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BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

Investigation regarding long-term planning for)
natural gas utility service in Nevada) Docket No. 21-05002
_____)

REPLY COMMENTS OF THE CONSERVATION ADVOCATES

1. Introduction

Western Resource Advocates (“WRA”), the Natural Resources Defense Council, Sierra Club, the Nevada Conservation League, The Nevada Chapter of the American Institute of Architects, and Defend our Desert (collectively, the “Conservation Advocates”) submit these reply comments in response to the September 24, 2021, Procedural Order issued by the Public Utilities Commission of Nevada’s (“Commission”) in Docket No. 21-05002. In these reply comments, the Conservation Advocates respond to the initial comments of Southwest Gas (“SWG”) in Phase 1. These reply comments respond to three broad themes present in SWG’s comments. First, we address SWG’s claim that fossil gas’s role in power sector decarbonization to date has relevance with respect to the fuel’s role going forward. Second, we address SWG’s suggestion that the distribution system should remain as is because there might be a use for some piped fuel in the future. Third, many of the studies that SWG cites are flawed. Each of these themes is described and addressed in the sections that follow.

2. Gas’s historical role in power sector decarbonization has no bearing on its future role.

SWG repeatedly asserts that natural gas has had a significant role in reducing greenhouse gas (“GHG”) emissions nationally and in Nevada. For example, SWG states:

Nevada has already made significant progress towards reducing its GHG emissions, particularly in the electric generation sector. This is in no small part due to the increased use of “lower-GHG emitting natural gas” and the

1 retirement of coal fired electric generation. Over the past 20 years, coal-to-gas
2 switching has driven a significant decline in the carbon intensity, as well as
total emissions from electric power generation in Nevada.

3 Nationally, CO2 emissions are near 20-year lows for similar reasons. The
4 national reduction in carbon intensity of electric generation is, like Nevada's,
5 due to the reduced use of coal for generation. These GHG emission reductions
in electric power generation demonstrate that natural gas can be an effective
6 tool to reduce GHG emissions across sectors by simply replacing more carbon-
intensive fuel sources.

7 Yet, despite Nevada's progress in reducing emissions from electric generation,
8 other sectors of the economy, as noted above, can still benefit from converting
to natural gas.¹

9 Even if natural gas has helped Nevada to reduce GHG emissions in some specific situations
10 *in the past*, for example by displacing coal in electric generation, it does not follow that gas will
11 or should be counted on to do so across all existing gas end uses and across all customers *in the*
12 *future*. As energy from renewable resources becomes increasingly prevalent, as electric options
13 for end uses such as transportation and building heat become more accessible and affordable, and
14 as generation from high-emitting resources such as coal declines on the grid in Nevada, there
15 will be fewer and fewer opportunities for gas to displace any GHG emissions on the grid or in
16 end-use applications. In the Nevada Pathways analysis referenced in our initial comments, the
17 Core Scenario, where Nevada reaches net-zero, sees the state's use of pipeline gas decline by 80
18 percent between 2020 and 2050.² Just because a fuel has contributed to incremental emissions
19 reductions does not mean that it can eliminate emissions. Stated another way, emissions from
meeting customer needs with gas have a floor, and that floor is likely well above zero.

20 **a. Fossil gas must be reduced to meet climate goals.**

21 Most critically, SWG ignores that meeting climate goals will require major cuts in fossil gas
22 use. As the Conservation Advocates outlined in initial comments, Nevada cannot possibly meet
23

24 ¹ SWG Comments in Docket No. 21-05002, submitted October 22, 2021, p. 9-10.

² Evolved Energy Research, Nevada Pathways Analysis, October 2020. Accessible at: <https://bit.ly/3qMJsQj>

1 the 2050 goals if other sectors, such as power and transportation, cut emissions, but those from
2 fossil gas use stay the same or increase.³ This is also a conclusion of Nevada’s 2020 State Climate
3 Strategy that states “[i]n order to meet Nevada’s long-term goal of zero or near-zero greenhouse
4 gas...emissions by 2050, transitioning away from natural gas is necessary.”⁴

5 The argument also overlooks the recent and growing body of evidence that gas leakage is
6 larger than assumed, likely negating all emission reduction benefits from fossil gas use. The U.S.
7 Environmental Protection Agency’s (“EPA”) current methane leak rate estimate is approximately
8 1.4 percent.⁵ On the other hand, a recent study published in 2020 by the Environmental Defense
9 Fund (“EDF”) examined methane leaks from the Permian Basin located in New Mexico and
10 Texas and found that 3.7 percent of the gas production in this basin is leaking into the
11 atmosphere.⁶ In another study conducted by Global Energy Monitor and released in 2020, “the
12 Gas Index” analyzed emission leaks from wellhead to homes for 71 cities across the country and
13 found similar results.⁷ This study found that the majority of the cities examined for methane leaks
14 have two to four times larger emission rates than the EPA’s current emission leak estimates. This
15 implies that the highest potential emission rate is 5.4 percent. These high methane leak rates are
16 seriously problematic because such high rates would negate or substantially reduce the potential
17 climate benefits that the gas industry has been claiming from replacing coal power plants with
18 gas power plants or replacing gasoline or diesel vehicles with compressed natural gas (“CNG”)
19 vehicles. In fact, a 2012 study conducted by researchers at EDF and several universities found

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22 ³ Conservation Advocates, Comments in Docket No. 21-05002, submitted October 22, 2021.

23 ⁴ “State Climate Strategy,” State of Nevada Climate Initiative, (December 1, 2020), p. 165, <https://bit.ly/3aV2ASJ>.

24 ⁵ U.S. Environmental Protection Agency. “Greenhouse Gases Equivalencies Calculator – Calculations and References.” Accessed June 17, 2021. Available at: <https://bit.ly/31YeutZ>

⁶ Storrow, Benjamin. 2020. “Methane Leaks Erase Some of the Climate Benefits of Natural Gas” *E&E News* on May 5, 2020. Available at: <https://bit.ly/3oiHvYO>.

⁷ Carter, Sheryl. 2020. “Gas Leaks—and It’s Worse Than We Thought.” Natural Resources Defense Council. Available at: <https://on.nrdc.org/3kwCnzo>

1 that natural gas would not produce any immediate climate benefits relative to coal power plants
2 if methane emission rates are more than 2.7 percent.⁸ The study further found no immediate
3 climate benefits relative to diesel fuel vehicles with methane leak rates over 1 percent, and no
4 benefit relative to gasoline vehicles with methane leak rates over 1.6 percent.

5 Carrying to the extreme SWG’s supposition that fossil gas can play a significant role in
6 supporting the transition to renewable energy for both power generation and utility service,⁹
7 SWG argues that gas service should be expanded rather than reduced. For example, SWG states,

8 Natural gas has long been a bridge fuel, and today there remain large sectors
9 and geographical areas that have yet to cross that bridge. There are sectors of
10 the economy, including the industrial sector and transportation sector, that still
11 rely heavily on petroleum-based fuels for energy. Additionally, residents in
12 several areas of Nevada still rely on more carbon-intensive fuels such as
propane to heat their homes. Before any reductions of natural gas usage are
considered, natural gas should be used to replace, as much as possible, those
more carbon-intensive fuels that remain heavily in use.¹⁰

13 Here, SWG conjures a widely used metaphor of a fuel that serves as a “bridge” to a low-
14 carbon energy sector. By distorting the “bridge” analogy, SWG asserts that increased natural
15 gas usage will reduce emissions if it replaces other fossil fuels. While fossil gas may have small
16 efficiency improvements in limited circumstances over other fuels, as noted above, the carbon
17 footprint of fossil gas over its lifecycle may be on par with coal. Also, expanding gas service
18 will make it impossible for Nevada to fully decarbonize the economy by 2050. This is
19 especially true given that some end-use equipment, such as heating systems, may only be
20 replaced once every 20–30 years. Short of retiring a gas heating system installed this decade

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23 ⁸ Alvarez, Ramon A., et al., “Greater focus needed on methane leakage from natural gas infrastructure.” *PNAS*.
(April 24, 2012) 109 (17) 6435-6440.

24 ⁹ SWG Comments, p. 1.

¹⁰ SWG Comments, p. 8. See also p. 12, which indicates that “natural gas produces significantly lower GHG emissions than the propane, heating oil, wood burning stoves and other fuels that homes and businesses currently use in these areas.”

1 well before the end of its useful life—a waste of consumers’ limited financial resources—there
2 may be only one opportunity before 2050 to achieve substantial reductions in emissions
3 associated with a building’s heating system. That opportunity could be squandered if new gas
4 pipeline extensions are allowed, with potentially severe consequences: customers stuck on gas
5 service for years to come and failure of the state to achieve GHG reduction targets.

6 Extensions of the gas system are unnecessary given that there are low- or no-carbon
7 alternatives for areas currently without gas service. These alternatives do not require extensive
8 pipes that could burden ratepayers for many years after they are no longer used and useful.
9 Electrification through heat pumps is already cheaper than or cost-competitive with natural gas
10 in the building sector and lower cost than propane or heating oil. Electrification through heat
11 pumps would allow 100 percent decarbonization as grid emissions decline without further end-
12 use changes.

13 SWG claims that there is a “clear opportunity” to reduce Nevada’s GHG emissions in the
14 transportation sector by transitioning from petroleum-based fuels to CNG.¹¹ However, CNG
15 vehicles do not allow the state to achieve zero emissions and may have few carbon dioxide
16 reduction benefits, even relative to diesel, when methane leaks are fully accounted for.
17 Electrification provides up to 100 percent reduction in both GHG and tailpipe emissions. As
18 noted in the Conservation Advocates’ initial comments, electrification is the clear economic
19 and emissions winner for light- and medium-duty vehicles, and it will likely make sense for
20 many heavy-duty applications as well. Targeted use of CNG or renewable natural gas (“RNG”)
21 for transportation applications could make sense in situations where the cost of maintaining the
22 pipelines and fueling infrastructure, plus fuel cost, is still lower than the cost of electric options.

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¹¹ SWG Comments, p. 11.

1 However, a 2021 study by the National Renewable Energy Laboratory estimates that the total
2 costs of ownership (“TCO”) for Class 4 parcel delivery trucks and Class 8 short-haul tractors
3 are currently slightly higher than the TCO for comparable CNG vehicles and are expected to be
4 lower in the near future. Further, while the study finds that while Class 8 long-haul tractors
5 (500-mile range) do not have a cost advantage to other vehicle types, they are expected to be
6 cost-competitive with CNG trucks in the near future when the dwell time for
7 refueling/recharging electric vehicle batteries is not required.¹² This implies that CNG trucks
8 using expensive RNG will likely be more expensive even for Class 8 long-haul tractors than
9 electric tractors. On behalf of NRDC and the Sierra Club, NRDC vehicle expert Patricio
10 Portillo testified on CNG vehicles in SWG’s 2022-2024 conservation and energy efficiency
11 plan docket.¹³

12 SWG’s argument that fossil gas has lower emissions than other fuels stems in part from a
13 comparison with efficiencies achieved with gas-fired electric generation. This argument
14 overlooks that fossil gas is, in fact, the dominant on-site emission fuel source in buildings today.
15 There is limited opportunity to cost-effectively replace remaining petroleum use in buildings with
16 gas because adding new gas lines for these customers would likely make gas options more
17 expensive compared with electrifying those buildings. In addition, further reductions in building-
18 related emissions below the level achieved with gas will require using something other than fossil
19 gas such as electricity or a more expensive lower-carbon fuel. Only electric options are assured
20 to be implementable at scale and at a reasonable cost to get the state’s buildings to zero emissions,
21 as discussed in the Conservation Advocates’ initial comments. Also, electric end-use options

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23 ¹² Hunter, C., et al., *Spatial and Temporal Analysis of the Total Cost of Ownership for Class 8 Tractors and Class*
24 *4 Parcel Delivery Trucks*. (2021) National Renewable Energy Laboratory. Available at: <https://bit.ly/3FclIsB>

¹³ Application of Southwest Gas Corporation for approval of its Conservation and Energy Efficiency Plan for the period 2022-2024, Docket No. 21-05001, Direct testimony of Patricio Portillo filed on July 29, 2021.

1 reduce the risk of methane leaks—a risk that is further minimized as renewable resources displace
2 gas generation and leaks are reduced during gas extraction and transportation, as well as during
3 consumption.

4 **b. Low-GHG forms of gas come with high costs and critical uncertainties.**

5 SWG’s argument for gas continuing to have a major role in a decarbonized future also hinges
6 on the availability of low-GHG forms of gas. On this point, SWG states:

7 In addition to helping drive down economy-wide emissions, the natural gas
8 industry is focused on efforts to both reduce GHG emissions associated with
9 the vast delivery system and reduce the carbon intensity of the fuel being
10 delivered. A recent report commissioned by Downstream Natural Gas
11 Initiatives (DNI), outlines key strategies for decarbonizing natural gas
12 infrastructure and operations and suggests clear and plausible approaches
13 natural gas utilities can take to meaningfully reduce GHG emissions while
14 maintaining natural gas in the overall energy system. These include accelerated
15 energy efficiency efforts, modernization of the pipeline system and enhanced
16 leak detection and repair strategies, the incorporation of lower-carbon gasses
17 into the pipeline system and carbon removal and negative emissions
18 technologies.¹⁴

19 There are important considerations for each of the approaches SWG recommends. Energy
20 efficiency is an important component of any emissions-reduction strategy. Yet the state needs to
21 be careful with the approach to gas energy efficiency programs. Programs that promote fossil-
22 gas consuming equipment, even equipment that is more efficient than standard gas measures,
23 send consumers the wrong message about gas. That is, these programs signal consumers and
24 contractors that fossil gas is part of an approved, planned path to meet policy objectives when
the continued use of fossil gas make it more difficult to achieve policy objectives. Combustion
of fossil gas must be limited to only the uses for which there are no alternatives to achieve the
state’s climate targets. Efficiency programs should not promote long-lived gas equipment.

¹⁴ SWG Comments, p. 7.

1 Rather, incentives for new gas equipment should be strictly limited and the emphasis of gas
2 efficiency programs should be on building shells and support for electrification. Accelerated
3 energy efficiency efforts should promote fuel-switching from gas and other delivered fuels to
4 electric heat pumps, which are already cost-competitive alternatives to natural gas and enable
5 buildings to reduce emissions substantially.

6 “Modernization of the pipeline system” is likely shorthand for accelerated pipeline
7 replacement and would increase potentially stranded assets that may prove a burden to future
8 ratepayers. Nevada needs a more proactive gas system planning approach, such as an approach
9 that requires pipeline replacement or expansion to demonstrate that it is more cost-effective than
10 non-pipe alternatives to be approved. Non-pipe alternatives include electrification.

11 With respect to the “incorporation of lower-carbon gasses into the pipeline system and carbon
12 removal and negative emissions technologies,” the lack of availability of RNG and hydrogen,
13 and the high energy costs of these and of carbon removal technologies and processes are major
14 risks of and barriers to these alternative fuels. As discussed in the Conservation Advocates’ initial
15 comments, these fuels should be reserved for their best and highest use; not in buildings that can
16 be electrified at relatively low cost.

17 SWG also mentions carbon capture use and storage (“CCUS”), carbon offset programs, and
18 “responsibly sourced gas” as other opportunities to reduce the carbon intensity of gas.¹⁵ CCUS
19 is a red herring because capturing carbon dioxide from an individual power plant faces
20 considerable barriers to deployment due to high cost of equipment, loss of plant efficiency, and
21 increases in water use.¹⁶ At smaller emissions scales, such as those from commercial and
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24 ¹⁵ SWG Comments, p. 9.

¹⁶ Eldardiry, Hisham, and Emad Habib. “Carbon capture and sequestration in power generation: review of impacts and opportunities for water sustainability.” *Energ Sustain Soc* 8, 6 (2018). <https://bit.ly/3DgFbYA>.

1 residential buildings, CCUS is not practical.

2 Carbon offset programs are a relatively common tool for addressing some portion of
3 emissions reductions, but whether these programs actually reduce emissions depends on how
4 they are designed and monitored. To be effective, activities that qualify for carbon offsets must
5 produce long-lasting emissions reductions that are greater than the reductions that would have
6 otherwise occurred. And while “responsibly sourced gas” is a buzzword in the gas industry,
7 displacing conventional gas with responsibly sourced gas would add to the cost of fuel but may
8 not provide clear emission reductions. This is especially likely to be the case if proposed federal
9 regulations¹⁷ tighten up the extraction and transportation processes. Also, responsibly sourced
10 gas would likely still lead to the same harmful health impacts associated with indoor air quality
11 that non-responsibly sourced gas would.

12 **c. Costs of gas will increase.**

13 As another rationalization for continuing and expanding gas service, SWG calls out the cost
14 of electrification. For example, SWG states:

15 Natural gas bills are typically the lowest utility bills a customer receives, and
16 a typical new home can save nearly \$900 per year in energy costs by installing
17 natural gas. On an energy-equivalent basis, natural gas rates are 67% less than
18 electricity.¹⁸

19 To the extent that gas bills are currently low, this will not continue as decarbonization
20 progresses, expensive low-carbon fuels are blended into the gas system, and system costs are
21 covered by fewer and fewer customers. The costs of meeting climate goals will likely be higher
22 if customers are paying for two systems (e.g. gas for space heating and electric for space cooling)

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24 ¹⁷ U.S. EPA, EPA Proposes New Source Performance Standards Updates, Emissions Guidelines to Reduce Methane and Other Harmful Pollution from the Oil and Natural Gas Industry. November 2, 2021. Available at <https://bit.ly/3ni5msx>.

¹⁸ SWG Comments, p. 1.

1 rather than just electric for both heating and cooling. In addition, low gas rates (on an energy-
2 delivered basis) are more than compensated by the much higher efficiency of electric heat pump
3 technologies that are regularly 300 to 500 percent more efficient than natural gas.¹⁹ The U.S.
4 Energy Information Administration (“EIA”) recently noted that the “Henry Hub spot price will
5 average \$5.53/MMBtu from November through February in our forecast” and that because “of
6 uncertainty around seasonal demand, we expect natural gas prices to remain volatile over the
7 coming months with winter temperatures to be a key driver of demand and prices.”²⁰ Based on
8 the EIA’s historical tacking, gas prices are currently more than double year-over-year.²¹

9 **3. The potential use for some piped fuel in the future does not mean that the gas**
10 **distribution system should be maintained in its present form.**

11 SWG maintains that the use of gas infrastructure should be maintained and expanded in order
12 to reduce GHG emissions.²² This position belies the fact that the large majority of SWG’s plant
13 in service, comprised largely of distribution system mains, services, and meters, is used to serve
14 residential customers,²³ for whom electrification is a ready and cost-competitive option. Even if
15 some essential combustion is retained, the scale of the necessary gas system would shrink
16 substantially if all residential heating loads shifted to all-electric. Under traditional ratemaking
17 principles, costs for the remaining system would be shifted to the customers who stay on the
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20 ¹⁹ This range of efficiency improvement is based on the assumption that heat pumps for space heating and water
21 heating are 300 percent efficient (a Coefficient of Performance of 3), that the most efficient gas equipment has a
22 95% efficiency rating (95 AFUE for a gas furnace), and that the lowest efficiency gas equipment has a 60%
23 efficiency rating (60 UEF for a storage gas water heater). Using these assumptions, the improvement in efficiency
24 from the most efficient gas equipment to a heat pump is 315 percent (300 percent / 95 percent), while the
improvement in efficiency from the least efficient gas equipment to heat pumps is 500 percent (300 percent / 60
percent).

²⁰ US EIA, “Short-Term Energy Outlook”, (Nov. 9, 2021). Accessible at: <https://bit.ly/3orRmeK>

²¹ *Id.*

²² SWG Comments, p. 7.

²³ See, for example, the cost of service studies presented in Application of Southwest Gas Corporation for
authority to increase its retail natural gas utility service rates for Southern and Northern Nevada, Schedule N-2 in
each of Volumes 31 and 33 of SWG’s filing for a general rate increase in Docket No. 21-09001.

1 system. This clearly denotes a clear need for equity-driven policies to protect customers during
2 the transition and enable customers without access to capital or control over their building
3 systems to switch away from gas or otherwise be protected.

4 States and utilities should explore other options for transporting fuel for niche and specialized
5 fossil gas uses rather than sinking ratepayer funds into a system that is likely to make it difficult
6 or impossible to meet carbon goals. For example, industrial customers may find it more cost-
7 effective to use trucked compressed or liquified gas for applications that cannot be electrified,
8 rather than paying a large portion of the cost of the pipeline system.

9 **4. SWG’s cited studies**

10 SWG cites a number of studies in its initial comments. Below we discuss three of the cited
11 studies, including: Navigant Consulting’s 2018 Analysis of the Role of Gas for a Low Carbon
12 California Future (the “Navigant Analysis”); Thomas Tanton’s 2020 report titled Costs of
13 Electrification: A State by State Analysis and Results (the “Tanton Report”), and the NYC
14 Mayor’s Office of Sustainability, ConEd and National Grid’s 2021 report, Pathways to Carbon-
15 neutral NYC: Modernize, Reimagine, Reach (the “Carbon-neutral NYC Report”). Absence of
16 any findings, conclusions, or commentary of the discussed studies or other studies relied on by
17 SWG from the discussion below is not agreement with their findings or recommendations.

18 **a. The Navigant Analysis**

19 SWG referenced the Navigant²⁴ Study performed in 2018 for Southern California Gas
20 (“SoCalGas”). SWG claims that the study demonstrates that a reduction in gas use “is not
21 necessary to achieve emission reductions” despite only analyzing one way of reducing the carbon
22 intensity of natural gas through the use of RNG.²⁵ However, the Navigant Analysis suffers from
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24 ²⁴ Now Guidehouse Consulting.

²⁵ SWG Comments, p. 16.

1 flaws that call into question its usefulness in California or any other state. Notably, the analysis
2 has been criticized for unrealistic assumptions about biomethane supply and scalability, its failure
3 to account for methane leakage, and biased assumptions about electrification costs, among other
4 things.²⁶ After a subsequent E3 study, the California Energy Commission released a report
5 finding that the costs of “climate neutral” fuels far exceeds that of natural gas²⁷. Given the very
6 limited supply of relatively inexpensive “climate neutral” fuels, such fuels should be reserved for
7 energy intensive sectors that do not have readily available efficient, electrified alternatives, as
8 discussed in the Conservation Advocates initial comments.

9 SoCalGas has since distanced itself from the Navigant Analysis. On November 2, 2021, the
10 utility filed a report²⁸ that acknowledges gas throughput declines may be needed to meet
11 California’s GHG reduction goals, which is a big shift from the earlier position. Instead of a focus
12 on decarbonized pipe fuels, SoCalGas now focuses on its system’s role in supporting electric
13 reliability and providing services to hard-to-abate industries. Key highlights from the latest filing
14 includes:

- 15 • “While overall gas throughput is expected to decline as electrification of end uses
16 occurs, the increased reliance on intermittent renewable generation resources will
17 make all the more important the gas system’s ability to support electric reliability by
18 providing gas for thermal electric capacity”²⁹;

21 ²⁶ Golden, Rachel. Sierra Club Comments on SoCalGas and Navigant Report, *Analysis on the Role of Gas for a*
22 *Low-Carbon California Future* (18-IEPR-09). August 24, 2018.
23 ²⁷ Including biomethane produced from anaerobic digestion of biomass wastes and from gasification of biomass
24 wastes and residues, climate-neutral hydrogen, and synthetic methane produced from a climate neutral source of
carbon and hydrogen.
²⁸ Southern California Gas Company and San Diego Gas & Electric Company, Joint Comments to the Assigned
Commissioner’s Amended Scoping Memo and Ruling, Public Utilities Commission of the State of California,
Rulemaking 20-01-007, November 2, 2021.
²⁹ *Id.* at 8.

- 1 • “As gas throughput to core customers declines over time, and the gas system’s
2 primary value is in its ability to deliver the large quantities of gas to satisfy peak hour
3 demand by electric generators”³⁰, and;
- 4 • “SoCalGas recently published the results of its study, The Role of Clean Fuels and
5 Gas Infrastructure in Achieving California’s Net-Zero Climate Goal, which highlight
6 the essential and indispensable role clean fuels and a clean fuels network play in
7 providing decarbonization solutions for hard to abate sectors, like heavy-duty
8 transportation and industry, while supporting climate energy policies including
9 resilient and reliable electrification.”³¹

10 In contrast with SoCalGas’ recognition of electrification as something that is going to happen,
11 SWG’s filing³² in the same California proceeding was a mirror of its Nevada filing, over-
12 optimistic on RNG and other fossil gas alternatives, even citing many of the same discredited
13 analyses, like the Tanton Report, discussed below.

14 **b. The Tanton Report**

15 SWG cites the Tanton Report as evidence for its claim that electrification poses significant
16 cost barriers.³³ SWG states that “[b]y some estimations, full, nationwide electrification will cost
17 between \$18 trillion and \$29 trillion dollars.” The Tanton Report is also cited for the claim that
18 “it would cost approximately \$1,978 per ton of [carbon dioxide] avoided in the residential sector
19 to replace that natural gas use with electricity.”

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23 ³⁰ *Id.* at 14.

³¹ *Id.* at 3.

³² Southwest Gas Corporation, Comments in Response to the Assigned Commissioner’s Amended Scoping Memo and Ruling, Public Utilities Commission of the State of California, Rulemaking 20-01-007, November 2, 2021

³³ The Tanton report is Exhibit O to SWG’s comments.

1 The Tanton Report suffers from methodological flaws and should not be given any weight
2 by the Commission. Most importantly, it does not account for the efficiency of gas or electric
3 appliances. The study’s method simply assumes that all site energy used by natural gas appliances
4 today would need to be replaced one-for-one with site energy supplied by electricity. Even with
5 only resistance heating, this would be incorrect (as resistance heating is 10 to 40 percent more
6 efficient than gas combustion), but it is rendered completely useless when compared with heat
7 pumps that are typically a factor of three to five more efficient than gas appliances. The author
8 also makes the same error with respect to electric vehicles, which are three to four times as
9 efficient as comparable internal combustion engine vehicles.

10 **c. The Carbon-Neutral NYC Report.**

11 When discussing investment that may be needed to deeply decarbonize the energy system,
12 SWG cites the NYC Pathways Report to highlight the need for upfront analysis of customer
13 impacts. While we agree that customer impacts are a critical consideration in the development of
14 decarbonization policy, we note that there are key issues with the Carbon-neutral NYC Report
15 analysis that Nevada should be careful to avoid. Most importantly, assumptions in Carbon-
16 neutral NYC Report with respect to the availability of RNG are unsupported and unrealistic.
17 Assumptions about the carbon footprint of RNG, including due to leakage and energy use in
18 processing, have not been addressed in the report, and no source is provided for the assumed
19 lifecycle carbon intensity. In addition, the analysis assumes that between 11 and 15 percent of
20 buildings are completely untouched with energy efficiency, even with basic efficiency measures
21 like low-flow water fixtures.

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24 DATED November 12, 2021.

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Respectfully submitted,

/s/ Dylan Sullivan

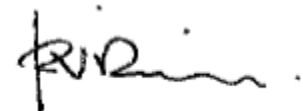
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CERTIFICATE OF MAILING

Docket No. 19-06008

I hereby certify that I have on this date served the foregoing document upon all parties of record in this proceeding by electronic mail to the recipient’s current electronic mail address, facsimile, or mailing a true copy thereof, properly addressed with postage prepaid or forwarded as indicated below to:

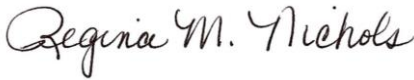
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