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October 30, 2015

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I. Introduction and Summary

The Southern California Gas Company ("SoCalGas") and San Diego Gas & Electric ("SDG&E") appreciate this opportunity to comment on the Draft Short-Lived Climate Pollutant Reduction Strategy ("SLCP"). We offer these comments to enhance the SLCP, and provide information on the role of natural gas and renewable natural gas ("RNG") in achieving California's long-term environmental and economic goals.

Our comments on RNG from organic waste streams and reducing fugitive emissions from oil and gas are summarized below and further explained in the following pages:

- We support California Air Resources Board's ("ARB") recognition of the opportunities and challenges of managing waste streams to reduce SLCPs and criteria pollutants while boosting economic growth in California. By putting organic waste, to beneficial use, California can create value for RNG derived from these resources and enable significant mitigation of atmospheric methane emissions while simultaneously producing a flexible and reliable renewable energy resource.
- We provide feedback on overcoming barriers to biomethane production and connecting to the natural gas pipeline system, such as production tax credits and alternative methods to financing.
- The overall collection of biomethane, for the purpose of injection into the pipeline and use by natural gas customers, is an overall public good and beneficial to all ratepayers.

change and air quality goals.

- The transportation sector is an especially important catalyst for building an RNG market and encouraging the utilization of SLCP sources. The ARB should consider reducing emissions by investing in natural gas transportation technologies and fueling infrastructure. This would also create market pull for the development of RNG to displace diesel and traditional natural gas.
- As a result of best practices in leak detection and repair and modernizing infrastructure, California's fugitive emissions from natural gas distribution are far below national levels. We encourage ARB to consider the progress of California Local Distribution Companies that have been proactive in reducing methane, and work with stakeholders from the natural gas industry to set a reduction target that reflects what can be achieved cost-effectively.

II. Detailed Comments on Renewable Natural Gas from Organic Waste Streams

1. Renewable Natural Gas Offers Flexibility and Can be Used for All Natural Gas End-Uses

The SLCP recognizes that harnessing captured methane can help meet multiple objectives, from reducing greenhouse gas ("GHG") emissions to reducing air pollution, improving soil health, and increasing the supply of California-produced biofuels (p. ES-3). Further, the California Energy Commission's ("CEC") Draft AB 1257 Report: Strategies to Maximize the Benefits Obtained from Natural Gas as an Energy Source notes that RNG from organic sources can supplement or directly replace the use of traditional natural gas, for use in electricity production, space and water heating, transportation fuel, and other natural gas end-uses¹. In this way RNG can play a critical role in enabling the state to achieve its GHG and petroleum reduction targets by 2050 by lowering the carbon intensity of natural gas².

a. Renewable Natural Gas and Transportation

SoCalGas and SDG&E support ARB's inclusion of RNG as a transportation fuel as part of the SLCP reduction strategy. Reducing emissions and petroleum use within the transportation sector is critical to meeting both air quality goals and climate change policy goals for California.

The transportation sector is responsible for 37% of statewide greenhouse gas emissions and over 80% of NOx emissions in South Coast Air Quality Management District ("SCAQMD") and San

¹ CEC Draft Staff Report, AB 1257 NATURAL GAS ACT REPORT: STRATEGIES TO MAXIMIZE THE BENEFITS OBTAINED FROM NATURAL GAS AS AN ENERGY SOURCE, Prepared Pursuant to Assembly Bill 1257 (Chapter 759, Statutes of 2014), p.77

² Energy + Environmental Economics (E3) "Decarbonizing Pipeline Gas to Help Meet California's 2050 Greenhouse Gas Reduction Goal" https://ethree.com/documents/E3_Decarbonizing_Pipeline_01-27-2015.pdf

Joaquin Valley Air Pollution Control District (“SJVAPCD”).³ 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 the California meet its GHG reduction and petroleum displacement goals, and should be included as a pathway, particularly 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 SLCP sources. The Low Carbon Fuel Standard (“LCFS”) identifies RNG from existing organic sources as the lowest carbon intensity standard pathway available, even lower than the current electricity mix and hydrogen. Today, due 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 compressed natural gas (“CNG”) and liquefied natural gas (“LNG”) stations throughout California. A review of the LCFS 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. This volume of RNG represents around 25% of the total statewide NGV throughput as estimated by the CEC⁴.

In the long term, and as transportation options evolve, more RNG can be injected into the pipeline system 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."

b. Renewable Natural Gas and Conventional Combustion Engines

The Draft SLCP states that “utilizing biogas in a conventional combustion engine to create electricity can exacerbate air quality problems in many parts of the State, including the Central Valley and Southern California” (p.12). However, in Southern California the SCAQMD in February 2008 adopted new standards⁵, 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 assessment⁶ 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 (“VOC”) 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

³ 37% figure: California Air Resources Board (CARB). “2000-2012 California Greenhouse Gas Emission Inventory.” CARB, May 2014. http://www.arb.ca.gov/cc/inventory/inventory_current.htm ; 80% figure: South Coast Air Quality Management District (SCAQMD). “Final 2012 Air Quality Management Plan.” SCAQMD, February 2013, p. ES-9. [http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-\(february-2013\)/main-document-final-2012.pdf](http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-air-quality-management-plan/final-2012-aqmp-(february-2013)/main-document-final-2012.pdf)

⁴ California Energy Commission, Energy Analysis Office

⁵ South Coast Air Quality Management District Rule 1110.2 adopted on February 1, 2008.

⁶ South Coast Air Quality Management District Interim Report on Technology Assessment for Biogas Engines Subject to Rule 1110.2 (July 9, 2010)

approximately 0.69 tpd of NO_x and 0.16 tpd of VOC. All new biogas engine installations must also meet these natural gas equivalent emission standards.

Biogas operators have been working with technology providers for the last several years to demonstrate viable technology that would achieve these stringent standards, with at least one technology/strategy determined to be achievable by the SCAQMD. A few other technology demonstrations are near completion and their results should be available in 2016. Considering the low number of biogas engines, and the low emission limits affecting them, emissions from biogas engines in the SCAQMD would not contribute any significant negative impact to air quality in the region.

For economic reasons, many biogas-producing facilities resort to flaring. We recommend that ARB consider incentives for the development, demonstration, and procurement of viable control technologies so these facilities can make more productive use of biogas, whether for on-site generation or injection into the pipeline system.

2. Renewable Natural Gas Creates Jobs

The Renewable Natural Gas Coalition (“RNGC”) 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 the RNGC’s *California Biofuels Cap and Trade Initiative*, developing biomethane projects at 200 candidate sites throughout the state (located at landfills, wastewater recovery facilities, and agricultural sites) would create more than 20,000 direct and indirect jobs 42 California counties. Also, as many as 100 temporary construction jobs could be created as a result of each project (p.8). A copy of overview has been provided as an attachment for reference and proposed inclusion in the final SLCP Strategy.

3. Practical Solutions to Overcome Barriers

In an effort to identify practical solutions to overcome RNG market barriers, SoCalGas offers the following information on production tax credits, other market based subsidies, and minimizing RNG start-up costs.

a. Production Tax Credits and Other Market-based Subsidies

In 2009, Senator Benjamin E. Nelson (D-Nebraska), introduced the Biogas Production Incentives Act of 2009 to bolster investment in RNG production by providing a Federal Tax Credit of \$4.27/MMBtu for biogas produced. Re-introduction of this bill or the introduction of similar federal legislation should be supported to provide a potentially high-impact and efficient method to enable RNG development and create a performance-based incentive that rewards the most successful and beneficial projects appropriately. At the state level, California lawmakers, regulators, and agencies should consider similar activities, either in the form of tax credits or through the distribution of the GGFR.

ARB should also evaluate alternative methods of financing to increase support for bioenergy projects at the state level. The California Alternative Energy and Advanced Transportation Financing Authority (“CAEATFA”) does not currently offer a program to fund biomethane production projects. CAEATFA, ARB, the California Department of Resources Recycling and Recovery (“CalRecycle”), and stakeholders should work together to develop innovative approaches to address financing gaps. For example, SoCalGas offers an optional tariff service for our customers: the Biogas Conditioning and Upgrading Services Tariff⁷ allows us to plan, design, procure, construct, own, operate, and maintain biogas conditioning and upgrading equipment on customer premises and recover our costs through a monthly service fee. However, the facilities qualified for this tariff are limited to biogas conveyance and processing and do not include digesters nor the facilities to connect with the utility pipeline system. Lack of access to capital for customers interested in developing these digesters and connecting with the utility pipeline system may be an issue that could be addressed by CAEATFA, ARB, and other stakeholders.

SoCalGas agrees with ARB’s statement that “[e]nabling pipeline injection of biomethane and minimizing associated costs will help get dairy biogas into the transportation sector and allow for the generation of LCFS, which could provide an especially valuable revenue stream” (p.46). Additionally, we strongly support ARB’s effort to immediately work with manure-to-methane-to-transportation fuel pathway applicants to enhance LCFS credits from such projects. Equally as important is the development of pathways related to other important RNG feedstocks, including wastewater treatment plants, landfills and organic green waste. High project startup costs, including the costs of connecting to the pipeline system, are one of the barriers of entry to the pipeline no matter the type of feedstock, and of successful delivery to customers. Entry to the pipeline system is necessary to both encourage methane capture to achieve the objective of the SCLP, as well as delivery of captured methane to customer as a clean energy resource to reduce carbon output of energy end uses. Assistance in mitigating that cost component would improve the overall start-up costs and achieves a public good and could rightly be considered a social cost.

b. Overcoming RNG Start-up Costs

SoCalGas supports removing barriers to entry for biogas facilities. The collection and injection of biomethane, for the purpose of use by natural gas customers, is a public good and beneficial to all ratepayers. Facilities that connect to the pipeline system are necessary for California to meet its climate change and air quality goals.

SoCalGas is ready to work with biomethane project developers to facilitate access to funding available through the PUC’s Biomethane Order Instituting Rulemaking (“OIR”) Phase II Decision which allocates \$40 million over five years to partially offset the cost of connecting with utility pipelines. This PUC driven incentive demonstrates great leadership and can be an effective catalyst for typical biomethane connections. However, many dairies and other sources of manure are located a significant distance away from existing natural gas infrastructure. Unlike dedicated organic waste digesters, which could possibly consider pipeline locations when siting

⁷ <http://www.socalgas.com/innovation/power-generation/green-technologies/biogas/conditioning-and-upgrading.shtml>

projects, these manure sources may require pipeline extensions of several miles making manure-sourced biomethane connections to the pipeline system more costly. ARB should support additional incentives to alleviate biomethane production and injection costs for these facilities through GGRF or other funding sources.

4. Areas for Further Research

Pipeline biomethane can be efficiently stored for long periods of time and flexibly deployed to existing natural gas fired generation assets or any other natural gas end-use. Understanding and quantifying the benefits of increasing the availability of pipeline biomethane and other low carbon fuels should be a strategic priority for the efficient development of California's sustainable energy future.

Additional primary and secondary research should be conducted to quantify the benefits of anaerobic digestion, gasification or hydrothermal processing techniques versus composting organic materials. This research is especially pressing in order to inform policies that will impact the forthcoming operationalization of organic waste diversion plans driven by AB 341 and AB 1826⁸.

The LCFS program custom pathway methodology could provide a mechanism to assign some value for the additional GHG benefits that biomethane can provide. Also, further consideration should be given to assess the need for additional incentives to encourage pipeline injection of biomethane, especially the opportunity to utilize GGRF dollars for this highly beneficial carbon reduction strategy.

We recommend ARB approve and publish a LCFS Carbon Intensity for dairy biogas that includes the benefit of avoided methane emissions. This would greatly enhance the project economics to produce RNG from dairy biogas and use for transportation fuel.

In conclusion, by developing appropriate policies and incentives, we have the opportunity to replace a significant amount of statewide natural gas usage with biological methane, or RNG, leveraging and using organic waste resources, which would otherwise be discarded. It is critical to make additional pipeline biomethane production incentives available to cultivate the development of these renewable resources and leverage existing pipeline systems, electric generation, combined heat and power, and CNG facilities.

Understanding and leveraging natural gas opportunities in California's energy future will aid in reducing SLCPs and criteria pollutants while ensuring a reliable, diverse, and sustainable energy

⁸ California has a legislative and executive goal of 75 percent recycling, composting or source reduction of solid waste by 2020. <http://www.calrecycle.ca.gov/75percent/> and AB 341. AB 1826 requires commercial facilities producing 8 cu yds or more weekly of organic waste on April 1, 2016, 4 cubic yards or more weekly of organic waste on January 1, 2017, 4 cubic yards or more weekly of commercial solid waste on January 1, 2019, and potentially 2 cubic yards or more weekly of commercial solid waste on January 1, 2020 to arrange for organic waste recycling services.

http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB1826

future for the state. SoCalGas staff is available to discuss RNG opportunities and challenges further, as well as serve on any research teams or working groups.

III. Reducing Methane Emissions from Oil and Gas Sectors

A. Methane Emissions Reduction Target of 40-45%

The section, *Recommended Actions to Further Reduce Methane Emissions*, details plans to reach a methane reduction level of 40-45% below 2013 levels by 2030 in the oil and gas sector. The Draft states that “California can match the goals of the Obama Administration to reduce methane emissions from the oil and gas sector by 40-45 percent by 2025” (p.43). However, the natural gas sector in California already has lower methane emissions than the rest of the nation. In fact, a recently published Washington State University (“WSU”) Study found that out of the total emissions from local distribution systems in the U.S., the western region contributes only 5%⁹. This is due to more miles of plastic and protected steel pipe, as well as best practices in leak detection and reduction. To further reduce methane emissions, SoCalGas is participating in the EPA’s Methane Challenge. This program would provide an additional mechanism through which oil and gas companies could make and track commitments to reduce methane emissions¹⁰.

ARB should consider that attempting to meet a 40-45% reduction goal from baseline could result in costly restrictions on operations. As mentioned above, we encourage ARB to consider the progress of California Local Distribution Companies that have been proactive in reducing methane, as well as future reduction plans from SB 1371 and the EPA Methane Challenge. ARB should work with stakeholders from the gas industry to develop an achievable and cost-effective target for gas systems. This approach would be consistent with the process used to develop methane reduction targets for the other sectors covered by the SLCP strategy.

B. Projecting Increase in Pipeline Leaks

In Appendix A of the Draft, emissions from pipeline leaks as a percentage of overall emissions are projected to *increase* from 9% in 2013 to 12% in 2030 due to aging infrastructure and expansion of the natural gas pipeline system. This equates to an increase from 10.62 MMCO₂e in 2013 to 14.04 MMCO₂e in 2030, or a 32% increase in pipeline emissions. However, both the EPA GHG Inventory and the WSU study found that methane emissions from local natural gas distribution systems have decreased in the past 20 years—even as pipeline miles have increased—and are projected to continue to decrease. Specifically, the number of pipeline leaks have decreased 25% for mains and 16% for services due to the use of better pipe materials, efforts to seal cast iron joints, and enhanced leak detection and repair procedures¹¹.

⁹ Lamb et al (2015) Direct Measurements Show Decreasing Methane Emissions from Natural Gas Local Distribution Systems in the United States. Link to study at:

<http://pubs.acs.org/doi/abs/10.1021/es505116p?ga=1.155985595.1447121853.1445893145>

¹⁰ <http://www3.epa.gov/gasstar/methanechallenge/>

¹¹ Lamb et al (2015) Direct Measurements Show Decreasing Methane Emissions from Natural Gas Local Distribution Systems in the United States

SoCalGas submitted a plan to the PUC in November 2014 to increase the rate of pipe replacement and repair on its system. A decision by the PUC is anticipated by the end of 2015. Once funding is approved, we anticipate repairing all currently identified pending non-hazardous leaks by the end of 2018. We urge ARB to take into account these planned improvements, as well as previously mentioned leak reduction efforts, in calculating California's projected methane emission sources in 2030.

SoCalGas and SDG&E specifically request that ARB make its documents and calculations public with respect to the 2013 attribution of emissions coming from oil and gas sources. We also ask for the calculations used in Appendix A to project the increase in pipeline emissions in 2030. Given the large increase, it may be necessary to revisit the calculation of the state's 1990 emissions target to be consistent with the methodological adjustments made to the 2013 GHG inventory.

IV. Conclusion: Combusting Methane to Reduce Global Warming Potential

Methane emissions (primarily from agriculture, dairies, and landfills) will continue to be part of the GHG inventory as they have 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 thank you for this opportunity to comment on the Draft SLCP, and we look forward to additional dialogue as the SLCP Strategy finalizes. Please contact me if you have any questions or concerns about these comments.

Sincerely,



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

Attachment: *California Biofuels Cap and Trade Initiative*