systems. Tier 4 engines and earlier engine types can be retrofitted to operate with natural gas.”** (pg. 170). The Goods Movement Appendix quotes, **“Liquid natural gas has also been considered as a fuel for rail locomotives. It is estimated that use of LNG with a Tier 4 locomotive would lead to NOx and PM reductions of 70 percent beyond the Tier 4 locomotive”**.

Beyond heavy-duty truck engines, LNG is an ideal choice to replace diesel and bunker fuel for the goods movement industry, especially for marine and rail operators. Using LNG to reduce GHG and criteria pollutant emissions has been discussed by the rail and marine industries as well as the ports. This is not required through regulation- it is being driven by the fuel price differential between natural gas and diesel. Nationally and internationally, we have seen an increase in the number of LNG-fueled vessels in the marine sector, as well as LNG-fueled engine pilot programs by railroads. SoCalGas has had discussions with the Ports of Long Beach and Los Angeles about the possibility of utilizing LNG as a multi-sector transportation fuel, and natural gas as an energy source, at the ports. The Port of Long Beach identified this as a potential strategy in their Energy Island proposal.³

² <http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm>

³ Port of Long Beach Press Release, “Energy Island, The Port’s Power Plan,” June 25, 2015,

This opportunity is only marginally addressed in the RTP/SCS and we request that the plan should more clearly include a focus on reducing NOx emissions by investing in natural gas transportation technologies and fueling infrastructure at the ports.

SCAG's goods movement strategies should also consider the advantages that switching from diesel to natural gas can have in the off-road and marine sectors will have for improvement of cancer risk in nearby communities affected by goods movement-related emissions. The Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Risk Assessment Guidelines Version 8.0 published in March 2015, shows natural gas has a significant advantage over diesel. SoCalGas calculated two examples of the difference between cancer risk from just switching from diesel to natural gas. In the case of a marine engine transiting near a port terminal, the calculation of the change in absolute residential cancer risk from just fuel switching (diesel to natural gas) shows that the diesel risk is 314 times the natural gas risk. In the case of locomotives, using an example of arrival and departure trains (1 train/day; 4 hours/train at 50% load), the calculation of the change in absolute residential cancer risk from fuel switching (diesel to natural gas) shows that the diesel risk is 107 times the natural gas risk. We wish to point out that no specific facility was examined in our sample calculations, and no inference about actual risk at a specific facility can be derived from just this tier 2 screening level analysis information.

Renewable Natural Gas and Transportation

SoCalGas supports SCAG's inclusion of renewable natural gas ("RNG") as an alternative transportation fuel in the Goods Movement Appendix. Reducing emissions and petroleum use within the transportation sector is critical to meeting both air quality and climate change policy goals for California. We believe supporting the development and deployment of RNG in the transportation sector should be included as a key strategy to achieve emission reduction goals.

Meeting the federal ozone and particulate matter standards in Southern and Central California are the most significant air quality challenges for the state. Natural gas vehicles ("NGVs") that can meet the optional low-NOx standard and run on renewable fuels can help California meet its GHG reduction and petroleum displacement goals, and should be included as a key pathway, especially in the heavy-duty vehicles sector.

The transportation sector can also be an important catalyst for building an RNG market and encouraging the utilization of methane resources. CARB's Low Carbon Fuel Standard identifies RNG from existing organic sources, such as dairy waste, landfills, and waste water treatment as the lowest carbon intensity standard pathway available, even lower than the current electricity mix and hydrogen. Today, due

<http://www.polb.com/news/displaynews.asp?NewsID=1464>.

"The Port will explore options that include liquefied natural gas (LNG) as fuel for ships and locomotives, hydrogen generation, fuel cell technology and related infrastructure. This goal builds on existing progress the Port has made under its Clean Trucks Program and Technology Advancement Program to support drayage trucks that run on LNG, compressed natural gas, and hydrogen fuel cell technology."

largely to this policy, RNG is already being used in California's transportation sector. For example, Waste Management, Inc., uses RNG produced at its Altamont Landfill and Resource recovery Facility to fuel its waste hauling fleet in that region. Clean Energy Fuels Corporation offers RNG at their CNG and LNG stations throughout California. A review of the CARB's Low Carbon Fuel Standard reporting tool shows that RNG, as a percentage of total natural gas used in the transportation sector, has increased from approximately 10% to 40-60% in the past year. SCAG needs to look at policies and incentives to promote more development of RNG in the region. Support for heavy-duty natural gas vehicles is a key to this development. The transportation sector can be an important catalyst for building the renewable natural gas market.

In addition, renewable natural gas creates jobs. The Renewable Natural Gas Coalition estimates that biomethane projects in California have resulted in the creation of more jobs per year average (11.5) than any other renewable energy technology. According to *Renewable Natural Gas Coalition's California Biofuels Cap and Trade Initiative*, developing biomethane projects at 200 candidate sites throughout the state (located at landfills, waste water recovery facilities, and agricultural sites) would create more than 20,000 direct and indirect jobs in 42 California counties. Also, as many as 100 temporary construction jobs could be created as a result of each project (page 8).

In the long term, and as transportation options evolve, more RNG can be injected into the pipeline and redirected to traditional natural gas end-uses, like cooking, space and water heating, achieving our Governor's goal announced in this year's State of the State speech to "clean our heating fuels."

We need to re-think methane. Capture and management of methane emissions (primarily from agriculture, dairies, landfills, etc.) will have a proportionately greater impact than efforts to control CO2 emissions because of the higher global warming potential of methane. Combustion of methane, i.e. conversion to CO2, reduces its global warming potential by a factor of greater than 20 times. Other management techniques, e.g. sequestration, are untested and still have significant issues to resolve, e.g. the ability to sequester the methane for long periods without leakage. Therefore, combustion of captured and recovered methane emissions will play an important role in current and future plans to reduce global warming.

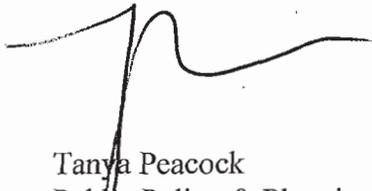
Conclusion

We applaud SCAG's effort in creating a technology neutral, performance-based RTP/SCS that looks to take advantage of the best that technology can offer. SoCalGas looks forward to working with SCAG and membership communities over the coming years to develop clear and actionable strategies to take advantage of and invest in opportunities to utilize natural gas' potential as a clean energy solution. Decisions today are defining the course of our clean energy future in all sectors of our economy. Simply put, Southern California has the unique challenges and opportunities presented by its comprehensive environmental targets that cannot be met by staying on the current course. There will always be ongoing regulatory initiatives that are being undertaken by various agencies in the state, but this should not deter SCAG from taking the lead in affirming natural gas' role in the long-term energy mix as a clean and affordable way to reduce smog and greenhouse gas emissions and improve the health of all Californians.

SoCalGas supports expanded research, development and deployment agendas for natural gas technologies. We are pleased SoCalGas' progress was noted in the Goods Movement Appendix, **"Southern California Gas Company (SoCalGas) has also been involved in several technology development projects and has worked with Original Equipment Manufacturers to develop and test several engines and vehicles. These projects have been funded by partners including the CEC, DOE, SCAQMD, in addition to funding invested by SoCalGas" (page 48).**

We believe the next step will be to prioritize these research opportunities and identify specific action plans to advance strategies for realizing the benefits of natural gas. We appreciate the opportunity to provide comments and input on the 2016 Regional Transportation Plan/Sustainable Communities Strategy. Southern California is our home and we share SCAG's goals to strive at the highest levels to preserve and take care of it. We embrace a big picture view and shall continue to work diligently to provide safe, clean, reliable and affordable service to 21 million people. We believe natural gas offers an affordable, clean and practical way to meet California's goals and look forward to continuing to work together to develop action plans to align state and regional policies and identify funding resources to advance cleaner natural gas technologies to meet the state's environmental goals, improve the health of our local communities through NOx, particulate matter and ozone emissions reductions, as well as global health through GHG reductions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tanya Peacock', with a stylized flourish extending to the right.

Tanya Peacock
Public Policy & Planning Manager



Jerilyn López Mendoza
Program Manager
Energy & Environmental Affairs

555 W. Fifth Street, GCT 17E5
Los Angeles, CA 90013

tel: 213.244.5235
fax: 213.700-0095
email:

jmendoza5@semprautilities.com

July 8, 2016

Ms. Rajinder Sahota
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Re: Written Comments by Southern California Gas Company and San Diego Gas & Electric Company on the 2030 Target Scoping Plan Update Concept Paper

I. Introduction

Dear Ms. Sahota,

Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) appreciate the opportunity to submit these comments on the California Air Resources Board's (ARB) 2030 Target Scoping Plan Update Concept Paper. We offer specific comments on the proposed concept scenarios, as well as overall policy comments on the 2030 greenhouse gas (GHG) reduction target.

II. High-Level Policy Comments

SoCalGas and SDG&E support continuation of a Cap-and-Trade Program and the Low Carbon Fuel Standard (LCFS) to help meet California's environmental and economic goals while minimizing unfavorable ratepayer impacts. These market-based mechanisms provide compliance flexibility for regulated industries, as well as access and incentives to identify the lowest cost GHG emission reduction opportunities across the economy. Additionally, the State has already invested heavily in the Cap-and-Trade Program, which is successfully driving long-term investment in cleaner fuels and more efficient use of energy.

In furtherance of our work with the State to advance California's clean energy future, we provide the following input on the Scoping Plan's 2030 Targets:

- **Cap-and-Trade and the Low Carbon Fuel Standard should continue post 2020** – The State should extend current market mechanisms used to encourage GHG reduction. Cap-and-Trade should continue to be one of the primary mechanisms to ensure flexibility in emission reduction approaches. Free allowances should continue to be allocated to

utilities under the current consignment schedule and escalation rate for the benefit of ratepayers. Additionally, the Low Carbon Fuel Standard (LCFS) should be extended to 2030 or beyond.

- **Straight-line to 2050** - The 2030 goal should be a 35% reduction over 1990 emission levels, which reflects straight line progress from 2020 to 2050 goals. In addition, the 1990 emissions levels used to set the target should consider all emissions currently in the GHG inventory. An alternative would be a “mid-term” goal of 40% reduction by 2035 which is halfway between 2020, the AB 32 target and 2050, the long term goal of a standing Executive Order. Studies show this approach to be a far more achievable pathway with more moderate cost impact on utility ratepayers, allowing more time for needed technologies such as Power-to-Gas (P2G) to develop.
- **California-funded GHG reductions should be counted** - GHG accounting should be clear that all California-funded GHG reductions should be counted whether occurring in-state or out-of-state. This would include generation from out-of-state renewables contracted by California electric load-serving entities, in-state renewable generation that is exported during overgeneration events, approved cap-and-trade offsets, and GHG reductions in other linked jurisdictions, if applicable.
- **SLCP 40% Reduction Goals should focus on Organic Sources** - Each of the four concepts presented relies on the ARB Short-Lived Climate Pollutant (SLCP) Proposed Strategy goal of reducing methane emissions by at least 40% below 2013 levels by 2030. SoCalGas and SDG&E believe that the State should focus on reductions from the dairy, agriculture and landfill sectors, as these contribute over 75% to California’s methane emission inventory. We support ARB’s strategy of capturing methane from these sectors to be used as a transportation fuel, injected into natural gas pipelines, and used to generate on-site renewable electricity and heat. Increasing the use of Renewable Natural Gas (RNG) as a transportation fuel would not only reduce methane emissions from organic waste streams, but also reduce black carbon by displacing diesel in older, conventionally fueled heavy-duty vehicles.
- **Implement transparency and legislative oversight regarding cost-effectiveness** - An annual report should include a cost effectiveness evaluation based on a cost per GHG ton reduced metric consistent with AB 32’s cost-effectiveness requirement. Including this additional information in the annual report will provide the Legislature with an opportunity to assess the benefits that the program is producing and readjust the program if necessary to utilize funding in the most efficient manner possible.
- **Equitable treatment across and within sectors** - All sectors, and entities within sectors, must contribute to and have equitable responsibility for, the GHG emission reduction effort in order to achieve the most efficient and effective net carbon reductions possible. Earlier achieved voluntary reductions should also be recognized. A disproportionate obligation should not be imposed on any one economic sector, or any portion of an economic sector.

- **Safety valves must be established to protect against unintended consequences -** Safety valves should be included in the Scoping Plan Update to ensure that California’s GHG reduction program is continuously monitored based on key variables that will trigger warnings about impacts on California’s residents and businesses:
 - **Transportation Sector Progress** – If the transportation sector is not making sufficient progress at reducing GHG emissions, the deadline should be revisited to hold the transportation sector accountable for its part of the GHG reduction goal, so that other sectors of the economy do not have to be burdened with emission reductions that should be occurring in the transportation sector.
 - **Economic Impact** – If California’s economy is suffering, then this state policy must be revisited. The benefits of GHG reduction need to be balanced with the cost and economic impact of GHG reduction policies to ensure California’s economy stays healthy as these policies are implemented. The impact to California’s economy would likely be noticed in multiple ways, two of which would be increases in the cost of electricity and in the unemployment rate.
 - **Validated CO₂ Reductions In-State/National Action** – If there is no federal action taken on carbon reductions, then the state program should be revisited. There should be a measurement of whether or not California’s policies are actually achieving net GHG reductions and not just causing GHG emission sources to move outside the state.

III. Detailed Comments on Concepts

Concept 1: Complementary Policies with a Cap-and-Trade Program

SoCalGas and SDG&E support the continuation of a Cap-and-Trade Program with reasonable declining caps to help meet California’s environmental and economic goals while minimizing unfavorable ratepayer impacts. Cap-and-Trade provides compliance flexibility for regulated industries, as well as access and incentives to identify the lowest cost GHG emission reduction opportunities across the economy. Likewise, we also support the continuation and increase of the LCFS to achieve a 10% reduction in fuel carbon intensity by 2020, and further reductions through 2030. These programs help California achieve co-benefits of reducing GHG as well as criteria pollutants that directly impact public health.

A. Low Carbon Fuel Standard

Since its adoption in 2010, the LCFS has been instrumental in creating price parity between alternative fuels and fossil fuels, such as gasoline and diesel. This parity has resulted in a 36 percent increase in the use of clean fuels, \$650 million being invested in clean fuel production, the avoidance of 16.6 million tons of carbon pollution, a savings of \$1.6 billion in health care costs, and the displacement of 6.6 billion gallons of petroleum fuels. There are not only

quantifiable benefits but also benefits that cannot be measured. This program has been the catalyst for companies and people to innovate in the energy sector.

The LCFS program has been crucial in spurring the development of low-carbon fuels in California by providing clear market signals to producers that their investments in research and development will yield returns in the long-run. It has increased demand for alternative fuels, such as renewable natural gas, leading to new technologies to produce, deliver, and use the fuel. For example, in 2015, encouraged by the increasing availability and decreasing price of alternative fuels, Big Blue Bus, the transit agency of the City of Santa Monica, switched its bus fleet to 100% renewable natural gas, reducing its fleet's carbon footprint by an estimated 8,000 tons per year. Innovations like this will help California achieve its ambitious climate goals such as those set forth in the 2030 Target Scoping Plan.

B. Mobile Source Strategy: Technology and Fuel Mandates

Concept 1 includes various proposed technology and fuel targets within the Mobile Source Strategy. However, SoCalGas and SDG&E believe it would be unnecessary and likely counterproductive to pre-select specific technologies and/or fuels as Mobile Source Strategy goals as compared to establishing desired outcomes, such as NOx or GHG emission reduction targets. As an example, the technology mandate proposed for the Advanced Clean Transit (ACT) regulation requires the purchase of “zero tailpipe emission” urban transit buses which could potentially increase transit costs statewide by \$5 to \$10 billion.¹ By contrast, both the 90% NOx emission reduction goal and the 80% GHG emission reduction goal established in the ACT regulation proposal can be *met and exceeded sooner* without significant incremental costs through the use of “near zero” technologies such as low NOx engines and RNG.

The ARB Board has also supported the movement away from technology mandates in favor of performance based goals at recent board meetings reviewing the ACT regulations, however it does not appear that board member concerns have been reflected in the ACT regulation and Mobile Source Strategy. SoCalGas and SDG&E encourage ARB staff to forego technology mandates and, instead, implement “fuel neutral” policies to encourage all technologies and fuels to compete in order to achieve *performance based goals* such as NOx and GHG emission reductions.

C. Medium and Heavy-Duty Vehicles and the Freight Sector

SoCalGas and SDG&E are in favor of the U.S. Environmental Protection Agency (EPA) and the Department of Transportation's National Highway Traffic Safety Administration's (NHTSA) jointly proposed national program that would establish second-phase GHG emissions and fuel efficiency standards for medium- and heavy-duty vehicles. Technology advancements in engine development are progressing at a rapid pace.

As detailed in the *Game Changer Technical Whitepaper* by Gladstein, Neandross & Associates (GNA), a heavy-duty natural gas engine is now commercially available which meets ARB's

¹ As presented in an economic analysis by the California Transit Association at the February 9, 2016, ACT Regulation Transit Sub-Group meeting.

lowest-tier optional low-NOx emission standard at 0.02 g/bhp-hr NOx.² When paired with RNG, this technology will provide a commercially proven, broad-based, and affordable strategy to immediately achieve major reductions in emissions of criteria pollutants, air toxins, and GHG.

Since ARB has already determined that heavy-duty electric and fuel cell electric vehicles will not be widely available in the next several decades,³ it is clear that RNG provides the single best opportunity for California to achieve its air quality and climate change goals in the on-road heavy-duty transportation sectors in the near term. Equally important, major reductions of cancer causing toxic air contaminants can immediately be realized in disadvantaged communities adjacent to freeways and areas of high diesel engine activity, where relief is most urgently needed.

This combination of ultra-low NOx engines with RNG in the freight sector would also help ARB accomplish its goal of “deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero freight vehicles and equipment powered by renewable energy by 2030,” as articulated in both the Concept Paper and the Draft California Sustainable Freight Action Plan (CSFAP).

D. Advanced Clean Transit: Near-Zero Emission Bus Fleets

The Concept Paper proposes a zero-emission bus requirement under ACT regulations. However, the results of a recent study commissioned by Los Angeles County Metropolitan Transportation Authority (LA Metro) found that the use of RNG and low-NOx CNG engines is more effective at reducing GHGs than battery electric or fuel cell powered buses that are commercially available today. In addition, emission reductions of both GHG and NOx from low-NOx engines and RNG are an order of magnitude more cost-effective than reductions from electric or fuel cell buses.⁴ Other municipalities have already made the move to RNG in their bus fleets, such as Santa Monica Big Blue Bus and San Diego Metropolitan Transit System. As low-NOx engines and low-carbon RNG are all available now to help accomplish California’s goals in a timely manner, we urge ARB to specifically include them as a viable strategy in the next iteration of the AB 32 Scoping Plan Update.

Concept 2: Ambitious Complementary Policies without Cap-and-Trade; a Focus on Industrial Sources

Concept 2 proposes entity level GHG declining caps for industrial sources as an alternative to Cap-and-Trade. This would require establishing a baseline annual GHG emissions level for each regulated entity in permits, and frequent program evaluation and adjustments. Implementing and enforcing such a regime would have a large impact on state resources, beyond the cost-

² Game Changer Technical White Paper, Gladstein, Neandross & Associates, May 3, 2016. http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf.

³ See ARB Technology Assessment: Medium and Heavy Duty Battery Electric Trucks and Buses, October 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/bev_tech_report.pdf and ARB Technology Assessment: Medium and Heavy-Duty Fuel Cell Electric Vehicles, November 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf.

⁴ Los Angeles Metro Technology Assessment, June 30 2016.

effectiveness of resulting GHG reductions. In addition, this would not include a statewide limit on GHG emissions, and could possibly require further programs if the 2030 target is still not achieved.

As emphasized in the staff presentation to the ARB Board on June 23, 2016, the objectives of the Scoping Plan include providing a flexible framework for implementation, and promoting resilient economic growth. However, requiring California's industries to meet facility emissions caps would not allow the same compliance flexibility to achieve GHG reduction goals at lower overall costs when compared to Cap-and-Trade. An emission cap policy would not take into consideration that different facilities face different compliance options and associated costs. Further, this command-and-control type regulation does not provide an incentive for industry to innovate by going beyond required reductions, as does a Cap-and-Trade model.

Concept 3: Ambitious Complementary Policies without Cap-and-Trade; a Focus on Transportation

Concept 3 focuses on reducing GHG emissions from the transportation sector as an alternative to Cap-and-Trade. This would be accomplished with a goal of 3.5-4.5 million zero emission and plug-in hybrid light duty electric vehicles by 2030. As we discussed above in our response to Concept 1, these technology and fuel mandates will not result in the same innovation to enable GHG reductions unlike performance-based goals. We urge ARB to reconsider its pre-selection of zero emission and plug-in hybrid vehicles as the only avenue for meeting this proposed GHG milestone. Further, we are concerned about the source of sustainable funding to incentivize businesses to take risks in investing in such an aggressive measure. Procuring, purchasing and providing infrastructure support for several million new electric vehicles in the next 14 years is very ambitious. SoCalGas and SDG&E would like to see more details about the implementation of such a measure in the transportation sector between now and 2030.

Similar to Concept 2, Concept 3 would still rely on additional programs, such as the RPS or facility level caps, to comply with the Clean Power Plan. SoCalGas and SDG&E recommend continuing California's existing Cap-and-Trade Program to streamline compliance with state and federal GHG reduction goals, in addition to the compliance flexibility benefits described previously.

Concept 4: Complementary Policies with a Carbon Tax

Concept 4 proposes a carbon tax in lieu of the Cap-and-Trade Program. Putting aside the tremendous burden on compliance entities to unwind their positions in allowances and offsets, and the wasted resources devoted by ARB to develop and administer the Cap-and-Trade Program since its inception, a carbon tax would make the achievement of ARB's GHG reduction goals more uncertain.

A carbon tax requires legislators to set the financial cost of carbon regulation with no idea if the tax rate is sufficient to attain the necessary reductions. It also does not result in the lowest cost

GHG reduction measures adopted by compliance entities as encouraged by the market-based mechanism of Cap-and-Trade. In addition, if these decisions are driven by State budget requirements, including funding needs for newly adopted subsidy programs, the budget requirements themselves could drive the tax to unreasonably high levels. A Cap-and-Trade Program adopts a cap and the economic cost of the Cap-and-Trade Program is whatever price becomes necessary to meet that cap, based on supply and demand.

In addition, California utilities and other businesses are subject to a plethora of command and control regulations as well as the Cap-and-Trade Program, and a carbon tax could be the final straw that drives businesses out of the state.

While we understand ARB's desire to explore various options, we do not believe a carbon tax can cost effectively reduce GHG emissions, especially when the tremendous amount of resources to implement the Cap-and-Trade Program is taken into account. If the carbon tax option is being seriously considered, we would seek a more detailed analysis into the specifics of a carbon tax, and a quantification of the already expended Cap-and-Trade Program costs.

IV. Alternative Concept: Low-Carbon Gas Pathways

In recent years, SoCalGas has been reexamining the long-term role for natural gas in a low carbon energy mix. We engaged Energy + Environmental Economics (E3) to look at *Decarbonizing Pipeline Gas to Help Meet California's 2050 Greenhouse Gas Reduction Goal*.⁵ In the scenarios explored in this E3 study, deep decarbonization of the natural gas supply would result in, by 2050, more than 50% of our natural gas supply coming from RNG, also known as biomethane. On this premise, E3 concluded:

- Pipeline de-carbonization works together with renewable electricity and electrification strategies towards GHG reduction objectives.
- Decarbonized pipeline gas reduces emissions in sectors that are otherwise difficult to electrify, including heavy duty vehicles; certain residential and commercial end uses, such as cooking, and existing space and water heating; and certain industrial end uses, such as process heating.
- Decarbonized gas in the form of power to-gas (P2G) can play an important role in integrating variable renewable generation by producing gas, and then storing it in the existing pipeline distribution and storage infrastructure for when it is needed to serve residential and commercial customers or for electricity generation.
- A transition to decarbonized pipeline gas would enable continued use of the State's existing gas pipeline distribution network, eliminating the need for constructing new energy delivery infrastructures to meet 2050 GHG targets, such as dedicated hydrogen pipelines or additional electric transmission and distribution capacity.
- Decarbonized gas technologies help diversify technology risk associated with heavy reliance on a limited number of decarbonized energy carriers, and would allow

⁵ SoCalGas' initial work with E3 was on the 2050 target to reduce GHG emissions by 80% below 1990 levels. We had assumed a straight-line progression to the 2050 target. So, by 2030, we would achieve a 34% reduction in GHG emissions. We would hit the 40% GHG reduction target between 2032 and 2033.

consumers, businesses and policymakers greater flexibility and choice in the transition to a low-carbon energy system.

In the electric generation sector, natural gas would have a long-term and significant role to decarbonize electricity generation through the production of RNG. P2G can also aid in managing the intermittency of renewable sources like wind and solar. Production of RNG from electricity offers the opportunity to increase consumption in low net load periods. P2G creates a new and potentially cost-effective beneficial use for electricity that can be stored in existing natural gas infrastructure and delivered on demand.

By avoiding proscriptive mandates and developing appropriate policies, a possible path forward may be to displace a significant amount of our statewide natural gas usage with RNG derived from landfills, wastewater treatment facilities, dairies, agricultural waste, urban waste, and woodland waste that would otherwise be discarded. In addition, non-arable land and non-potable water could be used to grow switch grasses and algae that would be used to produce RNG. Carbon capture and carbon transformation may provide another path forward. We recommend that ARB investigate the potential development of all of these RNG resources which can provide significant environmental benefits.

SoCalGas is actively working to support each of these short-, mid-, and long-term clean energy solutions to reduce GHG emissions as part of our continued leadership in the natural gas research and development sector. For example, SoCalGas has signed an agreement with the NREL to analyze the California Independent System Operator (“CAISO”) grid constraints and determine where there will be deployable electricity in the future to site P2G facilities. CAISO’s “duck curve,” shows the future of when generation will occur and predicts times with excess generation capacity and low demand, presenting an opportunity to implement P2G to create a much needed zero or near-zero carbon energy storage medium.

V. Conclusion and Supporting Comments

This is an exciting time in the energy industry with many new technologies and tools being developed and adopted, including those related to the use of natural gas, low- and no-carbon gas supply and the statewide gas grid and its energy storage assets. The State should continue to acknowledge the GHG reduction potential of natural gas, the immediate availability of the natural gas system, and the benefits to all Californians as we move forward in the process. Whatever policy is adopted, it should be flexible enough to allow the best ideas to be deployed, and not lock in prescriptive mandates or specific technologies that may seem attainable, but are ultimately unachievable in the required timeframe and/or cost prohibitive.

As an innovation leader, California has always been at the forefront of improving our environment. While climate change policies are necessary to secure the continued health of our environment for future generations, California must move forward with not only policy leadership on GHG emissions reductions, but also policy leadership on how to accomplish reductions in a manner that continues to grow our economy.

SoCalGas is looking forward to reviewing the Draft Scoping Plan when it is released later this year, and is eager to help implement what we hope to be a cost-effective and flexible strategy to reach the State's ambitious goals.

Sincerely,

Jerilyn López Mendoza

Jerilyn López Mendoza
Program Manager
Energy and Environmental Affairs



Jerlyn López Mendoza
Program Manager
Energy and Environmental Affairs

555 W. Fifth Street, GCT 17E5
Los Angeles, CA 90013

tel: 213.244.5235
fax: 213.244.8257
email: jmendoza5@semprautilities.com

July 18, 2016

Carol Sutkus
Manager
South Coast Air Quality Planning Section
and
Kirsten King Kayabyab
Air Pollution Specialist
South Coast Air Quality Planning Section
California Air Resources Board
P.O. Box 2815
1001 "I" Street
Sacramento, CA 95814

Re: Comments on Proposed 2016 State Strategy for the State Implementation Plan

Dear Ms. Sutkus and Ms. Kayabyab:

SoCalGas appreciates the opportunity to comment on the Proposed 2016 State Strategy for the State Implementation Plan (SIP) that the California Air Resources Board (ARB) shared with the public in June 2016. We hope our comments are taken in the constructive manner we offer them, and also look forward to a follow-up meeting in person to discuss our concerns and ideas with you.

1. SoCalGas Supports the Proposed Federal Low-NO_x Standard

As detailed in the Mobile Source Strategy (MSS) published by ARB earlier this year,¹ to attain federal air quality standards for ozone California must achieve dramatic reductions in NO_x emissions from heavy-duty trucks. To achieve these reductions, California needs to accelerate its transition to near-zero emission heavy-duty trucks for California-based trucks as well as new federal, heavy-duty truck engine emission standard to address trucks which operate in the state that are not based here. The MSS notes, "About 60 percent of total heavy-duty truck VMT in the South Coast on any given day is accrued by trucks purchased outside of California, and are

¹ ARB, "Mobile Source Strategy," pp. 22, 83 (May 2016).
<http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.pdf>

exempt from California standards. U.S. EPA [Environmental Protection Agency] action to establish a federal low-NOx standard for trucks is critical.”²

In 2015, Cummins Westport Inc. certified the world’s first heavy-duty engine at near-zero emission levels—90 percent below the existing federal standard, and certified to meet ARB’s lowest-tier optional near-zero emission standard and reduce GHGs by 15%. This “next generation” heavy-duty natural gas engine is now commercially available for transit bus, refuse, school bus, and medium-duty truck applications. Additional near-zero emission heavy-duty natural gas engines are expected to follow by 2018, addressing a wider array of medium- and heavy-duty on-road applications.

Two California Air Districts have petitioned the U.S. Environmental Protection Agency³ to implement an ultra-low heavy-duty engine emission standard for NOx. SoCalGas supports these requests for a new federal low-NOx truck standard, which are necessary to achieve air quality standards in California.⁴

2. SoCalGas Supports Continued Implementation of the Low Carbon Fuel Standard to Reach Our State’s Air Quality Goals

California has been known as the cradle for innovation and forward thinking in the areas of clean energy technology, and the Low Carbon Fuel Standard (LCFS) is an example of its success. Since its creation in 2010, the LCFS has been instrumental in creating price parity between alternative fuels and fossil fuels, such as gasoline and diesel. The effects are truly remarkable:

- 36% increase in the use of clean fuels
- \$650 million invested in clean fuel production
- 16.6 million tons of carbon pollution avoided
- \$1.6 billion in health costs prevented, and
- 6.6 billion gallons of petroleum have been displaced.⁵

There are not only statistical benefits but also benefits that cannot be measured. The LCFS has been the catalyst for companies and people to innovate in the energy sector. This program has been crucial in spurring the development of low-carbon fuels in California by providing clear market signals to producers that their investments in research and development will yield returns in the long-run. The LCFS has increased demand for alternative fuels, such as renewable natural gas, leading to new technologies to produce, deliver, and use that fuel. For example, in 2015,

² ARB, “Mobile Source Strategy,” p.46 (May 2016).

³ South Coast Air Quality Management District, “Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines,” p.12 (June 3, 2016). See also San Joaquin Valley Air Pollution Control, “Petition Requesting that EPA Adopt New National Standards for On-Road Heavy-Duty Trucks and Locomotives Under Federal Jurisdiction, June 22, 2016, at p. 1. “Begin formal rulemaking on the development of an ultra-low NOx exhaust emissions standard (0.02 g/bhp-hr) for on-road heavy duty engines.”

⁴ Attached for your review is the June 14, 2016, SoCalGas letter to the federal Environmental Protection Agency in support of the South Coast Air Quality Management District Petition to Adopt Ultra-Low NOx Emissions Standard, as Appendix A to these comments.

⁵ California Delivers webpage, “California’s Low-Carbon Fuel Standard Is *Working*,” <http://www.cadelivers.org/low-carbon-fuel-standard/>

encouraged by the increasing availability and decreasing price of alternative fuels, Big Blue Bus, the transit agency of the City of Santa Monica, switched its bus fleet to 100% renewable natural gas, reducing its fleet's carbon footprint by an estimated 8,000 tons per year.⁶ Its innovations like this that will help California achieve its ambitious air quality goals such as those set forth in the SIP.

3. ARB's Advanced Clean Transit Proposal Should Be Revised to Employ a Performance Based Approach

Multiple stakeholders including California transit agencies and SoCalGas strongly support a performance-based, rather than technology-specific, approach to developing the next generation of clean transit in California.⁷ Whatever technologies are pursued by transit agencies it seems very likely that incentive funding will be a critical element of a successful program. Flexibility is another key element. Flexibility that allows transit agencies to use near-zero and/or zero emission technologies coupled with renewable fuels.

A. Near-Zero Emission Natural Gas Buses Fueled by Renewable Natural Gas Can Improve Air Quality Now

Recent analyses from the Los Angeles County Metropolitan Transportation Authority and Santa Monica's Big Blue Bus clearly show the multiple benefits of allowing California transit agencies to use near-zero emission natural gas buses fueled by renewable natural gas for the foreseeable future. These benefits include significant NOx emission reductions, weighty greenhouse gas reductions (GHG), meeting the transit agency's duty-cycle needs, and considerably lower costs. Put more succinctly, providing this flexibility to transit agencies will achieve the same emission reduction benefits much sooner and for significantly less cost than the ARB staff proposal. This near-zero engine technology and renewable natural gas are available to be deployed starting this year. We have attached copies of these analyses for your review as Appendices B and C.

B. SoCalGas Is Concerned About a Disconnect Between ARB Board Member Comments and ARB Staff Direction on Advanced Clean Transit Proposal

For SoCalGas and many other stakeholders, there is a dramatic disconnect between ARB Board Member public comments in the fall of 2015 and earlier in 2016 and ARB staff's comments and lack of action to revise the Advanced Clean Transit proposal. At the ARB Board public meeting on February 18, 2016, at least two Board Members, Chair Mary Nichols and Professor Daniel Sperling, expressed concern that the Advanced Clean Transit proposal could negatively impact transit service. At the same time, they continued to express support for increasing the use of zero emission technologies in buses but clearly communicated that they no longer believed regulation was the right way to achieve this. Staff has continued on a path to *require* zero emission transit

⁶ Press Release, "Big Blue Bus, Fueling a Renewable Future One Bus at a Time," July 15, 2015.

<http://www.bigbluebus.com/Newsroom/Press/Big-Blue-Bus,-Fueling-a-Renewable-Future-One-Bus-at-a-Time.aspx>

⁷ SIP, Advanced Clean Transit, p. 53.

buses throughout the State by a date certain.⁸ Given this disconnect between board member public comments and staff actions, it is both confusing and misleading to include the Advance Clean Transit program in the MSS and the SIP until it is revised to include a performance-based approach and address the concerns raised by ARB Board Members.

4. Incentive Funding for Heavy-Duty Engines Results in Immediate Air Quality Improvements

As discussed above, SoCalGas supports a new federal standard of 0.02 NO_x g/bhp-hr for heavy-duty vehicles, as evidenced by our letter supporting the South Coast AQMD's petition to the federal Environmental Protection Agency requesting that very standard for a 2023 implementation timeline. (Please see our attached Appendix A.) What is needed urgently, between now and 2023, is a robust incentive program to deploy this existing near-zero technology throughout the entire heavy-duty transportation sector as both the ARB MSS and the South Coast Air Quality Management District's (SCAQMD) Draft Air Quality Management Plan⁹ acknowledge and support.

The MSS and the SIP both do a very good job of describing the critical need for significant incentive funding to achieve needed emission reductions from heavy-duty trucks. Achieving improved air quality requires more than just addressing long-term climate change goals, and when solutions are available to effectively address multiple environmental goals simultaneously, they should be prioritized by policymakers. Upgrading the existing population of heavy-duty trucks operating in California is an area where such co-benefits can be achieved cost-effectively and in the near-term. According to ARB's EMFAC (also known as "emissions factors") database, these trucks are responsible for nearly 40% of on-road NO_x emissions, and nearly 15% of on-road GHG emissions, making them a high-impact subject for improvement.

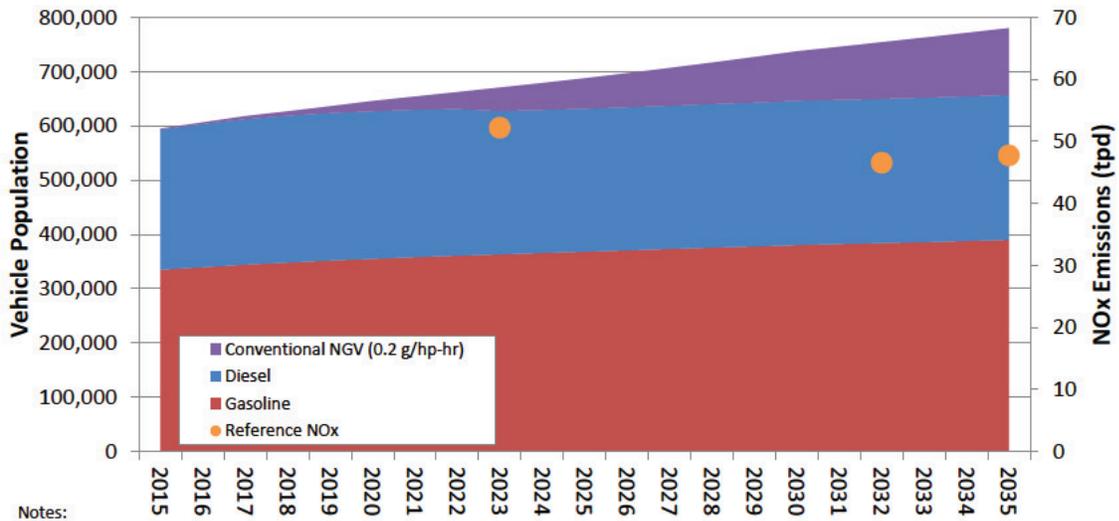
SoCalGas has conducted significant research into the efficacy of investing in near-zero natural gas heavy duty trucks to help local air districts and the State meet air quality and other goals.¹⁰ Below shows the penetration of such trucks into the South Coast Air Basin market based upon market forces at the current NO_x emission rate of 0.2 grams of NO_x per brake horsepower hour.

⁸ See, for example, "Discussion Draft for Battery Electric Bus Operations," from April 7, 2016, Advanced Clean Transit Workgroup Meeting, at <http://www.arb.ca.gov/msprog/bus/ratesanddemand.pdf>.

⁹ South Coast Air Quality Management District, Draft 2016 Air Quality Management Plan, Appendix IV-A, "Stationary and Mobile Source Control Measures," June 2016, p. IV-A-8, "Incentives Programs Measure."

¹⁰ For further discussion and full explanation of assumptions for these Figures, please see "Near-Zero Emission (NO_x) Natural Gas Truck Opportunities in the South Coast Air Basin," prepared by Environ International Corporation, December 2014, attached as Appendix D to these comments.

Figure 1.

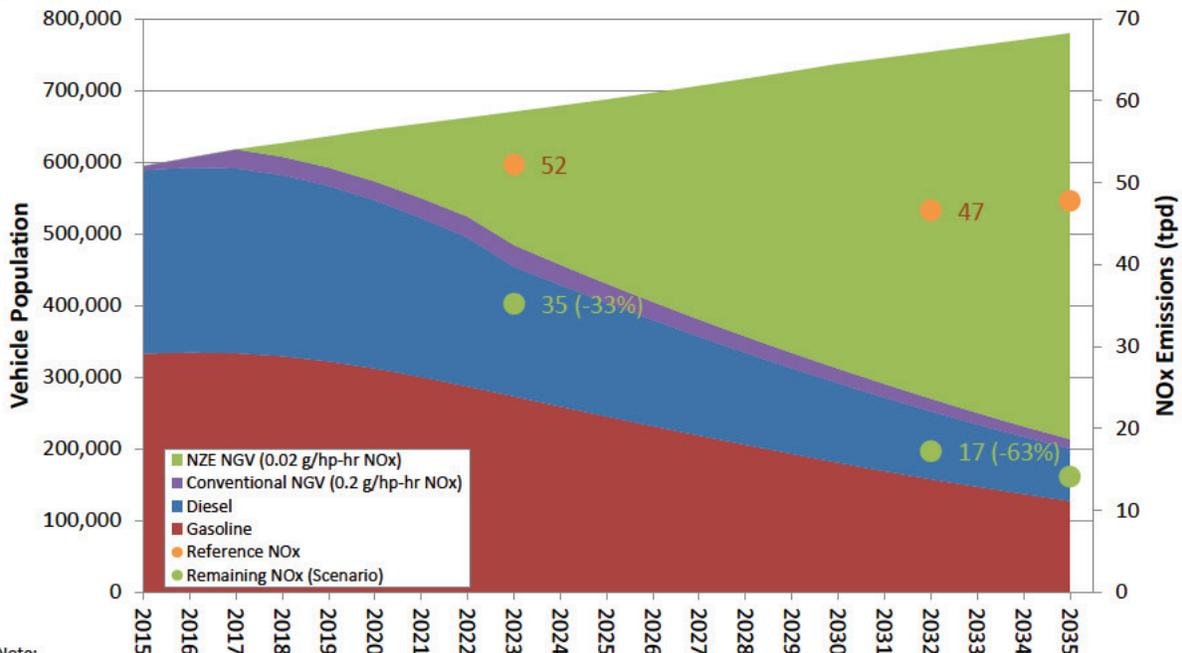


Notes:

1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Vehicle population is based on the EMFAC2011 data for the South Coast Air Basin.

If we look a little further into the future – two years at most – we believe a 12L heavy-duty natural gas engine that would produce 90% less NOx per brake power hour, at 0.02 grams, will be commercially available. Engines that size could support ultra-low NOx heavy-duty trucks used for drayage and long hauls common in the freight sector. If purchases of such ultra-low NOx natural gas trucks were supported by incentive funds, market penetration of such trucks would be expedited, leading to a **33% NOx emission reduction by 2023 and 63% NOx emission reductions by 2031 in the South Coast Air Basin alone.**

Figure 2.



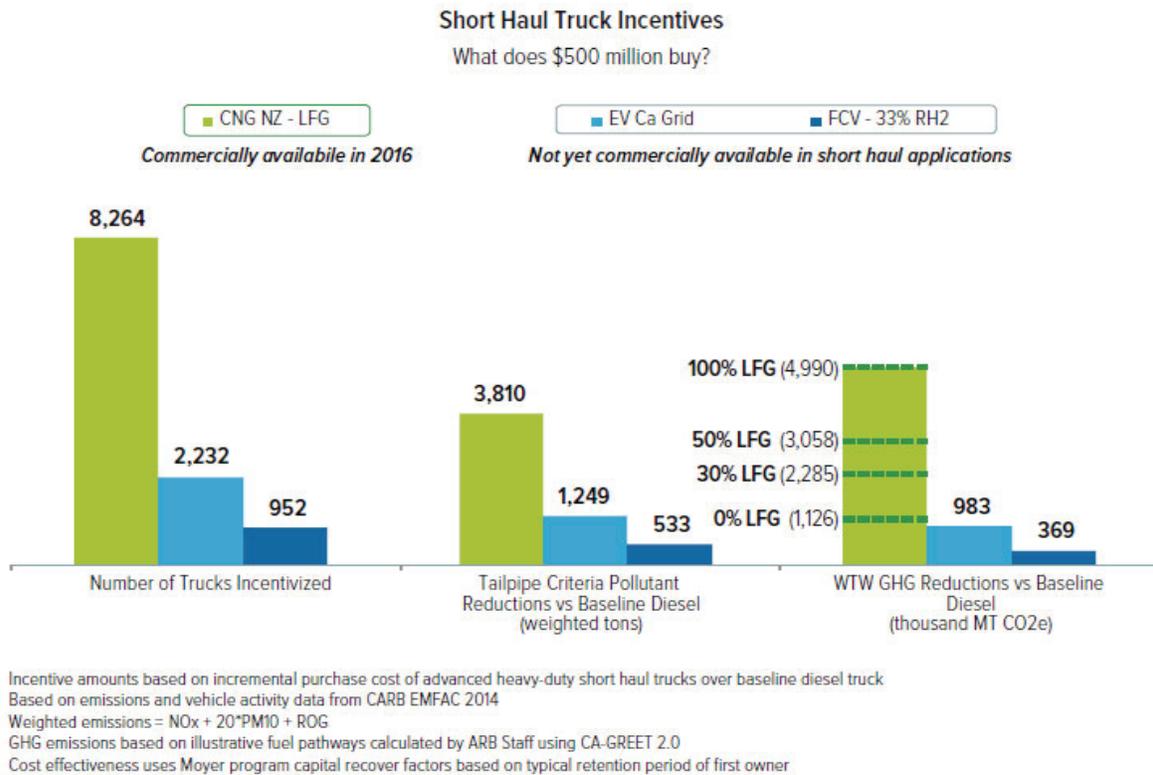
Note:

1. Analysis includes T7 Drayage, T7 Single, T7 Solid Waste Collection Vehicle, T7 Tractor, T7 Tractor Construction, T7 Agriculture, T7 Single Construction, T7 Public, T7 Utility, T7 IS, T6 Instate Heavy, T6 Instate Small, T6 Utility, T6 Public, T6 TS, T6 Agriculture, T6 Instate Construction Heavy, T6 Instate Construction Small, LHDDT, and LHDGT.
2. Maximum incentives range from \$15,500 - \$35,000/Truck depending on the vehicle type and engine size.
3. Assumed penetration rates after the incentive period ends remain at 20% due to some mechanism.

As discussed at length in the *Game Changer Technical Whitepaper* by Gladstein, Neandross and Associates, upgrading these traditional heavy-duty trucks with advanced near-zero emission natural gas vehicles (NGVs) can provide a cost-effective solution to help meet our climate change and air quality goals in the near term.

Figure 3¹¹ below demonstrates the relative impact incentives supporting heavy-duty NGVs can have compared to alternative choices – which may not be available for several decades. For example, providing incentives for near-zero emission heavy-duty NGVs fueled with renewable natural gas (RNG) can have three times the tailpipe criteria pollutant reduction and five times the “well-to-wheels” GHG reduction benefits as the next best alternative. Additionally, growing the demand for RNG as a vehicle fuel for California’s goods movement sector will promote the development of RNG production facilities, which often present an opportunity to mitigate atmospheric emissions of methane at landfills and dairies. Coupled with the near-term availability of this technology, these leveraged impacts make supporting the adoption of heavy-duty NGVs through the SIP and other state actions a clear choice.

Figure 3.



As noted by the ARB in their MSS, incentive funding is critical to deploying zero emission and near-zero emission heavy duty trucks. “Given the timing and the overlay of current regulatory programs, technology deployment by 2023 must come primarily through incentive

¹¹ Game Changer, Technical White Paper, Next Generation Heavy-Duty Natural Gas Engines Fueled by Renewable Natural Gas, May 3, 2016, Figure 4. http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf

mechanisms.”¹² ARB specifically references the need to incentivize near-zero heavy-duty trucks:

In the case of heavy-duty vehicles, combustion is likely to remain a dominant technology through 2031 based on the maturity of current technologies. Thus, the assessment focused on expanded deployment of low-NOx trucks. Under this approach, the population of trucks meeting a low-NOx standard in the South Coast would increase by approximately 150,000, totaling over 430,000 trucks by 2031. **These technologies are anticipated to be available, but will require substantial incentive funding to achieve this additional level of enhanced deployment.**¹³

As a result, a detailed discussion of an incentive funding plan for achieving the goals and objectives set forth in the SIP would be appropriate in the final version.

5. Renewable Natural Gas Can Transform the Mobile Sector by Reducing GHGs

SoCalGas supports ARB’s Proposed Short-Lived Climate Pollutant Strategy (SLCP) of capturing biogas to be used as a transportation fuel, injected into natural gas pipelines, and used to generate on-site renewable electricity and heat.¹⁴ Increasing the use of RNG as a transportation fuel would not only reduce methane emissions from organic waste streams, but also reduce black carbon by displacing diesel in older, conventionally fueled heavy-duty vehicles. Using RNG with a near-zero emission engine can further reduce GHG emissions by 50-80% depending on the source of biogas.

A. Addressing RNG Technology and Market Barriers

There are multiple technology and market challenges associated with injecting biogas into pipelines. SoCalGas strongly supports the ARB’s goals to address these challenges and build market certainty and value for RNG.

We commend ARB for publishing a provisional LCFS Carbon Intensity for dairy biogas that includes the benefit of avoided methane emissions. We believe this is a good first step towards enhancing the project economics to produce RNG from dairy waste and to use it as transportation fuel. We would support further initiatives to incentivize the capture and use of biogas, particularly by offsetting infrastructure costs. Facilities that connect to the pipeline system are necessary for California to meet its climate change and air quality goals, and provide for the most long-term flexibility for this valuable renewable resource.

- **Overcoming RNG Interconnection Challenges:** The SLCP points to the challenge of interconnecting distributed sources of renewable energy onto the electricity grid or pipelines. High project startup costs, including the costs of connecting to the pipeline

¹² Mobile Source Strategy, released by ARB May 2016, at p. 43.
<http://www.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.pdf>

¹³ Mobile Source Strategy, released by ARB May 2016, at p. 44 (emphasis added).

¹⁴ California Air Resources Board, Proposed Short-Lived Climate Pollutant Strategy, released April 2016, p. 66.
<http://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf>

system, are one of the inherent challenges of RNG project development, regardless of feedstock. Interconnection with the pipeline system gives RNG access to the broadest market possible, facilitating the most diverse and flexible utilization opportunities and hence most dynamic and effective incentive strategies to encourage methane capture to achieve the objective of the SLCP.¹⁵ Additional regulation providing for energy infrastructure investment by California regulated utilities is necessary to accept and transport RNG, and ultimately should be recoverable in rates.

- **Dairy Biogas for Freight Vehicles:** ARB identifies several programs to accelerate project development and emissions reductions at dairies. At SoCalGas, we are conducting education and outreach to developers to help accelerate RNG projects in this and other sectors. As discussed above, SoCalGas has assisted project developers with assessing high-level costs and feasibility for projects like the Kern County Dairy Biogas Cluster, which would help advance the development of California’s sustainable freight transportation system. In addition, the project would directly benefit the economically disadvantaged communities adjacent to these dairies and transportation corridors traveled by trucks fueled with RNG by SLCP emissions, improving air and water quality, and boosting economic growth. Extending natural gas infrastructure to these disadvantaged communities in conjunction with dairy-RNG pipeline interconnections could also present an opportunity to transition diesel and propane end-uses to cleaner burning natural gas appliances and vehicles, with the potential added benefit of NOx emission reduction.
- **Emissions from Conventional Combustion Engines:** In February 2008, the SCAQMD adopted new standards,¹⁶ which require biogas engines to meet the same emission limits as natural gas fueled engines. These requirements are the cleanest in the nation and apply to all biogas fueled engines (numbering approximately 66 engines in July 2010). According to a technology assessment¹⁷ conducted by the agency in 2010, uncontrolled biogas engine emissions approximated 0.93 tons per day (tpd) of NOx and 0.44 tpd of volatile organic compounds (VOCs) prior to the February 1, 2008 amendments. Once these biogas emissions are controlled as required by Rule 1110.2, the emissions reductions generated from biogas engines will be approximately 0.69 tpd of NOx and 0.16 tpd of VOC. All new biogas engine installations must also meet these natural gas equivalent emission standards. Such treatment of biogas would likely improve air quality in other areas of the state as will occur in the South Coast Air Basin.

B. Renewable Natural Gas and Transportation

The LCFS identifies RNG from existing organic sources as the lowest carbon intensity standard pathway available, even lower than the current electricity mix or hydrogen. When sourced from dairies and organic waste diverted from landfills, the carbon intensity of RNG is rated as “carbon-negative,” due to avoided methane emissions from dairies and landfills.

¹⁵ The California Public Utilities Commission has taken an initial step by authorizing the natural gas utilities to recover a portion of interconnect costs from ratepayers in D.15-06-029.

¹⁶ South Coast Air Quality Management District Rule 1110.2 adopted on February 1, 2008.

¹⁷ South Coast Air Quality Management District Interim Report on Technology Assessment for Biogas Engines Subject to Rule 1110.2 (July 9, 2010).

As detailed in *Game Changer Technical Whitepaper* by GNA (referenced above), a heavy-duty natural gas engine is now commercially available which meets ARB's lowest-tier optional near-zero emission standard at 0.02 g/bhp-hr NOx.¹⁸ When paired with RNG, this technology will provide a commercially proven, broad-based, and affordable strategy to immediately achieve major reductions in emissions of criteria pollutants, air toxins, and GHG. As ARB has identified that heavy-duty electric and fuel cell electric vehicles will not be available in the next several decades,¹⁹ RNG provides the single best opportunity for California to achieve its air quality and climate change goals in the on-road heavy-duty transportation sectors. Equally important, major reductions of cancer causing toxic air contaminants can immediately be realized in disadvantaged communities adjacent to freeways and areas of high diesel engine activity, where relief is most urgently needed.

The most powerful driver to produce RNG in today's market is to fuel natural gas vehicles (NGVs), where RNG can support both California's LCFS and the Federal Renewable Fuel Standard (RFS) programs. According to the LCFS program, in the last half of 2015, the majority of NGV fuel in California was RNG – a huge success for this program, but an indication that RNG supply is approaching parity with demand. Growing the NGV market in California is not only an impactful and cost effective way to significantly reduce NOx and GHG emissions, but will also be critical to increasing the demand for RNG as the existing market becomes increasingly saturated.

In conclusion, by developing appropriate policies and incentives, we have the opportunity not only to simultaneously reduce SLCP, GHG, and criteria emissions, but also replace a significant amount of statewide natural gas usage with biomethane, or RNG, by leveraging and using organic waste resources which would otherwise be discarded and emitted as SLCPs. It is critical to make additional pipeline RNG production incentives available to cultivate the development of these renewable resources and leverage existing pipeline systems, electric generation facilities, NGV refueling infrastructure, and combined heat and power and distributed generation opportunities.

C. SoCalGas Encourages ARB and Other Stakeholders to Examine the Impact of These Policies on the Emerging Biofuels Industry

The policies being pursued in these plans can result in significant growth in both the renewable natural gas industry and in the renewable diesel industry. Both fuel types offer GHG and NOx emissions reductions, and policymakers should enact programs which will promote multiple choices for operators, with incentives appropriately aligned with performance in meeting emissions reduction goals. The following should be considered in implementing these policies:

¹⁸ Game Changer Technical White Paper, Gladstein, Neandross & Associates, May 3, 2016. http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf.

¹⁹ See ARB Technology Assessment: Medium and Heavy Duty Battery Electric Trucks and Buses, October 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/bev_tech_report.pdf and ARB Technology Assessment: Medium and Heavy-Duty Fuel Cell Electric Vehicles, November 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf.

- Renewable diesel has an important role in reducing GHG emissions. Renewable diesel has also shown in testing that NOx emissions may be reduced when used as a replacement fuel in existing trucks, allowing the use of renewable diesel to be directly attributable to meeting the Clean Air Act compliance goals of the MSS, as well as the state’s GHG goals. (Briefings with our consultants indicate that the studies relied upon to substantiate these impacts should be updated, and we commend ARB for committing to do this.)
- Near-zero emission natural gas trucks, when fueled with renewable natural gas, can also meet both the Clean Air Act attainment goals for the state, and help meet the state’s GHG goals. For near-zero emission natural gas trucks, the dramatic 90% reduction in NOx emissions is a result of an advanced engine technology – which will deliver this emission reduction regardless of whether it is fueled with traditional natural gas, upgraded biogas, or renewable natural gas. Because of the need for new engine technology with this pathway, up-front buy down incentives will be required to encourage the adoption of this advanced technology. Without incentives to encourage purchase of the 0.02 g/bhp-hr engines, operators would purchase the less expensive 0.2 g/bhp-hr engines instead, and there would be no NOx emission reductions gain. ARB is currently requiring renewable natural gas use for all near zero emission trucks under the incentive programs being proposed, a commendable and attainable goal under today’s market conditions, consistent with the integrated planning approach for GHG and criteria pollutant reductions. Because of this linkage created by these incentive programs, i.e., near-zero emission trucks receiving incentives must use renewable natural gas, there will be significantly more demand for renewable natural gas production. As a result of these multiple requirements for near-zero emission trucks, more drastic air quality and environmental benefits will be achieved with this approach.

Because of this double emission reduction benefit from both renewable diesel and renewable natural gas, policymakers should compare the varying outcomes of these policies and consider adopting incentives commensurate with the benefits achieved.

Specifically, ARB has proposed a measure, “Expand Use of Renewable Fuels,” which has as its objective, “Replace 50 percent of diesel demand with low emission diesel by 2031.” This measure would establish a state policy that could significantly bias the growth of the biofuels industry, limiting innovation in the alternative fuels markets. As we all know, this industry needs support to grow, especially to reach production levels anticipated in these plans for both renewable diesel and renewable natural gas. We must recognize that because there is a finite amount of investment funding available, it is critical to consider the implications of these policies on the growth and innovation of the nascent biofuels industry. Policymakers must examine the respective renewable biofuels technology, costs, energy consumption, feedstock impacts, near and long term environmental benefits, and the impact on the direction of growth of the renewable fuels industry generally.

The Energy+Environmental Economics (E3) consulting firm has performed studies that begin to examine some potential pathways to achieving our state’s 2030 and 2050 environmental goals which can serve as a starting point for this examination. Last year E3 examined the impact of

supplementing an “Electrification” scenario, and an “Electrification” scenario with a “Low Carbon Gas” option, in order to improve the state’s ability to reach its 2030 GHG goals.²⁰ E3 concluded that one of the critical differences between a 100% Electrification compliance scenario and a scenario that includes Low Carbon Gas option would be choice of allocating biomass feedstock to the production of alternative fuels – namely bio and renewable diesel, and renewable natural gas. Fortunately, E3 also studied feedstock availability and found that less than 10% of the potential feedstock available nationally was necessary to produce the amount of renewable natural gas needed for their Low Carbon Gas option. However, due to the shared feedstock for the development of many biofuels, it is clear that it will be critically important to establish policies that don’t unilaterally support the development of single biofuels in order to maintain cost-effective energy diversity and achieve our statewide environmental goals. Below is a simple table summarizing some of the results of the E3 study:

	2015	2030 CARB Mobile Source Strategy	2030 E3 Electrification	2030 E3 Low Carbon Gas
ZEVs ^{1/} (millions of vehicles)	0.1	5 - 7.3	9.3	9.3
CNG and LNG trucks and buses (millions of vehicles)	0.00003	0.400	0.037 ^{4/}	0.359
Biogas (% of total gas system demand)	0%	<u>3/</u>	2%	30% ^{5/}
Renewable Diesel (% of total diesel demand)	2% ^{2/}	55%	67% - 85%	3%
Statewide GHG Reduction (% Reduction from 1990 Levels)	2%	40%	40%	40%

1/ Includes BEVs, PHEVs, and FCVs

2/ Estimated renewable diesel share in 2013, based on reported LCFS compliance

3/ Almost all renewable fuels are liquids. Some renewable gaseous fuel, tied to incentive requirements

4/ E3 Electrification Scenario includes approximately 320,000 hybrid diesel trucks in the Alternative Fuel HD Sector

5/ RNG transportation demand as a percent of total system demand is approximately 17% in 2030, and is approximately 30% in 2050.

In addition, SoCalGas has also been examining the comparison in cost and energy use for producing various biofuels from this common feedstock, and should have information available for this discussion shortly. We encourage ARB, California Energy Commission (CEC), SCAQMD, San Joaquin Valley Air Pollution Control District (SJVAPCD), and other stakeholders to consider these important relationships, and the potential outcomes with respect to meeting our near and long term environmental goals of policies proposed in these plans on the growth and direction of the biofuels industry. We recommend that ARB and CEC establish this

²⁰ Energy+Environmental Economics (E3), *Decarbonizing Pipeline Gas to Help Meet California’s Greenhouse Gas Reduction Goal*, November 2014, released January 27, 2015.

http://origin-gps.onstreammedia.com/origin/multivu_archive/ENR/1241844-Decarbonizing-Pipeline-Gas.pdf

See also, “Study Finds Low-Carbon Gas Fuels NEW Option for Meeting California’s Greenhouse Gas Reduction Goals: Comparison of Electrification, Mixed Energy Solutions,” January 27, 2015.

<http://www.prnewswire.com/news-releases/study-finds-low-carbon-gas-fuels-new-option-for-meeting-californias-greenhouse-gas-reduction-goals-300026623.html>

work group in the near future so that it will be able to provide this vital analysis before adoption of these plans.

6. SoCalGas Encourages the Use of Natural Gas in Non-Road Heavy-Duty Related Engines

SoCalGas believes natural gas and renewable natural gas have an important role to play as transportation fuel for heavy duty engines in the non-road mobile sector. Specifically, natural gas can significantly reduce emissions in ocean-going vessels and locomotives, which are large contributors of air pollutants in our state and globally.²¹ SoCalGas is taking steps to lower such emissions. For example, SoCalGas is co-funding the demonstration of a Low NOx Compressed Natural Gas-powered Switcher Locomotive at the San Pedro Bay Ports. In addition, SoCalGas has conducted analysis to evaluate the specific benefits of utilizing natural gas in heavy-duty non-road engines, and is pleased to share our findings here.

A. Ocean-Going Vessels Running on Liquefied Natural Gas Reduce Criteria Pollutants and Black Carbon Emissions

Emission estimates for an International Maritime Organization (IMO) Tier III diesel fueled 8,000 twenty-foot equivalent (TEU) ocean-going vessel (OGV) and a similar liquefied natural gas (LNG) OGV travelling from Los Angeles to Shanghai are shown in Table 1 of the attached Appendix E. Two different estimates were made for the diesel OGV - one before 2020 and the other for 2020 and beyond to capture the change in emissions resulting from the switch in fuel oil sulfur content to 0.5% required by IMO Regulation 14. The results show a reduction of 92% in PM₁₀, 85% in NO_x, >99% in SO_x, and 39% in black carbon prior to 2020. For calendar year 2020 and beyond, we see a smaller reduction in PM₁₀ of 69% due to the use of lower sulfur fuel oil; however, **reductions in black carbon emissions increase from 230 pounds per one-way trip (or 39%) to 330 pounds per one-way trip (or 49%).**

To understand the potential impact of such a fuel switch, consider a scenario of LNG OGVs increasingly replacing diesel OGVs for container cargo transport between Southern California and Asia. Southern California Association of Governments' (SCAG's) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) estimates that the Ports of Los Angeles and Long Beach will handle around 36 million TEUs in 2035.²² More than 90% of this cargo (around 32.4 million TEUs) would be traffic to/from Asia.²³ If LNG OGVs started replacing diesel OGVs in 2020 and carried half of projected 2035 Asian cargo, black carbon emissions from OGVs would be reduced every year after introduction by up to approximately 340 tons/year by 2035.

²¹ SIP, p. 82, "Further Deployment of Cleaner Technologies: Off-Road Federal and International Sources."

²² SCAG, 2016 to 2040 RTP SCS - Transportation Goods Movement System Appendix, Adopted April 2016. Available at http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_GoodsMovement.pdf. Accessed May 2016.

²³ Fact sheets for Ports of Los Angeles and Long Beach. Available at: https://www.portoflosangeles.org/pdf/POLA_Facts_and_Figures_Card.pdf and <http://www.polb.com/about/facts.asp>. Accessed: May 2016.

B. LNG-Fueled Line-Haul Locomotives Reduce Black Carbon Emissions

Emission estimates for a 100 rail car double-stacked intermodal container train powered by three Tier 4 diesel locomotives and a similar train powered by three LNG locomotives travelling from Los Angeles to Chicago are provided in Table 2 of the attached Appendix E. Both locomotives (diesel and LNG) meet the USEPA Tier 4 standard; as a result, there are no reductions in PM₁₀ or NO_x for the LNG locomotives as compared to the diesel locomotive. We do however see a **thirteen pound per one-way trip or 87% reduction in black carbon emissions with the use of LNG in place of diesel.**

Consider a scenario of LNG replacing diesel for freight trains from Southern California to and from the Midwest (e.g., Chicago). Historically, about 40% of the intermodal container cargo coming into the Ports of Los Angeles and Long Beach went to the Midwest/Chicago by rail. These ports are projected to handle container volumes of around 36 million TEUs in 2035²⁴ of which around 12.8 million TEUs are estimated to be transported by on- and off-dock intermodal trains.²⁵ If we assume that 40% of these TEUs travel to Chicago/Midwest region and a 100% of these trains are LNG fueled in 2020,²⁶ black carbon emissions would be reduced every year after the fuel switch to approximately 85 tons/year by 2035.

For these reasons, SoCalGas would be pleased to partner with ARB to urge the federal EPA and the International Maritime Organization to speed their fuel requirements in these sectors and provide for improved air quality and lower GHGs and other emissions from these non-road sectors of air pollution.

Conclusion

SoCalGas is looking forward to reviewing the final SIP to be submitted to the federal government later this year, and is eager to help implement what we hope to be a cost-effective and flexible strategy to reach the State's ambitious air quality goals.

Sincerely,

Jerilyn López Mendoza

Jerilyn López Mendoza
Program Manager
Energy and Environmental Affairs

²⁴ SCAG. 2016 to 2040 RTP SCS - Transportation Goods Movement System Appendix, Adopted April 2016.

²⁵ Per 2016 to 2040 RTP SCS, approximately 35.5% (5-year average 2010 to 2014) of container volumes handled by the Ports of Los Angeles and Long Beach are transported by intermodal trains.

²⁶ It is assumed that the railroads would do a nearly complete fuel switch by major line to minimize duplicating fueling infrastructure.



Jerilyn López Mendoza
Program Manager
Energy & Environmental Affairs

555 W. Fifth Street, GCT 17E5
Los Angeles, CA 90013

tel: 213.244.5235
fax: 213.700-0095
email: jmendoza5@semprautilities.com

September 7, 2016

Rajinder Sahota
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

RE: Written Comments by Southern California Gas Company and SDG&E on the Scoping Plan Update Workshop on the Energy Sector

Dear Ms. Sahota,

The Southern California Gas Company ("SoCalGas") and San Diego Gas & Electric Company ("SDG&E") appreciate this opportunity to comment on the California Air Resources Board's ("ARB") Scoping Plan Update Workshop ("Workshop"). We offer these comments to enhance the Scoping Plan and supplement the input we provided on the previous Scoping Plan Update¹ ("Update"). We strongly support ARB's commitments to meet the State's greenhouse gas ("GHG") reduction targets, and believe natural gas plays an integral role in achieving California's 2030 goals.

In this letter, we supplement our comments filed on the previous Update documents about how natural gas use contributes to meeting the state's mid-term air quality goals and the 2050 climate goals by providing additional detail on natural gas technology advancements. Specifically, we highlight the need to leverage the low emission benefits of natural gas in the transportation sector as well as developing and utilizing renewable sources of methane as methods to achieve significant GHG reductions and help facilitate integration of other renewable energy and storage technologies into the energy grid.

1. Integrating Renewable Gas and Power-to-Gas Technology

Natural gas utilization in ultra-low emitting technology applications will help achieve GHG emission reductions targets and generate air quality benefits. Development and utilization of renewable natural gas ("RNG"), and its use in ultra-low emission technologies can help further GHG reductions – and not just in trucks and buses using the newly developed "near zero" engine. But use of renewable gas in ultra-low emitting gas technology like fuel cells, and microturbines, and advanced combined heat and power ("CHP") applications can expand development of distributed generation sources complementing other renewable energy technologies, such as solar and wind.

¹ SoCalGas Comments on the Air Resources Board First Scoping Plan Update, April 28 2014.

Distributed generation resources powered by RNG, such as CHP systems and natural gas microturbines and fuel cells, can help manage load centers and our electricity demand, enhancing the resiliency of the state's energy infrastructure. For example, CHP systems serve as a form of onsite power that can help separate cities and communities from the electricity grid, which can reduce strain on the grid during peak hour demand. Further, CHP can help cities diversify their energy mix, thereby increasing local energy security while also increasing energy efficiency.

RNG technology can also further the development of other renewable sources, such as solar and wind, in its capacity to balance the demand imbalance inherent in these sources through what is known as power-to-gas. In the power-to-gas process, excess renewable energy produced by wind or solar, or in times of excess and with a need to protect the grid from imbalance, is used to produce hydrogen gas through the electrolysis of water. This hydrogen can be used in transportation via fuel cells, or methanated and injected into the pipeline for traditional uses. Today, more than 35 power-to-gas facilities in the European Union are being planned, constructed, or operated. These are referred to collectively as a "system solution" because of the added benefits of helping balance the grid and provide substantial energy storage capacity. Decarbonized gas in the form of power-to-gas can play an important role integrating variable renewable generation by producing gas, and then storing it in the existing infrastructure for when it is needed to serve residential and commercial customers or for electricity generation. Power-to-gas should be rigorously evaluated by ARB and the state's energy agencies developing the Update, and should be supported as a key strategy to reduce GHGs.

2. Reduce, Reuse, Recycle... Methane

Slide 63² of the Workshop presentation depicts the relative contribution of California's methane sources to the State's overall methane emissions in 2013 and the projected emissions for 2030. A majority of these emissions of methane to atmosphere are shown to come from organic sources including agriculture, livestock, and dairies. By comparison, the relative methane emissions from the oil and gas sector is significantly smaller, 13% compared to the combined 55% of organic sources for 2013, and 15% compared to the combined 54% projected for 2030. However, the policy drivers for reducing GHG emissions are inequitably targeting the oil and gas sector, aimed at reducing fugitive and vented emissions and improving monitoring – the total volume of potential capture pales in comparison to other unregulated sources. We believe that greater reductions could be achieved by focusing on emissions from the greatest share of the inventory. Specifically, developing and utilizing methane capture technologies can achieve co-benefit reductions from both organic methane sources as well as the oil and gas sector. In addition, SoCalGas has requested the ARB emissions inventory team revisit the 2030 forecasts of pipeline emissions, and has been working with staff to provide data.

² Slide 63. "Methane by Source in California." ARB Public Workshop on the Energy Sector to Inform Development of the 2030 Target Scoping Plan Update. Aug. 23, 2016.
<https://www.arb.ca.gov/cc/scopingplan/meetings/08232016/scoping.plan.energy.workshop.pdf>

In our Short-Lived Climate Pollutants (“SLCP”) comment letter,³ SoCalGas and SDG&E addressed our support for ARB’s strategy of utilizing organic waste streams to reduce GHG emissions and criteria pollutants and detailed the benefits of utilizing biogas for air quality and climate change purposes.

The Low Carbon Fuel Standard (“LCFS”) set a provisional Carbon Intensity for dairy biogas that included a benefit from avoided emissions. Further, the LCFS identified RNG from existing organic sources as the lowest carbon intensity standard pathway available, even lower than the current electricity mix or hydrogen. When sourced from dairies and organic waste diverted from landfills, RNG is rated as “carbon-negative” due to avoided methane emissions from dairies and landfills. That is, compared to electric vehicle technologies, which can at best provide zero carbon emissions, RNG sourced from dairy and other organic waste removes more carbon from the atmosphere than it produces. Further, when used as a transportation fuel, for electricity generation, or injected into the pipeline, RNG can significantly mitigate atmospheric methane emission while also providing a flexible and reliable renewable energy source. Currently, SoCalGas supports and has been engaged in the proposed Dairy Biogas for Freight Vehicles project in the San Joaquin Valley. The cluster of dairies involved in the project could generate 1.5 to 2.5 million diesel-gallon equivalents per year using dairy waste, and each dairy is also capable of generating renewable electricity on site with any excess biogas.

However, for organic sources like dairies to be used most effectively as sources of RNG, they need to be connected to the electric grid or natural gas pipelines for injection. As explained in our SLCP comment letter, there are definite challenges of interconnecting these distributed sources of renewable energy. High project startup costs, including the costs of connecting to the pipeline system, are some of the challenges inherent to RNG project development, regardless of feedstock. Interconnection to the pipeline system gives RNG access to the broadest market possible, facilitating the most diverse and flexible utilization opportunities and hence most dynamic and effective incentive strategies to encourage methane capture. Regulation providing for energy infrastructure investment by California regulated utilities is necessary to accept and transport RNG to end use customers, and such investment should be seen as a public benefit and recoverable in rates from all classes of ratepayers.

Additionally, competition for feedstock with other fuel sources has the potential to negatively impact successful development and deployment of RNG technologies. Currently, ARB has a proposed “Low-Emission Diesel Requirement” in their Mobile Source Strategy that intersects with South Coast Air Quality Management District’s (SCAQMD) proposed biogas control measure and incentive program for near-zero heavy-duty trucks. The objective of ARB’s measure is to replace 50 percent of diesel demand with low emission diesel by 2031, which establishes a state policy that could significantly bias the growth of the biofuels industry and limit innovation in the alternative fuels markets⁴. However, to reach the production levels anticipated in these plans for both renewable diesel and RNG, the industry will require substantial financial support. Because there is a finite amount of investment funding available, it

³ SoCalGas comments on Air Resources Board’s Proposed Short-Lived Climate Pollutant Reduction Strategy, May 26, 2016.

⁴ “Mobile Source Strategy,” California Air Resources Board (May 2016), p. 153 *available at*: <http://www.arb.ca.gov/planning/sip/2016sip/2016mobsr.pdf>

is critical to consider the implications of these policies on the growth and innovation of the biofuels industry. To inform a policy assessment on the growth of the renewable fuels industry, the respective biofuels technologies, costs, energy consumption, feedstock impacts and near- and long-term environmental health benefits should be examined. SoCalGas and SDG&E look forward to reviewing and commenting upon ARB's newly developed "Biofuel Supply Module," scheduled for release today, September 7, 2016, which will impact the assessment of low-carbon fuel availability for the Update.

It is essential to remember that production of RNG from dairy biogas relies on methane that would normally be released into our atmosphere and converts it into clean fuel for our freight vehicles. It's a double environmental win: California will reduce emissions from the agriculture sector while generating a renewable energy source for other applications.

3. Renewable Natural Gas and Transportation

SoCalGas and SDG&E agree with ARB's determination that to "close the gap" between current GHG reduction strategies and legislative emission targets, additional reductions from existing sectors will be needed to achieve these targets, particularly the 2030 limit. Further, we believe that one of the opportune places for these additional reductions is within the transportation sector as conveyed in the Workshop presentation. However, we disagree that these reductions should be achieved by solely focusing on electrifying the transportation sector as depicted in slide 46.⁵ In our comments on the California Sustainable Freight Action Plan⁶, we discuss the utilization of ultra-low emitting technology with RNG in the transportation sector as a strategy to reduce GHG and criteria pollutant emissions to reach the State's emissions targets more expeditiously than a pure electrification scenario, especially as ARB has identified that electrification of heavy-duty trucks will not be available in the shorter time frame needed for air pollutant reductions.

As detailed in *Game Changer Technical Whitepaper* by Gladstein, Neandross & Associates, a heavy-duty natural gas engine is now commercially available which meets ARB's lowest-tier optional low-NOx emission standard at 0.02 g/bhp-hr NOx.⁷ When paired with RNG, this technology will provide a commercially-proven, broad-based, and affordable strategy to immediately achieve major reductions in emissions of criteria pollutants, air toxins, and GHGs. As ARB has identified that heavy-duty electric and fuel cell electric vehicles will not be available in the next several decades,⁸ RNG provides the single best opportunity for California to achieve its air quality and climate change goals in the on-road heavy-duty transportation sector. Equally important, major reductions of cancer-causing toxic air contaminants can immediately

⁵Slide 46. "Transportation Electrification." ARB Public Workshop on the Energy Sector to Inform Development of the 2030 Target Scoping Plan Update. Aug. 23, 2016.

<https://www.arb.ca.gov/cc/scopingplan/meetings/08232016/scoping.plan.energy.workshop.pdf>

⁶ SoCalGas comments on Air Resources Board's Multi-Agency "California Sustainable Freight Action Plan," July 6, 2016

⁷ Game Changer Technical White Paper, Gladstein, Neandross & Associates, May 3, 2016.

http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf

⁸ See ARB Technology Assessment: Medium and Heavy Duty Battery Electric Trucks and Buses, October 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/bev_tech_report.pdf and ARB Technology Assessment: Medium and Heavy-Duty Fuel Cell Electric Vehicles, November 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf.

be realized in disadvantaged communities adjacent to freeways and areas of high diesel engine activity, where relief is most urgently needed.

SoCalGas and SDG&E strongly support the LCFS which identifies RNG from existing organic sources, such as dairy waste, landfills, and waste water treatment as the lowest carbon intensity fuels available. A review of the LCFS reporting tool shows that RNG as a percentage of total natural gas used in the transportation sector has increased dramatically in the past year. We believe the LCFS will help meet California's environmental and economic goals: it has been instrumental in creating price parity between alternative fuels and fossil fuels, thereby spurring the development of low carbon fuels in California—such as RNG—that will yield substantial future GHG reduction benefits.

Conclusion

Methane emissions (primarily from agriculture, dairies, and landfills) will continue to be a part of the state's GHG inventory as they have been historically, even with aggressive control technology. Capture and management of these methane emissions will have a proportionately greater impact than efforts to control CO₂ emissions because of the higher global warming potential of methane. Combustion of methane, i.e. conversion to CO₂, reduces its global warming potential by a factor of more than 20 times. Therefore, combustion of captured or recovered methane emissions, such as RNG, will play an important role in current and future plans to reduce global warming.

Again, SoCalGas and SDG&E appreciate the opportunity to comment on the Scoping Plan Update Workshop and we look forward discussing additional dialogue in the Scoping Plan development process. Please contact me if you have any questions or concerns about these comments.

Sincerely,

Jerilyn López Mendoza

Jerilyn López Mendoza
Environmental Affairs Program Manager – Air Resources Board
SoCalGas
and on behalf of SDG&E



Tim Carmichael
Agency Relations Manager

925 L Street, Suite 650
Sacramento, CA 95814
Tel: 916-492-4248
TCarmichael@semprautilities.com

November 21, 2016

Ms. Rajinder Sahota
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Re: Written Comments by Southern California Gas Company on the 2030 Target Scoping Plan Update November 7, 2016 Workshop

Dear Ms. Sahota,

Southern California Gas Company (SoCalGas) appreciates the opportunity to submit these comments on the California Air Resources Board's (ARB) 2030 Target Scoping Plan Update ("Scoping Plan") Workshop held on November 7, 2016. We offer specific comments on the proposed scenarios, as well as overall policy comments on the Scoping Plan.

I. High-Level Policy Comments

We provide the following input on high-level policy topics related to the Scoping Plan:

- A. The Low Carbon Fuel Standard should continue post 2020** – The Low Carbon Fuel Standard Program (LCFS) is an important complementary measure to help California meet its greenhouse gas (GHG) reduction goals. SoCalGas supports the continuation and increased stringency of the LCFS to achieve a 10% reduction in transportation fuel carbon intensity by 2020 and further reductions through 2030. First and foremost, the LCFS helps contribute to fuel diversification in ways that Cap-and-Trade cannot achieve on its own. The LCFS Program helps send a long-term policy signal that complements the short-term price signal of Cap-and-Trade, which helps reduce volatility in the transportation fuels market, and sends strong signals to investors.

The two scenarios presented by ARB for post-2020 reductions show 18% and 25% carbon intensity reduction targets by 2030. As ARB moves forward with the presentation of the underlying assumptions associated with these two scenarios, ARB should consider carefully the market dynamics that should be encouraged by the program. ARB has the

difficult task of balancing program feasibility with program stringency: If the program veers too far in one direction or another, then the efficacy of the program may be threatened by low credit prices (in a program that lacks sufficient stringency) or extremely high credit prices (as a result of a program that is too stringent).

SoCalGas looks forward to reviewing the underlying assumptions associated with the carbon intensity targets for the LCFS post-2020, and understanding further how the market may respond to different LCFS targets.

- B. The Cap-and-Trade Program should continue post 2020** – SoCalGas supports continuation of the Cap-and-Trade Program to help meet California’s environmental and economic goals while considering impacts to affordability of energy service. This market-based mechanism provides compliance flexibility for regulated industries, as well as access and incentives to identify the lowest cost GHG emission reduction opportunities across the economy. Additionally, the State has already invested heavily in the Cap-and-Trade Program, which is successfully driving long-term investment in cleaner fuels and more efficient use of energy.
- C. Short-Lived Climate Pollutant Reduction Goals should focus on Organic Sources** – The State should focus on reductions from the dairy, agriculture, landfill and wastewater sectors, as these contribute over 80% to California’s methane emission inventory¹. We support ARB’s strategy of capturing methane from these sectors to be used as a transportation fuel, injected into natural gas pipelines, and used to generate on-site renewable electricity and heat. Increasing the use of Renewable Natural Gas (RNG), also known as biomethane, as a transportation fuel would not only reduce methane emissions from organic waste streams, but also reduce GHGs, NOx, and black carbon by displacing diesel in older, conventionally fueled heavy-duty vehicles. Furthermore, SB 1383 directs state agencies to develop policies and infrastructure investments needed to move California towards a greater use of RNG from organic waste streams.
- D. AB 197 Consideration of the Social Cost of Greenhouse Gas Emissions** – When including the social cost of GHGs in cost-effectiveness calculations, ARB should consider the impacts on energy affordability. Low-income and disadvantaged communities in California rely on lower-cost natural gas to heat their water, food, and homes. The health impacts and associated costs on these communities from a lack of affordable energy choices² must be included in the social cost calculations for each applicable measure. In addition, as AB 197 includes the costs of climate adaptation impacts, ARB should include the benefits that natural gas infrastructure brings to the state’s overall grid resilience in social cost calculations.

¹ CARB Proposed Short-Lived Climate Pollutant Reduction Strategy, April 2016

² National Energy Assistance Survey, 2011 http://neada.org/wp-content/uploads/2013/05/NEA_Survey_Nov11.pdf

II. Detailed Comments on Policy Scenarios

A. Comments on the Draft Scoping Plan Scenario

SoCalGas supports the continuation of a Cap-and-Trade Program with reasonable declining caps to help meet California's environmental and economic goals while minimizing unfavorable ratepayer impacts. Cap-and-Trade provides compliance flexibility for regulated industries, as well as access and incentives to identify the lowest cost GHG emission reduction opportunities across the economy. Likewise, we also support the continuation and increase of the LCFS to achieve a 10% reduction in fuel carbon intensity by 2020, and further reductions through 2030. These programs help California achieve co-benefits of reducing GHG as well as criteria pollutants that directly impact public health.

1. Low Carbon Fuel Standard

Since its adoption in 2010, the LCFS has been instrumental in creating price parity between alternative fuels and gasoline and diesel. This parity has resulted in a 36% increase in the use of clean fuels, \$650 million being invested in clean fuel production, the avoidance of 16.6 million tons of carbon pollution, a savings of \$1.6 billion in health care costs, and the displacement of 6.6 billion gallons of petroleum fuels. In addition, the LCFS program has been the catalyst for companies and people to innovate in the energy sector. The LCFS is essential to meeting 2050 goals, and so should be central to the 2030 goals as well.

The LCFS program has been crucial in spurring the development of low-carbon fuels in California by providing clear market signals to producers that their investments in research and development will yield returns in the long-run. It has increased demand for alternative fuels, such as RNG, leading to new technologies to produce, deliver, and use the fuel. For example, in 2015, encouraged by the increasing availability and decreasing price of alternative fuels, Big Blue Bus, the transit agency of the City of Santa Monica, switched its bus fleet to 100% RNG, reducing its fleet's carbon footprint by an estimated 8,000 tons per year. Innovations like this will help California achieve its ambitious climate goals such as those set forth in SB 32.

2. Renewable Gas Standard

The Scoping Plan includes a 5% renewable gas standard (RGS) for residential, commercial, and industrial end users in the Alternative 1 scenario. SoCalGas recommends that ARB include an RGS in the Draft Scoping Plan scenario. We support a limited purchase mandate and authority for gas corporations to recover in rates infrastructure needed to interconnect biomethane facilities with the pipeline network. California will not achieve the 2030 and 2050 limits without the expanded utilization of methane sources.

In recent years, SoCalGas has been reexamining the long-term role for natural gas in a low carbon energy mix. We engaged Energy + Environmental Economics (E3) to look at *Decarbonizing Pipeline Gas to Help Meet California's 2050 Greenhouse Gas Reduction Goal*.³ In the scenarios explored in this E3 study, deep de-carbonization of the natural gas supply would result in more than 50% of our natural gas supply coming from RNG by 2050. On this premise, E3 concluded:

- Pipeline de-carbonization works together with renewable electricity and electrification strategies towards GHG reduction objectives.
- Decarbonized pipeline gas reduces emissions in sectors that are otherwise difficult to electrify, including heavy duty vehicles; certain residential and commercial end uses, such as cooking, and existing space and water heating; and certain industrial end uses, such as process heating.
- Renewable gas in the form of power-to-gas (P2G) can play an important role in integrating variable renewable electric generation. By producing synthetic gas from excess renewable power and storing and distributing it using existing natural gas infrastructure, this flexible demand can help balance the electric grid as our state's energy profile changes. The renewable gas can be deployed to the highest and best time and use - serving residential and commercial customers or generating electricity.
- A transition to decarbonized pipeline gas would enable continued use of the State's existing gas pipeline distribution network, eliminating the need for constructing new energy delivery infrastructures to meet 2050 GHG targets, such as dedicated hydrogen pipelines or additional electric transmission and distribution capacity.
- Decarbonized gas technologies help diversify technology risk associated with heavy reliance on a limited number of decarbonized energy carriers, and would allow consumers, businesses and policymakers greater flexibility and choice in the transition to a low-carbon energy system.

In the electric generation sector, natural gas can have a long-term and significant role to play in decarbonizing electricity generation through the production of renewable gas. P2G can also aid in managing the intermittency of renewable sources like wind and solar. Production of renewable gas from electricity offers the opportunity to increase consumption in low net load periods. P2G creates a new and potentially cost-effective beneficial use for electricity that can be stored in existing natural gas infrastructure and delivered on demand.

SoCalGas is actively working to support each of these short-, mid-, and long-term clean energy solutions to reduce GHG emissions as part of our continued leadership in the natural gas research

³https://ethree.com/documents/E3_Decarbonizing_Pipeline_01-27-2015.pdf

SoCalGas' initial work with E3 was on the 2050 target to reduce GHG emissions by 80% below 1990 levels. We had assumed a straight-line progression to the 2050 target. So, by 2030, we would achieve a 34% reduction in GHG emissions. We would hit the 40% GHG reduction target between 2032 and 2033.

and development sector. For example, SoCalGas has signed an agreement with the National Renewable Energy Laboratory (NREL) to analyze the California Independent System Operator (“CAISO”) grid constraints and determine where there will be deployable electricity in the future to site P2G facilities. CAISO’s “duck curve,” shows the future of when generation will occur and predicts times with excess generation capacity and low demand, presenting an opportunity to implement P2G to create a much needed scalable, long term, zero or near-zero carbon energy storage medium.

3. Sustainable Freight Strategy

The Scoping Plan includes the Sustainable Freight Strategy as part of the Draft Scoping Plan scenario and Alternative 2. SoCalGas supports the California Sustainable Freight Action Plan (CSFAP), and inclusion of sustainable freight pilot projects to show proof of concept of innovative technologies that can reduce emissions and further our freight system efficiencies. Specifically, SoCalGas supports and has been engaged in the proposed Dairy Biogas for Freight Vehicles project in the San Joaquin Valley.⁴ This project would help address technical, market, regulatory, and other challenges and barriers to the development of dairy methane emissions reduction projects, as mandated by SB 1383.

At SoCalGas, we are conducting education and outreach to developers to help accelerate RNG projects in this and other sectors. SoCalGas has assisted project developers with assessing high-level costs and feasibility for projects like the Dairy Biogas project, which would help advance the development of California’s sustainable freight transportation system. This cluster of dairies could generate 1.5 to 2.5 million diesel-gallon equivalents per year using dairy waste, with each dairy also capable of generating renewable electricity on site with any excess biogas. It could be the first operating dairy biogas to pipeline interconnection project in California. SoCalGas believes that this project achieves several key objectives, such as demonstrating measureable progress towards freight targets within a 2030 timeframe; has system transformation potential; presents opportunities for integrated State agency support; and has potential for scalability throughout the state, particularly in the Central Valley.

In addition, the project would directly benefit the economically disadvantaged communities adjacent to these dairies and transportation corridors traveled by trucks fueled with RNG by reducing SLCP emissions, improving air and water quality, and boosting economic growth. Extending natural gas infrastructure to these disadvantaged communities in conjunction with dairy-RNG pipeline interconnections could also present an opportunity to transition diesel and propane end-uses to cleaner burning natural gas appliances and vehicles, with the potential added benefit of NOx emission reduction.

⁴ <https://www.arb.ca.gov/gmp/sfti/sfpp/sfpp-037.pdf>

It is essential to remember that this Dairy Biogas project relies on methane that would normally be released into our atmosphere and converts it into clean fuel for freight vehicles. It is a double environmental win - California will reduce emissions from the agriculture sector while generating a renewable energy source for other applications.

4. No New Electrification of Space Heating

SoCalGas believes natural gas plays an integral role in achieving California's 2030 goals, and supports the policy of no new electrification of space heating in the Draft Scoping Plan and Alternative 2 scenarios. Natural gas utilization in ultra-low emitting technology applications will help achieve GHG emission reductions targets and generate air quality benefits. As discussed earlier in this letter, development and utilization of RNG and its use in ultra-low emission technologies can help further GHG reductions.

SoCalGas agrees with ARB that using the Cap-and-Trade set emission performance standards allow all fuels and technologies to compete. This encourages innovation and competition, which will reduce the costs of attaining air quality goals.

B. Comments on Alternative 1 (no Cap-and-Trade Program)

The Alternative 1 scenario proposes enhanced and new measures, including sector-specific GHG reduction targets as an alternative to Cap-and-Trade. As detailed in the Scoping Plan Concept Paper, this would require establishing a baseline annual GHG emissions level for each regulated entity in permits, and frequent program evaluation and adjustments. Implementing and enforcing such a regime would have a large impact on ARB resources, beyond the cost-effectiveness of resulting GHG reductions. Given the data difficulties, it is likely to lead to significant loss of business in the State, significant loss of jobs, and significant emissions leakage. ARB's economic analysis of this option should consider the likelihood of the impact of getting the achievable reductions wrong. In addition, this would not include a statewide limit on GHG emissions, and could possibly require further measures if the 2030 target is still not achieved.

As emphasized in the staff presentation to the ARB Board on June 23, 2016, the objectives of the Scoping Plan include providing a flexible framework for implementation, and promoting resilient economic growth. However, requiring California's industries to meet facility emissions caps would not allow the same compliance flexibility to achieve GHG reduction goals at lower overall costs when compared to Cap-and-Trade. Further, this command-and-control type regulation does not provide an incentive for industry to innovate by going beyond required reductions.

C. Comments on Alternative 2: Carbon Tax

The Alternative 2 scenario proposes a carbon tax in lieu of the Cap-and-Trade Program. As SoCalGas has commented previously in response to the Concept Paper, we do not believe a carbon tax can reduce GHG emissions any more cost effectively compared to the Cap-and-Trade Program. Putting aside the tremendous burden on compliance entities to unwind their positions in allowances and offsets, and the wasted resources devoted by ARB to develop and administer the Cap-and-Trade Program since its inception, a carbon tax would make the achievement of ARB's GHG reduction goals more uncertain.

A carbon tax requires legislators to set the financial cost of carbon regulation with no idea if the tax rate is sufficient to attain the necessary reductions. A Cap-and-Trade Program adopts a cap and the economic cost of the Cap-and-Trade Program is whatever price becomes necessary to meet that cap, based on supply and demand. In addition, a carbon tax would not be able to protect energy-intensive trade-exposed industries. For those businesses, a carbon tax could be the final straw that drives businesses out of the state, creating emissions leakage.

III. Conclusion and Supporting Comments

This is an exciting time in the energy industry with many new technologies and tools being developed and adopted, including those related to the use of natural gas, low- and no-carbon gas supply and the statewide gas grid and its energy storage assets. The State should continue to acknowledge the GHG reduction potential of natural gas, the immediate availability of the natural gas system, and the benefits to all Californians as we move forward in the process. Whatever policy is adopted should be flexible enough to allow the best ideas to be deployed, and not lock in prescriptive mandates or specific technologies that ultimately are unachievable in the required timeframe and/or cost prohibitive.

As an innovation leader, California has always been at the forefront of improving our environment. While climate change policies are necessary to secure the continued health of our environment for future generations, California must move forward with not only policy leadership on GHG emissions reductions, but also policy leadership on how to accomplish reductions in a manner that continues to grow our economy.

SoCalGas looks forward to reviewing the Draft 2030 Target Scoping Plan when it is released later this year, and is eager to help implement what we hope to be a cost-effective and flexible strategy to reach the State's ambitious goals.

Sincerely,

Tim Carmichael

Tim Carmichael

Agency Relations Manager – Energy and Environmental Affairs

SoCalGas

DOCKETED	
Docket Number:	17-IEPR-06
Project Title:	Doubling Energy Efficiency Savings
TN #:	216058
Document Title:	SoCalGas comment letter on 2030 Energy Efficiency Targets
Description:	N/A
Filer:	System
Organization:	SoCalGas
Submitter Role:	Public
Submission Date:	2/15/2017 4:58:45 PM
Docketed Date:	2/15/2017

Comment Received From: Tim Carmichael

Submitted On: 2/15/2017

Docket Number: 17-IEPR-06

SoCalGas comment letter on 2030 Energy Efficiency Targets

Additional submitted attachment is included below.



Tim Carmichael
Agency Relations Manager
State Government Affairs

925 L Street, Suite 650
Sacramento, CA 95814

Tel: 916-492-4248
TCarmichael@semprautilities.com

February 15, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on the Joint Agency IEPR Workshop on 2030 Energy Efficiency Targets, Docket number 17-IEPR-06 –Doubling Energy Efficiency Savings

Dear Commissioners:

Southern California Gas Company (SoCalGas) appreciates the California Energy Commission (CEC) for hosting the California Public Utilities Commission (CPUC) in the Joint Agency Integrated Energy Policy Report (IEPR) Workshop held on January 23, 2017, to discuss key questions in the adoption of targets that achieve a statewide cumulative doubling of energy efficiency savings in gas and electric final end-uses by 2030 as required by Senate Bill (SB) 350 and part of the 2017 IEPR. The CEC has the important task of implementing the goals of increased renewable energy, greenhouse gas reduction, and energy efficiency under SB 350.

SoCalGas supports the State’s ambitious efforts and offers the following comments regarding the Staff Paper “Framework for Establishing the Senate Bill 350 Energy Efficiency Savings Doubling Targets”¹ for the CEC’s consideration in its development of the implementation framework to determine and achieve these targets.

Staff Proposal on Aggregating Gas and Electric Savings

SoCalGas agrees with the CEC’s methodology of using site energy conversion factors to display energy savings in a common unit for reporting on progress toward meeting the annual goals. This is in agreement with the language within SB 350 in establishing “annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers.” In this application, site energy provides illustrative equivalency to customer

¹ Staff Paper available at http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-06/TN215437_20170118T160001_Framework_for_Establishing_the_Senate_Bill_350_Energy_Efficienc.pdf.

end use; analysis of energy savings potential through the California energy efficiency potential and goals studies² and the ultimate assignment of investor-owned utilities (IOU) program energy savings goals by the CPUC are given in final end use energy and is a required value in many of the cost-effectiveness calculation methods described in the CPUC Standard Practice Manual.³

Staff Proposal on Subtargets, Cost-Effectiveness, Feasibility, and Reliability

Feasibility, left undefined in the staff report and workshop presentation, remains an important criterion in the target setting exercise of SB 350. Taking the dictionary definition offered in previous comments by SoCalGas as the “possibility to do” or “capability of being carried out”, the CEC should continue to examine how emerging technologies are included in the subtargets to ensure forecasts are inherently feasible. Forecasts should only include emerging technologies that currently exist in the marketplace or are near market-ready. Including technologies which are or will be unavailable will result in targets that are inherently infeasible.

CEC Staff acknowledges “the limitations of available data to fully characterize cost-effective efficiency potential or sufficiently identify implementation strategies or program designs to fully capture more energy savings from efficiency.” SoCalGas is pleased to hear the CEC and CPUC integration efforts with RD&D programs such as the Electric Program Investment Charge (EPIC) Program and recommends that these integration efforts include the Natural Gas research and Development Program through Public Interest Energy Research (PIER). As forecasts are updated, newly identified emerging technologies through EPIC and PIER can be added to feasible energy efficiency program designs.

Treatment of Fuel Switching and Fuel Substitution

The Staff Paper provides the distinction between the treatment of fuel-switching and fuel substitution measures providing the recommendation that fuel substitution measures, substituting one utility-supplied/interconnected energy source for another, be included in the targets. SoCalGas encourages the CEC to utilize the CPUC’s established rules, referred to as the three-pronged test, to determine if fuel substitution measures are eligible as ratepayer-funded energy efficiency measures.⁴ These rules are intended to ensure that eligible fuel substitution projects are cost-effective, more efficient, and do not adversely affect the environment. In most cases, projects do not pass the three-pronged test, and are therefore not eligible for ratepayer-funded programs. The IEPR should align with the CPUC’s rules in this regard.

Additionally, the CEC’s Framework document discusses including fuel substitution measures that “save energy in final end uses by using cleaner fuels.”⁵ SoCalGas cautions against including electrification of final end uses as a strategy to reduce greenhouse gas emissions, as this would preclude implementation of California’s goals to increase the use of renewable natural gas in the

² California Energy Efficiency Potential and Goals Studies, <http://www.cpuc.ca.gov/General.aspx?id=2013>.

³ California Standard Practice Manual available at http://www.calmac.org/events/spm_9_20_02.pdf.

⁴ Energy Efficiency Policy Manual Version 5, July 2013 (R.09-11-014), pg. 24-25.

⁵ Staff Paper, p. 19.

transportation and building sectors, per SB 1383 and the California Air Resources Board (ARB) Short-Lived Climate Pollutant (SLCP) Reduction Strategy. As is directed by SB 1383, the CEC must provide recommendations for development and use of renewable natural gas in the 2017 Integrated Energy Policy Report Scoping Order.

SoCalGas strongly believes that a diverse energy portfolio which includes multiple fuels and technologies is needed to meet California's energy needs and environmental policies in a cost-effective manner. Natural gas utilization in ultra-low emitting technology applications will help achieve greenhouse gas (GHG) emission reductions targets and generate air quality benefits. Replacing the use of fossil natural gas with renewable natural gas could be an effective "fuel-substitution" measure to not only reduce GHGs associated with energy use, but would also reduce methane emissions from organic sources.

SoCalGas appreciates the CEC's consideration of these comments in the 2017 IEPR and look forward to continuing to work on advancing California's energy policy goals and objectives.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

DOCKETED

Docket Number:	17-EPIC-01
Project Title:	Development of the California Energy Commission Electric Program Investment Charge 2018 â€“ 2020 Triennial Investment Plan
TN #:	216619
Document Title:	SoCalGas Comments on the 2018 â€“ 2020 EPIC Investment Plan Draft Funding Initiatives
Description:	N/A
Filer:	System
Organization:	SoCal Gas
Submitter Role:	Public
Submission Date:	3/20/2017 3:33:10 PM
Docketed Date:	3/20/2017

Comment Received From: Tim Carmichael

Submitted On: 3/20/2017

Docket Number: 17-EPIC-01

SoCalGas Comments on the 2018 – 2020 EPIC Investment Plan Draft Funding Initiatives

Additional submitted attachment is included below.



Jeffrey G. Reed, Ph.D.
Director
Business Strategy and Advanced Technology
Southern California Gas Company

555 W 5th Street, GT15A4
Los Angeles, CA 90013

Tel: 858-654-1123
Mobile: 858-735-7590
JGReed@semprautilities.com

March 20, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

**Subject: Comments on the 2018 – 2020 EPIC Investment Plan Draft Funding Initiatives,
Docket Number: 17-EPIC-01**

Dear Chairman Weisenmiller and fellow Commissioners:

Southern California Gas Company (SoCalGas) appreciates the opportunity to submit comments on the California Energy Commission’s 2018 – 2020 EPIC Investment Plan Draft Funding Initiatives. We offer for your consideration the following comments and recommendations that we believe should be incorporated as appropriate into the EPIC Triennial Investment Plan.

Push Low-Carbon Microgrids Closer to Commercial Viability

SoCalGas recommends that, as part of its goal to establish commercial opportunities for microgrids, the CEC consider investment in demonstration projects of renewable gas from electrolysis, known as Power-to-Gas (P2G). Specifically, as part of “S2.2 Push Low-Carbon Microgrids Closer to Commercial Viability” under Theme 2 of the Investment Plan, there is an opportunity to include P2G demonstration projects for funding consideration.

P2G technology has the potential to provide a large-scale, cost-effective solution for storing excess energy produced from renewable sources. In the P2G process, excess renewable energy is used to electrolyze water to produce hydrogen gas. Like batteries, P2G technologies have excellent load-following capabilities, which are necessary to manage the intermittency of solar and wind resources. Unlike battery storage, however, P2G can store utility-scale quantities of energy indefinitely, without self-discharge. For example, wind power generated in March can be delivered into the high-value energy markets of August and September. These unique attributes have the potential to enable very high levels of renewable energy use while maximizing economic value.

Using P2G, energy from renewable sources, such as solar photovoltaic and wind generators, can be generated during periods of low demand for use in high demand periods. This can be effective in alleviating the “ramping” problem experienced by electric utilities in the afternoon and evening periods. Thus, P2G RD&D, including pre-commercial pilots and system modeling, could represent an important, high-value addition to the EPIC portfolio.

SoCalGas is currently demonstrating P2G projects at the National Renewable Energy Laboratory (NREL) in Golden, Colorado, and at the University of California, Irvine (UCI).¹ These demonstrations will assess the feasibility and potential benefits of using the natural gas pipeline system to store photovoltaic and wind-produced energy. In the European Union, more than 35 P2G facilities are already being planned, constructed, or operated.² These are referred to collectively as a “system solution” because of the added benefits of helping balance the grid and providing substantial energy storage capacity.

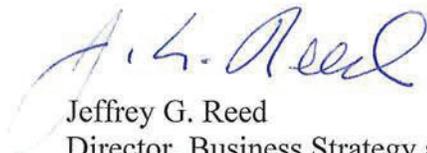
Conclusion and Supporting Comments

SoCalGas strongly believes that a diverse energy portfolio which includes multiple fuels and technologies is needed to meet California’s energy needs and environmental policies in a cost-effective manner. P2G provides an opportunity to enable long-term storage of large amounts of carbon-free power—which is critical for California to meet its ambitious climate goals. Investing in advancing the commercialization of P2G now will help move this technology to market, accelerating its adoption and its related benefits.

P2G can play an important role in integrating variable renewable generation. California is faced with an increasingly urgent need to deploy utility-scale energy storage solutions to support intermittent renewable power generation. As highlighted in a recent news article, CAISO reports that over 300,000 MWh of solar and wind electricity were curtailed in 2016, and that number will increase as additional rooftop solar is deployed.³ Battery storage technology alone is not sufficient to provide the energy storage California needs to meet its climate goals. As such, SoCalGas believes P2G should be evaluated rigorously by the CEC for its potential as a large-scale storage option, as well as its potential applications to microgrids.

SoCalGas appreciates the CEC’s consideration of these comments and looks forward to continuing to work on advancing California’s energy policy goals and objectives.

Sincerely,



Jeffrey G. Reed
Director, Business Strategy and Advanced Technology
Southern California Gas Company

¹ <http://www.prnewswire.com/news-releases/socalgas-launches-first-power-to-gas-project-in-us-300064534.html>

² <http://www.europeanpowertogas.com>

³ <http://www.dailynews.com/environment-and-nature/20170318/heres-how-california-ended-up-with-too-much-solar-power>



Tim Carmichael
Agency Relations Manager
State Government Affairs

925 L Street, Suite 650
Sacramento, CA 95814

Tel: 916-492-4248
TCarmichael@semprautilities.com

April 10, 2017

Ms. Rajinder Sahota
California Air Resources Board
1001 "I" Street
Sacramento, CA 95812

Re: SoCalGas Comments on the 2017 Climate Change Scoping Plan Update
--

Dear Ms. Sahota,

The Southern California Gas Company (SoCalGas) appreciates this opportunity to comment on the California Air Resources Board's (ARB) 2017 Climate Change Scoping Plan Update (Scoping Plan). SoCalGas strongly supports ARB's efforts to meet California's long-term climate change goals while also sustaining the vitality of the state's economy. SoCalGas wants to emphasize the role that natural gas can continue to play in policies that deliver on this vision. As we enter the second chapter of California's efforts to fight climate change, we continue to offer our support, expertise and partnership to ARB to create a technology neutral Scoping Plan that allows the best ideas to be deployed.

SoCalGas respectfully submits the following comments on the Scoping Plan:

I. SoCalGas supports the continuation of the existing Cap-and-Trade Program beyond 2020.

The Cap-and-Trade Program should continue to be one of the primary strategies in the State's efforts to achieve cost-effective greenhouse gas (GHG) reductions. After four years of recorded auctions and successful compliance, Cap-and-Trade has proven to be a flexible, low-cost and reliable mechanism for reducing GHG emissions. In addition, the Cap-and-Trade Program is unique in its ability to protect ratepayers from higher energy prices, serve as an emissions backstop when other reduction strategies are underperforming and facilitate international action on climate change through jurisdictional linkages.

The Program has also established the Greenhouse Gas Reduction Fund (GGRF), providing vital resources to fulfill the goals of AB 32 and delivering key co-benefits. We applaud the continuation of investments that have so far been an economic, environmental and a public health boon to Californians, particularly those investments that benefit disadvantaged

communities. The State has invested heavily in GGRF programs, incentivizing emission reductions and driving long-term market transformation in many sectors of the economy.

Using the Cap-and-Trade Program to reduce emissions provides a level playing field and allows all fuels and technologies to compete. This encourages innovation and competition, while reducing the costs of attaining air quality and GHG goals. The Cap-and-Trade Program also helps reduce greenhouse gas emissions while considering impacts to affordability of energy service. As noted in the Scoping Plan and above, the Cap-and-Trade Program is designed to protect utility ratepayers from higher energy prices. Ratepayers should continue to benefit from free allowances at the current cap adjustment factor that together with the continuation of a gradual consignment schedule will avoid any significant rate shocks.

In addition, GHG offset credits provide a critical cost containment function. Offsets have historically been a cost competitive source of emission allowances and a means to finance GHG reduction projects in sectors outside of the Program. California plays a leading role in developing frameworks and markets that achieve climate goals shared by jurisdictions globally. Now more than ever, it is critical for local and state entities to show leadership on this issue. Therefore, ARB should strengthen rather than diminish the early-stage offset market by expanding the role of offsets in California's Cap-and-Trade program. SoCalGas supports actions that contribute to a robust offset market including increasing usage limits, improving and expanding offset protocols, and other actions that instill confidence in the offset market. Overall, Cap-and-Trade offers the needed flexibility and reliability to meet the ambitious goals of AB 32 and address climate change in a bold and pragmatic way.

II. The Low-Carbon Fuel Standard is critical to continue the transition to cleaner fuels.

SoCalGas also enthusiastically supports the extension of the Low Carbon Fuel Standard (LCFS) program to 18% reduction beyond 2020. The extension will help meet California's environmental and economic goals: it has been instrumental in creating price parity between alternative fuels and fossil fuels, thereby spurring the development of low carbon fuels in California—such as renewable gas—that will yield substantial future GHG reduction benefits. It sends clear market signals to producers that their investments in research and development will yield returns in the long-run. It has increased demand for alternative fuels, such as renewable gas, leading to new technologies to produce, deliver, and use the fuel. The LCFS program helps contribute to fuel diversification in ways that the Cap-and-Trade program cannot achieve on its own. It sends a long-term policy signal that complements the short-term price signal of Cap-and-Trade, which helps reduce volatility in the transportation fuels market, and sends strong signals to investors.

The LCFS program identifies renewable gas from existing organic sources like dairy waste, landfills, and waste water treatment as the lowest carbon intensity fuels available. A review of the LCFS reporting tool shows that renewable gas as a percentage of total natural gas used in the transportation sector has increased dramatically in the past year. For example, in 2015,

encouraged by the increasing availability and decreasing price of alternative fuels, Big Blue Bus, the transit agency of the City of Santa Monica, switched its bus fleet to 100% RNG, reducing its fleet's carbon footprint by an estimated 8,000 tons per year. Innovations like this will help California achieve the climate goals set forth in SB 32.

III. Renewable Gas provides multiple opportunities to reach climate goals.

The Scoping Plan specifically highlights using “methane as a renewable source of natural gas to fuel vehicles and generate electricity¹” and as an important measure to reduce GHG emissions and air pollution. SoCalGas supports the inclusion of renewable gas in the Scoping Plan, and we plan to coordinate with ARB, other state agencies and industry stakeholders to help ensure successful implementation of the final Short-Lived Climate Pollutant (SLCP) strategy, as called for in the SB 1383 timeline². We offer the following recommendations on renewable gas to help further the goals of the Scoping Plan.

A. The Proposed Scenario should include a Renewable Gas procurement requirement.

Utilities can play a key role in the development of renewable gas resources by investing in infrastructure needed to produce renewable gas and connect the projects to the gas pipeline system, and deliver renewable energy to end users. Under California's Renewable Portfolio Standard (RPS), electric utilities have invested in renewable generation, and upgraded transmission and distribution infrastructure to support increasing levels of electricity delivery from wind and solar. These investments by the utilities have allowed California to stay ahead of schedule for meeting the RPS requirements³. Similarly, a gas procurement requirement, such as a Renewable Gas Portfolio Standard (RGS) and the ability to invest in and recover costs associated with renewable gas production, conditioning and delivery would drive investment in renewable gas production, processing and pipeline interconnection. In the Scoping Plan, only Alternative 1 includes an RGS (specified as a 5% increased utilization of renewable gas by 2030). SoCalGas recommends that ARB include an RGS in the Proposed Scenario, which would accelerate the goals of SB 1383 to encourage development of RG infrastructure. In fact, this is anticipated in the legislative language, directing the agencies to develop procurement policies, among other directives.

B. Power-to-Gas

The Scoping Plan notes the need for large-scale electricity storage to meet the increasing use of renewable energy⁴. Power-to-Gas (P2G) technology can specifically help meet the State's renewable energy and GHG reduction goals in several ways, such as helping to manage overgeneration, providing flexible energy storage, producing zero and near-zero GHG transportation fuels, and decarbonizing electricity production, gas systems, and industrial processes. We elaborate on P2G technology in our previously submitted letter on the Scoping

¹ 2017 Climate Change Scoping Plan Update, p. 106

² Revised Proposed Short-Lived Climate Pollutant Strategy p. 14.

³ California Energy Commission, http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf

⁴ 2017 Climate Change Scoping Plan Update, p. 89

Plan workshop on the Energy Sector⁵. SoCalGas is currently demonstrating P2G projects at the National Renewable Energy Laboratory in Golden, Colorado and at the University of California, Irvine (UCI). These demonstrations will assess the feasibility and potential benefits of using the natural gas pipeline system to store photovoltaic and wind-produced energy. At UCI, preliminary findings demonstrated that implementing P2G could increase the fraction of renewable power used on campus from 3.5 percent to 35 percent⁶.

P2G Is Part of a Strategy That Is More Feasible than Electrification Alone

Using the existing gas infrastructure, P2G makes achieving California’s ambitious climate and clean energy targets more feasible than a strategy that relies solely on electrification by:

- Decarbonizing end-uses that are difficult—if not impossible—to electrify at scale, such as long-haul heavy-duty vehicles, aviation, residential and commercial cooking, and industrial end-uses, like process heating;
- Implementing a more realistic and cost-effective strategy for long-term, seasonal electricity storage than flexible loads and long-duration batteries, which will be needed in a high renewable electricity generation future;
- Reducing the need for other low-carbon energy infrastructure by taking advantage of the state’s existing gas pipeline distribution system; and
- Diversifying the economic risk that any one technology may not achieve commercial success.

We encourage ARB to consider P2G as a tool to help meet the goals of California’s clean energy future.

IV. Near-zero heavy-duty technology is critical to public health.

The Scoping Plan should prioritize measures that address both climate and public health concerns. Air contaminants such as NO_x, PM 2.5 and Diesel Particulate Matter (DPM) are identified in the Scoping Plan as causal factors in premature mortality⁷.

In the next decade, the South Coast and San Joaquin Valley Air Basins must both achieve significant reductions in NO_x to attain ozone and particulate matter National Ambient Air Quality Standards. More than 80 percent of the region’s NO_x emissions come from mobile sources. With heavy-duty trucks as the largest categorical contributor, the widespread deployment of near-zero heavy-duty trucks is the single most impactful emission reduction strategy. ARB’s own recently adopted SLCP Plan notes that “using renewable natural gas as a

⁵ SoCalGas and SDG&E Comments on the Scoping Plan Workshop on the Energy Sector, submitted September 2016. <https://www.arb.ca.gov/lispub/comm2/bccommlog.php?listname=scoplan2030energy-ws>

⁶ <http://www.prnewswire.com/news-releases/socalgas-and-university-of-california-irvine-demonstrate-power-to-gas-technology-can-dramatically-increase-the-use-of-renewable-energy-300432101.html>

⁷ Scoping Plan Workshop, March 2017. Slide 24. <https://www.arb.ca.gov/cc/scopingplan/meetings/032817/sp-march-workshop-slides.pdf>

transportation fuel can result in significant potential revenue streams and reduce criteria pollutant emissions from the transportation sector.”⁸

ARB has acknowledged that Class 7 and 8 heavy-duty electric and fuel cell electric vehicles will not be available until the 2030 timeframe.⁹ Renewable gas can provide an immediate opportunity for California to achieve its air quality and climate change goals in those heavy-duty transportation sectors more quickly. Increasing the use of renewable gas as a transportation fuel would not only reduce methane emissions from organic waste streams, but also reduce black carbon, a component of PM 2.5, by displacing diesel in older, conventionally fueled heavy-duty vehicles. Thus, major reductions of cancer causing toxic air contaminants can immediately be achieved in disadvantaged communities adjacent to freeways and areas of high diesel engine activity, where relief is most urgently needed.

Several measures in the Proposed Scoping Plan Scenario preclude the widespread adoption of renewable gas in the transportation sector by mandating electrification. We address these issues and offer the following recommendations for the Scoping Plan transportation sector.

A. Advanced Clean Transit

The Scoping Plan proposes a zero-emission bus requirement by 2030 under Advanced Clean Transit (ACT) regulations. ARB should consider that transit agencies including Los Angeles County Metropolitan Transportation Authority (LA Metro), San Diego Metropolitan Transit System, Orange County Transportation Authority, and Santa Monica’s Big Blue Bus have thoroughly studied the use near-zero emission natural gas buses running on renewable gas, and have found that they provide significant emissions benefits at an acceptable cost. LA Metro’s recent study found that the use of near-zero engines with renewable gas is the most cost-effective strategy by an order of magnitude for reducing NOx and GHGs as compared to using battery electric or fuel cell powered buses.¹⁰ Moreover, to effectively serve California citizens, transit agencies need flexibility to deploy advanced technologies in ways that are synergistic with their operations. Transit agencies in the South Coast Air Basin have already begun investing in upgrading their fleets with near-zero engines running on renewable gas, and a mandate to electrify fleets would result in stranded investment.¹¹

⁸ Revised Proposed Short-Lived Climate Pollutant Strategy p. 122.

⁹ See ARB Technology Assessment: Medium and Heavy Duty Battery Electric Trucks and Buses, October 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/bev_tech_report.pdf and ARB Technology Assessment: Medium and Heavy-Duty Fuel Cell Electric Vehicles, November 2015, available at http://www.arb.ca.gov/msprog/tech/techreport/fc_tech_report.pdf

¹⁰ “Zero Emissions Bus Options: Analysis of 2015-2055 Fleet Costs and Emissions,” Ramboll Environ (Feb. 5, 2016) (prepared for LA Metro), *available at*: https://media.metro.net/board/Items/2016/09_september/20160914atvcitem4.pdf.

¹¹ For example, Orange County Transportation Authority has invested heavily to upgrade fleets to significantly reduce emissions by utilizing renewable gas, repowering 199 buses with 0.2 g-bhp/hr engines, and purchasing 98 new, near-zero, 0.02 g-bhp/hr buses. See August 9, 2016 letter from OCTA to Dr. Philip Fine re Draft 2016 Air Quality Management Plan, *available at*: <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/2016aqmpRTC-1of2.pdf?sfvrsn=4>.

We urge ARB to align this measure with the Innovative Clean Transit measure in the 2016 State Strategy for the State Implementation Plan, which considers a more flexible approach to allow transit fleets to deploy advanced, clean technologies¹². SoCalGas supports the pursuit of a performance-based standard, not a technology mandate, to address GHG and criteria pollutant emissions, thereby providing transit agencies with affordable technology choices and operational flexibility.

B. Last Mile Delivery

The Scoping Plan proposes a requirement to phase in zero emission class 3-7 trucks used for last mile delivery starting in 2020. Although still considered in the heavy-duty category, the vehicle engines targeted by ARB are smaller than those trucks utilized for commercial drayage. We believe natural gas engines, paired with the use of renewable gas and hybrid technology, can have a useful role in helping reduce emissions from last mile delivery. Efficient Drivetrains Inc. (EDI) partnered with Greenkraft, Inc. to design and optimize a Plug-in Hybrid Electric (PHEV) powertrain and battery pack compatible with an existing US EPA and California Air Resources Board-certified 6.0 liter class-4 compressed natural gas (CNG) engine. Integrated into a CNG-powered Greenkraft 14,500 lbs class 4 medium-duty truck, the optimized EDI Drive was then validated, tested, and demonstrated on the road to prospective fleet customers. The results showed approximately 51% reduction in CO₂ emissions, 70% reduction in particulate matter, and an increase in fuel economy compared to a conventional CNG truck. The project was completed in June 2016, resulting in valuable lessons learned by both Greenkraft, Inc. and EDI. EDI has improved on the design and is building another Class 4 CNG-PHEV on a General Motors low cab forward platform. The truck is scheduled for in-service emissions testing and demonstration this fall.

The CEC and US Hybrid are testing a truck that combines the Cummins Westport heavy duty liquefied natural gas engine with a 223 kW electric motor, optimizing battery storage and engine controls. The goals of this pilot effort include exhibiting an ability to meet and exceed ARB emissions limits, and demonstrating improved fuel economy while reducing air emissions. This hybrid truck would achieve both particulate matter and NO_x emissions lower than existing ARB regulations. Further, and most importantly for those concerned with pollution from ports and freight movement, this truck would eliminate frequent periods of idling typical at the Port facilities where drayage trucks often queue for long periods of time waiting for their cargo. This natural gas hybrid truck will operate in electric mode (EV mode) around 25% of time (30 miles) in charge depletion mode, then in hybrid mode with sustaining charge. The hybrid truck would have no limitation on range and usage and it would have a higher number of operating hours than a diesel truck, resulting in a potentially dramatic reduction in truck emissions in port and in last mile delivery.

¹² “Revised Proposed State SIP Strategy,” ARB, pp. 69-70 (March 7, 2017).

C. Sustainable Freight

We disagree that the needed reductions in the freight system are best achieved through electrification alone. Near-zero natural gas technologies for both on-road and off-road sectors, when fueled by renewable gas, will considerably help achieve the State's emissions targets.

As detailed in the Game Changer Technical Whitepaper prepared by Gladstein, Neandross & Associates (GNA), there is now a commercially-available heavy-duty natural gas engine that meets ARB's lowest-tier optional low-NOx emission standard at 0.02 g/bhp-hr NOx¹³. A recent report by the University of California Riverside's College of Engineering-Center for Environmental Research and Technology (CE-CERT) found that these ultra-low emission natural gas heavy-duty vehicles met and exceeded their certification standards during a full range of duty cycles¹⁴. This finding is in stark contrast to previously released CE-CERT data and a recently released report by ARB that found heavy-duty diesel trucks emitted higher levels of NOx than their certification standards in the same duty cycles. When paired with renewable gas, this technology will provide a commercially proven, broad-based, and affordable strategy to achieve major reductions immediately in emissions of criteria pollutants, air toxins, and GHGs

V. California's 2030 goals cannot be achieved by excluding natural gas from the building sector.

SoCalGas supports the continued use of natural gas in buildings in the Proposed Scenario. We agree that California can meet its 2030 goals without complete electrification of buildings. The Scoping Plan's economic modeling further supports that the Proposed Scenario achieves higher GHG reductions at a lower cost than the Alternative 1 Scenario, which includes building electrification. In addition, the range of cost per metric ton to electrify buildings in Table III-3 in the Scoping Plan is above the social cost of GHG (and the ceiling price of the Cap-and-Trade Program), as also noted in SDG&E's submitted comments.

Further, the 40% reduction of methane emissions, as directed by SB 1383, can only be accomplished by the capture and delivery of biomethane as decarbonized gas for transportation and stationary source end uses, such as water and space heating in the residential sector, as well as commercial and industrial applications. Electrifying such end uses, by contrast, would directly halt implementation of California's goals to increase the use of renewable gas, as well as undermine the economic impetus for biomethane capture.

VI. Enabling Local Action is critical to efforts to reduce GHG emissions.

SoCalGas supports the efforts outlined in the Scoping Plan to achieve success by partnering with local governments to achieve California's goals to reduce GHG emissions. We agree they can better engage citizens while finding solutions that are best suited to the needs of their community. SoCalGas works closely with cities and counties to help them achieve greenhouse

¹³ Game Changer Technical White Paper, Gladstein, Neandross & Associates, May 3, 2016. http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf

¹⁴Johnson, Kent. Ultra-Low NOx Natural Gas Vehicle Evaluation. University of California, Riverside. November 2016.

gas and ozone emission reduction goals, providing resources on energy efficiency, natural gas vehicle, distributed energy resources, renewable gas, and energy storage programs. We believe it helps provide environmental as well as economic benefits to the communities we serve. The utility's role is critical in achieving emissions reductions, and we are an important partner with communities as they develop policies and action items to meet the goals.

We applaud the numerous examples included in Appendix B that will guide local action in reducing GHG emissions through the development and use of renewable gas. Such examples include requiring biogas generation at wastewater treatment plants and methane capture at landfill facilities, and the waste management tactics to require the collection of organic materials for use in anaerobic digestion. By putting organic waste to beneficial use, California can create value for renewable gas derived from these resources and enable significant mitigation of atmospheric methane emissions while simultaneously producing a flexible and reliable renewable energy resource. To expand the use of biogas in the transportation sector, we suggest including within the "Transportation and Land Use" section an example to streamline local permitting and siting for CNG/RNG fueling infrastructure.

We have several suggestions for additional examples within Appendix B to reflect fuel and technology neutrality. As discussed earlier, P2G technology can support greater use of renewable technology, and we suggest its inclusion as an example of on-site storage in the "Energy" and "Green Building" sections. Also in those sections, we suggest including other examples of energy efficient distributed generation, such as natural-gas powered micro-turbines, fuel cells and co-generation. Lastly, consistent with our earlier discussion of building electrification, under "Green Buildings," we suggest the inclusion of newer low emission and more efficient natural gas heating units as an option for new residential buildings, and for converting existing residences that have older natural gas equipment.

Conclusion

SoCalGas strongly believes that a diverse energy portfolio that includes multiple fuels and technologies is needed to meet California's energy needs and climate change targets in a cost-effective and timely manner. As an innovation leader, California has always been at the forefront of improving our environment. Climate change policies are necessary to secure the continued health of our environment for future generations, and California must move forward with not only policy leadership on GHG emissions reductions, but also policy leadership on how to accomplish reductions in a manner that continues to grow our economy.

SoCalGas is eager to help implement what we hope to be a cost-effective, sustainable, and flexible strategy to reach the State's ambitious goals.

Respectfully submitted,

Tim Carmichael

Agency Relations Manager

DOCKETED	
Docket Number:	17-IEPR-06
Project Title:	Doubling Energy Efficiency Savings
TN #:	219997
Document Title:	SoCalGas Comments on Doubling Energy Efficiency Savings
Description:	N/A
Filer:	System
Organization:	SoCalGas
Submitter Role:	Public
Submission Date:	6/30/2017 3:21:24 PM
Docketed Date:	6/30/2017

Comment Received From: Jennifer Morris

Submitted On: 6/30/2017

Docket Number: 17-IEPR-06

SoCalGas Comments on Doubling Energy Efficiency Savings

Additional submitted attachment is included below.



Tim Carmichael
Agency Relations Manager
State Government Affairs

925 L Street, Suite 650
Sacramento, CA 95814

Tel: 916-492-4248
TCarmichael@semprautilities.com

June 30, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

**Subject: Comments on the IEPR Staff Workshop on 2030 Energy Efficiency Targets,
Docket number 17-IEPR-06 –Doubling Energy Efficiency Savings**

Dear Commissioners:

Southern California Gas Company (SoCalGas) appreciates the California Energy Commission (CEC) hosting the California Public Utilities Commission (CPUC) in an Integrated Energy Policy Report (IEPR) Staff Workshop to discuss proposed methodologies for establishing the 2030 energy efficiency (EE) savings targets called for by Senate Bill (SB) 350 to achieve the statewide cumulative doubling of EE savings in gas and electric final end-uses by 2030. SoCalGas supports these ambitious efforts, but also encourages the CEC to consider impacts to ratepayers and the State's environmental objectives when evaluating proposals such as fuel substitution. We urge the CEC to follow CPUC guidance on cost-effectiveness, reliability and feasibility, as well as SB 1383 and the California Air Resources Board's (CARB) goals for increased utilization of renewable gas to reduce greenhouse gas (GHG) emissions.

Treatment of Fuel Substitution Programs

In the CEC presentation "Additional Topics: CVR/VVO, Fuel Substitution, and Reporting Requirements", staff distinguished between the treatment of fuel-switching and fuel substitution measures by defining fuel substitution measures as "end-use device shifts from natural gas to electricity" and fuel switching as "non-utility fuel shifting to electricity." Similar distinctions were made when discussing site energy savings energy reductions requirements, which only considered the case of replacing an electric end use. This is a shift away from CEC's definitions provided in its Staff Paper, *Framework for Establishing the Senate Bill 350 Energy Efficiency Savings Doubling Targets*¹ because this approach only considers the single case of substitution from natural gas to electric fuels. Instead, CEC Staff should also consider substitution from electric to natural gas fuels as a viable option to contribute toward the SB 350 EE savings targets so long as both energy savings and GHG reductions can be achieved. SoCalGas encourages the

¹ Staff Paper available at http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-06/TN215437_20170118T160001_Framework_for_Establishing_the_Senate_Bill_350_Energy_Efficienc.pdf.

CEC to utilize the CPUC's established rules, referred to as the three-prong test², to determine if the substitution of EE technologies is eligible as a ratepayer-funded EE program/measure/project. These rules, which align with SB 350, are intended to ensure that eligible fuel substitution projects are cost-effective, more efficient, and do not adversely affect the environment. The three-prong test consists of the following requirements³:

- a. The EE program/measure/project must not increase source-BTU consumption. Proponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC-established heat rate.
- b. The EE program/measure/project must have Total Resource Cost (TRC) test and Program Administrator Cost (PAC) test benefit-cost ratio of 1.0 or greater. The tests used for this purpose should be developed in a manner consistent with Rule IV.4 (currently referenced as XV.4 in CPUC's Energy Efficiency Policy Manual, Version 5.0).
- c. The EE program/measure/project must not adversely impact the environment. To quantify this impact, respondents should compare the environmental costs with and without the program using the most recently adopted values for avoided costs of emissions. The burden of proof lies with the sponsoring party to show that the material environmental impacts have been adequately considered in the analysis.

Considering source energy is more appropriate than site consumption in the case of fuel substitution because source energy accounts for total energy resources required by the technologies being compared. Additionally, to verify appropriate performance standards are used, the three-prong test compares the technologies offered by the program/measure/project with the industry standard practice same-fuel substitute technologies available to prospective participants, which would have TRC and PAC benefit-cost ratio of 1.0 or greater.⁴ When projects pass the three-prong test, EE credit (and ultimately SB 350 EE target compliance) go to the utility of departing load. The IEPR should align with the CPUC's rules in these regards.

SoCalGas cautions against reconciling the three-prong test in way that may compromise the test's screen to make sure that technologies are predominantly EE (and not load building or retaining), and provide net resource value to the ratepayer funding these programs, and maintain customer choice in the marketplace. Investor-Owned Utilities (IOUs) must utilize ratepayer funds to offer a cost-effective portfolio of EE measures and programs. Any modification of the test could potentially remove or reduce these ratepayer protections by masking the cost or inflating the benefit to the ratepayer. Furthermore, the IOUs have an obligation to pursue EE first in California's Loading Order and to meet unmet resource needs through EE and demand reduction resources that are cost-effective, reliable, and feasible under the California Public Utilities Code.⁵ The three-prong test was developed to confirm that any proposed fuel substitution activities for EE technologies are in accordance with these requirements and is therefore an important ratepayer protection strategy.

² Energy Efficiency Policy Manual, Version 5, July 2013, p. 24-25.

³ *Id.*

⁴ *Id.*, at 24.

⁵ See Public Utilities Code Sections 454.5 and 454.56 for electric and gas corporations, respectively.

Natural gas is the lowest-price fuel source in California, and provides valuable, low-cost energy to ratepayers, including the 33% of SoCalGas residential customers that are enrolled in the California Alternate Rates for Energy (CARE) program.⁶ In fact, in the CEC’s Pre-Rulemaking on 2019 Building Energy Efficiency Standards docket, an Energy and Environmental Economics, Inc. (E3) study examining building electrification found a \$24 monthly energy bill increase when moving to an all-electric home from a mixed-fuel home.⁷ Additionally, E3’s analysis showed that an all-electric home required more energy than a mixed-fuel home.⁸

Electrification of Final End-Uses Impedes Implementation of Climate Goals

SoCalGas also cautions that including electrification of final end-uses as a strategy to reduce energy consumption may preclude implementing California’s goals to increase the use of renewable gas in the transportation and building sectors. The State recently adopted several policies that rely on the continued use of natural gas infrastructure to meet the state’s decarbonization goals. Specifically, SB 1383 and CARB’s Short-Lived Climate Pollutant (SLCP) Reduction Plan require the increased use of renewable gas to reduce methane from organic sources by 40% by 2030, including injection into natural gas pipelines and utilization in the transportation sector.⁹ Reliable natural gas infrastructure is crucial to meeting these objectives and then delivery of renewable gas to end-uses.

Furthermore, CARB’s 2017 Climate Change Scoping Plan Update relies heavily on the SLCP Reduction Plan to achieve about one-third of GHG reductions needed to reach the 2030 goals¹⁰ and demonstrates that California can meet its 2030 goals *without* electrification of buildings. The Proposed Scoping Plan Scenario (Proposed Scenario) analysis states that “this scenario does not include fuel-switching of natural gas or diesel end uses to electric end uses.”¹¹ Rather, the 2030 goal can be met by extending existing programs such as Cap-and-Trade and the Low Carbon Fuels Standard, and implementation of new legislation such as SB 1383. CARB’s economic analysis also demonstrates that the Proposed Scenario achieves the 2030 goal in a more cost-effective manner than alternative scenarios that include electrification of buildings.¹²

Natural gas use in ultra-low emitting technology applications will also help achieve GHG emission reductions targets and generate air quality benefits. Replacing the use of fossil natural gas with renewable gas could be an effective “fuel-substitution” measure—not only to reduce GHGs associated with energy use, but also to reduce methane emissions from organic sources, which account for over 80% of California’s methane emissions. Renewable gas

⁶ Monthly Report of Southern California Gas Company (U 904 G) on Low-Income Assistance Programs For February 2017.

⁷ Electrification Analysis, report completed by Energy & Environmental Economics in July 2016.

⁸ *Id.*

⁹ CARB Short-Lived Climate Pollutant Reduction Strategy, March 2017 p. 66.

¹⁰ CARB Proposed Scoping Plan, (January 2017) Figure 2 p. 41

¹¹ CARB Proposed Scoping Plan, (January 2017) Appendix D at 8.

https://www.arb.ca.gov/cc/scopingplan/app_d_pathways.pdf

¹² CARB Scoping Plan Appendix E p17, January 2017.

https://www.arb.ca.gov/cc/scopingplan/app_e_economic_analysis_final.pdf

can be used for all existing natural gas end-uses to lower net life-cycle GHG emissions by at least 40%.¹³ A CARB/UC Davis study estimated that around 20% of California’s residential natural gas can be supplied by renewable gas from organic sources such as dairy manure, landfills, organic municipal solid waste, and wastewater treatment facilities.¹⁴

2030 IOU Energy Efficiency Target Setting

As stated in the CPUC’s Energy Efficiency Potential and Goals Study for 2018 and Beyond draft public report (Potential and Goals Study), a significant number of policy changes in California based on the direction of SB 350 and Assembly Bill (AB) 802 have modified the approach and methodology of forecasting EE savings for the IOUs. Concurrently, activities have been undertaken by the CPUC to revisit cost-effectiveness methodologies for EE and other distributed energy resources to consider the cost and value of environmental benefits in the current cost-effectiveness tests, given the change in statewide GHG targets. To address these changes and activities, the Potential and Goals Study has offered multiple EE forecast scenarios to inform the goal setting processes of the CPUC and CEC.

SoCalGas echoes the CPUC’s takeaway in its presentation “Staff Workshop on Methodologies for SB 350 Energy Efficiency Target Setting” that EE targets informed by the Potential and Goals Study be based on cost-effectiveness, reliability, and feasibility obligations of the IOUs. Caution should be taken as the forecasted scenarios are evaluated to verify that the benefits from EE as an energy resource are appropriately valued and do not mask the actual cost of EE technologies or measures, yielding a costlier outcome to both EE program participants and ratepayers. This has been emphasized by multiple parties including SoCalGas in the Integrated Distributed Energy Resources (IDER) proceeding (R.14-10-003) on the proposal of a societal cost test that:

“the [CPUC] should adopt sufficient safeguards to ensure ratepayers are not shouldering an unreasonable burden for California’s broader societal goals...” and “... should strive to minimize cost shifting among participating and non-participating customers, and ensure that in all cases both participants and non-participants benefit from the expenditure of ratepayer funds.”¹⁵

SoCalGas is actively engaged with the CPUC and stakeholders in both IDER and EE proceedings (R.13-11-005) where these topics are being considered. SoCalGas will continue to work with the CPUC to determine appropriate goals that are achievable and that best represent the market potential for natural gas energy savings.

¹³ https://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf

¹⁴ <https://www.arb.ca.gov/research/apr/past/13-307.pdf>

¹⁵ Reply Comments of Southern California Edison, Pacific Gas and Electric Company, Southern California Gas Company, and San Diego Gas & Electric Company on Administrative Law Judge’s Ruling Taking Comment on Staff Proposal Recommending a Societal Cost Test, R.14-10-003, April 6, 2017, p. 4.

Conclusion

SoCalGas appreciates the CEC's consideration of these comments in the 2017 IEPR and looks forward to continuing to work on advancing California's energy policy goals and objectives. Please do not hesitate to contact us for more information.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

DOCKETED	
Docket Number:	17-IEPR-06
Project Title:	Doubling Energy Efficiency Savings
TN #:	220542
Document Title:	SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Staff Papers
Description:	N/A
Filer:	System
Organization:	SoCalGas
Submitter Role:	Public
Submission Date:	8/3/2017 4:26:56 PM
Docketed Date:	8/3/2017

Comment Received From: Jennifer Morris

Submitted On: 8/3/2017

Docket Number: 17-IEPR-06

SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Staff Papers

Additional submitted attachment is included below.



Tim Carmichael
Agency Relations Manager
State Government Affairs

925 L Street, Suite 650
Sacramento, CA 95814

Tel: 916-492-4248

TCarmichael@semprautilities.com

August 3, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on CEC Staff's Two Draft Papers on SB 350 Energy Efficiency Savings Doubling Targets, Docket #17-IEPR-06

Dear Commissioners:

Southern California Gas Company (SoCalGas) appreciates the California Energy Commission (CEC) staff's publication of two draft reports on energy efficiency (EE) savings targets. SoCalGas supports the State's ambitious efforts and offers the following comments regarding the two staff papers,¹ entitled *Senate Bill 350 Energy Efficiency Target Setting for Utility Programs* and *Senate Bill 350 Energy Efficiency Targets for Programs Not Funded through Utility Rates* for the CEC's consideration. As there are a number of questions in the staff papers to be resolved, SoCalGas encourages CEC to ensure initial targets are based on existing policy and cost effectiveness.

Our comments are organized as follows:

- 1. Site Energy and Source GHG Emissions**
 - a. *Clarity is needed on the proposed model for site vs. source emissions*
- 2. Requirements for Fuel Substitution Technologies**
 - a. *Electrification of final end-uses impedes implementation of climate goals*
- 3. Special Cost-Effectiveness Considerations (3-prong test)**
 - a. *CPUC's 3-Prong test should not be replaced*
 - b. *The two reports' approach to cost-effectiveness is inconsistent*
- 4. Inter-utility Departing Load/Gaining Load Considerations**
- 5. Reporting Data and Cumulative Goals**

- 1. Site Energy and Source GHG Emissions**

- a. *Clarity is needed on the proposed model for site vs. source emissions*

¹ http://www.energy.ca.gov/2017_energypolicy/documents/#07212017

Although using *site* energy metrics may have merits in measuring EE outcomes and end-user costs, it should not be used to justify measures in the absence of *source* or *TDV* metrics which provide necessary context to ensure lifecycle greenhouse gas (GHG) emissions are not adversely impacted. PRC 25310(d)(10) clearly states “reduce greenhouse gas emissions as measured on a lifecycle basis,” which implies that source energy characteristics must be considered in these measures. Additionally, SoCalGas contends that cost-effectiveness of these measures should be given due consideration to ensure ratepayer funds are prudently managed and prioritized to maximize outcomes.

2. Requirements for Fuel Substitution

a. Electrification of final end-uses impedes implementation of climate goals

SoCalGas cautions that including electrification of final end-uses as a strategy to reduce energy consumption may preclude adoption other lower carbon energy sources and decelerate achievement of the state’s climate goals. The State recently adopted several policies that rely on the continued use of natural gas infrastructure to meet the State’s decarbonization goals. Specifically, SB 1383 and California Air Resources Board’s (ARB) Short-Lived Climate Pollutant (SLCP) Reduction Plan require the increased use of renewable gas to reduce methane from organic sources by 40% by 2030, including injection into natural gas pipelines and utilization in the transportation sector.² Reliable natural gas infrastructure is crucial to meeting these objectives of delivering renewable gas to end-uses.

Furthermore, ARB’s 2017 Climate Change Scoping Plan Update relies heavily on the SLCP Reduction Plan to achieve about one-third of GHG reductions needed to reach the 2030 goals and demonstrates that California can meet its 2030 goals without electrification of buildings.³ The Proposed Scoping Plan Scenario (Proposed Scenario) analysis states that “this scenario does not include fuel-switching of natural gas or diesel end uses to electric end uses.”⁴ Rather, the 2030 goal can be met by existing programs such as Cap-and-Trade and the Low Carbon Fuel Standard, and implementation of new legislation such as SB 1383. ARB’s economic analysis also demonstrates that the Proposed Scenario achieves the 2030 goal in a more cost-effective manner than alternative scenarios that include electrification of buildings.⁵

Natural gas use in ultra-low emitting technology applications will also help achieve GHG emission reductions targets and generate air quality benefits. Replacing the use of fossil natural gas with renewable gas could be an effective “fuel-substitution” measure—not only to reduce GHGs associated with energy use, but also to reduce methane emissions from

² CARB Short-Lived Climate Pollutant Reduction Strategy, March 2017 p. 66.

³ CARB Proposed Scoping Plan, (January 2017) Figure 2 p. 41

⁴ CARB Proposed Scoping Plan, (January 2017) Appendix D at 8.
https://www.arb.ca.gov/cc/scopingplan/app_d_pathways.pdf

⁵ CARB Scoping Plan Appendix E p17, January 2017.

https://www.arb.ca.gov/cc/scopingplan/app_e_economic_analysis_final.pdf

organic sources, which account for over 80% of California’s methane emissions. Renewable gas can be used for all existing natural gas end-uses to lower net life-cycle GHG emissions by at least 40%. An ARB/UC Davis study estimated that around 20% of California’s residential natural gas can be supplied by renewable gas from organic sources such as dairy manure, landfills, organic municipal solid waste, and wastewater treatment facilities.⁶

3. Special Cost-Effectiveness Considerations (3-prong test)

a. CPUC’s 3-prong test should not be replaced

SoCalGas encourages the CEC to utilize the CPUC’s established rules, referred to as the three-pronged test, to determine if fuel substitution measures are eligible as ratepayer-funded energy efficiency measures.⁷ These rules are intended to ensure that eligible fuel substitution projects are cost-effective, more efficient, and do not adversely affect the environment. In most cases, projects do not pass the three-pronged test because they are not cost-effective, and are therefore not eligible for ratepayer-funded programs. The Integrated Energy Policy Report (IEPR) should align with the CPUC’s rules in this regard.

SoCalGas cautions against modifying the three-prong test in a way that may compromise the test’s screen to make sure that technologies are predominantly energy efficient (and not load building or retaining), provide net resource value to the ratepayers funding these programs, and maintain customer choice in the marketplace. Investor-Owned Utilities (IOUs) must utilize ratepayer funds to offer a cost-effective portfolio of energy efficient measures and programs. Any modification of the test could potentially remove or reduce these ratepayer protections by masking the cost or inflating the benefit to the ratepayer. Furthermore, the IOUs have an obligation to pursue EE first in California’s Loading Order and to meet unmet resource needs through EE and demand reduction resources that are cost-effective, reliable, and feasible under the California Public Utilities Code. The three-prong test was developed to confirm that any proposed fuel substitution activities for energy efficient technologies are in accordance with these requirements and is therefore an important ratepayer protection strategy.

Natural gas is the lowest-price fuel source in California, and provides valuable, low-cost energy to ratepayers, including the 33% of SoCalGas residential customers that are enrolled in the California Alternate Rates for Energy (CARE) program. The economic impact on ratepayers—especially low-income ratepayers—must be taken into account when considering EE. Without natural gas, the cost of energy for many consumers could rise: in the CEC’s Pre-Rulemaking on 2019 Building Energy Efficiency Standards docket, an Energy and Environmental Economics, Inc. (E3) study examining building electrification found a \$24 monthly energy bill increase when moving to an all-electric home from a

⁶ <https://www.arb.ca.gov/research/apr/past/13-307.pdf>

⁷ Energy Efficiency Policy Manual Version 5, July 2013 (R.09-11-014), pg. 24-25.

mixed-fuel home.⁸ Additionally, E3’s analysis showed that an all-electric home required more energy than a mixed-fuel home.

b. The two draft reports’ approach to cost-effectiveness is inconsistent

In *Senate Bill 350 Energy Efficiency Target Setting for Utility Programs*, the staff propose “use of a production simulation model that will develop 8,760 hourly GHG emissions per unit of electric generation through time... [and] believes environmental impacts element of the three-prong test can be replaced by a more straightforward GHG emission assessment” (p.49).

However, *SB 350 Energy Efficiency Targets for Programs Not Funded through Utility Rates* states, “in its SB 350 target setting work, for the above and any other energy efficiency programs not listed above, **staff recommends that the Energy Commission not supersede any cost effectiveness test adopted and used by the entity with authority over the program.** For any other programs and energy efficiency measures, staff recommends that the Energy Commission use the general definition of cost-effectiveness in section 25000.1(c) of the Public Resources Code” (*emphasis added*).⁹

The CEC should take a consistent approach to the cost-effectiveness test to both utility and non-utility programs. As described above, SoCalGas does not believe the three-prong test should be replaced, as it appropriately protects ratepayers’ interests.

4. Inter-utility Departing Load/Gaining Load Considerations

To ensure appropriate performance standards are used, the three-prong test compares the technologies offered by the program/measure/project with the industry standard practice same-fuel substitute technologies available to prospective participants that would have Total Resource Cost (TRC) and Program Administration Cost (PAC) benefit-cost ratio of 1.0 or greater.¹⁰ When projects pass the three-prong test, EE credit (and ultimately SB 350 EE target compliance) go to the utility of departing load.

The IEPR should align with the CPUC’s rules in these regards.

5. Reporting Data and Cumulative Goals

SoCalGas seeks clarity on how aspirational goals will impact actual goal setting. Additionally, SoCalGas requests more information on how staff plans to account for cumulative savings given the increase in potential identified for measures with shorter effective useful lives (EULs) and how savings are treated for these measures past their EULs. The CPUC is currently considering cumulative goals as an on-going issue regarding

⁸ Electrification Analysis, report completed by Energy & Environmental Economics in July 2016.

⁹ Senate Bill 350 Energy Efficiency Targets for Programs Not Funded through Utility Rates, July 2017 at 3.

¹⁰ Energy Efficiency Policy Manual, Version 5, July 2013 at 24.

how to treat savings decay and reparticipation. SoCalGas cautions that this is a major issue that needs to be resolved between both the CEC and CPUC for consistent treatment of cumulative savings.

SoCalGas emphasizes that EE targets set forth for SB350 be based on cost-effectiveness, reliability, and feasibility obligations of the IOUs. The 2018 and Beyond Potential and Goals Study forecasted scenarios are evaluated to ensure that the benefits from EE as an energy resource are appropriately valued and do not mask the actual cost of energy efficient technologies or measures, yielding a costlier outcome to both EE program participants and ratepayers. This has been emphasized by multiple parties including SoCalGas in the Integrated Distributed Energy Resources (IDER) proceeding (R.14-10-003) on the proposal of a societal cost test that:

“...the [CPUC] should adopt sufficient safeguards to ensure ratepayers are not shouldering an unreasonable burden for California’s broader societal goals...” and “... should strive to minimize cost shifting among participating and non-participating customers, and ensure that in all cases both participants and non-participants benefit from the expenditure of ratepayer funds.”¹¹

SoCalGas is actively engaged with the CPUC and stakeholders in both IDER and EE proceedings (R.13-11-005) where these topics are being considered. SoCalGas will continue to work with the CPUC to determine appropriate goals that are achievable and that best represent the market potential for natural gas energy savings.

Given the CEC’s need to track cumulative goals in the State’s effort to achieve the cumulative doubling of statewide energy efficiency, SoCalGas cautions that challenges associated with accounting for energy savings decay and future market potential, incorporation of evaluation data on the estimates of decay, and the achievement of future annual goals continue to persist and must be resolved. The CPUC shifted to annual goals in the 2013-2014 cycle to resolve these issues,¹² but CPUC staff and the Demand Analysis Working Group were unsuccessful in identifying suitable approaches to develop cumulative savings.¹³

One such area where this issue is of large concern involves savings from behavioral, retro-commissioning, and operational (BROs) program and measures. Behavioral program savings typically have a very short effective useful life (EUL). Combined with the fact that some of the savings are naturally occurring, and that BROs programs and measures make up a continually increasing portion of the IOU potential and goals forecast of the 2018 and

¹¹ Reply Comments of Southern California Edison, Pacific Gas and Electric Company, Southern California Gas Company, and San Diego Gas & Electric Company on Administrative Law Judge’s Ruling Taking Comment on Staff Proposal Recommending a Societal Cost Test, R.14-10-003, April 6, 2017, p. 4.

¹² CPUC D.12-05-015, p. 94-95.

¹³ June 15 2017 Administrative Law Judge’s Ruling Inviting Comments on Draft Potential and Goals Study, p. 6 (Question 2).

Beyond Potential and Goals study, uncertainty regarding the treatment of energy savings decay and reparticipation must be resolved as decay make-up savings will become a large portion of EE goals as the State tracks the 2015-2030 term.

SoCalGas continues to echo the concerns in comments docketed in the CEC's Energy Collection Rulemaking R.16-OIR-03 regarding protection of customer privacy and the volume of data being proposed by the CEC, which applies to both gas and electric utility customers. SoCalGas emphasizes the direction from the Legislature that the CEC minimize the data it collects in order to protect personal privacy and confidentiality and to reduce duplicative, unnecessary, and burdensome reporting obligations on the entities and consumers from which the CEC collects the data.¹⁴ Further, IOUs have been refining reporting requirements as part of the EE rolling portfolio process which has considered the requirement of SB 350. The CEC should align reporting requirements as much as possible to ensure efforts are not duplicated.

Conclusion

SoCalGas strongly believes that a diverse energy portfolio which includes multiple fuels and technologies is needed to meet California's energy needs and environmental policies in a cost-effective manner. Natural gas utilization in ultra-low emitting technology applications will help achieve GHG emission reductions targets and generate air quality benefits. Replacing the use of fossil natural gas with renewable gas could be an effective "fuel-substitution" measure to not only reduce GHGs associated with energy use, but would also reduce methane emissions from organic sources.

SoCalGas appreciates the CEC's consideration of these comments in the 2017 IEPR and looks forward to continuing to work on advancing California's energy policy goals and objectives.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

¹⁴ Public Resources Code Section 25320.

DOCKETED	
Docket Number:	17-BSTD-01
Project Title:	2019 Building Energy Efficiency Standards PreRulemaking
TN #:	221069
Document Title:	SoCalGas Comments on August 22 Title 24 ZNE Workshop
Description:	N/A
Filer:	System
Organization:	SoCalGas
Submitter Role:	Public
Submission Date:	9/6/2017 4:59:15 PM
Docketed Date:	9/6/2017

Comment Received From: SoCalGas

Submitted On: 9/6/2017

Docket Number: 17-BSTD-01

SoCalGas Comments on August 22 Title 24 ZNE Workshop

Additional submitted attachment is included below.

August 22, 2017 Proposed 2019 Building Energy Efficiency Standards ZNE Strategy Presentation Comment Letter

In Regards to CEC Docket #17-BSTD-01

September 6, 2017



Background

The California Energy Commission (CEC) is undergoing its pre-rulemaking for the 2019 Building Energy Efficiency Standards (Standards). CEC staff conducted a public workshop to present Zero Net Energy (ZNE) related updates on April 20, 2017,¹ and SoCalGas® and SDG&E jointly submitted comments on May 5, 2017.² CEC conducted an additional related workshop on August 22, 2017,³ and SoCalGas is providing these comments in response to the CEC presentation by Mazi Shirakh with document title “Presentation - Proposed 2019 Building Energy Efficiency Standards ZNE Strategy”.⁴ All related documents are available online in CEC Docket #17-BSTD-01.⁵

SoCalGas Comments

The 2019 Standards represent a substantial effort on the part of the CEC, its staff, and the numerous parties that participated in the workshop. SoCalGas appreciates the extensive efforts the CEC has taken to present a balanced energy approach striving to minimize potential negative impacts to the electric grid while giving builders, local jurisdictions, and California utility customers the flexibility to identify and choose the most effective pathways to comply with California’s ZNE goals. SoCalGas appreciates the opportunity to provide the following comments.

Balanced Energy Approach

With California’s aggressive greenhouse gas reduction goals, many have asserted that the best path to achieve those goals is through widespread electrification. However, when appropriate analyses are conducted, it raises concerns around grid reliability and harmonization. This issue has been recognized through what is commonly known in California as “the duck curve,” depicting net load over a 24-hour period. A comparison of forecasted versus actual net load shows that this issue develops faster and more pronounced than anticipated, and requires assertive mitigation.^{6,7,8} The CEC reiterates in its latest ZNE strategy presentation that these concerns are exacerbated due to solar photovoltaic (PV) over-generation from buildings. SoCalGas urges the CEC to continue on the path of balanced energy, allowing builders and designers to utilize all available resources, from higher efficient energy systems to multiple fuel sources, both for conventional use and renewable generation systems. This approach fosters innovation, competition and flexibility, while still advancing California’s energy policies. SoCalGas participates in multiple research and demonstration projects that showcase the

¹ <http://www.energy.ca.gov/title24/2019standards/prerulemaking/documents/index.html#04202017>

² http://docketpublic.energy.ca.gov/publicdocuments/17-bstd-01/tn217465_20170505t170011_marc_esser_on_behalf_of_socalgas_and_sdge_comments_april_20_201.pdf

³ <http://www.energy.ca.gov/title24/2019standards/prerulemaking/documents/index.html#08222017>

⁴ http://docketpublic.energy.ca.gov/publicdocuments/17-bstd-01/tn220876_20170824t105443_82217_zne_strategy_presentation.pdf

⁵ <https://efiling.energy.ca.gov/lists/docketlog.aspx?docketnumber=17-bstd-01>

⁶ <https://www.eia.gov/todayinenergy/detail.php?id=32172>

⁷ http://www.scottmadden.com/wp-content/uploads/2016/10/Revisiting-the-Duck-Curve_Article.pdf

⁸ <http://www.nrel.gov/docs/fy16osti/65023.pdf>

feasibility and success of a balanced energy approach, and will continue to support the CEC in defining and executing similar projects in the future.

Cost Effectiveness

SoCalGas agrees with the CEC that PV systems should be sized to meet electric kWh and that PV tradeoffs for energy efficiency should be disallowed. Cost effectiveness varies regionally and allowing flexibility for consumers and builders to select from multiple compliance paths and energy options with comparatively small PV systems maximize the cost effectiveness potential in designing ZNE homes.

Balanced energy homes should continue to be supported as the CEC and its consultants have recommended beginning on slide 14 of the latest ZNE strategy presentation. Cost effectiveness concerns for all-electric homes are compounded by recent field studies where nameplate energy factors of heat pump water heaters were found to be significantly higher than actual (for example, “real world” EF 1.77 vs. nominal rating of 2.4).⁹

SoCalGas is supportive of CEC’s sensitivity analysis of plausible future modifications to NEM rates. In the California Public Utility Commission’s (CPUC) latest NEM ruling, they state that NEM will be reevaluated in 2019. Given the exacerbation of the duck curve due to PV, it is reasonable to assume that the CPUC will further reduce the value of PV electricity exports to the grid, especially during mid-day. Furthermore, the CPUC used the same reasoning recently when it ruled that SDG&E can soon shift their summer on-peak time of use (TOU) period from 11 am – 6 pm to 4 pm – 9 pm. The 2019 Standards will be effective in January 2020 and the life cycle analysis is 30 years, so both these electricity rate changes, and surely more, will be effective during that period.

More fundamentally, CEC should consider updating their residential electricity rate forecasts in the Integrated Energy Policy Report (IEPR) to account for the upcoming prevalence of residential PV, and the impact of mandated and new TOU and NEM rates. The TDV schedules and CBECC-Res should then be updated accordingly. CEC should also consider adding utility bill calculations to CBECC-Res so building owners can anticipate their utility bills.

Finally, a few items were missing: multifamily cost effectiveness calculations and E3’s referenced technical report. Multifamily cost effectiveness calculations are especially important given the limited available roof area for PV, and the need to improve and justify the related PV exception that was proposed. The E3 technical report surely includes numerous important details left out of the presentation, and stakeholders need time to review those details and provide public comments.

Reach codes

SoCalGas agrees with the CEC in recognizing the State’s goals as a collective effort, inclusive of the important role local jurisdictions have in maintaining authority to adopt cost-effective reach codes as a strategy to capture energy savings beyond minimum state requirements. SoCalGas provides support to local jurisdictions looking to implement a reach code through the development of tools and resources including cost-effectiveness studies and this support will continue as California strives to meet ZNE goals.

⁹ http://aceee.org/sites/default/files/pdf/conferences/hwf/2017/Howlett_Session3B_HWF17_2.27.17.pdf

In summary, through a cost-effective balanced energy strategy, SoCalGas is supportive of the 2019 Building Energy Efficiency Standards approach to reach ZNE goals. We thank the CEC for the opportunity to provide these comments and will continue to be involved through the 2019 rulemaking process.

Sincerely,

A handwritten signature in black ink, appearing to read 'Sue Kristjansson', with a long horizontal line extending to the right.

Sue Kristjansson
Codes & Standards and ZNE Manager
Southern California Gas Company

DOCKETED

Docket Number:	17-IEPR-06
Project Title:	Doubling Energy Efficiency Savings
TN #:	221292
Document Title:	SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Draft Commission Paper
Description:	N/A
Filer:	System
Organization:	Jennifer Morris
Submitter Role:	Public
Submission Date:	9/21/2017 5:22:37 PM
Docketed Date:	9/21/2017

Comment Received From: Jennifer Morris

Submitted On: 9/21/2017

Docket Number: 17-IEPR-06

SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Draft Commission Paper

Additional submitted attachment is included below.



Tim Carmichael
Agency Relations Manager
State Government Affairs

925 L Street, Suite 650
Sacramento, CA 95814

Tel: 916-492-4248

TCarmichael@semprautilities.com

September 21, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on CEC Draft Commission Report on SB 350: Doubling Energy Efficiency Savings by 2030, Docket #17-IEPR-06

Dear Commissioners:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide feedback on the Draft Commission Report, titled *Senate Bill 350: Doubling Energy Efficiency Savings by 2030*. SoCalGas supports the State's ambitious efforts to increase energy efficiency (EE) and reduce greenhouse gas (GHG) emissions. The Draft Commission Report still indicates, on an mmbtu basis, a shortfall in the SB 350 EE target and potential EE savings in 2030. As the State develops innovative new approaches to achieve deeper EE savings, SoCalGas encourages the CEC to consider impacts to feasibility and energy affordability when evaluating proposals and measures such as fuel substitution. These comments are focused on the fuel substitution issues raised in the Draft Commission Report.

1. Site versus source energy

The Draft Commission Report states that the energy savings requirement for fuel substitution is based on site energy. This is an incomplete approach that fully disregards the substantial additional energy needed to generate and deliver electricity to the site versus gas. It also does not account for the variability of electricity cost to utilities or customers, electricity demand, load building,¹ or grid harmonization issues.² "Attachment A SB 350 Energy Savings Potential Development Plan" goes on to state that electric resistance technologies meet the site energy requirement for fuel substitution programs.³ However, those technologies are much worse by any source energy metric and are heavily restricted in California's Building Energy Efficiency

¹ CPUC. "Energy Efficiency Policy Manual, Version 5." July 2013.

² http://docketpublic.energy.ca.gov/publicdocuments/17-bstd-01/tn220876_20170824t105443_82217_zne_strategy_presentation.pdf

³ CEC. NORESO. "Attachment A SB 350 Energy Savings Potential Development Plan", p. 111. September 14, 2017.

Standards (i.e., Title 24, Part 6).⁴ This alone reveals the unreasonableness of site energy comparisons.

As stated in prior comments,⁵ SoCalGas recommends that the Energy Commission instead adopt the well-established and more logical metric of source energy, and more specifically, the latest Time Dependent Valuation (TDV) metric developed by Energy and Environmental Economics, Inc. (E3) for the Energy Commission.⁶ That would be consistent with Title 24, Part 6 energy modeling; the Participant Test in the California Standard Practice Manual;⁷ the Total Resource Cost (TRC) requirement in the three-prong test;⁸ and the source-BTU requirement of the three-prong test. The last of those states: “[p]roponents of fuel substitution programs should calculate the source-BTU impacts using the current CEC-established heat rate.”

2. Cost and feasibility barriers to electrifying space and water heating

SB 350 calls for a cumulative doubling of energy efficiency savings in electricity and natural gas final end-uses by 2030, to the extent doing so is *cost effective*, feasible, and does not adversely impact public health and safety. Attachment A of the Draft Commission Report cites electric heat pump technologies replacing natural gas technologies as a fuel substitution strategy in the residential sector. However, there are currently several economic and technical barriers to implementing electric heat pumps. The “Palo Alto Electrification Final Report,” referenced in A-59 of the Draft Commission Report, concludes that heat pump water heating and heat pump packages are not cost-effective in existing buildings, primarily due to the costly electrical upgrades required.⁹ As the majority of housing in California was built before 1980, most residential electrification projects would therefore not be cost-effective. Further, the report notes that building types included in the analyses did not include high-rise residential or large multi-family buildings, which have much higher water and space heating loads. As 31% of California households reside in multifamily homes, the feasibility and costs of electric heat pumps in that particular housing type must be evaluated. An additional cost impact of heat pump water heaters is the requirement to install condensate drain lines in older buildings, which would cost thousands of dollars for a multi-family home.¹⁰

Households in electrified single family homes, using the 2,100 square foot single family prototype building, will pay an additional \$15 to \$71 per month in utility bills than mixed-fuel homes, according to an E3 electrification analysis (also cited in the Palo Alto Report).¹¹ As

⁴ CEC. “2016 Building Energy Efficiency Standards”. Section 140.4(g), Table 150.1(A), and Section 150.1(c)8.

⁵ SoCalGas. “SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Staff Papers.” August 3, 2017.

⁶ Energy and Environmental Economics, Inc. “2019 TDV Methodology Report 2-15-17.” February 16, 2017.

⁷ CPUC. “California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects.” October 2001.

⁸ CPUC. “Energy Efficiency Policy Manual, Version 5.” July 2013.

⁹ City of Palo Alto. TRC Energy Services. “Palo Alto Electrification Final Report.” November 16, 2016. <http://www.cityofpaloalto.org/civicax/filebank/documents/55069>. Pages 15-16.

¹⁰ Ibid p. 13

¹¹ Electrification Analysis, report completed by Energy & Environmental Economics in July 2016.

electric heat pump measures are not cost-effective in existing homes, and require costly infrastructure additions, electrification could exacerbate housing affordability issues. Cost-effectiveness concerns for all-electric homes are further compounded by recent field studies where nameplate energy factors of heat pump water heaters were found to be significantly higher than actual (for example, “real world” EF 1.77 vs. nominal rating of 2.4).¹²

As SB 350 also calls for improving the economic conditions in disadvantaged communities,¹³ the CEC must consider electrification impacts to the affordability of energy and housing for the 43% of California households that are lower income,¹⁴ including over one-third of SoCalGas customers—or 1.5 million households—that receive bill assistance each month.

The “Palo Alto Electrification Final Report” also claims that federal preemption is not a concern if electrification ordinances or incentive programs are designed appropriately. In a footnote on page 8, they rightfully state, “[f]ederal preemption occurs when a state or city mandates that a higher efficiency appliance be installed than the minimum efficiency required by the DOE.” The federal minimum efficiency for residential heat pump water heaters at or below 55 gallons is “0.960 - (0.0003 × Rated Storage Volume in gallons)”, and the minimum above 55 gallons is an energy factor of “2.057 - (0.00113 × Rated Storage Volume in gallons).”¹⁵ The report states that all the energy factors used in the analyses were above these minimum efficiencies. Therefore, none of the heat pump water heater scenarios studied there could be mandated in California, and can only potentially be included in programs that are optional to customers.

3. Balanced Energy Approach

With California’s aggressive GHG reduction goals, some have asserted that the best path to achieve those goals is through widespread electrification of all end-uses. However, when appropriate analyses are conducted, concerns arise around grid reliability and harmonization. This issue has been recognized through what is commonly known in California as “the duck curve,” depicting net load over a 24-hour period. A comparison of forecasted versus actual net load shows that this issue develops faster and more pronounced than anticipated, and requires assertive mitigation.^{16,17,18}

SoCalGas urges the CEC to continue on the path of balanced energy, allowing builders and designers to utilize all available resources, from higher-efficient energy systems to multiple fuel sources, both for conventional use and renewable generation systems. This approach fosters innovation, competition, and flexibility, while still advancing California’s energy policies. SoCalGas participates in multiple research and demonstration projects that showcase the feasibility and success of a balanced energy approach. For example, SoCalGas partnered with

http://docketpublic.energy.ca.gov/PublicDocuments/16-BSTD-06/TN212680_20160808T161828_Electrification_Analysis.pdf. Page 33

¹² http://aceee.org/sites/default/files/pdf/conferences/hwf/2017/Howlett_Session3B_HWF17_2.27.17.pdf

¹³ <http://www.cpuc.ca.gov/General.aspx?id=6442453417>

¹⁴ <http://www.hcd.ca.gov/policy-research/plans-reports/docs/California's-Housing-Future-Main-Draft.pdf>

¹⁵ <https://www.regulations.gov/document?D=EERE-2006-STD-0129-0005>

¹⁶ <https://www.eia.gov/todayinenergy/detail.php?id=32172>

¹⁷ http://www.scottmadden.com/wp-content/uploads/2016/10/Revisiting-the-Duck-Curve_Article.pdf

¹⁸ <http://www.nrel.gov/docs/fy16osti/65023.pdf>

LINC Housing Corporation, Southern California Edison, and others to implement deep, near-zero energy retrofits at The Village at Beechwood, a 100-unit low-income multifamily property in Lancaster. Residents of low-income housing in California often carry the brunt of the State’s energy burden, allotting a higher proportion of their income to utility costs compared to other income groups. This is primarily because owners of low-income multifamily housing lack the ability to raise rents and reinvest in a property’s energy efficiency. This project at The Village at Beechwood has demonstrated and reported cost-effective Very Efficient Retrofits (VERs) packages and the integration of solar technologies in a low-income multifamily project, reducing annual electricity use by 92%, and natural gas by 50%.¹⁹

SoCalGas will continue to support the CEC in defining and executing similar projects in the future.

4. Inter-utility Departing Load/Gaining Load Considerations

To ensure appropriate performance standards are used, the three-prong test required by the California Public Utilities Commission (CPUC) compares the technologies offered by a program/measure/project with the industry standard practice same-fuel substitute technologies available to prospective participants that would have Total Resource Cost (TRC) and Program Administration Cost (PAC) benefit-cost ratio of 1.0 or greater.²⁰ When projects pass the three-prong test, EE credit (and ultimately SB 350 EE target compliance) go to the utility of departing load. The CEC should align with the CPUC’s rules in these regards.

Further, the Draft Commission Report states that “unlike traditional energy efficiency programs, fuel substitution causes electric load to increase.” In the case of substituting electricity for natural gas, the gas utility would receive the savings credit, as the reduction in natural gas usage results in net energy savings.

5. Fuel Substitution Working Group

As part of developing an approach to fuel substitution, the Draft Commission Report recommends convening a “working group to review SB 1383 and CARB’s Short-Lived Climate Reduction Pollutant Reduction Strategy and provide recommendations about complementary or competing roles of substituting electricity for natural gas and replacing natural gas with renewable gas as strategies for reducing GHG emissions.” SoCalGas agrees that this is an important step in ensuring that electrification of natural gas end-uses does not preclude adoption of other lower carbon energy sources and decelerate achievement of the State’s climate goals. SoCalGas would like to be included in this working group, and can provide input on utilizing renewable gas in the residential sector. As stated in previous comment letters, renewable gas can be used for all existing natural gas end-uses to lower net life-cycle GHG emissions by at least 40%.²¹

¹⁹ http://aceee.org/files/proceedings/2016/data/papers/1_468.pdf

²⁰ Energy Efficiency Policy Manual, Version 5, July 2013 at 24.

²¹ https://www.arb.ca.gov/fuels/lcfs/121409lcfs_lutables.pdf

Conclusion

SoCalGas strongly believes that a diverse energy portfolio that includes multiple fuels and technologies is necessary to meet California's energy needs and environmental policies in a cost-effective and feasible manner.

SoCalGas appreciates the CEC's consideration of these comments on the Draft Commission Report and looks forward to continuing to work on advancing California's energy policy goals and objectives.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

DOCKETED	
Docket Number:	17-IEPR-01
Project Title:	General/Scope
TN #:	221758
Document Title:	SoCalGas Comments on the Draft 2017 IEPR
Description:	N/A
Filer:	System
Organization:	Southern California Gas Company
Submitter Role:	Public
Submission Date:	11/13/2017 4:50:37 PM
Docketed Date:	11/13/2017

Comment Received From: Southern California Gas Company
Submitted On: 11/13/2017
Docket Number: 17-IEPR-01

SoCalGas Comments on the Draft 2017 IEPR

Additional submitted attachment is included below.



George Minter
Regional Vice President
External Affairs & Environmental Strategy
Southern California Gas Company

555 W. 5th Street
Los Angeles, CA 90013
(213) 244-2550
GIMinter@semprautilities.com

November 13, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on the Draft 2017 Integrated Energy Policy Report— 17-IEPR-01 – General/Scope

Southern California Gas Company (SoCalGas) appreciates this opportunity to comment on the Draft 2017 Integrated Energy Policy Report (Draft 2017 IEPR). We provide feedback on the following chapters of the Draft 2017 IEPR:

- I. Chapter 2: Implementing SB 350
- II. Chapter 4: Accelerating the Use of DER on the California Grid
- III. Chapter 8: Natural Gas Trends and Outlook
- IV. Chapter 9: Renewable Gas
- V. Chapter 10: Climate Adaptation and Resiliency
- VI. Chapter 11: Update on Energy Reliability Issues in Southern California

I. Chapter 2: Implementing SB 350

SoCalGas supports the State’s ambitious efforts to increase energy efficiency (EE) and reduce greenhouse gas (GHG) emissions as part of Senate Bill (SB) 350. As we have stated in previous SB 350 comment letters,¹ we encourage the CEC to consider impacts to feasibility and energy affordability when evaluating proposals and measures such as fuel substitution.

Cost-effectiveness is essential to ratepayer protection

The Draft 2017 IEPR states that several stakeholders have encouraged the California Energy Commission (Commission or CEC) and California Public Utilities Commission (CPUC) to address policy barriers that currently limit utility incentive programs and Title 24 from encouraging fuel substitution.² SoCalGas would like to emphasize that these policies, such as the

¹ SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Draft Commission Paper, September 21, 2017, and SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Staff Papers, August 3, 2017.

² Draft 2017 IEPR, p.56.

CPUC’s three-prong test, are in place to verify cost-effectiveness and to ultimately protect ratepayers. In most cases, projects do not pass the three-prong test because they are not cost-effective, and are therefore not eligible for ratepayer-funded programs.

The Draft 2017 IEPR also provides electric heat pumps as an example of a fuel substitution technology for reaching SB 350 goals.³ However, there are currently several economic and technical barriers to implementing electric heat pumps. The “Palo Alto Electrification Final Report,” referenced in B-159 of the SB 350 Final Commission Report, concludes that heat pump water heating and combined heat pump space and water heating packages are not cost effective in existing buildings, primarily due to the costly electrical upgrades required.⁴ As the majority of housing in California was built before 1980, most residential electrification projects would not be cost-effective. According to the Energy Planning Analysis Tool, SoCalGas found that full electrification of the state would cost Californians approximately \$345 million annually in higher energy costs, and would cost over \$5 billion to retrofit California’s more than 12 million households with high efficiency electric water heating, space heating, and cooking end uses.⁵ Households in electrified single-family homes, using the 2,100 square foot, single-family prototype building, will pay \$180 to \$852 higher in utility bills than mixed-fuel homes annually, according to an Energy and Environmental Economics electrification analysis⁶ (also cited in the Palo Alto Report). SoCalGas provided further details on the cost, efficiency, and feasibility concerns to electrifying space and water heating in the previously submitted letter on the Draft Commission Report.⁷

As SB 350 also calls for improving the economic conditions in disadvantaged communities,⁸ the CEC must consider electrification impacts to energy and housing affordability for the 43% of California households that are lower income,⁹ including over one-third of SoCalGas customers—or 1.5 million households—that receive bill assistance each month.

SoCalGas supports the creation of the Fuel Substitution Working Group

The Draft 2017 IEPR recommends that the CEC work with utilities to develop guidelines for fuel substitution.¹⁰ The Draft Commission Report also recommended convening a working group to review SB 1383 and Air Resources Board’s (ARB’s) Short-Lived Climate Pollutants (SLCP) Reduction Strategy as part of a fuel substitution working group.¹¹ SoCalGas agrees that this is an important step in ensuring that electrification of natural gas end-uses does not preclude adoption of other lower carbon energy sources and decelerate achievement of the State’s climate goals.

³ Draft 2017 IEPR, p. 55.

⁴ City of Palo Alto. TRC Energy Services. “Palo Alto Electrification Final Report.” November 16, 2016. <http://www.cityofpaloalto.org/civicax/filebank/documents/55069>. Pages 15-16.

⁵ Energy Planning Analysis Tool is located at <http://epat.gastechnology.org/>

⁶ Electrification Analysis, report completed by Energy & Environmental Economics in July 2016.

http://docketpublic.energy.ca.gov/PublicDocuments/16-BSTD-06/TN212680_20160808T161828_Electrification_Analysis.pdf. Page 33.

⁷ SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Draft Commission Paper, September 21, 2017.

⁸ <http://www.cpuc.ca.gov/General.aspx?id=6442453417>

⁹ <http://www.hcd.ca.gov/policy-research/plans-reports/docs/California's-Housing-Future-Main-Document-Draft.pdf>

¹⁰ 2017 Draft IEPR, p. 83.

¹¹ CEC SB 350 Draft Commission Report, p. 53.

SoCalGas would like to be included in this working group and can provide input on utilizing renewable gas in the residential sector.

II. Chapter 4: Accelerating the Use of Distributed Energy Resources on the California Grid

Power-to-Gas should be considered for further research and investment

As the use of distributed energy resources (DERs) in California continues to grow, state agencies will need to adopt policies and forward-looking research investment plans to enable these technologies to integrate with existing energy infrastructure.

As was covered in our comments on earlier workshops, SoCalGas believes the CEC should strongly consider power-to-gas (P2G) technology for inclusion in DER planning efforts. If we are to reach ever-higher penetration rates of renewable generation sources on the grid, energy storage solutions, like P2G, will be crucial in absorbing the large amounts of excess energy that would otherwise be curtailed and discharging it when demand is highest. We appreciate the CEC’s inclusion of P2G in Chapter 3 of the IEPR, but feel it is also relevant to the DER discussion.

P2G is still in early commercialization and will require investment in the research necessary to bring this crucial technology to market. SoCalGas is actively supporting P2G research and demonstration projects, including the first-ever P2G microgrid project in North America at the University of California at Irvine (UCI). The UCI system demonstrates several of the value propositions that P2G technology can provide for microgrids, including a dispatchable load, the capture of otherwise-curtailed intermittent renewable power, and using the natural gas system as a storage resource.

Further research is needed to understand the impact hydrogen can have on the natural gas pipeline system, but initial studies at UCI have shown promising results. The CEC should commit to funding such research opportunities at the many California institutions—such as UCI—that are willing to undertake them.

Before P2G can become fully realized as a grid solution, however, several policy hurdles need to be overcome. Crucially, the natural gas system (including transmission, distribution, and storage systems) needs to be considered as an energy storage resource when renewable hydrogen is included. As noted in Chapter 3 of the Draft 2017 IEPR, “hydrogen can be stored more cheaply than electricity in a battery” and the existing natural gas pipeline system is a critical and cost-effective solution for doing so. The CEC should support policies that allow the natural gas system to be counted as an energy storage resource where P2G is concerned.

III. Chapter 8: Natural Gas Trends and Outlook

SoCalGas is supportive of comments made by our sister company, San Diego Gas & Electric Company (SDG&E), which highlight the need to maintain and modernize the natural gas system in a manner that significantly enhances the overall safety, reliability, resiliency, and flexibility of the Southern California energy grid. The final 2017 IEPR should recognize that investments in natural gas infrastructure are consistent with the state’s safety, reliability, and climate goals.

SDG&E and SoCalGas’ co-sponsored Pipeline Safety & Reliability Project (PSRP), for example, would enhance public safety, improve reliability in a gas-constrained region, facilitate renewable gas usage in the greater San Diego area, and modernize the natural gas system through state-of-the-art technology upgrades.

In our joint SoCalGas-SDG&E prior comments¹² on the Draft 2016 IEPR Update, we highlighted the need for the PSRP to meet a “top priority”¹³ of the state for improving pipeline safety and reliability and safety risks from the CPUC’s denial of the North-South Project, despite acknowledging the need for “enhanced system reliability in the Southern System.”¹⁴ The final 2017 IEPR should recognize that these risks have only grown more urgent in the past year. Our joint statement from last year’s comments remains equally germane today: “SoCalGas and SDG&E believe that investments in natural gas infrastructure that can accomplish multiple objectives simultaneously – e.g., safety, reliability and energy grid flexibility – should be encouraged and prioritized in order to meet California’s dynamic and evolving energy needs and climate policies consistent with the Draft 2016 IEPR Update.”

Further, SoCalGas supports the Draft 2017 IEPR’s emphasis on natural gas infrastructure safety. As the report points out, replacing outdated infrastructure will enhance the safety of our pipeline system.¹⁵ SoCalGas has an obligation to provide safe and reliable natural gas service to all natural gas customers in its service area. SoCalGas also has an obligation to comply with the CPUC-approved Pipeline Safety Enhancement Plan (PSEP) via projects like PSRP, which would replace one of two lines that currently transport natural gas to San Diego County. In addition to installing cathodic protection to protect the pipeline from corrosion, as described,¹⁶ the PSRP also will install internal inspection launching and receiving equipment and incorporate new, significant safety features (e.g., modern safety features, such as warning mesh to alert excavators, intrusion detection monitoring, and 24-hour real-time leak detection system). The final 2017 IEPR should recommend strategies to upgrade natural gas infrastructure that improves safety, enhances reliability, and facilitates the reduction of GHG emissions consistent with state policy.¹⁷

IV. Chapter 9: Renewable Gas

The CEC must make stronger recommendations for the development and use of renewable gas

SB 1383 recognizes that renewable gas will play an important role in meeting California’s SLCP and GHG reduction goals. The bill specifically directs the CEC to develop policy recommendations for the development and use of renewable gas and develop cost-effective strategies, including infrastructure development and procurement policies, that will encourage

¹² SoCalGas–SDG&E comments on Draft 2016 IEPR Update. Available at http://docketpublic.energy.ca.gov/PublicDocuments/16-IEPR-01/TN214407_20161107T155727_Tim_Carmichael_Comments_CEC_Draft_2016_IEPR_Update_SoCalGasSDGE.pdf

¹³ 2015 IEPR at 146. “It is the policy of the state that the [CPUC] and each gas corporation place safety of the public and gas corporation employees as the top priority.”

¹⁴ CPUC Decision 16-07-015 at 24-25.

¹⁵ Draft 2017 IEPR, p. 240.

¹⁶ Draft 2017 IEPR, p. 241.

¹⁷ Draft 2017 IEPR, p. 251.

the production of renewable gas in the 2017 IEPR.¹⁸ SoCalGas believes the Draft 2017 IEPR falls short of the SB 1383 mandate. The CEC does not make sufficient recommendations on increasing the development and use of renewable gas, particularly with respect to infrastructure development and procurement policies. Without specific policies that prioritize and support in-state development of pipeline-injected renewable gas, California will not meet the goal of 40% reduction of methane below 2013 levels by 2030.

As over 80% of the state's methane emissions come from the agricultural and waste industries, putting organic waste streams to beneficial use in the form of renewable gas is critical to meeting climate change and air quality goals. In fact, the California Air Resources Board's (ARB) 2017 Climate Change Scoping Plan Update relies heavily on the SLCP Reduction Plan, which focuses on utilizing renewable gas from organic sources, to achieve 32% of GHG reductions needed to reach the 2030 goals.¹⁹

A. Pipeline injection is the best mode for renewable gas

SoCalGas appreciates the CEC's recognition of renewable gas use in the medium- and heavy-duty vehicle sectors as an important strategy for improving air quality, and its recommendation to encourage renewable gas for use in state fleets.²⁰ Renewable gas can provide an immediate opportunity to significantly reduce GHG and NOx emissions by replacing diesel transportation fuel. However, as stated in the Draft 2017 IEPR, transportation is a near-term strategy to utilize the State's SLCP emission sources. As the demand for renewable fuels in the transportation sector develops over time, more renewable gas will be developed and become available to decarbonize natural gas end-uses in residential and commercial uses, as well as generate electricity.

Pipeline access allows renewable gas to be flexibly delivered to decarbonize natural gas end-uses in both the residential and commercial sectors. As California implements additional programs to decarbonize the residential energy market, directing renewable gas to residential appliances can provide similar benefits at a comparable or lower cost than all-electric homes utilizing solar photovoltaic (PV) systems.²¹ Using renewable gas in the home removes the need to electrify end uses, which would be costly to ratepayers and create feasibility challenges. As 90% of homes in Southern California use natural gas, decarbonizing existing pipeline infrastructure with renewable gas is a more feasible GHG-reduction strategy than electrification and promotes customer choice, energy diversity, and resilience.

While the Draft 2017 IEPR includes a section discussing pipeline injection, the CEC should include pipeline injection for direct end use as an explicit recommendation for the long-term use

¹⁸ http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383

¹⁹ 2017 Scoping Plan Update Public Workshop, October 12, 2017. Slide 16.
<https://www.arb.ca.gov/cc/scopingplan/meetings/101217/sp-october-workshop-slides.pdf>

²⁰ 2017 Draft IEPR, p. 293

²¹ Renewable gas in a mixed-fuel home would provide lower upfront costs (5-10%), smaller solar PV sizes (-.4-0.7 kW) and modest homeowner annual cost savings. Navigant Consulting, Inc. 2017. "Strategy and Impact Evaluation of Zero-Net-Energy Regulations on Gas-Fired Appliances." Report prepared for Southern California Gas Company. March 7, 2017.

of renewable gas. Using the pipeline system will provide this resource access to the broadest market, enabling greater flexibility and maintaining long-term value.

B. Enabling long-term utility infrastructure and procurement investment

To accommodate the development of renewable gas resources in California, important infrastructure investments are needed. The CEC should include utility ratebased investment in this infrastructure as a primary policy recommendation, as it can offset portions of these costs to stimulate the production of California renewable gas and meet the SLCP reduction goals of SB 1383.

Much of the requisite infrastructure is related to pipeline transportation, gas processing and quality management, and gas measurement – all infrastructure that utilities are experienced at operating. Policies to enable utility rate-based investment in these facilities will hasten in-state renewable gas development and interconnection with the pipeline network.

Additionally, SoCalGas believes the market stability through a utility procurement requirement will be necessary to increase production, drive down costs over time, develop new gasification and other renewable gas technologies, and provide the volumes necessary to move renewable gas to the core market. This will drive greater GHG reductions without the massive disruption and investment that would be required for individual customers to replace existing equipment and appliances. SoCalGas also recommends that the CEC support facilitating long-term supply contracts, which would enable capital financing of long-term production projects and provide further market certainty for the renewable gas market.

These concepts are not unprecedented. Under California’s RPS, electric utilities have upgraded transmission infrastructure to support increasing levels of electricity from wind and solar, and can invest in renewable electricity generation projects that are competitive with other market offerings. These investments by the electric utilities have allowed California to stay ahead of schedule for meeting the RPS requirements.²² Similarly, a Renewable Gas Standard (RGS) and the ability to recover investment costs would drive investment in renewable gas production, processing, and pipeline interconnection. The CEC should include an RGS in its recommendations in the 2017 IEPR.

The CEC should include renewable gas in the 2018 IEPR Update

The Draft 2017 IEPR recommends re-examining the status of renewable gas as part of the IEPR in four years.²³ Given the urgency of California’s GHG reduction goals and the critical role renewable gas plays in achieving them, SoCalGas recommends a shorter timeline. The CEC should include renewable gas as a special issue in the 2018 IEPR Update and further explore the implementation of an RGS. As the 2017 Draft IEPR has identified that multiple stakeholders

²² California Energy Commission, http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf

²³ 2017 Draft IEPR, p. 295

have already expressed the need for an RGS,²⁴ the CEC should examine and recommend a utility procurement requirement.

SoCalGas looks forward to continuing to work with CEC, other state agencies, and industry stakeholders to support successful implementation of SB 1383 and to ultimately achieve California's 2030 GHG reduction goals.

V. Chapter 10: Climate Adaptation and Resiliency

SoCalGas supports each policy recommendation in Chapter 10, but thus far, climate adaptation and resiliency planning processes have not been focused on Southern California natural gas infrastructure and the benefits it brings to the overall resilience of California. We ask staff to include the following information in the final 2017 IEPR.

A diversified energy portfolio is prudent risk management against climate change

Energy diversification is necessary as a climate adaptation strategy: the UN Framework Convention on Climate Change clearly states that expanding the energy portfolio increases system reliability in a cost-effective manner. Over-reliance on a single energy source can create avoidable and unnecessary risks for public safety and the economy. Maintaining diverse energy sources across the economy is a prudent measure to ensure resiliency. Gas technologies, such as P2G and other distributed generation resources, should be part of California's strategy to adapt to climate change.

The natural gas system is resilient in the face of natural disasters

Since the natural gas system is mostly underground, it is very resilient to extreme weather events. According to CEC staff, "Climate change appears to have little impact on natural gas availability..."²⁵

For example, in 2012, after Superstorm Sandy, the entire natural gas system in the Northeast was essentially intact, allowing residents to support back-up generators, cook, and keep warm. Businesses with natural gas-powered fuel cells were able to operate and compressed natural gas (CNG) buses in New Jersey were used to shuttle residents to safety.²⁶ This year, Hurricane Harvey reduced the nation's refining capacity by 30%: "While other fleets struggled with fuel shortages [CNG] shuttles were able to stay moving during and after the storm thanks to uninterrupted CNG supply."²⁷ Flooding closed 16 hospitals, but those that had combined heat and power systems were able to provide urgently needed medical attention. These are just a

²⁴ 207 Draft IEPR, p. 275

²⁵ *Potential Impacts of Climate Change on California's Energy Infrastructure and Identification of Adaptation Measures*, CEC, Staff Paper, January 2009, CEC-150-2009-001, at 11.

²⁶ *5 Ways Alternative Fuels Aid Response to Hurricanes and Natural Disasters*, Office of Energy Efficiency & Renewable Energy, September 20, 2017, available at https://energy.gov/eere/articles/5-ways-alternative-fuels-aid-response-hurricanes-and-natural-disasters?utm_source=EERE+Weekly+Digest+of+Clean+Energy+News&utm_campaign=f048cbec65-EMAIL_CAMPAIGN_2017_09_25&utm_medium=email&utm_term=0_96dffafa2f-f048cbec65-34678197

²⁷ *Ibid.*

couple real-world examples of the importance of supply diversification, and specifically distributed generation resources, which offer a clean, flexible, and reliable form of energy.

SoCalGas and other natural gas infrastructure stakeholders must be included in climate resiliency planning and development processes

In order for climate plans to be effective, every region of California must be considered and engaged. Specifically, SoCalGas wants to be involved in establishing a California Partnership for Energy Sector Climate Resilience and convening a joint-agency workshop on climate resilience metrics to help track California’s action and successes.

VI. Chapter 11: Update on Energy Reliability Issues in Southern California

Aliso Canyon remains a critical part of the energy infrastructure in Southern California

SoCalGas agrees with the assessment stated in the Draft 2017 IEPR that preventing the normal use of Aliso Canyon will lead to higher power system operating costs. Efforts should be taken to minimize those cost impacts to consumers.

As SoCalGas has stated on numerous occasions, the restrictions on the use of Aliso Canyon still pose a risk to energy reliability in Southern California, especially as winter approaches. SoCalGas will likely not have sufficient supplies to meet all customer demand during weather events, unplanned supply interruptions, or unexpected hourly, daily, and seasonal demands.

The need for flexible and strategically located supply sources will only increase as more renewables are brought online. California needs more flexibility on its energy system, not less. Therefore, as the State continues to plan for its clean energy future, it is important for us to recognize the crucial role of natural gas—and renewable gas—in reaching our climate and air quality goals while providing affordable energy to all Californians.

Recent events reinforce the need for Aliso Canyon. Planned and unplanned outages on the natural gas transmission system—such as those on Line 235 and Line 4000—can greatly impact our ability to transport supplies to demand centers. To address unforeseen conditions such as these, prudent planning incorporates contingencies to provide system resiliency and flexibility. This is where storage resources are critical for maintaining reliability. SoCalGas’ system was designed with storage facilities as a key component and Aliso Canyon has by far the largest capacity and flexibility of our four storage facilities, and due to its central location is uniquely able to support the natural gas demands of the Los Angeles Basin. The Division of Oil, Gas, & Geothermal Resources (DOGGR) and the CPUC determined in July 2017 that Aliso Canyon was safe, stating the facility “will be held to the most rigorous monitoring, inspection and safety requirements in the nation.”²⁸ In past years, injections into and withdrawals from storage,

²⁸ California Public Utilities Commission and California Department of Conservation Joint Press Release, July 19, 2017. http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/ReleaseStateInspectionsConfirmSafetyofAlisoCanyon.pdf

primarily Aliso Canyon, have been sufficient to maintain system reliability, even when difficult and unexpected conditions arose.

The State must now decide, as a matter of policy, whether it is more prudent to risk customer outages, system reliability, and price volatility, or instead to use Aliso Canyon, a facility that state agencies determined to be safe over three months ago.

The future of Aliso Canyon should not be predetermined in the IEPR

SoCalGas respectfully disagrees with the recommendation in the IEPR that the CEC begin planning for the closure of Aliso Canyon within 10 years. As the CEC is aware, the CPUC is already examining the future of Aliso Canyon through the proceeding it opened pursuant to SB 380 (I.17-02-002). In reaching a final determination in that proceeding, SB 380 (Chapter 14, Statutes of 2016) requires that multiple stakeholders and “relevant government entities” must be consulted. The CPUC proceeding is the correct venue to collect and consider input from these stakeholders before any decision is made.

Additionally, both the CPUC and the CEC are directly involved in I.17-02-002 and have indicated their intent to develop various models to better understand the system and allow technical analysis to guide the determination of the need for the facility. At this time, neither agency has completed this analysis nor the related modelling effort. SoCalGas is concerned that the CEC’s formal statements that Aliso should be closed in ten years is not based on fact but rather on policy, and undermines due process afforded to all parties in the CPUC’s open proceeding. SoCalGas suggests that the appropriate regulatory process be permitted to complete before the IEPR unilaterally commits to any plan for closure of Aliso Canyon. It is necessary that policy be guided by sound technical analysis, especially when assessing the energy needs of a region as large and diverse as Southern California, which will occur through the completion of I.17-02-002

Conclusion

SoCalGas strongly believes that a diverse energy portfolio which includes multiple fuels and technologies is needed to meet California’s energy needs and environmental policies in a cost-effective manner.

SoCalGas appreciates the CEC’s consideration of these comments for the 2017 IEPR and looks forward to continuing to work on advancing California’s energy policy goals and objectives.

Sincerely,

George I. Minter
Regional Vice President
External Affairs & Environmental Strategy



Jennifer Morris
 Senior Environmental Policy Advisor
 555 W. Fifth Street, GCT 21C5
 Los Angeles, CA 90013
 Email: jhmmorris@semprautilities.com

January 23, 2018

Anita Cerna
 Senior Planner
 City of Pasadena – Planning Division
 Community Planning Section (2nd Floor)
 175 N. Garfield Ave.
 Pasadena, CA. 9110

RE: City of Pasadena Draft Climate Action Plan

Dear Ms. Cerna,

Southern California Gas Company (SoCalGas) is one of California’s investor-owned utilities regulated by the California Public Utilities Commission. We are the nation’s largest natural gas distribution utility, providing energy to 20.9 million consumers throughout 500 communities. SoCalGas’ service territory encompasses approximately 20,000 square miles in diverse terrain throughout Central and Southern California.

SoCalGas appreciates the opportunity to submit comments on the City of Pasadena’s Draft Climate Action Plan (CAP). We commend the City for undergoing the CAP development process, and committing to a vision for a more sustainable community. Our comments focus on the following topics:

1. Alternative Fuel Vehicles: Renewable Natural Gas Achieves Greater Emissions Reductions Sooner than Electric Options (Measure T-4.1)
2. Fuel Diversity Supports Resilient Infrastructure (Measure 4)

1. Alternative Fuel Vehicles: Renewable Natural Gas Achieves Greater Emissions Reductions Sooner than Electric Options

Measure T-4.1

SoCalGas supports Measure T-4.1, “Expand the availability and use of alternative fuel infrastructure and fueling infrastructure”, in the City of Pasadena’s Draft CAP. Pasadena has demonstrated progress in clean transportation by converting the entire Pasadena Transit fleet to 100% compressed natural gas (CNG) vehicles, which emit 20-29% fewer GHG emissions than

comparable gasoline or diesel-fueled vehicles¹. When powered by renewable natural gas (RNG), these emission reductions increase to 90%².

Implementation Action G- EV and Transit Fleet

Pasadena's Draft CAP proposes to study the feasibility of transitioning to electric buses (Implementation Action G, Measure T-4.1). The City of Pasadena should consider that transit agencies including Los Angeles County Metropolitan Transportation Authority (LA Metro), San Diego Metropolitan Transit System, Orange County Transportation Authority, and Santa Monica's Big Blue Bus have thoroughly studied the use near-zero emission natural gas buses running on renewable gas, and have found that they provide significant emissions benefits at an acceptable cost. LA Metro's recent study found that the use of near-zero engines with renewable gas is the most cost-effective strategy by an order of magnitude for reducing NOx and GHGs as compared to using battery electric or fuel cell powered buses.³

Moreover, to effectively serve local citizens, transit agencies need flexibility to deploy advanced technologies in ways that are synergistic with their operations. Recently, the City of Albuquerque reported significant failures with its newly adopted electric bus fleet, including malfunctioning charging systems, batteries, and a shorter-than-expected range that would require the city to purchase additional buses⁴. Further, as Pasadena Transit has already invested in upgrading their fleets with CNG vehicles, a decision to electrify fleets could result in stranded investments. SoCaGas recommends that the City of Pasadena consider the costs and difficulty of transitioning fleets to electric technology, and as well as consider the need for flexibility by transit agencies to select technologies that will meet their fleet and ridership requirements.

Implementation Action H- Hydrogen Fueling Stations

SoCalGas supports investigating the feasibility of installing hydrogen fueling infrastructure as proposed in the Draft CAP (Implementation Action H, Measure T-4.1). The use of CNG for transportation now helps create a bridge to a hydrogen future⁵. Natural gas from existing pipelines is already the leading fuel feedstock in the production of hydrogen, and further developing Pasadena's current CNG refueling infrastructure could aid to a transition to a future network based on hydrogen.

2. Fuel Diversity Supports Resilient Infrastructure

Measure 4

Protecting the resilience of critical systems in the City of Pasadena is a key priority in the Draft CAP, as emphasized in Measure 4⁶. Including natural gas and renewable natural gas in the city's energy portfolio can increase system reliability, as the majority of natural gas pipelines are

¹ <http://www.ngvamerica.org/natural-gas/environmental-benefits/>

² Ibid.

³ "Zero Emissions Bus Options: Analysis of 2015-2055 Fleet Costs and Emissions," Ramboll Environ (Feb. 5, 2016) (prepared for LA Metro), available at: https://media.metro.net/board/Items/2016/09_september/20160914atvcitem4.pdf.

⁴ <https://www.abqjournal.com/1116887/mayor-outlines-major-problems-with-art-including-inability-to-charge-buses.html>

⁵ <https://steps.ucdavis.edu/wp-content/uploads/2017/05/2017-UCD-ITS-RR-17-04-1.pdf>, p.61

⁶ Draft CAP p. 101

underground and therefore more resilient to extreme weather events. Further, the natural gas system has a separate distribution pathway, allowing it to operate without electricity and continue to serve customers, even when other energy sources fail.⁷

Implementation Action A

In a recent local example, firefighting efforts were hampered during the Thomas Fire when power to water pumps failed in Ventura and Santa Barbara, due to lost electric power⁸. Ensuring diverse energy infrastructure, such as natural-gas powered water pumps, would support Implementation Action A, Resilient Energy and Water Supply.

Implementation Action B

During Hurricane Sandy in 2012, Atlantic City was able to rely on its fleet of 190 CNG buses to shuttle residents to safety, thanks to uninterrupted CNG supply⁹. The resiliency of the natural gas and CNG refueling system would support Implementation Action B, Transportation Safety, by ensuring a safe and reliable mode of transport in the event of climate-related incidents.

Conclusion

SoCalGas encourages the City of Pasadena to adopt a diverse energy portfolio that includes multiple fuels and technologies to meet California's energy needs and climate change targets in a cost-effective and timely manner. We appreciate the ongoing discussion and are excited to continue our engagement with the City's CAP. Please do not hesitate to contact me with any questions.

Sincerely,

Jennifer Morris

Senior Environmental Policy Advisor

Southern California Gas Company

⁷ Massachusetts Institute of Technology Lincoln Laboratory, *Interdependence of the Electricity Generation System and the Natural Gas System and Implications for Energy Security* (2013) at 14. ("Power is not assured in all possible scenarios that disrupt the electric grid...but natural gas has demonstrated energy security benefits during all historical electricity outages.")

⁸ <https://www.scpr.org/news/2017/12/08/78694/social-fires-strain-power-and-water-systems/>

⁹ https://energy.gov/eere/articles/5-ways-alternative-fuels-aid-response-hurricanes-and-natural-disasters?utm_source=EERE+Weekly+Digest+of+Clean+Energy+News&utm_campaign=f048cbec65-EMAIL_CAMPAIGN_2017_09_25&utm_medium=email&utm_term=0_96dffafa2f-f048cbec65-34678197

DOCKETED	
Docket Number:	17-IEPR-01
Project Title:	General/Scope
TN #:	222455
Document Title:	Southern California Gas Company Comments SoCalGas Comments on Proposed Final 2017 IEPR
Description:	N/A
Filer:	System
Organization:	Southern California Gas Company
Submitter Role:	Public
Submission Date:	2/7/2018 3:45:52 PM
Docketed Date:	2/7/2018

Comment Received From: Southern California Gas Company

Submitted On: 2/7/2018

Docket Number: 17-IEPR-01

SoCalGas Comments on Proposed Final 2017 IEPR

Additional submitted attachment is included below.



George Minter
Regional Vice President
External Affairs & Environmental Strategy
Southern California Gas Company

555 W. 5th Street
Los Angeles, CA 90013
(213) 244-2550
GIMinter@semprautilities.com

February 7, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

**Subject: Comments on the Proposed Final 2017 Integrated Energy Policy Report—
17-IEPR-01 – General/Scope**

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the Proposed Final 2017 Integrated Energy Policy Report (IEPR). Natural gas infrastructure supports resiliency in the energy sector and will continue to be instrumental in maintaining electric grid reliability, safety and security, especially as California continues to integrate an increased percentage of renewable electric energy. In addition, development and utilization of renewable gas and its use in ultra-low emission technologies can help further greenhouse gas (GHG) reductions.

SoCalGas provides feedback on the following chapters:

- I. Chapter 2: Implementing SB 350
- II. Chapter 7: Transportation Energy
- III. Chapter 8: Natural Gas Trends and Outlook
- IV. Chapter 9: Renewable Gas
- V. Chapter 10: Climate Adaptation and Resiliency
- VI. Chapter 11: Update on Energy Reliability Issues in Southern California

I. Chapter 2: Implementing SB 350

SoCalGas supports the State's ambitious efforts to increase energy efficiency (EE) and reduce GHG emissions as part of Senate Bill (SB) 350. As we have stated in previous SB 350 comment letters,¹ the California Energy Commission (CEC) should consider impacts to feasibility and energy affordability when evaluating proposals and measures, such as fuel substitution.

¹ SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Draft Commission Paper, September 21, 2017, and SoCalGas Comments on SB 350 Energy Efficiency Savings Doubling Targets Staff Papers, August 3, 2017.

The Effectiveness of Regional Energy Networks (RENs) is Still Under Evaluation

The Utility Energy Efficiency Program Savings section contains a new statement that concludes that Community Choice Aggregators (CCA) and RENs will be important in meeting SB 350 targets, and should be an important element of future potential and goals studies carried out by the California Public Utilities Commission (CPUC).² However, the CPUC is still evaluating the effectiveness of RENs and any inclusion in future studies should be based on the outcome of those evaluations.

As of now, proposed REN activities in filed CPUC EE business plans³ are pending a CPUC decision. D.16-08-019 reiterates that RENs should continue to focus on: “activities that utilities cannot or do not intend to undertake; pilot activities where there is no current utility program offering, and where there is potential for scalability to a broader geographic reach, if successful; and pilot activities in hard to reach markets, whether or not there is a current utility program that may overlap.” Some of the proposed new activities described in the proposals,⁴ however, are duplicative of current and/or planned efforts by IOUs or are inconsistent with CPUC policy for proper use of EE ratepayer funds.

RENs must achieve their current objectives before expanding their current offerings. SoCalGas supports continued funding of existing RENs as pilots, where appropriate, and maintains that the most prudent course of action is to complete the evaluation of REN pilots before new REN activities or new RENs are authorized. Therefore, any tactics or future strategies included in the Final IEPR should be flexible, and based on the outcome of these business plan applications.

SoCalGas Supports the Creation of the Fuel Substitution Working Group

SoCalGas appreciates the new recommendation for agencies, utilities and stakeholders to work together in evaluating fuel substitution with renewable gas and meeting the State’s Short-Lived Climate Pollution (SLCP) reduction goals. As stated in our previous comments, SoCalGas agrees that this is an important step in ensuring that electrification of natural gas end-uses does not preclude adoption of other lower carbon energy sources and decelerate achievement of the State’s climate goals. SoCalGas would like to be included in this working group and can provide input on utilizing renewable gas in the residential sector.⁵

II. Chapter 7: Transportation Energy

² Proposed Final 2017 IEPR, p. 64.

³ See applications of Southern California Edison Company (A.17-01-013), San Diego Gas & Electric Company (A.17-01-014), Pacific Gas and Electric Company (A.17-01-015), and Southern California Gas Company (A.17-01-016) for adoption of its Energy Efficiency Rolling Portfolio Business Plans.

⁴ As an example, intervention strategies proposed by the Southern California Regional Energy Network can be found at https://docs.wixstatic.com/ugd/0c9650_c3d9a5b446704389bdf9cd0db785dc7.pdf, pp. 9-13.

⁵ SoCalGas comments on 2017 Draft IEPR, November 13, 2017.

The Proposed Final 2017 IEPR states “To meet federal clean air standards, reduce overall GHGs, and reduce petroleum dependence within California, the state must clean up the transportation sector. One way to accomplish this is to electrify transportation, and many rules, regulations, policies, and programs throughout the state are focused on vehicle electrification.”⁶

SB 350 and California Public Utilities Code section 740.12(a)(1)(A) state that “Advanced clean vehicles and fuels are needed to reduce petroleum use, to meet air quality standards, to improve public health, and to achieve greenhouse gas emissions reduction goals”. Further, 740.12(a)(1)(C) states that the increased use of both zero emission and near-zero emission vehicles, in disadvantaged communities is necessary to “enhance air quality, lower greenhouse gas emissions, and promote overall benefits to those communities.” As the majority of transportation GHGs come from light-duty vehicles⁷, electrification of the light-duty transportation sector is an important strategy to achieving GHG reductions. However, as heavy-duty vehicles are the greatest contributors to NOx and air pollution in California’s most impacted air basins, combining renewable gas with low- and ultra-low-NOx engines provides the best opportunity for California to achieve its air quality and climate change goals in the on-road heavy-duty transportation sectors in the near term⁸.

Since *both* zero emission and near-zero emission vehicles provide public health and societal benefits, increasing access to multiple technologies and fuels in disadvantaged communities is desirable and required under SB 350. Therefore, SoCalGas recommends the following modification:

“To meet federal clean air standards, reduce overall GHGs, and reduce petroleum dependence within California, the state must clean up the transportation sector. One way to accomplish this is to **encourage the use of advanced clean vehicles and fuels** ~~electrify transportation~~, and many rules, regulations, policies, and programs throughout the state are focused on **advanced clean vehicles and fuels** ~~electrification~~.”

Page 256 states “This expansion is in line with [California Air Resources Board’s (CARB)] Innovative Clean Transit goal of transitioning all transit buses to zero-emission technologies by 2040. This assumption is justified on the basis of battery-electric buses being cost-competitive with diesel electric buses, capital costs for transit being borne largely by federal grants, and the reduced costs of fuel and maintenance.”

SoCalGas recommends the text be modified as follows:

⁶ Proposed Final 2017 IEPR, p. 255.

⁷ Light-duty vehicles accounted for approximately 70% of transportation emissions in 2014
https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf

⁸ https://www.gladstein.org/gna_whitepapers/game-changer-next-generation-heavy-duty-natural-gas-engines-fueled-by-renewable-natural-gas/

“This expansion is in line with CARB’s **proposed** Innovative Clean Transit goal of transitioning all transit buses to zero-emission technologies by 2040. This assumption is **based on CARB staff’s position** that ~~justified on the basis of~~ battery-electric buses are ~~being~~ cost-competitive with diesel electric buses, capital costs for transit being borne largely by federal grants, and the reduced costs of fuel and maintenance.”

We believe it is important to note that many stakeholders in the Innovative Clean Transit (ICT) workshops disagree with the CARB staff’s position and believe mandating the use of electric buses in lieu of other alternate fuels and technologies will be extremely expensive. Notably, the California Transit Association recently published their concerns regarding the high cost and adverse operational impacts of electric buses.⁹

III. Chapter 8: Natural Gas Trends and Outlook

SoCalGas appreciates the CEC’s consideration of our previous comments relating to the Pipeline Safety & Reliability Project (PSRP). SoCalGas requests the following clarifications relating to the description of this proposed project.

SoCalGas and SDG&E have proposed PSRP to: 1) enhance the safety of their integrated natural gas transmission system and comply with State safety mandates, 2) improve the reliability and resiliency of the natural gas system within San Diego County, and 3) enhance operational flexibility to manage stress conditions by increasing local capacity in the San Diego region.

The proposed project would construct a new approximately 47-mile long, 36-inch diameter natural gas transmission pipeline from the existing Rainbow Metering Station, where SoCalGas and SDG&E also propose a new pressure-limiting station, and terminate on Marine Corps Air Station Miramar. The new pipeline would replace the transmission function of existing Line 1600 and allow it to be converted to distribution service. SoCalGas and SDG&E do not propose pressure testing Line 1600 and instead propose to de-rate—or lower the pressure of—Line 1600. Replacing Line 1600’s transmission function and operating Line 1600 at a lower pressure achieves a greater margin of safety.

The new pipeline would also enhance the resiliency, reliability, and operational flexibility of SoCalGas and SDG&E’s system by increasing local capacity in the San Diego region, which would allow SDG&E to handle intra-day fluctuations in electric generation demand. This is particularly important as new fast-ramping natural gas-fired electric generation comes online in San Diego County.

SoCalGas therefore requests revising page 260 of the clean version of the Final 2017 IEPR as follows:

⁹ <http://caltransit.org/news-publications/our-newsroom/press-releases/setting-the-record-straight-on-bus-electrification/>

California’s existing combination of pipeline capacity and underground gas storage appears adequate to meet forecast natural gas demand and no general increase in capacity is proposed. SoCalGas and SDG&E, ~~however~~, have an application before the CPUC seeking permission to build a new 47-mile pipeline which will provide several benefits to the San Diego region, including an increase in local system capacity. The proposed pipeline would transport natural gas from the existing Rainbow Pressure Limiting Metering Station at the Riverside/San Diego County line, south to the Marine Corps Air Station Miramar in San Diego. The proposed pipeline would replace the existing transmission function of existing Line 1600, which, under this proposal, would be de-rated, or lowered in pressure, converted to serve as a distribution line. The new line ~~would allow safety testing and de-rating of the existing~~ Line 1600 and would provide a measure of redundancy and additional safety and reliability for gas service into San Diego.

The Proposed Final 2017 IEPR also mischaracterizes the status of SoCalGas’ Aliso Canyon storage field. The Proposed Final IEPR states, “As a result of the leak, Senate Bill 380 (Pavley, Chapter, 14, Statutes of 2016) (SB 380) and DOGGR imposed a moratorium on injections at Aliso Canyon until SoCalGas complies with regulations and meets certain conditions.”¹⁰ On July 19, 2017, the CPUC and DOGGR confirmed that SoCalGas had met the requirements of the comprehensive safety review and could resume injections after several checks and activities were completed. On July 31, 2017, SoCalGas resumed injection operations at Aliso Canyon. SoCalGas requests that this CEC include this clarification in the report before finalizing the 2017 IEPR.

Finally, the Proposed Final 2017 IEPR simplifies the cause of the price impacts in Southern California: “The Energy Commission views this volatility as being caused by the pipeline outages and not by the reduced operating status Aliso Canyon.”¹¹ SoCalGas operates an integrated system that relies on storage, transmission, and distribution assets to reliably serve our customers. The loss of any of these assets impacts reliability and could impact price volatility. The price volatility seen this winter is impacted by both events, but is primarily driven by CPUC-imposed restrictions on Aliso Canyon, which restricts and limits a strategically located source of natural gas supply that provides sufficient system resiliency to support the system when pipeline outages occur.

IV. Chapter 9: Renewable Gas

Corrections to Power-to-Gas and Hydrogen Statements

¹⁰ Proposed Final 2017 IEPR, p. 262.

¹¹ Ibid., p. 250.

SoCalGas appreciates the addition of power-to-gas in the recommendations for Chapters 3 and 9. However, we are concerned with a few incorrect statements made about power-to-gas in the Pipeline Injection section.

The Proposed Final 2017 IEPR references “the one operational project at the University of California, Irvine, (UC Irvine) that injects 0.24–0.78 percent hydrogen gas by volume into a SoCalGas natural gas pipeline.”¹² For accuracy, we recommend editing this sentence to state that the injection occurs on UC Irvine’s natural gas line, not a SoCalGas pipeline.

The Proposed Final 2017 IEPR states, “5 percent hydrogen concentration will accelerate fatigue crack growth in steel pipes, conservatively requiring pipelines to be repaired or replaced every 80 years, as opposed to 100 or more years.”¹³ However, this is not consistent with research findings. The research report states (emphasis added):

“Parametric studies on the initial crack depth were conducted to find the maximum crack depth after 100 years under the given pressure fluctuations in hydrogen and in natural gas (assumed to be the same as that in air). **The results showed that axial cracks in X42 line pipes with an initial depth smaller than 40% of the wall thickness do not reach depths equal to 75% of the thickness over a period of 100 years.** For X52, X56, X60, and X65, the corresponding initial crack depth of 50% of the wall thickness **never leads to depths equal to 75% of the thickness over a period of 100 years.**”¹⁴

Thus, for the existing pipeline materials and pressure fluctuations investigated, pipeline lifetimes of greater than 100 years can be expected for complete substitution of hydrogen (100% hydrogen) when the initial depth of cracks in these pipelines is 50% through or less.

The apparent “80 year” limit that was found by IEPR authors may have been garnered from Figure 26 of the report. Note that this failure shown in Figure 26, however, occurred in one of the simulations for a case of 100% hydrogen in a pipeline with an initial crack depth of 53% through.

The CEC Must Make Stronger Recommendations for the Development and Use of Renewable Gas

SoCalGas reiterates our previous concerns with the lack of sufficient recommendations on increasing the development and use of renewable gas, particularly with respect to infrastructure development and procurement policies. Without specific policies that prioritize and support in-

¹² Ibid., p. 344.

¹³ Ibid., pp. 344-345.

¹⁴ M. Dadfarnia and P. Sofronis, Assessment of Resistance of Line Pipe Steels to Hydrogen Embrittlement, November 29, 2016, p. 14.

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&ved=0ahUKEwi0gZyggd3YAhWvmuAKHRHhCCAQFgg0MAI&url=http%3A%2F%2Fwww.apep.uci.edu%2Fdownload01%2FPower-to-Gas%2FFinal_Report_SoCalGas_Project_UIUC.doc&usg=AOvVaw1mrQ4W1bu7KFISGedK_qDP

state development of pipeline-injected renewable gas, California will not meet the goal of 40% reduction of methane below 2013 levels by 2030. It is well documented that the largest methane emissions in California come from the agricultural and waste sectors.¹⁵ Capturing these emissions will be integral to lowering methane emissions in California in a reasonable and economic way.¹⁶ The existing natural gas infrastructure provides a solution by transporting renewable natural gas over existing transmission and distribution infrastructure. These efforts would have the added benefit of promoting economic development in these areas and energy reliability in California by developing new renewable energy sources.

The CEC should include pipeline injection for direct end-use as an explicit recommendation for the long-term use of renewable gas. Using the pipeline system will provide this resource access to the broadest market, enabling greater flexibility and maintaining long-term value.

Additionally, SoCalGas believes that market stability through a utility procurement requirement will be necessary to increase production, drive down costs over time, develop new gasification and other renewable gas technologies, and provide the volumes necessary to move renewable gas to the core market. This will drive greater GHG reductions without the massive disruption and investment that would be required for individual customers to replace existing equipment and appliances. SoCalGas also recommends that the CEC support facilitating long-term supply contracts, which would enable capital financing of long-term production projects and provide further market certainty for the renewable gas market.

V. Chapter 10: Climate Adaptation and Resiliency

In the Proposed Final 2017 IEPR, the following comment from SoCalGas is incorrectly attributed to our sister company, SDG&E: “In order for climate plans to be effective, every region of California must be considered and engaged. Specifically, SoCalGas wants to be involved in establishing a California Partnership for Energy Sector Climate Resilience and convening a joint-agency workshop on climate resilience metrics to help track California’s action and successes.”¹⁷ This quote is from our comment letter on the Draft 2017 IEPR.¹⁸ We welcome the support from the CEC and look forward to participating in the Partnership for Energy Sector Climate Resilience.

VI. Chapter 11: Update on Energy Reliability Issues in Southern California

¹⁵ Proposed Final 2017 IEPR, p. 279 (See also <https://www.arb.ca.gov/board/books/2017/092817/17-9-5pres.pdf>).

¹⁶ See October 2, 2017, Introduction to the Phase I Report of the California Methane Survey from the Staff of the California Air Resources Board (CARB), available at https://www.arb.ca.gov/research/methane/CA_CH4_Survey_Phase1_Report_2017.pdf.

¹⁷ Proposed Final 2017 IEPR, p. 404.

¹⁸ SoCalGas Comments on the Draft 2017 Integrated Energy Policy Report. November 13, 2017.

Southern California Customers Deserve Mitigation Measures That Are Targeted and Reasonable, and Will Not Unnecessarily Impact SoCalGas Customers and Customer Choice

SoCalGas agrees that warmer and milder than expected weather conditions this winter have significantly contributed to SoCalGas avoiding the need to withdraw the quantities of gas it would during a normal (or cold) winter.¹⁹ Other parts of the United States have not been so fortunate. In fact, extreme conditions east of California have restricted supplies and caused prices in certain areas to significantly increase.²⁰

Although the unusually warm weather conditions in California have helped mitigate some concerns regarding reliability this winter, SoCalGas remains concerned about the potential for colder temperatures later in the season, especially considering the current limitations on the system. This risk is especially true in the Santa Barbara County area, where Southern California continues to manage the aftereffects of the recent wildfires and mudslides.

California deserves mitigation measures to these risks that are targeted and reasonable, and that will not unnecessarily impact SoCalGas customers and customer choice. The CEC's and CPUC's recommendation of an emergency moratorium on new natural gas connections in Los Angeles County is not a targeted or reasonable mitigation measure.²¹

When the CPUC issued a proposal to direct SoCalGas to implement such a moratorium on new commercial and industrial customer natural gas connections in Los Angeles County,²² SoCalGas requested that the CPUC reject the draft resolution because it is unreasonable, unnecessary, contrary to the public interest, and inconsistent with established curtailment rules, priority of service, and applicable CPUC decisions.²³ Numerous other parties²⁴ opposed the CPUC's proposal, and highlighted the harm that would be done to the economy if the moratorium were implemented. The Los Angeles County Economic Development Corporation's (LAEDC) Institute for Applied Economics examined the potential economic implications of the proposed moratorium, including the direct, indirect, and induced employment impacts within Los Angeles County. LAEDC determined that, if implemented, the emergency moratorium would have the following estimated economic and job impacts over its proposed duration (January 11th through March 2018):

- 5,160 fewer total jobs would be created

¹⁹ Proposed Final 2017 IEPR, p. 377.

²⁰ See <http://www.naturalgasintel.com/articles/112957-natgas-spot-hits-record-175mmbtu-at-transco-z6-ny-amid-noreaster-midday-alert>.

²¹ Proposed Final 2017 IEPR, p. 378.

²² See CPUC Draft Resolution G-3536.

²³ SoCalGas Comments on CPUC Draft Resolution G-3536.

²⁴ Los Angeles County, American Gas Association, LA County Business Community Coalition, Bloom Energy, California Manufacturers and Technology Association, Biz Fed LA County, PTG Water & Energy, Californians for Affordable and Reliable Energy, California Council for Environmental and Economic Balance, Clean Energy, and Honeybird Restaurant.

- \$879.5 million lost in future economic output
- \$323.9 million lost in future labor earnings
- \$119.7 million lost in future federal, state and local tax revenues, of which \$13.3 million and \$5.8 million will be lost in tax revenues to Los Angeles County and local cities, respectively²⁵

This demonstrates the importance of natural gas to the economy and the need for investment in and use of natural gas infrastructure to support California. California policymakers must support the maintenance of a safe and reliable natural gas system, promote a healthy California economy, and continue towards its environmental and air quality goals, which natural gas and renewable gas can help support.

Aliso Canyon Is an Important Part of California’ Energy System

As acknowledged by the Proposed Final 2017 IEPR: “The Aliso Canyon natural gas storage facility has been an important tool for managing natural gas supply for electric generation (particularly in summer when air-conditioning use is high) and home heating use (in the winter).”²⁶ Aliso Canyon has been instrumental in supporting an affordable, reliable, and resilient energy system; enabling the integration of renewable resources; and in promoting a healthy and functioning economy.

Despite this, much of the Proposed Final IEPR seems colored by efforts to achieve the permanent closure of the Aliso Canyon facility within 10 years.²⁷ The goal of closing Aliso Canyon was first announced in July 2017, when Chair Weisenmiller announced that the CEC plans to work with other agencies to plan for the permanent closure of the Aliso Canyon natural gas storage facility within 10 years.²⁸ SoCalGas continues to disagree with the CEC’s recommendation to permanently close Aliso Canyon within ten years, and recent analysis validates the importance of underground storage to energy reliability.

As acknowledged in Chair Weisenmiller’s announcement, the Governor called for the California Council of Science and Technology (CCST) to prepare an independent and scientific assessment of the long-term viability of all natural gas storage facilities in California, and this assessment “will inform how the state will rethink all natural gas storage facilities in California.”²⁹ That independent assessment should cause the CEC to reconsider how it views natural gas storage

²⁵ See <https://laedc.org/2018/01/09/proposed-gas-moratorium-warrants-further-study/>.

²⁶ Proposed Final 2017 IEPR, p. 24.

²⁷ Ibid., p. 373 (“The report also raised the possibility of curtailing noncore customers to preserve storage inventory and withdrawal capacity needed for core customers. SoCalGas further reiterated its top mitigation measure is to operate Aliso Canyon unrestricted in the same manner it did before the gas rupture and historic leak in 2015. Doing so, however, would be inconsistent with the long-term policy goals of reducing California’s reliance on methane and closing Aliso Canyon in 10 years.”).

²⁸ Ibid., p. 140.

²⁹ See

http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/News_Room/News_and_Updates/2017-07-19-energy-commission-chair-releases-letter-ailso-canyon_nr.pdf (emphasis added).

facilities in the state, including Aliso Canyon – a facility that, before the current restrictions imposed by the CPUC, accounted for approximately 23% of the natural gas storage inventory in California and 64% in Southern California.

The CCST report was created by having numerous scientific experts and research institutions consult with the CPUC, CEC, CARB, and the Division of Oil, Gas, and Geothermal Resources (DOGGR). Consistent with its legislative mandate, the CCST report includes a broad review of the potential health risks and community impacts associated with the operation of underground natural gas storage facilities, including fugitive emissions. The report also examines the linkages between gas storage, California’s current and future energy needs, and its greenhouse gas reduction goals.

The CCST report ultimately determines that California needs natural gas and underground natural gas storage to run reliably, and that without such storage, California would be unable to consistently meet winter demand for natural gas.³⁰ In fact, the CCST report assessed the need for natural gas in the near- (2020), mid- (2030), and long-term (2050), and determined:

- “In the near term, no method of conserving or supplying electricity—including electricity storage (batteries, pumped hydroelectric, compressed air storage, etc.), new transmission, energy efficiency measures, and demand response—can replace the need for gas to meet the winter peak in the 2020 timeframe.”³¹
- “We could not identify a technical alternative gas supply system that would meet the 11.8 Bcfd extreme weather peak day demand forecast and allow California to eliminate all underground gas storage by 2020.”³²
- “Two possible longer-range physical solutions are extremely expensive, carry their own risks, and would incur barriers to siting. The potential benefits of other approaches that were examined are either small, cannot be estimated at this time, or have negative impacts such as dramatic increase in air toxins and greenhouse gas emissions. No ‘silver bullet’ can replace underground gas storage in the 2020 timeframe.”³³
- “The total amount of underground gas storage needed is unlikely to change by 2030.”³⁴
- “California’s climate change policies for 2030 are likely to reduce total gas in California, however, they are also likely to require significant ramping in our natural gas generation to maintain reliability.”³⁵
- “California has not yet targeted a future energy system that would meet California’s 2050 climate goals and provide energy reliability in all sectors. California will likely rely on

³⁰ Long-Term Viability of Underground Natural Gas Storage in California Summary Report, p. 9 (Conclusion SR-2); Long-Term Viability of Underground Natural Gas Storage in California, p. 496 (Conclusion 2.1).

³¹ Ibid., p. 547 (Conclusion 2.15).

³² Ibid., p. 562 (Conclusion 2.16).

³³ Ibid., p. 562 (Conclusion 2.16).

³⁴ Ibid., p. 649 (Conclusion 3.9).

³⁵ Ibid., p. 649 (Conclusion 3.8).

underground gas storage for the next few decades as these complex issues are worked out.”³⁶

As SoCalGas has stated on numerous occasions, the need for flexible and strategically located supply sources will only increase as more renewables are brought online. California needs more flexibility on the energy system, not less. Consistent with the CCST report, it is important for the State to recognize the crucial role of natural gas in reaching our climate policy goals.

SoCalGas agrees with the CCST report that underground natural gas storage could increasingly be called upon to provide natural gas and electric reliability during emergencies caused by extreme weather and wildfires, which is expected to only increase with climate change.³⁷ This is evidenced by the recent wildfires and mudslides in the Santa Barbara County area, and the consequences of those events being mitigated by underground natural gas storage.

In addition, the CCST report addresses potential health and safety risks associated with underground natural gas storage, concluding that associated potential risks can be mitigated and managed.³⁸ Here, too, SoCalGas agrees, and has already introduced industry-leading safety practices that state regulators and independent experts have referred to as the most comprehensive in the nation.

Further, the CCST report notes that the natural gas pipeline system and related infrastructure could continue to be a useful energy resource for the state for decades to come. For example, the state’s underground natural gas storage facilities may be important resources for long-term storage of renewable gas, renewable hydrogen, and carbon dioxide related to carbon capture and sequestration.³⁹

The CEC’s formal statements that Aliso Canyon should be closed in ten years should be reconsidered based on the findings of the CCST report – which included consulting with the CEC. Public policy must be guided by technical analysis performed by independent experts and research institutions. The CEC should revise its policy goals consistent with the CCST report.

The Future of Aliso Canyon is the Subject of an Ongoing CPUC Proceeding

As the CEC is aware, the CPUC is already examining the future of Aliso Canyon through the proceeding it opened pursuant to SB 380 (I.17-02-002). In reaching a final determination in that proceeding, SB 380 (Chapter 14, Statutes of 2016) requires that multiple stakeholders and “relevant government entities” must be consulted. In I.17-02-002, the CPUC will consider the results of the CCST’s report on the long-term viability of underground natural gas storage in California,⁴⁰ in order to determine whether the CPUC should reduce or eliminate the use of the Aliso Canyon.⁴¹

³⁶ Ibid., p. 664 (Conclusion 3.12).

³⁷ Ibid., p. 506 (Conclusion 2.5).

³⁸ Long-Term Viability of Underground Natural Gas Storage in California Summary Report, p. 8 (Conclusion SR-1)

³⁹ Ibid., pp. 66-78 (Conclusion SR-3)

⁴⁰ See http://ccst.us/projects/natural_gas_storage/publications.php.

⁴¹ I.17-02-002 Scoping Memo.

The CEC’s formal statements that Aliso Canyon should be closed in ten years is not based on fact, but rather on policy, and undermines due process afforded to all parties in the CPUC’s open proceeding. SoCalGas suggest that the appropriate regulatory process be permitted to complete before the CEC recommends any plan for closure of Aliso Canyon. It is necessary that policy be guided by technical analysis such as the CCST report, especially when assessing the energy needs of a region as large and as diverse as Southern California, which will occur through the completion of I.17-02-002.

Corrections to Aliso Canyon Statements

The Proposed Final 2017 IEPR mischaracterizes SoCalGas’ position on mitigation measures, incorrectly stating that SoCalGas believes the “top mitigation measure is to operate Aliso Canyon unrestricted in the same manner [as] before the gas rupture and historic leak in 2015.”⁴² SoCalGas does not believe the safety and operational enhancements in place at Aliso Canyon—including the tubing-flow only configuration and real-time pressure monitoring of all wells, among others—should be removed as a means to return the field to an “unrestricted” status. We do believe that lifting the restrictions on when natural gas may be withdrawn from Aliso Canyon to support energy reliability would reduce the risk of curtailment in the current winter season. As was stated in our reply comments to the Winter Risk Assessment Technical Report Supplement (emphasis added): “If Aliso Canyon was authorized to resume normal operation, consistent with state and federal regulations, and at the inventory levels deemed safe by the Division of Oil, Gas and Geothermal Resources (DOGGR), Aliso Canyon would be able to reduce the curtailment risk identified in the 2017-18 Supplement.”⁴³

The Proposed Final 2017 IEPR also contains incorrect statements regarding current Aliso Canyon proceedings. It states, “Aliso Canyon continues to be the subject of multiple proceedings – each addressing different aspects of the issue – ranging from a root cause analysis, whether to allow reinjection (and when), to the long-term future of the facility.”⁴⁴ As mentioned above, on July 19, 2017, the CPUC and DOGGR authorized reinjection operations at Aliso Canyon. Consequently, there is no ongoing proceeding related to reinjection at Aliso Canyon. Further, although the root cause analysis of the October 23, 2015 incident is ongoing, the CPUC has yet to initiate a proceeding related to this issue.

Additionally, the Proposed Final 2017 IEPR states that “On October 1, 2017, SoCalGas suffered a rupture of Line 235-2 near the Newberry compressor station, which also damaged Line 4000 nearby”⁴⁵ and “As a result of the rupture on Line 235-2 and damage to Line 4000, an additional 800 MMcfd was suddenly out of service, reducing deliveries to North Needles receipt point to 0

⁴² Proposed Final 2017 IEPR, p. 415.

⁴³ SoCalGas Comments on Aliso Canyon Winter Risk Assessment Technical Report 2017-18 Supplement, December 5, 2017 (emphasis added).

⁴⁴ Proposed Final 2017 IEPR, p. 364.

⁴⁵ Proposed Final 2017 IEPR, p. 372.

on top of Toprock receipt point being 0 capacity.”⁴⁶ This is inaccurate: the remediation work for Line 4000 was not due to the rupture on Line 235-2.

SoCalGas requests that the CEC correct these statements before finalizing the 2017 IEPR.

Conclusion

SoCalGas strongly believes that a diverse energy portfolio which includes multiple fuels and technologies is needed to ensure that energy is affordable for all Californians, the infrastructure is resilient to increasing extreme climate change events, and the economic vitality of the State is not jeopardized from relying on a single energy pathway.

SoCalGas appreciates the CEC’s consideration of these comments for the 2017 IEPR and looks forward to continuing to work on advancing California’s energy policy goals and objectives.

Sincerely,

George I. Minter
Regional Vice President
External Affairs & Environmental Strategy

⁴⁶ Ibid.



Leila Namvar
 Assistant Planner
 Development Services Department - Planning
 City of Indio
 100 Civic Center Mall
 Indio, CA 92201

RE: INDIO GENERAL PLAN UPDATE

Dear Ms. Namvar,

Southern California Gas Company (SoCalGas) is one of California's investor-owned utilities regulated by the California Public Utilities Commission. We are the nation's largest natural gas distribution utility in providing energy to 20.9 million consumers throughout 500 communities. SoCalGas' service territory encompasses approximately 20,000 square miles in diverse terrain throughout Central and Southern California.

SoCalGas appreciates the opportunity to submit comments on the City of Indio's General Plan Update. These comments have been composed pertaining to the recommendations listed under the Key Issues Report that focuses on key public health, energy sustainability and transportation concerns and issues that will play a prominent role in the city's future adaptation and development strategies.

The comments provided regard the following subject matter:

- Technology neutrality
- Mobility/Conservation Sustainability
- Natural gas technologies

Technology Neutrality

SoCalGas believes that natural gas is an important energy resource for California as it provides a low cost, efficient and reliable source of clean energy. As future natural gas prices are expected to stay reasonably low with widespread supply availability, it is likely natural gas will be a foundation for new energy pathways that will not only deliver energy with virtually near zero emissions but do so more cost-effectively than relying only on electric technologies. SoCalGas recommends that the City of Indio maintain *technology-neutral* both in mindset in the language of their updated General Plan to recommend **both** zero and near-zero emission technologies among their strategies and policies.

Mobility

As the Mobility section of the Key Issues document identifies "diesel-exhaust particulate matter from heavy...trucks on heavily traveled roadways" as a "potential hazard to residents located close to heavily traveled roadways," encouraging the use of alternative-fuel vehicles for mass transit options through these roadways can greatly reduce these emissions. SoCalGas is currently engaging with SCAG in the development of their 2040 Regional Transportation Plan/Sustainable Communities Strategy to support

development of near-zero and zero emissions vehicles and technologies to help attain near-term emission reduction goals. The use of compressed natural gas (CNG) buses and heavy duty trucks that surpass the EPA's NOx and Particulate Matter air quality standards are but one example with great potential to improve air quality in heavily trafficked regions. As the recommendations listed in the Key Issues Report suggest plans to "work with SunLine Transit Agency, Amtrak, Metrolink, CVAG and SCAG to maintain and enhance transit services in the City so they are efficient, cost-effective and responsive to growth and redevelopment," SoCalGas recommends encouraging such collaboration to prioritize use of low-emission fuel technology to help address the growing public health risk from vehicle air pollution. Here, the use of natural-gas proves an economically and environmentally preferable alternative to continuing diesel fuel-use for mobility purposes.

Conservation Sustainability

The Conservation/Environmental Sustainability section of the Key Issues Report identifies the suggestion to "conserve energy/utilize renewable energy resources (solar panels, controlled water meters, insulated walls, wind turbines, electric cars" as a means to support a greener environment throughout the city. As mentioned, natural gas as an energy and/or fuel source produces considerably lower emissions when compared with diesel. This is especially important regarding technologies for which electrification is either not a readily economically feasible option or has a long timeline projection for development. Such is the case, currently, for heavy-duty vehicles, buses and rail. However, natural gas has proven extremely successful as a low-emission fuel for these uses. SoCalGas recommends including language that advocates increased use of "alternative fuel vehicles" and related infrastructure alongside recommendations that support other low emission technologies. For example, "Introducing natural gas fueling stations" should be acknowledged alongside interests for increasing electric charging.

Natural Gas Technologies

SoCalGas believes that there are important pathways utilizing natural gas including renewable natural gas that achieve both criteria and greenhouse gas pollution reductions faster and more economically than just "decarbonizing" electric generation. SoCalGas is focused on "decarbonizing the pipeline".

Renewable natural gas, or biomethane, can be produced from agricultural waste, waste water and landfills, and then upgraded to delivery in our pipelines. It may be used for electric generation and as a transportation fuel. Unlike other sources of renewable energy—such as solar and wind—biomethane doesn't need the sun to shine or the wind to blow. Waste materials can be converted into deliverable, renewable energy that is available around the clock. The energy produced when biomethane fuels electric generation is considered renewable similar to solar and wind and can be counted towards California's Renewable Portfolio Standards. When used as a transportation fuel, biomethane has one of the lowest carbon intensities of all transportation fuels.

Regarding energy storage, projects are being developed in which surplus electricity is used to power electrolyzers that will split water into its component parts, with the hydrogen being directly injected into natural gas pipelines for storage. The technology is known as Power-to-Gas and is currently being utilized throughout Europe in countries that have heavily incentivized solar and wind energy and have been working on solutions to over-generation. Incorporating renewable hydrogen into our pipelines, as well as combining the hydrogen with a carbon source (such as a nearby power plant) to create synthetic methane, are additional strategies SoCalGas is engaging in to decarbonize our pipeline. SoCalGas recommends incorporating language into the final General Plan that will allow for such technologies to be used for both energy and public health purposes.

Conclusion

Looking forward, natural gas will continue to play an important role in electric generation, not just for baseload central power plants, but also for flexible and appropriately scaled natural gas peaking technologies that balance the intermittency of renewables, help integrate them into the grid, and grow the state's renewable generation portfolio over the long term. Decarbonizing our natural gas delivery systems keeps intact the inherent energy efficiencies of direct uses of natural gas, at lower-carbon content—without creating the dramatic increase in electric demand and cost which makes decarbonizing electric generation a challenge.

SoCalGas appreciates your consideration of these comments and your willingness to meet with use to further discuss issues raised in this letter. Thank you and if you have any questions, please do not hesitate to contact me by telephone or email.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Danker', with a long horizontal line extending to the right.

Geoffrey Danker, AICP
Senior Policy & Planning Advisor
Southern California Gas Company



Geoffrey Danker, AICP
Senior Policy & Planning Advisor

555 W. Fifth Street, GCT 17E5
Los Angeles, CA 90013

Email: gdanker@semprautilities.com

Troy Clark, General Plan Administrator
City of Redlands
Development Service Department
35 Cajon St.
P.O. Box 3005
Redlands, Ca 92373

RE: CITY OF REDLANDS DRAFT SUSTAINABLE COMMUNITY ELEMENT

Dear Mr. Clark,

Southern California Gas Company (SoCalGas) is one of California’s investor-owned utilities regulated by the California Public Utilities Commission. We are the nation’s largest natural gas distribution utility, providing energy to 20.9 million consumers throughout 500 communities. SoCalGas’ service territory encompasses approximately 20,000 square miles in diverse terrain throughout Central and Southern California.

SoCalGas appreciates the opportunity to submit comments on the Draft Sustainable Community Element of the City of Redlands’ General Plan Update. These comments have been composed pertaining to the Policies and Actions depicted in the Draft, with particular attention to Sections 8.1 and 8.3.

The comments provided regard the following topics:

- Renewable Natural Gas;
- Energy Resilience

1. Renewable Natural Gas

SoCalGas believes that there are important pathways utilizing natural gas, including renewable natural gas, that achieve both criteria and greenhouse gas pollution reductions faster and more economically than just “decarbonizing” electric generation. SoCalGas is focused on “decarbonizing the pipeline.”

SoCalGas supports the language in Principle 8-P.1 in Section 8.1 stating that the city will work to “promote energy efficiency and conservation technologies and practices that reduce the use and dependency of nonrenewable resources of energy by both City government and the community.” However, the associated Actions of this section seem to favor consideration of only zero-emission technologies, “such as hydroelectricity, geothermal, solar and wind power, to meet the community’s needs” as stated in Action 8-A.4. The same can be said for Action 8-A.5 that seems to primarily advocate adoption of solar power technologies as a solution to increase energy efficiency and conservation. While it’s true that wind and solar power are forms of sustainable energy sources, these particular actions should also include mention of other near-zero emission technologies that are sustainable and are even considered renewable. Specifically, Actions 8-A.4 and 8-A.5 should include consideration of bioenergy resources as sustainable sources of energy, such as biogas and biomethane (i.e. renewable natural gas), which are important sources of carbon neutral, renewable energy.

Unlike other sources of renewable energy—such as solar and wind—biomethane doesn’t need the sun to shine or the wind to blow. Waste materials, from landfills, dairies, or wastewater treatment, can be converted into deliverable, renewable energy that is available around the clock. The energy produced when biomethane fuels electric generation is considered renewable similar to solar and wind and can be counted towards California’s Renewable Portfolio Standards. When used as a transportation fuel, biomethane has one of the lowest carbon

intensities of all transportation fuels, which is salient to the goals of Action 8-A.7 that seek alternate, renewable fuel resources for transportation.

To this end, we believe renewable natural gas can be seen as a renewable energy source that aligns with the goals described in Principle 8-P.1. Not only is it a sustainable energy source—as it is generated using diverted waste materials—but it is also cost effective as it can be directly injected into existing pipeline infrastructure, thereby reducing emissions and increasing energy efficiency.

In the same regard, use of renewable natural gas aligns with the actions stipulated in Section 8.3 of the Element, as well. Action 8-A.29 promotes the development of programs to “divert food waste and other biodegradable waste to composting facilities,” as opposed to landfill disposal. As mentioned previously, renewable natural gas can be made from these materials. When this waste biodegrades it produces biogas which can be captured and refined into biomethane and then directly injected into natural gas pipeline for immediate use. Renewable natural gas, therefore, could be actively produced in waste diversion programs, which in itself can be seen as a “creative new opportunity to use solid waste as a resource” as promoted in Action 8-A.34.

For these reasons, SoCalGas requests that renewable natural gas be included as a sustainable energy source to be supported along with solar in the Actions detailed in Section 8.1.

2. Energy Resilience

SoCalGas feels there is an additional consideration that should be taken into account regarding the principles and actions outlined in the Sustainable Communities Element. As a means to help mitigate future damage from growing climate change impacts, Senate Bill 379, adopted October 2015, requires cities and counties to now incorporate climate adaptation and resiliency strategies applicable to their localities into any updates to their general plans. As one of the most cited definitions for “sustainable” development describes it as being able to sufficiently and equitably meet the needs of both present and future generationsⁱ, it can be reasoned that energy system resiliency plays an integral role in achieving truly “sustainable communities.” Here, increasing and/or expanding the use of distributed energy generation (DER) technologies can substantially benefit resiliency strategies. Further increased energy system resilience can help reduce total costs from potential damage of future climate impacts.

Current well-known DER technologies include renewable energy sources such as solar and wind, which can serve as sources of local power and allow communities or residents to separate themselves from the grid, largely helping to increase the resiliency of local energy systems. However, near-zero natural gas technologies are also key players in DER technology, and can help increase energy system resiliency more than solely electric sources. Specifically, combined heat and power (CHP) can serve as a form of onsite DER technology to help isolate cities and communities from volatility of the electric grid as well as help diversify their energy mix, thereby increasing local energy security. CHP technologies powered by microturbines can allow a business or other building, such as a hospital to generate its own electricity *and* heating. In the case of climate events that damage electric infrastructure, having an alternate source of energy such as DER can help cities and communities avoid impacts from power outages as these technologies are black start and islandable – they don’t rely on the electricity grid to operate.

It should be noted that there is a substantial divergence in relative risk to electric infrastructure versus the natural gas system from impacts due to climate events. While electric infrastructure is largely aboveground with considerable exposure to events such as wildfire, sea level rise, high winds and storms, the natural gas system is inherently more resilient as a large majority of its infrastructure is underground.

Further, according to the California Energy Commission staff paper on Potential Impacts of Climate Change on California’s Energy Infrastructure and Identification Further, according to the California Energy Commission staff paper on Potential Impacts of Climate Change on California’s Energy Infrastructure and Identification of Adaptation Measures (Staff Paper)ⁱⁱ, “Climate change appears to have little impact on natural gas availability since most of the supply comes from basins located in Alberta, the Rockies, and the Southwestern United States.” With this, DER technologies connected to the natural gas system, like CHP systems, natural gas microturbines

and fuels cells, can help manage electricity use and enhance the resiliency of a city's or county's energy system. Not only can CHP provide energy with a very low overall emissions profile, but it is also an islandable, black start technology that can provide clean energy separate from the grid – all the while being less exposed to climate risks compared to other DER technologies like solar and wind.

With this, natural gas DER technologies can not only help increase resiliency of local energy systems, but also reduce total costs of damage to energy infrastructure in during climate events. This dual benefit is more difficult to replicate with electric infrastructure. From a life-cycle perspective, therefore, cost-benefit analysis would likely favor natural gas DER technologies compared to other renewables. Abiding by the goals outlined in Action 8-A.6, it stands to reason that these natural gas technology projects would, as a result, be prioritized as the best use of city funds for energy conservation and resiliency.

Given these considerations, SoCalGas recommends that consideration of increasing system resiliency through adaptation strategies is incorporated into the Sustainable Communities Element either as an individual policy or as an action supporting one of the existing policies, and that a *technology neutral* mindset is used in evaluating potential solutions.

Conclusion

In summary, SoCalGas supports the general goals outlined in the draft Sustainable Communities Element for the City of Redlands General Plan Update, including reducing dependency and use of nonrenewable energy resources, promoting pursuit of sustainable energy resources and prioritizing projects based on cost-effectiveness. However, given the comments stated above, we have developed several goals of our own that we would like to see accomplished in the duration of the development process for the General Plan Update. These include the following:

Goal 1 – The Element should include consideration of renewable natural gas (i.e., biomethane) as a renewable energy resource in addition to those explicitly listed in the document, and also convey a technology neutral mindset in the language of the supporting policies. The City should look to prioritize and incentivize renewable natural gas development and SoCalGas would be happy to partner in such efforts.

Goal 2 – The Element should add consideration of energy system resiliency in its supporting principles, highlighting relative vulnerabilities and strengths of particular renewable energy resources and technologies.

Goal 3 – SoCalGas would like to engage in in-person meetings with the City to have a more active role on ongoing planning efforts.

SoCalGas appreciates your consideration of these comments for the Draft Sustainable Communities Element of the City of Redlands General Plan Update. We would appreciate the opportunity to follow up with the City regarding these comments and the rest of the Plan development process. If you have any questions, please feel free to contact me by telephone or email.

Sincerely,

Geoffrey Danker, AICP
Senior Policy & Planning Advisor
Southern California Gas Company

ⁱUNECE. "Sustainable Development - Concept and Action." http://www.unece.org/oes/nutshell/2004-2005/focus_sustainable_development.html

ⁱⁱ Potential Impacts of Climate Change on California's Energy Infrastructure and Identification of Adaptation Measures, CEC, Staff Paper, January 2009, CEC-150-2009-001.

APPENDIX D

Power-to-gas is a research interest across the globe. Below are some project highlights:

1. Grid operators in Britain are preparing to dilute the natural gas grid with low-carbon hydrogen. A report published by the Institution of Mechanical Engineers outlines the potential for power-to-gas as a technology to support the addition of renewable energy capacity to the grid, and as a storage alternative with advantages over much talked about lithium-ion technology.¹
2. The Deutsche Energie-Agentur GmbH (dena), the German Energy Agency, and its partners are supporting the use and development of the power-to-gas system solution with the objective to establish power-to-gas as a reliable, cost-efficient and large-scale multi-purpose option at least by the beginning of the year 2020/2025 with at least 1,000 MW of electrolysis power installed in Germany.²
3. BioCat Project in Copenhagen, Denmark uses an advanced alkaline electrolyzer which is powered by nearby renewable electrical generators. The hydrogen produced by the electrolyzer is combined with CO₂ supplied by an on-site biogas upgrading process in a biological methanation system to produce pipeline-grade renewable gas for injection and storage in a local gas distribution grid.³

¹ <https://www.pv-magazine.com/2018/05/10/report-calls-on-uk-government-to-embrace-power-to-gas/>

² <http://www.powertogas.info/english/>

³ <http://biocat-project.com/>

APPENDIX E

ACC-OC Climate Action Plan Comment Letter

Provided in response to Data Request Sierra Club-UCS-004 Q16



Geoffrey Danker, AICP
Franchise, Fees and Planning Manager

555 W. Fifth Street, GCT 17E5
Los Angeles, CA 90013

Email: gdanker@semprautilities.com

Kelsey Brewer
Policy Analyst
Association of California Cities – Orange County
500 S. Main St. Suite 410
Orange, CA 92868

RE: Association of California Cities – Orange County Climate Action Plan

Dear Ms. Brewer,

Southern California Gas Company (SoCalGas) is one of California’s investor-owned utilities regulated by the California Public Utilities Commission. We are the nation’s largest natural gas distribution utility, providing energy to 20.9 million consumers throughout 500 communities. SoCalGas’ service territory encompasses approximately 20,000 square miles in diverse terrain throughout Central and Southern California.

SoCalGas appreciates the opportunity to submit comments on the Association of California Cities – Orange County (“ACC-OC”) Model Climate Action Plan. These comments have been composed pertaining to the Transportation, Waste & Recycling and Energy sections depicted in the Draft Plan.

The comments provided regard the following topics:

- Recommended General CAP Principles
- Renewable Natural Gas
- Distributed Energy Technology
- Near-zero Emission Transportation Technology

1. Recommended General CAP Principles

SoCalGas recommends that the Association of California Cities – Orange County considers the following principles for Cities seeking to draft and implement Climate Action Plans:

- Aim to create technology-neutral goals and policies;
- Cities should not pick technology winners and losers, and rather should strive to create performance standards vs mandates;
- Advocate for cost-effective solutions to reduce carbon emissions;
- Consider full life-cycle emissions vs simplified environmental metrics;

- Partner with utilities to align and take advantage of existing energy efficiency programs and should seek to team on new initiatives that will reduce carbon emissions and increase resiliency;
- Seek to accelerate the capture, production and use of renewable natural gas, through incentives for collection and processing, to increase renewables, reduce greenhouse gas emissions, and reduce fossil fuel reliance;
- Accelerate adoption of natural gas for use in clean transportation by providing incentives for natural gas fueling and cleaner vehicles to reduce emissions;
- Plan for a secure and resilient energy future with a diverse portfolio of resources, including natural gas;
- Cities should lead the effort to modernize and protect utility infrastructure by supporting streamlined regulatory and licensing system that enables energy, water, and telecommunications industries to invest with surety; and
- Support natural gas distributed generation, such as combined heat and power systems, micro-turbines and fuel cells, to more efficiently meet consumers' energy demands

2. Renewable Natural Gas

SoCalGas believes that there are important pathways utilizing natural gas including renewable natural gas that achieve both criteria and greenhouse gas pollution reductions faster and more economically than just “decarbonizing” electric generation. SoCalGas is focused on “decarbonizing the pipeline.”

SoCalGas supports the goal of Policy A, *Reduce the amount of energy waste*, in the Energy section of the document, specifically the Action stating the City should “potentially increase the availability of clean energy supply, like natural gas, as an additional option for consumers.” We appreciate the recognition of natural gas as a clean energy source, for it has considerably less NOx emissions than other fuels like coal and diesel, and want to further highlight the use of renewable natural gas as an even cleaner energy resource. Renewable natural gas, or biomethane, and biogas are important sources of carbon neutral, renewable energy. Unlike other sources of renewable energy—such as solar and wind—biomethane doesn’t need the sun to shine or the wind to blow. Waste materials can be converted into deliverable, renewable energy that is available around the clock. The energy produced when biomethane fuels electric generation is considered renewable similar to solar and wind and can be counted towards California’s Renewable Portfolio Standards. When used as a transportation fuel, biomethane has one of the lowest carbon intensities of all transportation fuels.

Further, the use of renewable natural gas can be also seen as highly salient to the Policies and Actions in the Waste & Recycling Section, which state the Cities should “consider capturing methane gas from wastewater treatment.” Methane captured from wastewater treatment is a form of biogas and can be reformed into biomethane, which is ready for immediate use. This method can also be done with waste from landfills, where organic waste is diverted from landfill disposal and, instead, used to produce methane gas. Here use of renewable natural gas can also help waste stream diversion.

To this end, we believe renewable natural gas can be seen as a renewable energy source that aligns with the Policies and Actions outlined in the Energy and Waste & Recycling sections of the Draft Climate Action Plan and request that it be included as a renewable energy source to be supported along with other renewable energy technologies.

3. Distributed Energy Technology

The fourth Action depicted in the Energy section suggests the County “work with utility and stakeholders to make cleaner energy [and] electricity available, as an option, in the community.” A common method of achieving this is through use of community-oriented distributed generation (“DER”) technologies. Common types of DER include renewable wind and solar power, which can help local cities and communities generate their own electricity separate from the grid. However, near-zero natural gas technologies can also play an integral role as a form of DER that provide local, resilient sources of energy while helping reduce energy generation emissions. Specifically, combined heat and power (“CHP”) can serve as a form of onsite DER technology to help separate cities and communities from the electricity grid as well as help diversify their energy mix, thereby increasing local energy security. CHP technologies powered by microturbines can allow a business or other building, such as a hospital, to generate its own electricity *and* heating, allowing the building to be disconnected from the grid. In providing an alternate source of energy, CHP helps efficiently create a broader and diverse mix of energy resources while increasing energy efficiency and helping reduce energy generation emissions.

4. Near-zero Emission Transportation Technology

The Transportation section of the Climate Action Plan lists the second goal of Policy C, *Encourage Multimodal Transportation*, as regarding “non-emission vehicle transportation.” Accordingly, a majority of the Actions under this goal seem to favor consideration of only electric infrastructure (i.e. favoring charging stations for electric vehicles). SoCalGas disagrees that emission reductions from transportation should be solely met through zero emission technologies. Rather, we suggest including language pertaining to both zero and near-zero emission technologies. In fact, when fueled by renewable natural gas as discussed earlier, natural gas technologies for the transportation sector can achieve the State’s emissions reduction targets faster than electrification.

As detailed in Game Changer Technical Whitepaper by Gladstein, Neandross & Associates (GNA), a heavy-duty natural gas engine is now commercially available which meets ARB’s lowest-tier optional low-NOx emission standard at 0.02 g/bhp-hr NOx¹. When paired with RNG, this technology will provide a commercially proven, broad-based, and affordable strategy to immediately achieve major reductions in emissions of criteria pollutants, air toxins, and greenhouse gases. As ARB has identified that heavy-duty electric and fuel cell electric vehicles will not be available in the next several decades, RNG provides the single best opportunity for California to achieve its air quality and climate change goals in the on-road heavy-duty transportation sectors. Equally important, major reductions of cancer causing toxic air contaminants can immediately be realized in disadvantaged communities adjacent to freeways and areas of high diesel engine activity, where relief is most urgently needed.

Action 2 under this goal suggests the City “consider encouraging infrastructure for alternative fuel vehicles, such as plug-in stations,” and Action 3 furthers this with “consider[ing] incentivizing business to provide charging stations and other infrastructure.” Both of these are good examples for opportunities to include language for natural gas fueling infrastructure, especially as natural gas technologies can achieve emissions reductions more cost-effectively than their electric equivalents.

¹ Game Changer Technical White Paper, Gladstein, Neandross & Associates, May 3, 2016. http://ngvgamechanger.com/pdfs/GameChanger_FullReport.pdf.

For example, municipalities such as the Orange County Transportation Authority², Santa Monica Big Blue Bus and San Diego Metropolitan Transit System have already made the move to using renewable natural gas in their bus fleets because the low-NOx natural gas engines are an order of magnitude more cost effective at achieving emission reductions compared to electric or fuel cell buses.³

Conclusion

In summary, SoCalGas supports the general goals and Actions outlined in the Draft Climate Action Plan. That said, SoCalGas strongly supports the Actions listed under Policy D, *Collaboration Efforts*, that advocate “transportation collaboration with the Private Sector” and “collaboration with agencies to obtain funding to lower GHGs.” We appreciate the ongoing discussion and are excited to continue our engagement with the Association of California Cities – Orange County.

Sincerely,

Geoffrey Danker, AICP

Franchise, Fees and Planning Manager

SoCalGas

² Piellisch, Rich. "Element Markets for OCTA Biomethane." *Fleets & Fuels*. N.p., 21 Mar. 2016
<<http://www.fleetsandfuels.com/fuels/cng/2016/03/element-markets-for-octa-biomethane/#respond>>

³ Los Angeles Metro Technology Assessment, June 30 2016.

APPENDIX F
GLOSSARY OF TERMS

AB	Assembly Bill
BY	Base Year
CAISO	California System Operator
CARB	California Air Resources Board
CPUC/Commission	California Public Utilities Commission
CEC	California Energy Commission's
CSTP&S	Customer Service Technologies, Policies and Solutions
DOE	Department of Energy
EPA	Environmental Protection Agency
EPIC	Electric Program Investment Charge
GHG	Green-House Gas
GRC	General Rate Case
LA Metro	Los Angeles County Metropolitan Transportation Authority
NOx	Nitrogen Oxides
NREL	National Renewable Energy Lab
O&M	Operations and Maintenance
ORA	The Office of Ratepayer Advocates
P&ES	Policy and Environmental Solutions
PNNL	Pacific Northwest National Lab
PUC	California Public Utilities Code
RD&D	Research, Development & Demonstration

RG	Renewable Gas
SC-UCS	Sierra Club and Union of Concerned Scientists
SoCalGas	Southern California Gas Company
SCAQMD	South Coast Air Quality Management District
SJVAPCD	San Joaquin Valley Air Pollution Control District
TY	Test Year