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21-05002

Public Utilities Commission of Nevada  
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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 2. These reply comments respond to two substantial problems with SWG’s comments. First, we address errors and distortions in SWG’s comparison of energy needs for electrification relative to direct gas use. Second, we address SWG’s claims about studies and challenges in other states, including California and New York.

2. SWG makes numerous errors in its characterization of energy needs for electrification.

SWG’s initial comments in Phase 2 contain problems that call into question the weight that the Commission should give to SWG’s conclusions. For example, SWG states:

In posing its question, the Commission perceptively asks about “natural gas electrification” because it recognizes that 61.3% of electric generation is fueled by natural gas and any new electric demand would likely come from natural gas fired power plants. In which case, natural gas electrification will actually increase GHG emissions - having the opposite desired outcome. Because using natural gas to generate electricity is far less efficient than the direct use of natural gas, it requires electric utilities to consume substantially more natural

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gas to generate an equivalent amount of electricity. Conservative estimates put it at two to three times the amount of natural gas. The result is that electric generation, which already consumes 65% of the natural gas used in the state, will increase its natural gas consumption in the state and thereby increase GHG emissions.<sup>1</sup>

SWG errs in its comparison of the amount of energy that would be consumed by gas power plants to serve electrified load relative to direct use in buildings. SWG compares the efficiency of a gas power plant to generate electricity for decarbonized buildings (42 to 60 percent), to the efficiency of direct use of gas in buildings (91 percent).<sup>2,3</sup> Even if a power plant is only 50 percent efficient and direct gas use in buildings is 90 percent efficient, then electrified loads with a coefficient of performance (“COP”) over 1.8 would consume less energy than direct gas use (e.g., for heat pumps).<sup>4,5</sup> Existing heat pumps for space conditioning easily exceed a COP of 1.8 in all but the coldest temperatures and heat pump efficiency continues to improve.<sup>6</sup> When powered by renewable energy, heat pumps have no emissions, which is not true for gas-fired furnaces.

SWG’s statement also assumes, incorrectly, that additional load from electrification would be served by gas-fired generation. Fossil gas is not the long-term marginal fuel for new electric generation in the state. Renewable energy production is growing rapidly: as this Commission is

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<sup>1</sup> Southwest Gas Phase 2 Comments submitted December 10, 2021, p. 7.  
<sup>2</sup> These efficiency ratings are SWG’s estimates, provided in footnote 2 of Southwest Gas’ Phase 2 Comments, *id.* The efficiency of gas-fired power plants does not appear to take into account losses in transmission and distribution of electricity, but the direct use of gas likewise does not appear to account for leakage of methane (gas with high global warming potential) during gas processing and transport.  
<sup>3</sup> It is important to note that SWG’s comparison assumes that electric heating relies on electric resistance heating. However, electric heat pumps are substantially more efficient than electric resistance heating or natural gas space heating. Heat pumps are now widely available and will be the dominant electric heating technology.  
<sup>4</sup> The coefficient of performance is a measure of the useful heating or cooling provided relative to the energy required to get that heating or cooling. As a comparison, the 90 percent efficiency of gas combustion equipment (heating provided) divided by the assumed 50 percent power plant efficiency (energy required) yields a COP of 1.8. This can be compared to the COP of heat pumps, which often exceeds 1.8 in all but the lowest of temperatures.  
<sup>5</sup> See the discussion on the operation of heat pumps in Nevada in the Conservation Advocates Comments submitted in this Docket on October 22, 2021, pg. 13.  
<sup>6</sup> *Id.*

1 well aware, Nevada increased renewable energy production more than threefold since 2011.<sup>7</sup>  
2 Utility-scale renewable energy sources are highly cost-effective and are expected to continue to  
3 decline in cost. While some increased load associated with electrification might be met with  
4 gas on an hourly or monthly basis, renewable resources will continue to displace gas fired  
5 generation over time. Importantly, SWG’s assumption that new generation will be gas-powered  
6 also appears to conflict with the requirements of the Renewable Portfolio Standard mandate  
7 that 50 percent of electricity sales be from renewable sources by 2030.

8 SWG also asserts that meeting the higher load for electrification will make it “drastically  
9 more difficult, if not impossible” for electric utilities to meet their clean energy goals.<sup>8</sup> Yet  
10 electric utilities can acquire additional wind, solar, storage, and other renewable resources as  
11 part of highly decarbonized grid. Numerous studies examine grids with high levels of  
12 renewable resources and electrified loads and find that it is viable, contrary to SWG’s  
13 statements.<sup>9</sup>

14 Similarly, SWG indicates that “[b]ecause nearly 100% renewable electricity is necessary  
15 for natural gas electrification to be environmentally beneficial, [policy driven electrification]  
16 will necessitate aggressive, accelerated deployment of renewable resources.”<sup>10</sup> This erroneous  
17 statement confuses what is required to reduce emissions—far less than 100 percent renewable  
18 electricity—and what is required to eliminate them. Using electric end use technologies widely  
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22 <sup>7</sup> State of Nevada Governor’s Office of Energy, 2020 Status of Energy Report, available at: <https://bit.ly/3IF7ymd>

23 <sup>8</sup> Southwest Gas Phase 2 Comments submitted December 10, 2021, p. 10.

24 <sup>9</sup> See, for example, the National Renewable Energy Laboratory, “Electrification Futures Study: Operational Analysis of U.S. Power Systems with Increased Electrification and Demand-Side Flexibility” (2021), available at <https://bit.ly/3EMFoUf>. Also see Sullivan, et al., “Pathways and Policies to Achieve Nevada’s Climate Goals: An Emissions, Equity, and Economic Analysis” (Evolved Energy, GridLab, NRDC, Sierra Club, October 2020), <https://bit.ly/3BZbISq>

<sup>10</sup> SWG Phase 2 Comments submitted December 10, 2021, p. 12.

1 available today, the efficiency of overall energy consumption can be improved via  
2 electrification even if new gas plants are used to meet increased load.

3 **3. SWG mischaracterizes developments in other states.**

4 California

5 Looking outside of Nevada, SWG claims that California “is now scrambling to find  
6 baseload resources” as a result of its efforts to expand renewable resources.<sup>11</sup> This statement  
7 mischaracterizes the relatively small, temporary gas resources that California procured,  
8 comprising a total of five gas-fueled generators that have individual capacities of 30 MW each,  
9 according to SWG’s cited article. Calling them “baseload” resources is inaccurate and, at a  
10 combined total of 150 megawatts, they are collectively a “drop in the bucket” relative to  
11 California’s daily average peak demand of well over 40,000 megawatts.<sup>12</sup> More notably,  
12 California continues to aggressively expand its non-gas generation fleet. This includes a recent  
13 procurement of 11.5 GW of clean energy resources, slated to come online by 2026.<sup>13</sup>

14 New York

15 SWG also references a New York Independent System Operator study on the potential  
16 impacts of electrification.<sup>14</sup> The report acknowledges that eliminating natural gas while  
17 simultaneously electrifying buildings would require substantial investment, but it does not  
18 conclude that electrification is unaffordable or unnecessary, as evident from a review of the  
19 paragraph surrounding the language cited by SWG:

20 The current system is heavily dependent on existing fossil-fueled resources to  
21 maintain reliability, and eliminating these resources from the mix will require  
22 an unprecedented level of investment in new and replacement infrastructure,

23 <sup>11</sup> *Id.*

<sup>12</sup> See California Energy Commission, “A Peek at Net Peak” (2021) at <https://bit.ly/3rTXFv7>

24 <sup>13</sup> Balaraman, Kavya. “California approves 11.5 GW of new clean resources in largest-ever single procurement order”, (2021) Utility Dive, available at <https://bit.ly/33lwI9t>

<sup>14</sup> Southwest Phase 2 Comments submitted December 10, 2021, p. 13.

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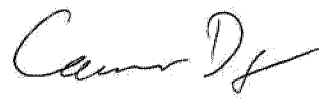
and/or the emergence of a zero-carbon fuel source for thermal generating resources. A power system that is effectively free of GHG emissions in 2040 cannot include the continued operation of thermal units fueled by well-based natural gas. However, these are the very units that are currently vital to maintain power system reliability throughout the year. This is the fundamental challenge of the power system transition that will take place over the next two decades. Indeed, this transition must take place at the same time that electricity demand in the state will grow significantly if electrification of other economic sectors, such as transportation and heating, is needed to meet the economy-wide GHG emission reduction requirements. In all four cases studied, the required investment in and development of renewable resources is substantial, and far greater than anything previously experienced in New York.<sup>15</sup>

Just because a challenge is unprecedented does not mean it is impossible, or not the right path. The impacts of climate change that include increased occurrences of heat waves and droughts due to increased temperatures in Nevada are expected to occur with a high degree of confidence without deep reductions in greenhouse gas emissions.<sup>16</sup> Increased incidences of severe weather and other changes in the energy system will be “unprecedented” “challenges” that must be addressed to navigate the coming decades while maximizing the public interest.

DATED December 10, 2021.

Respectfully submitted,  
/s/ Dylan Sullivan

Senior Scientist, Climate & Clean Energy  
Program  
Natural Resources Defense Council

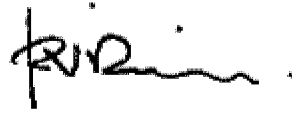
  
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<sup>15</sup> Analysis Group 2020. Climate Change Impact Phase II: An Assessment of Climate Change Impacts on Power System Reliability in New York State: Final Report (2020), available at: <https://bit.ly/3lQAttJ>.  
<sup>16</sup> See Intergovernmental Panel on Climate Change, “Climate Change 2021: The Physical Science Basis” (2021), available at: <https://bit.ly/3ENW1id>; also see USGCRP, “Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment,” Vol. II, Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.) (2018), available at: <https://bit.ly/3GBJJu2>

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/s/ Elspeth Cordua  
Elspeth Cordua, Beyond Coal Campaign  
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