R.13-11-005
Order to Show Cause Against Southern California Gas Company Issued December 2, 2019

Sierra Club Exhibit
Exhibit SC-22

SoCalGas technical comments CEC 2022 Energy Code 082120 final,

filed in CEC Docket 19-BSTD-03

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SoCalGas technical comments CEC 2022 Energy Code 082120 final

Additional submitted attachment is included below.

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Subject: Technical Comments Regarding Pre-Rulemaking for the California 2022 Energy Code Compliance Metrics, Docket #19-BSTD-03

I write on behalf of Southern California Gas Company (SoCalGas) in response to the California Energy Commission's (CEC's) staff workshop on 2022 Energy Code Compliance Metrics held on March 26, 2020. SoCalGas appreciates the State's bold attempts to address climate change and wants to be a key partner to reduce greenhouse gas (GHG) emissions from the building sector. SoCalGas believes that a portfolio approach, utilizing all energy sources and technologies to meet our climate goals, will best serve Californians and those that follow our lead. Natural gas and renewable gas (such as hydrogen, synthetic natural gas, and biomethane/renewable natural gas) are clean, reliable, affordable, and resilient sources of energy that play a critical part of the *solution* to California's energy concerns.

SoCalGas supports decarbonizing commercial and residential buildings as part of California's strategy to meet climate goals. California is blessed with geographic and climate diversity and natural and human resources that enable us to help feed the country and share innovation and ideas that feed the world. The decarbonization strategy should reflect the State's resources and not be limited to a one-size-fits-all approach. We should maintain a diverse portfolio of energy options to allow customers choice in their preferred appliances for heating and cooking in their homes and businesses. Gas is preferred by our customers[1] and the safe, reliable, integrated gas system in place today can be used to decarbonize hard-to-electrify sectors, such as industry. The benefits of the gas system include its resiliency to service disruptions from climate-driven and

[1] Natural Gas Institute. *California Reports Show Homeowners Prefer NatGas Over Electrification*. April 25, 2018. Available at: https://www.naturalgasintel.com/articles/114152-california-reports-show-homeowners-prefer-natgas-over-electrification

natural disasters.[2,3] The CEC should support policies that advance decarbonizing the gas delivery system, not just the electric system, as well as develop hydrogen-powered fuel cell technologies and other diverse distributed energy solutions to keep communities resilient against natural disasters.

The importance of fuel diversity cannot be overstated given its implications for assuring affordability and energy security.[4,5,6] We should not rely on a single energy source: it puts the reliability and resiliency of the energy delivery system at risk. The California Public Utilities Commission (CPUC) is currently undertaking the subject of building decarbonization and has opened an Order Instituting Rulemaking on the subject. Also, Phase I of implementing Senate Bill 1477 includes electrification pilot programs (BUILD and TECH). In the future, the agency will be looking at policies for broader decarbonization efforts.
Building envelope improvements coupled with decarbonizing the energy sources we use in buildings should remain paramount in meeting the State's GHG emissions reduction goals. A technology-neutral approach addresses these issues and also helps to provide greater regulatory certainty by not requiring businesses to commit to a specific fuel or technology. The 2022 Energy Code should support a fuel neutral,[7] diversified energy approach that enables builders to

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[2] PR Newswire. SoCalGas Study Offers Lessons in Resiliency Planning to Help Communities and Utilities Prepare for Disasters. October 30, 2018. Accessed 5/14/20 from: https://www.prnewswire.com/news-releases/socalgas-study-offers-lessons-in-resiliency-planning-to-help-communities-and-utilities-prepare-for-disasters-300740527.html

[3] ICF. Regional Workshops held on January 24, 2019. Potential Impacts and Adaptation Options for
Electricity and Natural Gas Systems from Climate Vulnerability in San Diego Area. Slide deck available
at: http://www.climateassessment.ca.gov/events/docs/20190124-Slides_ICF.pdf

[4] CPUC Integrated Resource Planning Proposed (IRP) Proposed Decision (PD) acknowledges that a diverse portfolio is absolutely fundamental in California reaching its 2030 and 2045 GHG emission goals in the least-cost manner. Source: CPUC IRP PD at p. 74.

[5] PR Newswire. SoCalGas Study Offers Lessons in Resiliency Planning to Help Communities and Utilities Prepare for Disasters. October 30, 2018. Accessed 5/14/20 from: https://www.prnewswire.com/news-releases/socalgas-study-offers-lessons-in-resiliency-planning-to-help-communities-and-utilities-prepare-for-disasters-300740527.html

[6] Energy Futures Initiative's (EFI's) report accentuates the need for the State to pursue a building decarbonization strategy that allows the State to maintain a diverse portfolio of energy options. Source: EFI. *Optionality, Flexibility, & Innovation. Pathways for Deep Decarbonization in California.* Summary for Policy Makers. Available at:
https://static1.squarespace.com/static/58ec123cb3db2bd94e057628/t/5cadebd04cd61c00017a563b/15549
01977873/EFI+California+Summary+DE+PM.pdf

[7] This point is also made in Guttmann & Blaevoet Consulting Engineers' comments. "We encourage the commission to consider adopting a fuel neutral baseline in the 2022 standards for Non-residential buildings as has already been done for low rise residential and multi-family occupancies. A transition to a single all electric baseline is encouraged as well." Source: Guttmann & Blaevoet Consulting Engineers' comments in response to CEC's staff workshop on

provide the decarbonization benefits to owners and operators of buildings while maintaining reliability, resiliency, and affordability.
SoCalGas offers the following feedback on the CEC's proposal for the development of the 2022 Energy Code:

1. The 2022 Energy Code should support a fuel neutral, diversified energy approach; CEC should set separate electric and gas baselines, as recommended by staff.
2. The gas system should be leveraged to help meet California's decarbonization goals
3. Misleading comments submitted on indoor air quality and gas cooking by electrification advocates are irresponsible and without merit.
4. SoCalGas supports a balanced scientific workshop on Indoor Air Quality.
5. CEC should use the 100-year global warming potential for methane in the time dependent valuation (TDV) metric assumptions on gas leakage, and exclude out-of-state gas emissions, as initially recommended by staff
6. CEC's current TDV metric assumption of bio- synthetic gas and the availability of renewable natural gas are not overestimated; in fact, they are too conservative

1. 2022 Energy Code should support a fuel neutral, diversified energy approach; CEC should set separate electric and gas baselines as recommended by CEC staff

SoCalGas supports the CEC's recommendation to have separate gas and electric baselines (same as 2019) to avoid performance path compliance barriers for building electrification.

A fuel-neutral approach poses a greater chance of achieving the State's climate goals by addressing crucial questions about organic methane, the need for longer-term and large-scale energy storage off the electric system, and the role existing natural gas assets can play in providing negative carbon solutions and storage while strengthening the reliability and resiliency of our energy system, and maintaining affordability and consumer choice.

If the goal is to make significant strides to combat climate change in the near term, California should allow for ingenuity, cost effective, and less disruptive ways to quickly lower carbon intensity of building usage. Decarbonization of the gas sector is the most cost-effective and expeditious way to reduce carbon intensity in most cases.

2. Natural gas system should be used to help meet California's decarbonization goals

Experts agree that the best pathway for emissions reductions for the building sector is through optionality and flexibility. Energy Futures Initiative's study, *Optionality, Flexibility & Innovation: Pathways for Deep Decarbonization in California*, developed by Dr. Ernest Moniz, former Secretary of Energy under the Obama Administration, analyzes the ways California can meet its 2030 and 2050 low-carbon energy goals. Chapter 5 provides guidance on how best to reduce emissions from the buildings sector by 2030. The researchers emphasize the need for the State to pursue a building decarbonization strategy that allows California to maintain a diverse portfolio of energy options. "Energy efficiency, defined broadly, is likely to be the most cost-

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2022 Energy Code Compliance Metrics. March 26, 2020. At. p.1. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=232715&DocumentContentId=64787

effective approach to decarbonization in the energy end-use sectors in California."[8] The authors identify the best emissions reduction pathways for the building sector are those that promote optionality and flexibility: energy efficiency of building end use technologies, increased use of renewable natural gas, and expanded deployment of combined heat and power units in large commercial facilities.[9]

Lawrence Livermore National Laboratory, an independent science-based academic organization, advises against a drive to phase-out all existing natural gas infrastructure from a climate mitigation standpoint. The organization points out the following:[10]

1. Natural gas-fired electricity generation can be decarbonized through efficiencies.
2. Existing gas distribution infrastructure could provide a platform to broaden the use of carbon-neutral or carbon-negative renewable gas and clean hydrogen.
3. California has the largest renewable gas potential of any state and reducing short-lived climate pollutants is key to reach climate goals.
4. California already has the largest number of natural gas refueling stations in the nation and this number is expected to grow.
5. Existing gas infrastructure, coupled with a renewable gas supply, can help decarbonize hard-to-electrify sectors, such as industry and transportation.
6. Natural gas reduces the need for energy storage by allowing for flexible, dispatchable generation. California Independent System Operator (CAISO) warns that there will be electricity capacity shortfall in 2022 and advocates that the CPUC ensure there are gas resources available to ensure energy reliability.[11]

California needs a robust and broad technical study supported by numerous, independent studies before the CEC further pursues an anti-natural gas energy pathway. Natural gas allows for penetration of renewables, provides seasonal storage, and protects resiliency today. Studies that model expanding the decarbonization potential of the existing natural gas system in California are warranted. Such studies will demonstrate the cost-effectiveness, sustainability and resiliency of a system that 1) leverages existing natural gas assets to deliver renewable natural gas, some of which has a negative carbon intensity, and hydrogen to be used in the building, industrial, and transportation sectors and 2) also supports other negative carbon solutions such as purpose built direct air capture machines and carbon dioxide sequestration as described in Lawrence

[8] EFI. *Optionality, Flexibility, & Innovation. Pathways for Deep Decarbonization in California.* 2019. At p. xiv. Available at: https://energyfuturesinitiative.org/
[9] *Ibid.*
[10] Information summarized from Lawrence Livermore National Laboratory. Comments in response to the CEC's Workshop on The Natural Gas Infrastructure and Decarbonization Targets. At p.2. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=228811&DocumentContentId=60143
[11] CPUC Rulemaking 16-02-007. Comments of the CAISO. July 22, 2019. Available at: http://www.caiso.com/Documents/Jul22-2019-Comments-PotentialReliabilityIssues-R16-02-007.pdf

Livermore National Labs recently released researched, *Getting to Neutral: Options for Negative Carbon Emissions in California*.[12]

Recently, the European Union embraced the portfolio approach in their announcement of a European energy decarbonization plan.[13]

> *"Today's energy system is still built on several parallel, vertical energy value chains, which rigidly link specific energy resources with specific end-use sectors. For instance, petroleum products are predominant in the transport sector and as feedstock for industry. Coal and natural gas are mainly used to produce electricity and heating. Electricity and gas networks are planned and managed independently from each other. Market rules are also largely specific to different sectors. This model of separate silos cannot deliver a climate neutral economy. It is technically and economically inefficient and leads to substantial losses in the form of waste heat and low energy efficiency.*
> *Energy system integration – the coordinated planning and operation of the energy system 'as a whole', across multiple energy carriers, infrastructures, and consumption sectors – is the pathway towards an effective, affordable and deep decarbonisation of the*
> *European economy in line with the Paris Agreement and the UN's 2030 Agenda for Sustainable Development."*

SoCalGas supports the CEC on its pathway to adopt a holistic view of the energy system to affordably and sustainably achieve California's climate goals. Without addressing the need for a gas system assessment identified here, CEC should not endorse a transition away from gas, nor accept that gas rates will be higher in the 2030 and 2050 timeframes due to stranded assets. SoCalGas encourages the CEC to explore all options to achieve the State's climate change goals while prioritizing reliability, resiliency, affordability, and consumer choice.

3. Misleading comments submitted on indoor air quality and gas cooking by electrification advocates are irresponsible and without merit

The Joint Comments submitted by Rocky Mountain Institute and Redwood Energy make several assertions about indoor air quality (IAQ) and gas cooking.[14] Sierra Club supports these comments.[15] These parties have made assertions that are incorrect, are not supported by CEC's own research and includes claims that are not supported by the cited literature.

Further, they ignore other factors related to health and safety that should be considered. For example, the simple act of toasting bread can exceed World Health Organization levels for

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[12] Lawrence Livermore National Labs. *Getting to Neutral: Options for Negative Carbon Emissions in California.* January 2020. Available at: https://www-gs.llnl.gov/content/assets/docs/energy/Getting_to_Neutral.pdf

[13] EU Strategy for Energy System Integration. July 2020. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1259

[14] Rocky Mountain Institute & Redwood Energy comments on 2022 Energy Code. Docket # 19-BSTD-03. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=232712&DocumentContentId=64784

[15] Sierra Club comments on 2022 Energy Code. Docket # 19-BSTD-03. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=232716&DocumentContentId=64785

particulate matter.[16] Furthermore, according to the National Fire Protection Association, households with electric stoves are 2.5 times more likely to have deadly fires than those with gas stoves.[17] Finally, there has been very little research on electric induction stoves and exposures to electromagnetic fields radiation. However, one study suggests that electromagnetic fields radiation can exceed safety levels and pregnant women cooking on an induction stove may be inadvertently expose unborn children to excessive radiation.[18]

The very act of cooking whether with electric or gas stoves creates emissions from the food and oils. Furthermore, it is well understood and confirmed in CEC research that mechanical ventilation of a home is the most important factor to mitigate all IAQ sources such as formaldehyde from composite wood products. CEC's recent mechanical ventilation research found an improvement in IAQ from 10 years ago, since the first code requirement was established in 2008 where the homes tested were electric while the recent study was all gas.[19] Further evidence suggests good air exchange rates can mitigate exposure to COVID-19 based on guidance by the Center for Disease Control (CDC).[20] Consequently, robust ventilation and/or outdoor air exchangers are the most effective way to reduce all indoor air quality issues.

In this section, SoCalGas provides general comments regarding the status of gas-fired residential cooking appliances among the leading agencies responsible for residential IAQ issues and roles including gas cooking emissions, including the U.S. Consumer Product Safety Commission, U.S. Environmental Protection Agency (EPA), CARB, and CEC. These agencies, tasked with developing appliance rules, policies, and regulations affecting IAQ and appliances, have not recommended the elimination of gas appliances. **The consistent recommendation by these agencies is that proper ventilation and maintenance mitigates IAQ concerns from cooking appliances.**

Please see Attachment A for specific responses to the claims cited in the Joint Comments.

A. U. S. Consumer Product Safety Commission

The U. S. Consumer Product Safety Commission has a major role under the Consumer Product Safety Act (15 U.S.C. Chapter 47, §2051 et. seq.) in protecting residential occupants from health and safety hazards. It has been active in the past reviewing emissions issues of unvented gas heating appliances in the 1980's and early 1990's for both carbon monoxide and nitrogen dioxide (NO_2) and cooking appliances for carbon monoxide in the mid-1990's. The agency has been effective in implementing changes to unvented gas appliance standards and requirements

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[16] The Times. *Toast is more toxic than traffic fumes.* February 17, 2019. Accessed on 5/26/20 from: https://www.thetimes.co.uk/article/toast-is-more-toxic-than-traffic-fumes-wm6pb6c8z

[17] National Fire Protection Association. Home Cooking Fires. November, 2019. Available at: https://tinyurl.com/y7pmqsaa

[18] Viellard *et. al.* Foundation for Research on Information Technologies in Society. *B-Field Exposure from Induction Cooking Appliances.* July 2006.

[19] CEC. Energy Research and Development Division Final Project Report. *Ventilation and Air Quality in New California Homes with Gas Appliances and Mechanical Ventilation.* March 2020.

[20] COVID-19 Employer Information for Office Buildings. May 27, 2020 from: https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html

responding to emission issues from these products. **To date, the agency has shown no need for further action on gas cooking products with respect to emissions under normal operating conditions.**

B. U.S. EPA

The U. S. EPA-led Federal Interagency Committee on Indoor Air Quality[21] is responsible for IAQ issues; specifically residential IAQ and asthma across federal agencies including the U.S. Departments of Commerce, Defense, Energy, Health and Human Services, Housing and Urban Development, Interior, Justice, Labor, State, Transportation, and the Treasury as well as Consumer Product Safety Commission, EPA, among others. **The work of the committee routinely addresses IAQ issues of public importance but has not identified gas cooking emissions as an important issue with respect to asthma or respiratory illness more generally.**

C. California Air Resources Board (CARB)

In California, CARB has a long-standing role in indoor air quality and has implemented research and control measures on unvented combustion indoors, including gas cooking.[22] However, **specific guidance provided by CARB on gas cooking does not support the arguments in the Joint Comments regarding banning gas cooking.** For example, discussion of formaldehyde emissions from gas cooking products addresses operation of gas ovens in self-cleaning mode as a source of negative IAQ, not from daily operation of cooking burners. In contrast, CARB devotes most of its information and recommendations for remedial action toward control of cooking process emissions and the importance of kitchen exhaust hoods and ventilation as mitigation responses, which are important issues for both gas and electric cooking appliances.

D. California Energy Commission (CEC)

As discussed above, some of the most recent research sponsored by the CEC contradicts the Joint Comments' focus on gas cooking. In a recent study completed by Chan, et. al., the research team found for 70 California homes included in the study:

> *"…that the bulk of homes met most ventilation requirements and that ventilation fans on average moved 50 percent more air than the minimum specified in Title 24. Air pollutant concentrations were similar or lower than those reported in a study of recently constructed California homes done in 2007-08 before the minimum ventilation requirement. Measured concentrations were below health guidelines for most pollutants, indicating that indoor air quality is acceptable in new California homes when mechanical ventilation is used… Based on project findings, the researchers recommend that the core ventilation requirements of dwelling unit and local exhaust ventilation*

[21] U.S. EPA. Indoor Air Quality (IAQ). Federal Interagency Committee on Indoor Air Quality. Retrieved on 5/4/20 from: https://www.epa.gov/indoor-air-quality-iaq/federal-interagency-committee-indoor-air-quality

[22] CARB. Combustion Pollutants. Retrieved on 5/4/20 from: https://ww3.arb.ca.gov/research/indoor/combustion.htm

should remain in the Title 24 Building Energy Efficiency Standards for the foreseeable future."[23]

In-house measurements were taken for one week and included concentrations and changes over time of $PM_{2.5}$, NO_2, CO_2, and formaldehyde. Measurements also included average concentrations over time of formaldehyde, NO_2 and total NO_X and included coverage of actual gas cooking behaviors of building occupants. Since Title 24 ventilation requirements are part and parcel to the energy requirements in the Energy Standard, the study provides directly relevant information to the consideration of proposals to the 2022 edition, including coverage of gas cooking. **In short, no persuasive arguments for banning or limiting gas cooking or shortcomings of existing ventilation requirements with respect to gas range use emerge from this latest research.**

4. **SoCalGas supports a balanced scientific workshop on Indoor Air Quality.**

Several parties have suggested the CEC conduct a workshop on Indoor Air Quality. If the CEC decides to examine indoor air quality improvements, SoCalGas would be supportive and would like to participate as long as the intention is to take a holistic look targeted at protecting public health rather than a forum to attack natural gas that we think some advocates are seeking. Research over the last two decades shows there are a lot of significant sources of indoor air pollution including: household cleaners, smoke from cooking, pesticides, and "off-gassing" from new furniture, building materials, and carpeting. Better ventilation is the most common recommendation to reduce exposure to all indoor air contaminants regardless of the source and to protect public health.

5. **CEC should use the 100-year global warming potential (GWP) for methane in the time dependent valuation (TDV) metric assumptions on gas leakage, and exclude out-of-state gas emissions, as recommended by staff**

Sierra Club's, Natural Resources Defense Council's, and Sacramento Municipal Utility District's (SMUD's) comments state that CEC's current TDV metric of methane leakage is underestimated. SoCalGas does not agree and urges CEC to move forward with its proposal.

A. Current TDV metric assumption 0.7% gas used will leak, as suggested by CEC staff, is an overestimation

Although the California Air Resources Board (CARB) adopted the Fischer study, *Natural Gas Methane Emissions From California Homes*, as part of its GHG Inventory, it was a very limited study and further analyses should be done on customer-side emissions before adopting these

[23] Chan, W, Y-S Kim, B. Less, B. Singer, and I. Walker, "Ventilation and Air Quality in New California Homes with Gas Appliances and Mechanical Ventilation," Lawrence Berkeley National Laboratory, prepared for CEC, Energy Research and Development Division, Contract Number: PIR-14-007, March 2020

values for setting policies.[24] For example, recently, SoCalGas implemented for all its residential customers a unique tool to catch large emissions on the customer side of the meter with the installation of its advanced meters. Advanced meter data analytics identifies anomalous levels of gas consumption where the customer may have left an appliance on (e.g. BBQ) or there may be an actual leak that the customer did not smell the safety odorant. The new advanced meters help customers avoid excessive bills for both gas and water (e.g. advanced meters can identify excessive consumption of natural gas to continuously heat water when the hot water tank or associated piping had a leak).

Although the majority of emissions from a natural gas system are independent of throughput, SoCalGas's emissions rate is estimated to be less than half of a percent of throughput (~0.32%) based on latest reported numbers from the SB 1371 "Natural Gas Leakage Abatement" program under the CPUC.[25] Further, the reported value of 0.32% includes purposeful venting needed for maintenance, third-party damages and antiquated emission factors from over two decades ago that do not represent the modernization of the system. For example, SoCalGas eliminated all cast iron pipe from its system over twenty years ago and modernized its meter and regulator stations to eliminate high-bleed pneumatics.

B. Current TDV metric assumption to use a 100-year global warming potential is appropriate, as suggested by CEC staff

SoCalGas supports the position CEC staff took on use of 100-year global warming potential (GWP) proposed during the workshop. However, the recent E3 documentation appears to change the assumption to a 20-year GWP for methane emissions. The use of 100-year GWP for methane ensures consistency with CARB in the 2017 Climate Change Scoping Plan Update and other Assembly Bill 32 policies, like the Low Carbon Fuel Standard. It is important to use a consistent framework to evaluate the cost of GHG reduction programs. Using the 20-year GWP of methane will artificially increase the carbon emissions from natural gas appliances and give an incorrect assessment of the cost.

C. Current TDV metric excluding gas out-of-state emissions is appropriate, as suggested by CEC staff

SoCalGas supports CEC's current TDV metric to exclude gas out-of-state emissions from buildings. If the CEC does include upstream emissions for the gas system, then it should also include those upstream emissions associated with electric generation as well as consider the

[24] Fischer, Mark, Wanyu Chan, Seongeun Jeong, Zhimin Zhu. 2018. *Natural Gas Methane Emissions From California Homes*. Available at: https://pubs.acs.org/doi/10.1021/acs.est.8b03217
[25] SoCalGas Annual Report. Appendix 8. June, 14, 2019. Available at: https://www.socalgas.com/regulatory/documents/r-15-01-008/R1501008_SCG-2019_Annual_Report_Appendix_8_Template_Summary.pdf

additional electricity production necessary due to line losses. The CEC,[26] CPUC,[27] CAISO,[28] and leading researchers[29] agree that natural gas generation will continue to play an important role in California; providing the electric grid with operational flexibility as well as supporting the growth and integration of intermittent renewable sources of energy. Therefore, California must account for associated upstream emissions across all sectors on a level basis.

6. **CEC's current TDV metric assumption of bio- and synthetic gas and the availability of renewable natural gas are not overestimated; in fact, they are too conservative**

SMUD's comments claim that bio- and synthetic gas are overestimated in current TDV; and that renewable natural gas availability in California is over estimated.[30] SoCalGas believes CEC's current assumptions are low.

The Bioenergy Association of California[31] and numerous studies suggest higher volumes of available feedstock, both in- and out-of-state.[32] Additionally, SoCalGas is committed to 5% renewable gas in the system by 2022 and 20% by 2030.

Closing Comments

We reiterate, decarbonization and fuel diversity, not electrification, is the policy of the state. Indeed, fuel diversity is the core reason why the CEC was established.[33] Maintaining fuel

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[26] "For the near term, natural gas generation will continue to play an important role in integrating renewable resources and ensuring reliability." CEC. Final 2019 IEPR. At p.2. February 2020. Available at: https://efiling.energy.ca.gov/getdocument.aspx?tn=231883

[27] Recently, CAISO submitted comments asking CPUC to extend the use of natural gas power plants to address a potential shortfall of 2500 MW in 2022 and to look at long-term need for flexible resources. Source: CPUC Rulemaking 16-02-007. Comments of CAISO, July 22, 2019. Available at: http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=310226799

[28] At the SB 100 Modeling Inputs and Assumptions Workshop. February 24, 2020 workshop, Delphine Hou, Director of California Regulatory Affairs at CAISO said again that the Joint Agencies should "[c]onsider strategically maintain gas fleet to provide both energy and other grid services during transition. This includes maintain gas transmission infrastructure. We need to consider and implement a plan that ensures local capacity areas maintain reliability before shutting down local gas resources." Source: Joint Agencies. SB 100 Modeling Inputs and Assumptions Workshop. February 24, 2020

[29] EFI. *Optionality, Flexibility, & Innovation*. *Pathways for Deep Decarbonization in California.* Summary for Policy Makers. 2019. A p. xiii. Available at: https://energyfuturesinitiative.org/

[30] SMUD comments on 2022 Energy Code. Docket # 19-BSTD-03. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=232711&DocumentContentId=64781

[31] Bioenergy Association of California Comments. E3 Study and Presentation. June 21, 2019. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=228817&DocumentContentId=60148

[32] UC Davis Institute of Transportation Studies. *The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute*. at p.ix. June 2016. Available at: https://steps.ucdavis.edu/wp-content/uploads/2017/05/2016-UCD-ITS-RR-16-20.pdf

[33] The Warren Alquist Act created the CEC and gives it the authority to "…conduct an ongoing assessment of the opportunities and constraints presented by all forms of energy, to encourage the balanced use of all sources of energy to meet the state's needs, and to seek to avoid possible undesirable

diversity as California decarbonizes will be critical given its implications for assuring economic and energy security. Relying solely on a single energy source and irretrievably transitioning away from the natural gas system puts the energy delivery system reliability and resiliency at risk and undermines economy-wide carbon neutral goals. Building decarbonization efforts will be most successful if they are done in a way that is affordable to consumers and preserve consumer choice to facilitate quick implementation to meet 2030 goals.

SoCalGas provides these comments to help move California towards meeting our aggressive climate goals in a thoughtful, reasoned, studied, and cost-effective way. We believe that we can decarbonize buildings by decarbonizing both electricity and natural gas supplies. We believe a diverse energy portfolio that includes increased energy efficient technologies (e.g. heat pumps (both gas and electric), combined heat and power systems, green hydrogen powering fuel cells, new dual fuel gas equipment, natural gas/hydrogen blends, renewable natural gas, solar thermal and all the emerging technologies that have yet to be commercialized (e.g. direct solar hydrogen cells) provides the best pathway to reach California's ambitious climate and environmental goals in a prudent way that is fair and affordable to all Californians.

We look forward to participating in additional workshops that thoughtfully consider different options for building decarbonization and their effects on customers and communities. As always, SoCalGas subject matter experts are available to discuss all of these issues with CEC staff.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company
Encl.

consequences of reliance on a single source of energy." Source: CEC. Warren Alquist Act. 2019 Edition. Available at: https://ww2.energy.ca.gov/2019publications/CEC-140-2019-001/CEC-140-2019-001.pdf