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SoCalGas Comments on Accelerating Industrial Decarbonization

Additional submitted attachment is included below.

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August 17, 2021

Commissioner J. Andrew McAllister
California Energy Commission
Docket Unit, MS-4
Docket No. 21-IEPR-06
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: Comments on Accelerating Industrial Decarbonization

Dear Commissioner McAllister:

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide public comments on the California Energy Commission (CEC) 2021 Integrated Energy Policy Report (2021 IEPR) Workshop held on August 3, 2021, to examine pathways to help California's industrial sector decarbonize. A key theme throughout the workshop discussions was working creatively and collaboratively to pursue all decarbonization pathways, including energy efficiency, electrification, decarbonized fuels, and carbon capture.

SoCalGas offers the following comments in the spirit of collaboration and in pursuit of solutions based on decades of experience working with its industrial customers: **(1)** Gas utility partnerships and incentives can accelerate industrial decarbonization through energy efficiency programs; **(2)** Methane leak detection programs are crucial to mitigate climate change impacts and help decarbonize industry; **(3)** Gas-fueled microgrids support renewables and provide a resilient decarbonization pathway for businesses; **(4)** Gas utility hydrogen demonstration programs are needed today to inform and advance hydrogen injection standards; **(5)** State support for industrial hubs can help scale low- and zero-carbon renewable hydrogen and provide a decarbonization pathway for high heat and energy-intensive industries; and **(6)** California has abundant underground natural resources that have the potential to advance Carbon Capture Utilization and Storage (CCUS) technologies for industries reliant on traditional fuels.

(1) Gas utility partnerships and incentives can accelerate industrial decarbonization through energy efficiency programs

During the workshop, Commissioner Monahan noted that over half of the greenhouse gas (GHG) emissions from industry are from the oil and gas and refining and hydrogen production sectors[1] and asked whether there were opportunities to reduce emissions in these industry segments.[2]

SoCalGas submits that with appropriate incentives and gas utility partnerships, industrial customers can have the opportunity to upgrade to proven, advanced technologies, invest in energy efficiency measures, and replace aging equipment much sooner than they would otherwise, resulting in lower energy usage and reduced GHG emissions, to the benefit of all Californians. SoCalGas is committed to partnering with our industrial customers to pursue comprehensive energy efficiency solutions to help them better optimize their energy needs. Our current portfolio of industrial energy efficiency programs has an annual budget of $14.5 million, which includes solutions such as prescriptive rebates, custom incentives, strategic energy management support, technical assistance, and zero percent on-bill financing for qualifying projects. Over the past five years cumulatively, our Industrial Customers have saved 14.3 million therms annually through our energy efficiency programs which represents a reduction of 83,000 tons of CO2 or taking over 16,000 passenger cars off the road for one year.[3]

For example, in 2020, SoCalGas worked with a large petrochemical industry customer to implement a Pressure Swing Adsorption (PSA) Modernization project.[4] This customer participated in the SoCalGas Energy Efficiency Calculated Incentive Program (EECIP) and was awarded an $1 million incentive for meeting all eligibility criteria required by both SoCalGas and the California Public Utilities Commission (CPUC). The project involved the installation of a novel molecular sieve and densely packed particle bead media bed in the PSA Unit of a hydrogen production steam methane reformer. This energy efficiency measure resulted in 1.4 million therms of natural gas savings, a reduction of 7,680 tons of Carbon Dioxide (CO2) emissions, and the elimination of 6.9 million gallons of feed water annually all while increasing the plant's production of hydrogen.[5] In early 2021, SoCalGas issued a request for proposals (RFP) to the energy efficiency program implementer community to help us further partner with energy-intensive sectors like refiners and manufacturing to bring additional energy efficiency

[1] *See* CARB, "Presentation - IEPR Commissioner Workshop to Accelerate Industrial Decarbonization", available at https://www.energy.ca.gov/event/workshop/2021-08/session-1-iepr-commissioner-workshop-accelerate-industrial-decarbonization

[2] *See* CEC, "IEPR Commissioner Workshop to Accelerate Industrial Decarbonization: Sessions 1 and 2", available at https://www.energy.ca.gov/event/workshop/2021-08/session-1-iepr-commissioner-workshop-accelerate-industrial-decarbonization and https://www.energy.ca.gov/event/workshop/2021-08/session-2-iepr-commissioner-workshop-accelerate-industrial-decarbonization

[3] Greenhouse gas equivalencies calculated using https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

[4] *See* SoCalGas, "Energy Efficiency Programs 2020 Annual Report to the California Public Utilities Commission", available at https://www.socalgas.com/sites/default/files/SCG_2020_Energy_Efficiency_Annual_Report.pdf

[5] Ibid.

resources and innovative solutions to bear.[6] We expect new, additional energy efficiency programs to be in place by the summer of 2022.

(2) Methane leak detection programs are crucial to mitigate climate change impacts and help industry decarbonize through targeted energy efficiency measures

Commissioner Monahan noted the need to create benchmarks for understanding how different utilities use energy and to identify savings opportunities.[7] In support of the urgent need to reduce methane emissions globally to slow the rate of climate change[8] and consistent with its net-zero goal to reduce Scope 3 GHG emissions,[9] SoCalGas has implemented its Aerial Methane Mapping (AMM) program that uses Light Detection and Ranging (LiDAR) technology integrated to a helicopter that can identify methane emissions as a "plume of gas."[10] This program allows us to proactively detect potential leaks as well as incomplete combustion that could be associated with gas-fired equipment. These detection technologies allow us to exceed our compliance obligations and proactively identify leaks on our distribution pipelines, providing opportunities for energy efficiency upgrades by targeting customers with less efficient appliances. AMM data helps SoCalGas' Advanced Meter Infrastructure (AMI) team improve its algorithms to better analyze and distinguish customer usage patterns. For example, through enhanced analysis of customer usage patterns, these programs have helped identify when appliances are unintentionally left on or when hot water leaks occur. As a result, SoCalGas can proactively contact the customer to prevent high bills and possibly unnoticed high gas consumption which can enable customers to improve their operations or better maintain their equipment as needed.

(3) Gas-fueled microgrids support renewables and provide a resilient decarbonization pathway for businesses

Many commercial and industrial customers have complex energy profiles; therefore, onsite distributed energy resources (DERs) like microgrids must be flexible enough to respond and support those customers' energy needs.[11] Gas-fired generation technologies can meet businesses' energy and resiliency needs while supporting greater renewables penetration. As noted in the

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[6] *See* SoCalGas, "Energy Efficiency Program", available at https://www.socalgas.com/regulatory/efficiency

[7] *See* CEC, ""IEPR Commissioner Workshop to Accelerate Industrial Decarbonization: Session 1", available at https://www.energy.ca.gov/event/workshop/2021-08/session-1-iepr-commissioner-workshop-accelerate-industrial-decarbonization

[8] *See* United Nations, "Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions", available at https://www.unep.org/resources/report/global-methane-assessment-benefits-and-costs-mitigating-methane-emissions

[9] For SoCalGas, Scope 3 emissions are indirect GHG emissions from sources not owned or controlled by the company and include commercial and industrial customers. For more information, please see "Aspire 2045: Sustainability and Climate Commitment to Net zero" available at https://www.socalgas.com/sites/default/files/2021-03/SoCalGas_Climate_Commitment.pdf

[10] *See* Aerial Methane Mapping Research Update dated Jan. 21, 2021 presented by SoCalGas and SDG&E at the SB 1371 Winter Workshop, available at https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/safety-policy-division/documents/day-2-slide-1---sempra---bp17_20a---aerial-methane-mapping-randd---sempra.pdf.

[11] *See* CEC, "A Comprehensive Assessment of Small Combined Heat and Power Technical and Market Potential in California", page 98, available at https://www.energy.ca.gov/publications/2019/comprehensive-assessment-small-combined-heat-and-power-technical-and-market

Industrial Outlook session by Panelist Jeff Malin with Applied Medical, "[m]icrogrids aren't feasible [today] without natural gas" and gas-fired microgrids provide reliability to Applied Medical's business operations during Public Safety Power Shutoff (PSPS) events.[12] When connected to the gas grid, gas-fired microgrids can be designed to deliver continuous power generation. In addition, gas-fueled DERs can support increased use of renewables in industrial applications, because they can increase (or decrease) their power generation to support solar or storage assets within the microgrid. This allows California businesses to manage their energy profiles to meet their operational, financial, and decarbonization needs and provide goods and services to local communities and the public. As the gas grid continues to decarbonize, renewable gases can support microgrids through stationary fuel cells, cleaner combined heat and power (CHP), and tri-generation applications which can support fuel cell vehicle charging from the integration of a hydrogen purification station even when energy from the electric grid is otherwise unattainable.

(4) Gas utility hydrogen demonstration programs are needed today to inform and advance hydrogen injection standards

Hydrogen blending demonstrations are in progress across the globe and are critical, foundational steps towards engaging end-use customers, developing systemwide injection standards, and providing sufficient confidence that public safety, pipeline integrity, and reliability will not be compromised. Further, earlier this year, the US Department of Energy released its Hydrogen Program Plan which emphasizes that "realizing the true potential for hydrogen requires a commitment to continued research and development as well as ramping up demonstrations and deployments with the private sector to achieve scale."[13]

To this end, SoCalGas and San Diego Gas and Electric Company proposed, in CPUC Application (A.) 20-11-004, three hydrogen blending demonstration projects with the objectives of (1) establishing hydrogen blending demonstration workflow, including data acquisition to set integrity management approach, (2) setting standards for polyethylene (PE) plastic and mixed material distribution networks, and (3) data acquisition on steel that would feed into integrity management analysis to set a standard for a transmission network.[14] The field experience gained from the demonstrations is necessary to corroborate and assess hydrogen blending literature and laboratory testing as applied to the SoCalGas and SDG&E gas systems.

The CPUC denied the Application and recommended that SoCalGas, SDG&E, PG&E, and Southwest Gas (Joint IOUs) "improve collaboration with stakeholders including the California Energy Commission, University of California, Riverside; and parties in this proceeding" to develop and submit a demonstration plan and program for consideration in a future

[12] *See* CEC, "IEPR Commissioner Workshop to Accelerate Industrial Decarbonization: Session 2", available at https://www.energy.ca.gov/event/workshop/2021-08/session-2-iepr-commissioner-workshop-accelerate-industrial-decarbonization

[13] *See* U.S. Department of Energy (U.S. DOE), "Hydrogen Program Plan", available at https://www.hydrogen.energy.gov/pdfs/hydrogen-program-plan-2020.pdf

[14] *See* SoCalGas, "A.20-11-004 - JOINT UTILITY PRELIMINARY HYDROGEN INJECTION STANDARD APPLICATION", available at https://www.socalgas.com/regulatory/a20-11-004

Application.[15] SoCalGas suggests the CEC target projects that include high-pressure steel to an industrial application in its upcoming Grant Funding Opportunity for a pilot project to demonstrate hydrogen blending in the existing gas system. Such a project would allow a gas utility to collect foundational, operational information, share resulting operational and inspection data on its pipeline with state agencies and provide insights on how the blended fuel interacts with the customers' end use operations and/or processes. SoCalGas looks forward to continuing to collaborate with the CEC and other stakeholders, as recommended in the CPUC's decision on A.20-11-004, to develop a demonstration program quickly and effectively for the CPUC's consideration in any future Application.

(5) State support for industrial hubs can help scale low- or zero-carbon hydrogen and can provide a decarbonization pathway for high heat and energy-intensive industries

Renewable Hydrogen has the potential to play a critical role in California's zero-carbon economy. State policies and programs have the potential to support hydrogen infrastructure development and open the pathway to renewable hydrogen production becoming a self-sustaining zero carbon fuel source for California.[16] Initially focusing the development of hydrogen infrastructure toward industrial hubs creates opportunities for co-located industries to take advantage of scale, sharing risk and resources, aggregation and optimization of demand, cross-industry waste synergies, and other interdependencies.[17] Industrial hydrogen hubs can support energy diversity, improve energy resiliency (when using hydrogen fuel cells and above/below ground hydrogen storage), accelerate multi-sectoral decarbonization, drive down the cost of zero-carbon hydrogen, and create jobs.[18] California has already become a leader in the hydrogen industry with more hydrogen fueling stations than any other state in America.[19] With the city of Los Angeles aiming to reduce GHGs to 73% below 1990 baseline levels by 2035,[20] hydrogen infrastructure initiated as industrial hubs can be a crucial step towards that goal.

Europe has begun significant investment in industrial hydrogen hubs as a pathway to support decarbonization. The United Kingdom (UK) is already starting on an industrial cluster project called Zero Carbon Humber, which will use hydrogen technology and carbon capture to aim for a net-zero industrial cluster in Humber, where the UK's largest industrial cluster resides.[21] The Zero Carbon Humber project involves a 12-company partnership where CO_2 transport and storage infrastructure can be shared, new jobs can be created, and the resulting low-carbon

[15] *See* CPUC Decision 21-07-005.
[16] *See* CEC, "Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California", June 2020, page C-28 Conclusions, available at https://cafcp.org/sites/default/files/Roadmap-for-Deployment-and-Buildout-of-RH2-UCI-CEC-June-2020.pdf
[17] *See* Accenture, "Industrial Clusters Working Together to Achieve Net Zero", March 1, 2021, slide 5, https://www.accenture.com/_acnmedia/PDF-147/Accenture-WEF-Industrial-Clusters.pdf#zoom=40
[18] *See* Green Hydrogen Coalition's comment "DOE Hydrogen Program Response to RFI #DE-FOA-0002529," July 7, 2021, page 3, available at: Filings — GREEN HYDROGEN COALITION (ghcoalition.org)
[19] *See* U.S. DOE, "Hydrogen Fueling Station Locations," August 10, 2021, available at https://afdc.energy.gov/fuels/hydrogen_locations.html#/find/nearest?fuel=HY
[20] *See* Mayor Eric Garcetti "L.A.'s Green New Deal Sustainable City Plan 2019", April 2019, page 13 Accelerating L.A.'s GHG targets, available at https://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf
[21] *See* World Economic Forum, "Why Industrial Clusters Can Be the Heart of the Green Revolution," available at https://www.weforum.org/agenda/2021/03/decarbonizing-industrial-clusters-green-revolution/

hydrogen can be utilized by major industry, power generation, and other key sectors. Another effort in Europe that encompasses hydrogen industrial clusters is the European Hydrogen Backbone. This is an initiative that has currently grown to 23 European infrastructure companies that are working together to plan a pan-European dedicated hydrogen transport infrastructure to connect various hydrogen industrial clusters throughout Europe.[22] Globally, the benefits of hydrogen hubs are becoming more tangible and have the potential to play a significant role in the effort to decarbonize the industrial sector.

(6) California has abundant underground natural resources to advance Carbon Capture Utilization and Storage (CCUS) technologies for industries reliant on traditional fuels
California has both the natural underground resources appropriate for sequestering carbon coupled with the imminent need to address GHG emissions from industry. CCUS is necessary to support California's carbon neutrality goals and can lead to significant carbon reductions while maintaining California's competitive advantage as the fifth largest economy in the world.[23]

As expressed in a 2020 joint study by Stanford and Energy Future Initiatives titled: "An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions," California "has opportunities to advance its decarbonization and economic goals by leveraging carbon capture and storage (CCS) due to its sizeable geologic storage resources; the suitability of its emissions sources for carbon capture; its need for clean firm electricity generation as the renewable energy profile grows; the need for decarbonized transportation fuels, such as hydrogen; and its experience advancing strong climate policies and innovative industries." Additionally, to identify potential industry clusters for more centralized CCUS opportunities, the study further investigates the CO_2 capture opportunities by county for a cluster of sizeable emitters grouped by number of facilities, total emissions, estimated capture rate, etc. The findings include:[24]

1. "There are 76 existing electricity and industrial facilities [25 natural gas combined cycle (NGCC) facilities and 51 industrial sites] identified by this analysis to be candidates for CCS retrofit in California. These facilities emit 59 million metric tons of carbon dioxide per year (MtCO2/year)"

2. There are potential CCS hubs in the Los Angeles and San Francisco Bay areas, which could result in emission reductions of 25.2 MtCO2/yr and 14 MtCO2/yr, respectively." Sally Benson, who is the faculty director of the Stanford Center for Carbon Storage and

[22] *See* European Hydrogen Backbone Imitative, "Extending the European Hydrogen Backbone," available at https://gasforclimate2050.eu/wp-content/uploads/2021/04/European-Hydrogen-Backbone-2021-Webinar-slidedeck.pdf
[23] *See* Governor's Office of Business and Economic Development, "California Produces," available at https://business.ca.gov/#
[24] *See* Energy Futures Initiative and Stanford University, "An Action Plan for Carbon Capture and Storage in California: Opportunities, Challenges, and Solutions.", available at https://sccs.stanford.edu/sites/g/files/sbiybj7741/f/efi-stanford-ca-ccs-full-rev1.vf-10.25.20.pdf.

lead author of the study noted in a recent article, "If we were to store 60 million tons of carbon dioxide a year in California, you could do that for more than 1,000 years."[25]

3. Deployment of CCS infrastructure can also enable emergence of new industries, such as hydrogen production and negative-emissions carbon dioxide removal (CDR) [direct air capture (DAC) and bioenergy with CCS (BECCS)]

Conclusion

As we collectively pursue the decarbonization of California's energy system , it is imperative that policymakers consider the public interest, market participants, and utilize current energy efficiency programs while scaling new technologies like renewable hydrogen and CCUS. SoCalGas looks forward to contributing and advancing those efforts by working with the CEC, the CPUC, and sister agencies to define solutions, including by leveraging the gas grid, to enable the future decarbonized energy system for all Californians.

Respectfully,

/s/ Kevin Barker

Kevin Barker
Senior Manager
Energy and Environmental Policy

Cc: Commissioner Patty Monahan
Commissioner Karen Douglas
Deputy Commissioner Laurie ten Hope

[25] *See* Forbes, "Can Carbon Capture and Storage Save California's Grid?", August 6, 2021, available at https://www.forbes.com/sites/jamesconca/2021/08/06/can-carbon-capture-and-storage-save-californias-grid/?sh=64f51a3b73e4