



**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

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Application of SOUTHERN CALIFORNIA  
GAS COMPANY (U 904 G) for Authority to  
Establish a Memorandum Account for the  
Angeles Link Project

Application 22-02-\_\_\_\_\_

**APPLICATION OF SOUTHERN CALIFORNIA GAS COMPANY (U904G) FOR  
AUTHORITY TO ESTABLISH A MEMORANDUM ACCOUNT FOR THE ANGELES  
LINK PROJECT**

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Pursuant to California Public Utilities Code section 701, and California Public Utilities Commission (“Commission”) Rules of Practice and Procedure (“Rules”) 2.1 and 2.2, Southern California Gas Company (“SoCalGas”) hereby submits this application (“Application”) for authorization to establish the Angeles Link Project Memorandum Account (“Memo Account”). The Memo Account would track the incremental costs associated with stakeholder engagement and engineering, design and environmental work necessary to develop a first-of-its-kind potential project (“Project”) to deliver renewable green hydrogen into the Los Angeles Basin. The potential Project is anticipated to include one or more trunk transmission pipelines that would run from green hydrogen generation sources into delivery point(s) in the Los Angeles Basin.<sup>1</sup>

The only regulatory action requested of the Commission at this time is approval of a Memo Account to track Project costs. In one or more subsequent filings, SoCalGas expects to seek Commission approval of the Project and recovery of just and reasonable costs incurred. This Application seeks *only* the authority to establish and maintain a memorandum account to

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<sup>1</sup> See Section II.A for further details.

track Project study and public engagement costs. Given the innovation and broad environmental benefits of the potential Project, SoCalGas believes it important to provide the Commission and the public with information about the Project and its context in this first filing.

The Project would benefit ratepayers and the state by advancing California’s net zero goals, increasing use of clean fuels, and creating new jobs and economic benefits. Specifically, the Project would develop a green hydrogen energy transport system into the Los Angeles Basin to further two related State clean energy policy objectives:

- Advance the state’s decarbonization and clean air goals by bringing green hydrogen<sup>2</sup> into the Los Angeles Basin to support current and future green hydrogen end users, including “hard-to-electrify” industries, electric generation and the heavy duty transportation sector; and
- Displace the use of natural gas in the Los Angeles Basin to support, along with other clean energy projects and reliability efforts, a comprehensive approach to facilitate the ultimate closure of the Aliso Canyon underground natural gas storage facility, consistent with state goals and energy reliability requirements, and complementary to the Commission’s efforts in the Order Instituting Investigation, I.17-02-002 (“SB 380 Proceeding”).

Establishing the Memo Account would not predetermine the recoverability of any Project costs tracked therein. Rather, the Memo Account would enable SoCalGas to record Project costs, provide customers and stakeholders with a transparent mechanism to monitor Project

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<sup>2</sup> “Green hydrogen” generally refers to hydrogen produced through electrolysis using renewable energy. See, e.g., Cal. Energy Comm’n, *Draft 2021 Integrated Energy Policy Report*, CEC-100-2021-001-V3 (Jan. 2022) (“Draft 2021 IEPR”), Vol. III, p. 66, available at <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report>.

development, and, at a later date, allow the Commission to determine the reasonableness and recoverability of the recorded costs.

Granting SoCalGas’s request for a Memo Account is in the public interest and appropriate for several reasons. **First**, the Project responds to an event of an exceptional nature that is not under SoCalGas’s control—climate change—which California has identified requires swift, transformative and progressive action to meet the state’s climate goals under unambiguous timelines. **Second**, the costs proposed to be tracked in the Memo Account could not have reasonably been foreseen when SoCalGas filed its last General Rate Case (“GRC”) in 2017, nor should they be delayed to SoCalGas’s next GRC cycle. The need for green hydrogen and, by extension, the potential Project has recently been determined. **Third**, the costs to study and design the potential Project are anticipated to be substantial. **Finally**, the process of tracking and reporting on Project development costs through this Memo Account is in the public interest because it will provide for a high level of transparency and stakeholder engagement throughout the Project development process, including with respect to costs SoCalGas incurs along the way.

Accelerating a shift to clean fuels requires swift action—as reflected in Governor Newsom’s request to the Commission to accelerate progress toward the state’s net zero goals<sup>3</sup> and his Emergency Proclamation to expedite clean energy projects and relieve demand on the electrical grid in the face of extreme climate impacts across the West.<sup>4</sup> Accordingly, given the Project’s magnitude and the state’s identified need to act quickly in order to meet the state’s

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<sup>3</sup> Office of the Governor, Press Release: *Governor Newsom Holds Virtual Discussion with Leading Climate Scientists on State’s Progress Toward Carbon Neutrality* (July 9, 2021), available at <https://www.gov.ca.gov/2021/07/09/governor-newsom-holds-virtual-discussion-with-leading-climate-scientists-on-states-progress-toward-carbon-neutrality/>. See *infra* notes 80-81 and accompanying text.

<sup>4</sup> Office of the Governor, *Proclamation of a State of Emergency* (July 30, 2021), available at <https://www.gov.ca.gov/wp-content/uploads/2021/07/Energy-Emergency-Proc-7-30-21.pdf>.

climate goals, SoCalGas has identified three phases of cost recording as the Project moves forward: (1) preliminary engineering, design, and environmental studies; (2) a front-end engineering and design (“FEED”) study; and (3) development of a formal application for a certificate of public convenience and necessity (“CPCN”) for the potential Project.

As one of the nation’s largest operators of an energy fuel delivery network, serving approximately 22 million consumers in more than 500 rural, suburban and urban communities, SoCalGas is uniquely positioned to help develop and drive California’s emerging clean energy economy through investments in green hydrogen to serve the public interest. Clean fuels, and an infrastructure network to deliver them, can play key roles in: (1) enabling dispatchable, firm generation capacity that serves electric system reliability, further decarbonizing the electric sector; (2) supporting resiliency and affordability of the energy system; (3) providing a decarbonization solution for hard to electrify industrial sectors and heavy duty transportation; and (4) creating new jobs and economic benefits.

The National Renewable Energy Laboratory’s (“NREL”) “LA100: The Los Angeles 100% Renewable Energy Study” (“LA100 Study”) found that in-Los Angeles Basin generation using renewably-derived fuels, like hydrogen, is a necessary component of reaching Los Angeles’ goal of 100% renewable energy by 2045.<sup>5</sup> This Project would directly advance these goals by delivering clean fuels that could be used to decarbonize industrial facilities,

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<sup>5</sup> See Cochran, Jaquelin, and Paul Denholm, *The Los Angeles 100% Renewable Energy Study*, National Renewable Energy Laboratory, NREL/TP-6A20-79444 (March 2021), Executive Summary, pp. 10, 12, available at <https://maps.nrel.gov/la100/report>. “Identifying alternative options for firm, in-basin capacity likely represents the largest opportunity to reduce the costs of the transition and points to the highest priorities for R&D: hydrogen and extended demand response.” *Id.* at 17.

transportation fuels, and electric generating facilities—sectors that currently emit tens of millions of metric tons of carbon dioxide equivalent emissions per year in the Los Angeles Basin.

SoCalGas is dedicated to leading the transition to a decarbonized energy system, and has set a target to achieve net zero greenhouse gas (“GHG”) emissions in its operations and delivery of energy by 2045.<sup>6</sup> As demonstrated in SoCalGas’s recent report on the role of clean fuels and gas infrastructure in achieving California’s net zero climate goal,<sup>7</sup> this transition to net zero requires expanding on proven and new technologies in clean fuels, such as green hydrogen, as proposed herein. Rapidly scaling up clean fuels initiatives today is vital to putting a clean fuels network in place in time to help California meet its climate goals.

SoCalGas acknowledges that many initiatives and proceedings are already underway in the private sector and at the Commission and other state and federal agencies (including some in which SoCalGas is a participant) regarding climate change and hydrogen technologies. The Project is complementary to, yet distinct from, those efforts because it will take technological and policy studies to the next level immediately: defining an implementable physical project, as discussed in Section II, *infra*. The Project can proceed in parallel to inform and achieve the state’s goals. Even if planning begins immediately, a first-of-its-kind infrastructure solution like the Project—which will allow California and the Commission to continue to demonstrate leadership, advance innovative climate technologies, and create practical climate solutions—will

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<sup>6</sup> SoCalGas, *Aspire 2045: Sustainability and Climate Commitment to Net Zero* (March 23, 2021), available at [https://www.socalgas.com/sites/default/files/2021-03/SoCalGas\\_Climate\\_Commitment.pdf](https://www.socalgas.com/sites/default/files/2021-03/SoCalGas_Climate_Commitment.pdf).

<sup>7</sup> See SoCalGas, *The Role of Clean Fuels and Gas Infrastructure in Achieving California’s Net Zero Climate Goal Summary Report* (October 2021), available at [https://www.socalgas.com/sites/default/files/2021-10/SCG\\_Whitepaper\\_Full-Report.pdf](https://www.socalgas.com/sites/default/files/2021-10/SCG_Whitepaper_Full-Report.pdf).



take years to implement, compelling decisive action now in the face of ever-accelerating decarbonization timelines necessary for climate stabilization.<sup>8</sup>

In particular, SoCalGas recognizes the Commission's pending SB 380 proceeding investigating the feasibility of reducing or eliminating the use of Aliso Canyon for natural gas storage, while maintaining energy and electric reliability for the Los Angeles region at just and reasonable rates. The Project supports the Commission's objectives as a complementary physical solution that would reduce demand for natural gas from Aliso Canyon while providing a clean fuel for firm, dispatchable electricity generation in the Los Angeles Basin.

Establishing this Memo Account is in the best interest of energy users and other stakeholders. SoCalGas recognizes that this transformative Project requires a significant commitment of resources and will be of great interest to a broad range of stakeholders. Thus, as described in this Application, SoCalGas proposes from the outset a stakeholder engagement process and regular reporting to the Commission and the public, so that costs recorded in the account are clearly scoped, transparent, and understandable. The Project's phasing creates touchpoints that allow for opportunities to evaluate the further recording of Project expenses to the Memo Account, if appropriate. These considerations are designed to permit efficient and transparent progress on the Project, while facilitating the Commission's future review of the reasonableness and recoverability of Project costs.

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<sup>8</sup> California's now burgeoning solar energy market offers a useful point of comparison. California's push toward solar energy began in earnest in the mid-2000s. However, in 2010, power plants in California were generating just 0.5% of their electricity from solar. Penn, Ivan, *California invested heavily in solar power. Now there's so much that other states are sometimes paid to take it*, Los Angeles Times (June 22, 2017), available at <https://www.latimes.com/projects/la-fi-electricity-solar/>. By 2017, that number increased to 10%. *Ibid.* The history of solar development in the state demonstrates that even when the public will is behind a new technology, building the infrastructure and developing large scale implementation takes considerable time.

For the reasons described herein, SoCalGas respectfully requests authorization to establish the Memo Account, with an effective date of the date of filing of this Application.

## **I. BACKGROUND AND POLICY CONTEXT FOR THIS MEMO ACCOUNT APPLICATION**

Authorizing SoCalGas to establish and maintain a Memo Account to track costs associated with developing the Project is in the public interest, particularly in light of its potential significant decarbonization benefits, which are described in detail below.

### **A. Green Hydrogen Supports California’s Decarbonization Efforts**

For nearly two decades, California has pursued a comprehensive, long-term approach to address climate change and reduce GHG emissions, while recognizing the need for continued energy system reliability and affordability.<sup>9</sup> Ambitious and bold system-wide changes will be needed to achieve the state’s goals, which include:

- Reducing GHG emissions to 40% below 1990 levels by 2030 (Senate Bill (“SB”) 32) and to 80% below 1990 levels by 2050 (Executive Order (“EO”) S-03-05);
- 100% carbon-free electricity by 2045 (SB 100);
- Attaining carbon neutrality by 2045 (EO B-55-18);
- Reducing emissions of short-lived climate pollutants, such as methane, and reducing organic waste disposal by 75% by 2025 (SB 1383);
- Developing at least 100 publicly-available hydrogen fueling stations (Assembly Bill 8); and

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<sup>9</sup> See, e.g., Assem. Bill No. 32 (2005-2006 Reg. Sess.), Sen. Bill No. 32 (2015-2016 Reg. Sess.), Sen. Bill No. 375 (2007-2008 Reg. Sess.), Assem. Bill No. 197 (2015-2016 Reg. Sess.), Assem. Bill No. 398 (2017-2018 Reg. Sess.), Assem. Bill No. 617 (2017-2018 Reg. Sess.), Sen. Bill No. 100 (2017-2018 Reg. Sess.), Exec. Order No. B-55-18 (September 10, 2018), Exec. Order No. N-79-20 (Sept. 23, 2020), Sen. Bill No. 350 (2015-2016 Reg. Sess.), Sen. Bill No. 1383 (2015-2016 Reg. Sess.), Assem. Bill No. 1504 (2009-2010 Reg. Sess.), Exec. Order No. B-52-18 (May 10, 2018), SB 1386, Exec. Order No. N-82-20 (Oct. 7, 2020).

- Achieving net zero GHG emissions for the cement sector by 2045 (SB 596).

At a global level, the need for swift and decisive action is also widely recognized.

Reducing global carbon dioxide emissions to net zero by 2050 is consistent with the Paris Agreement’s efforts to limit the long-term increase in average global temperature to 1.5 degrees Celsius.<sup>10</sup> The Intergovernmental Panel on Climate Change Working Group’s “Climate Change 2021: The Physical Science Basis” report concludes that reaching net zero carbon dioxide emissions “is a requirement to stabilize human-induced global temperature increase at any level.”<sup>11</sup> Achieving scenarios with very low or low global GHG emissions can lead within years to discernable effects on GHG concentrations and air quality,<sup>12</sup> and could “strongly limit the change” of certain climate change-related impacts, such as the frequency of extreme sea level events, heavy precipitation and pluvial flooding, and exceedances of dangerous heat thresholds.<sup>13</sup>

Green hydrogen has an essential and unique role to play in achieving these goals. Using green hydrogen to generate electricity or for industries or activities that are traditionally difficult to decarbonize would advance progress toward net zero goals. With our extensive experience in engineering, constructing, operating, inspecting, and maintaining pipelines in backcountry and urban settings, SoCalGas is well-positioned to help achieve green hydrogen’s contributions to

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<sup>10</sup> See IPCC, *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (2018), available at <https://www.ipcc.ch/sr15/>.

<sup>11</sup> See IPCC, *Climate Change 2021: The Physical Science Basis, Working Group I contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Aug. 7, 2021), Summary for Policy Makers, p. SPM-36, available at <https://www.ipcc.ch/report/ar6/wg1/>; see also *id.* at Chapter 5, p. 5-9 (discussing “the basic conclusion that global CO<sub>2</sub> emissions would need to decline to at least net zero to halt global warming”).

<sup>12</sup> *Id.* at p. SPM-40.

<sup>13</sup> *Id.* at p. SPM-41.

net zero goals. The Project, in collaboration with complementary proposals from the Los Angeles Department of Water and Power (“LADWP”) and other stakeholders, can catalyze and chart the region’s clean fuel course for the next 100 years.

In 2020, Energy and Environmental Economics, Inc. (“E3”) modeled three different scenarios to achieve carbon neutrality in California by 2045.<sup>14</sup> All three scenarios, including a high-electrification scenario, include use of hydrogen. E3 concluded that continued development of zero-carbon fuel sources, such as, among others, green hydrogen, “is likely to be a key for achieving economy-wide carbon neutrality,”<sup>15</sup> and that decarbonizing hard-to-electrify sectors, such as heavy industry and heavy-duty transport, would require reliance on low-carbon fuels.<sup>16</sup> Likewise, NREL’s LA100 Study, which analyzes pathways for implementing Los Angeles’s goal of 100% clean energy by 2045,<sup>17</sup> found that in-Basin generation fueled by renewably-derived fuels, like green hydrogen, is critical in every analyzed pathway.<sup>18</sup>

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<sup>14</sup> E3, Presentation at CARB Public Workshop: *Achieving Carbon Neutrality in California & 2022 Scoping Plan* (June 8, 2021), slide 12, available at [https://ww2.arb.ca.gov/sites/default/files/2021-06/e3-uci-rhodium\\_sp\\_kickoff\\_june2021.pdf](https://ww2.arb.ca.gov/sites/default/files/2021-06/e3-uci-rhodium_sp_kickoff_june2021.pdf).

<sup>15</sup> E3, *Achieving Carbon Neutrality in California – PATHWAYS Scenarios Developed for the California Air Resources Board* (Oct. 2020), p. 79, available at [https://ww2.arb.ca.gov/sites/default/files/2020-10/e3\\_cn\\_final\\_report\\_oct2020\\_0.pdf](https://ww2.arb.ca.gov/sites/default/files/2020-10/e3_cn_final_report_oct2020_0.pdf).

<sup>16</sup> *Id.* at p. 15.

<sup>17</sup> Mayor Garcetti subsequently accelerated the City’s goal to 2035, noting the critical role of green hydrogen for in-Basin generation to achieve that goal. See Mayor Eric Garcetti, *State of the City 2021 Remarks* (April 19, 2021), p. 19, available at [https://lamayor.org/sites/g/files/wph1781/files/landing\\_pages/files/SOTC%202021\\_0.pdf](https://lamayor.org/sites/g/files/wph1781/files/landing_pages/files/SOTC%202021_0.pdf) (“To achieve [the City’s 100 percent carbon-free by 2035 goal], we will transition our aging Scattergood power plant to run on green hydrogen . . .”). See *infra* p. 17.

<sup>18</sup> LA100 Study, *supra* note 5, Executive Summary, p. 12; *id.* at Chapter 6, p. 3 (“New in-basin renewable firm capacity—resources that use renewably produced and storable fuels, can come online within minutes, and can run for hours to days—is a key element of maintaining reliability at least cost given the assumed retirement of natural gas generators, existing transmission constraints, and challenges in upgrading existing or developing new transmission.”).

The Governor’s report on “California’s Electricity System of the Future”—published alongside the Governor’s July 30, 2021 Emergency Proclamation calling for “even more rapid procurement and deployment of clean energy production”<sup>19</sup>—recognizes that finding “a carbon free fuel to replace natural gas may be the greatest challenge for reaching 100 percent clean electricity.”<sup>20</sup> “For clean energy and energy storage, hydrogen may be the ultimate solution, but it is also the most expensive and faces the most barriers to bringing the technology to market.”<sup>21</sup> Despite these current challenges, the Governor’s report strongly advocates for investment in hydrogen technologies, given the enormous decarbonization benefits of doing so. The report explains that “[i]nvestment in green hydrogen could lead to rapid decline in production costs similar to the experience seen with solar production and battery energy storage technologies as technologies are scaled up and commercialized.”<sup>22</sup> Therefore, the report urges California to “help remove the barriers” to bring new, storable energy technologies to market.<sup>23</sup> The Project would help turn a green hydrogen vision into a reality for the Los Angeles Basin by breaking

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<sup>19</sup> *Proclamation of a State of Emergency*, *supra* note 4 (“even more rapid procurement and deployment of clean energy production is necessary to end the vicious cycles in which generating energy contributes to the very climate-impacted emergencies that threaten energy supply.”). These clean energy projects include green hydrogen. See Office of the Governor, Press Release: *Governor Newsom Signs Emergency Proclamation to Expedite Clean Energy Projects and Relieve Demand on the Electrical Grid During Extreme Weather Events This Summer as Climate Crisis Threatens Western States* (July 30, 2021), available at <https://www.gov.ca.gov/2021/07/30/governor-newsom-signs-emergency-proclamation-to-expedite-clean-energy-projects-and-relieve-demand-on-the-electrical-grid-during-extreme-weather-events-this-summer-as-climate-crisis-threatens-western-s/>.

<sup>20</sup> Governor Gavin Newsom and Filsinger Energy Partners, *California’s Electricity System of the Future* (July 30, 2021), p. 26, available at <https://www.gov.ca.gov/wp-content/uploads/2021/07/Electricity-System-of-the-Future-7.30.21.pdf>; Draft 2021 IEPR, *supra* note 2, Vol. III, p. 58 (“There is increasing awareness that to fully decarbonize the gas system, there is a need for clean fuels or molecules in addition to clean energy.”).

<sup>21</sup> *Ibid.*

<sup>22</sup> *Id.* at p. 27.

<sup>23</sup> *Id.* at p. 28.

down one existing barrier to a decarbonized economy: reliable and scalable delivery of green hydrogen for electric generation, industry, and transportation.

### **1. Green Hydrogen Supports Energy System Reliability and Resiliency**

Currently, California’s energy system relies primarily on electric and gas infrastructure. “[N]atural gas plays an important role in space heating, oil refining, industrial processes, cooking, electricity generation, and grid reliability.”<sup>24</sup> In 2020, approximately 48% of the state’s electricity was generated from in-state power plants using natural gas.<sup>25</sup> As the California Energy Commission (“CEC”) has recognized, “[t]oday’s [electric] grid continues to rely on natural gas power plants, especially for meeting reliability requirements, peak-hour demand, and voltage and frequency regulation.”<sup>26</sup>

California’s energy systems are rapidly evolving in response to climate policy and market changes. As a result, California’s gas and electric systems are growing more interdependent, with changes to the electric grid driving changes and demands on the gas system. The CEC highlighted some of these changes in their 2019 Integrated Energy Policy Report (“IEPR”):

During the last decade, installed renewable capacity in the state increased from 9,313 megawatts (MW) in 2009 to 23,313 MW in 2018. The variable nature of renewable resources, which change as the sun rises and sets and as winds blow, requires shifts in how the system is managed. Flexibility with fast responsiveness is needed to accommodate morning and late afternoon changes (termed

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<sup>24</sup> Cal. Energy Comm’n, *Final 2019 Integrated Energy Policy Report*, CEC-100-2019-001-CMF (Feb. 2020) (“2019 IEPR”), p. 246, available at <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report>.

<sup>25</sup> Cal. Energy Comm’n, *2020 Total System Electric Generation*, available at <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation>; see also Cal. Energy Comm’n, *Electric Generation Capacity and Energy*, available at <https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/electric-generation-capacity-and-energy>.

<sup>26</sup> 2019 IEPR, *supra* note 24, p. 52.

ramps) in the net load (total load minus solar and wind generation) to prevent surpluses or shortages on the electricity grid.

Although several tools are available to rapidly adjust supply or demand or both to meet flexibility needs, natural gas power plants provide about 75 percent of the available flexible capacity (the ability to quickly ramp energy production up or down as needed to match supply and demand).<sup>27</sup>

As more states across the West decarbonize, the need for firm, dispatchable power is becoming more acute. Electricity demand, along with variable and renewable electric generating resources, is expected to continue to grow in California. Increased renewable penetration, in turn, creates increased reliance on dispatchable electric generating resources to meet net and peak demand, especially when variable resources are unavailable. As noted in the 2019 IEPR, the gas system provides the required just-in-time dispatchable stored energy to meet these energy demands: “In the near term to mid-term, fossil natural gas generation plays a critical role in ensuring reliability and integrating renewable energy resources.”<sup>28</sup>

The 2021 IEPR<sup>29</sup> similarly recognizes that “[a] key value of [gas] resources is that they can provide stable generation capacity throughout the day.”<sup>30</sup> Gas resources are “able to start up quickly, . . . and can ramp up and down quickly to enable balancing authorities to meet changing demand throughout the day.”<sup>31</sup> “These systems have provided baseload power for the state for

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<sup>27</sup> *Id.* at p. 2.

<sup>28</sup> 2019 IEPR, *supra* note 24, p. 9.

<sup>29</sup> As of the date of this filing, the CEC has posted Volumes I, II, and IV of the 2021 IEPR in final form. However, Volume III of the 2021 IEPR, which covers “Decarbonizing the State’s Gas System,” remains in draft form. When Volumes I, II, and IV are cited in this Application, the citations refer to the Final 2021 IEPR. “Draft 2021 IEPR” will refer and apply to Volume III only.

<sup>30</sup> 2021 IEPR, *supra* note 2, Vol. II, p. 32.

<sup>31</sup> *Ibid.*

many years and have proven necessary to fill in when renewable resources are not available.”<sup>32</sup>

The 2021 IEPR also highlights the potential tension between decarbonization and energy reliability, noting that “[n]early 6,000 [MW] of firm and dispatchable resources, or resources that can provide power on demand, are expected to be retired” in the next five years.<sup>33</sup>

The gas system historically and currently provides a key supplementary and complementary service as a greater base of renewables is deployed. Due to the intermittency of renewable electric generation, coupled with daily and seasonal variability of demand, the energy system benefits from clean alternative fuels to fill the gaps. In the CEC’s 2018 report assessing electricity needs to meet the state’s zero-emission vehicle mandates, researchers observed notable increases in load resulting from increased building electrification and electric vehicle charging, which could add strain to the electric grid.<sup>34</sup> The ability to provide just-in-time fuel to the electric grid during times of high demand, while also facilitating quick ramp downs when needed, is an operational feature anticipated to be in even greater demand as load serving entities make progress towards SB 100 goals and greater parts of the California economy electrify.<sup>35</sup>

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<sup>32</sup> *Id.*, Vol. II, pp. 32-33.

<sup>33</sup> *Id.*, Vol. II, p. 12.

<sup>34</sup> See Cal. Energy Comm’n, Staff Report: *California Plug-In Electric Vehicle Infrastructure Projections: 2017-2025* (March 2018), p. 4, available at <https://www.nrel.gov/docs/fy18osti/70893.pdf>; see also Governor’s Wind and Solar Energy Coalition, *Electric vehicles should fear the ‘dragon curve,’ researchers say* (April 26, 2018), available at <https://governorswindenergycoalition.org/electric-vehicles-should-fear-the-dragon-curve-researchers-say/> (referencing spikes of energy demand when electric vehicles are plugged to chargers).

<sup>35</sup> CAISO anticipates that, as a result of new laws concerning GHG emissions and electrification, “[a]lthough natural gas usage may decline overall, increasing renewable penetration may lead to continued reliance on gas-fired generation for intra-day ramping needs and during multiple days of low solar generation.” CAISO, *Comments on Amended Scoping Memo of the California Independent System Operator Corporation* (Nov. 2, 2021), p. 2, available at <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M420/K303/420303760.PDF>.



Replacing gas currently used for electric system reliability with clean fuels, like green hydrogen, will be essential for thermal generators to support the electric grid and fill the gaps created by daily and hourly solar and wind generation intermittency with a clean energy profile in accordance with the state’s decarbonization goals. For example, the Draft 2021 IEPR acknowledges that there is “a need for clean fuels for thermal generation capacity to integrate increasing amounts of renewable resources and provide for reliability.”<sup>36</sup>

The 2021 SB 100 Joint Agency Report, prepared by the Commission, California Air Resources Board (“CARB”), and the CEC, likewise recognizes the key role of hydrogen in decarbonizing electricity supply via seasonable storage, renewables integration, and grid balancing:

Hydrogen technologies — including as a storage resource, use in fuel cells, and direct combustion — can support the cost-effective implementation of SB 100 by integrating more intermittent renewables and providing flexible supply to balance the grid. Hydrogen may improve the economic efficiency of renewable investments and serve as carbon-free seasonal storage, supplying energy when renewable energy production is low and energy demand is high. A recent study by E3 [for] Mitsubishi Hitachi Power Systems estimates that the hydrogen market in California could be up to 10 GW [of electrolyzer capacity] by 2045, driven primarily by long-duration energy storage.<sup>37</sup>

The 2021 SB 100 Joint Agency Report explains that emerging energy storage technologies, including hydrogen, “can help bridge the gap between variable renewable generation and grid

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<sup>36</sup> Draft 2021 IEPR, *supra* note 2, Vol. III, p. 58; see also *id.* at p. 70 (“Hydrogen offers advantages to support electric grid reliability, especially given SB 100 study scenarios that show up to 15 gigawatts (GW) of firm dispatchable generation may be needed to support renewable resources to meet the requirements of the statute.”).

<sup>37</sup> Cal. Energy Comm’n, *2021 SB 100 Joint Agency Report Achieving 100 Percent Clean Electricity in California: An Initial Assessment*, CEC-200-2021-001 (March 2021), p. 109.

energy demands (a role played in large part by natural gas plants today) and provide ancillary services and capacity rapidly to support system stability and reliability.”<sup>38</sup>

By providing a major pathway of zero-carbon fuel to facilitate the generation of clean firm power, the Project would facilitate more affordable decarbonization of the electricity sector. A 2021 study prepared by the Environmental Defense Fund, Clean Air Task Force, E3, Princeton University, and Stanford University, assessed how California can affordably and reliably decarbonize its electricity sector by 2045.<sup>39</sup> The study concluded that meeting SB 100’s 100% carbon-free electricity mandates in the absence of “clean firm power” (i.e., power available on demand without dependence on weather) would lead to an approximately 65% increase in wholesale electricity rates by 2045. On the other hand, if approximately 30 GW of clean firm power (e.g., combustion turbines using green hydrogen) were available, then California could take significant strides toward achieving SB 100 mandates with wholesale generation and transmission supply costs on par with current averages.<sup>40</sup> In addition, the Draft 2021 IEPR

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<sup>38</sup> *Id.* at p. 108. Similarly, John Kerry, Special Presidential Envoy for Climate, noted in recent remarks at the U.S. Department of Energy that “hydrogen offers a way to bridge the gap between the clean energy technologies we have today—such as wind, solar, nuclear, hydro, and geothermal power—and to bridge the gap with a vast set of end uses of energy that aren’t yet hooked up to the power grid today.” DOE, *Hydrogen Shot Summit: John Kerry Opening Remarks* (Aug. 31, 2021), available at <https://www.energy.gov/eere/fuelcells/hydrogen-shot-summit-john-kerry-opening-remarks-text-version>.

<sup>39</sup> Long et al., *Clean Firm Power is the Key to California’s Carbon-Free Energy Future*, Issues in Science and Technology (March 24, 2021), available at <https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/>; see also Notice of Ex Parte Communication, Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes, Environmental Defense Fund R.20-05-003 (May 3, 2021) (attaching slide deck summarizing report); Long et al., *California needs clean firm power, and so does the rest of the world*, Environmental Defense Fund, available at <https://www.edf.org/sites/default/files/documents/SB100%20clean%20firm%20power%20report%20plus%20SI.pdf> (providing modeling and background data regarding research efforts).

<sup>40</sup> *Clean Firm Power is the Key to California’s Carbon-Free Energy Future*, *supra* note 39. Similarly, SoCalGas’ recent report on the role of clean fuels and gas infrastructure in achieving California’s net zero climate goal, which was independently verified by experts from UC Irvine and UC Davis, concluded that “[c]ombining the strengths of renewable electricity from solar and wind (clean electrons) with clean hydrogen, RNG, syngas, and biofuels (clean molecules) is the most affordable . . . path to carbon neutrality.” See SoCalGas, *supra* note 7.

acknowledges that “[m]arket transformation is widely expected to reduce the costs of hydrogen production” and recognizes that “the plummeting costs of electricity produced by solar and wind resources and growth in global investments in these resources are expected to drive down the cost of green hydrogen production enough to make it competitive with other fuels.”<sup>41</sup>

In sum, the most reliable and affordable decarbonization pathways require clean molecules. Green hydrogen provides a critical, scalable and realistic tool to achieve the state’s ambitious decarbonization targets, and an opportunity to use abundant renewable generation to create and enhance long duration energy storage capabilities and firm and dispatchable energy resources.

## **2. The Los Angeles Basin Can Be a Green Hydrogen Hub**

Green hydrogen is well-suited as an energy transition solution in the Los Angeles Basin. Introducing green hydrogen into the Basin would provide a clean alternative fuel to serve existing customer demand, displacing reliance on natural gas and other fossil fuels while maintaining energy system reliability. Converting existing natural gas power plants to green hydrogen-fueled turbines would maintain in-Basin generation and reduce emissions, supporting net zero goals.<sup>42</sup>

SoCalGas anticipates a growing demand for green hydrogen in the Los Angeles Basin, which is home to a variety of potential large-scale industrial, transportation, and electric

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<sup>41</sup> Draft 2021 IEPR, *supra* note 2, Vol. III, pp. 72-73.

<sup>42</sup> See, e.g., LA100 Study, *supra* note 5, Chapter 6, p. 3. As CAISO has recognized, “limitations on Aliso Canyon and other storage facilities and retention or replacement of natural gas-fired resources . . . will significantly affect the future capacity and capability of the gas system, particularly in Southern California. This will also have electricity market and reliability impacts.” CAISO, *Comments of the California Independent System Operator Corporation* (Nov. 2, 2020), p. 4, available at <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M349/K872/349872444.PDF>. By enabling hydrogen infrastructure to replace these resources in the Los Angeles Basin, the Project would help to reduce these impacts and improve system reliability in the area.

generating facility end users.<sup>43</sup> For example, Mayor Garcetti announced a plan to explore transitioning LADWP’s Scattergood electric generating station to green hydrogen, which would require a supply of green hydrogen and a dedicated hydrogen gas transportation network.<sup>44</sup> On August 5, 2021, LADWP issued Request for Information (RFI) 8.5.21-POWER-SAL (“LADWP RFI”) seeking information on the planning, design, and deployment of hydrogen infrastructure, including hydrogen transportation, to meet its clean energy future objectives. LADWP plans to retire up to 1,661 MW of once-through cooling (“OTC”) units by the end of 2029, resulting in “a need to build additional long-duration capacity within the Los Angeles Basin to avoid widespread blackouts during transmission outages due to wildfire, transmission line maintenance and upgrades, and other contingencies.”<sup>45</sup> In conjunction with NREL, LADWP has identified a need for approximately 1,200 to 2,600 MW of firm capacity to supplement the loss of OTC capacity by 2030, and approximately 1,700 to 4,300 MW by 2045. In light of the City’s goal to be carbon-free by 2035, LADWP seeks to achieve green-hydrogen-based electricity generation at its Scattergood Generating Station prior to 2030. By 2035, LADWP estimates a need for up to 5,765 tonnes of hydrogen per year for its Harbor, Haynes, Scattergood, and Valley generating stations. By 2045, that estimate increases to 67,817 tonnes of hydrogen per year.<sup>46</sup>

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<sup>43</sup> See, e.g., Tom Christopher, *LA green hydrogen hub developers map out role for gas pipelines, storage*, S&P Global (Sept. 3, 2021), available at <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/la-green-hydrogen-hub-developers-map-out-role-for-gas-pipelines-storage-66435613> (identifying offtake demand from LADWP and Port terminal operators, as well as in hubs in Los Angeles, Victorville, and Bakersfield).

<sup>44</sup> Mayor Eric Garcetti, *State of the City 2021 Remarks* (April 19, 2021), p. 19.

<sup>45</sup> LADWP, Request for Information (RFI) 8.5.21-POWER-SAL (Aug. 5, 2021), p. 2, available at <https://labavn.force.com/LABAVN/s/opportunity-details?id=0066g00003Xo6F5AAJ>.

<sup>46</sup> *Id.*, p. 5.

To further the vision of a broad hydrogen economy in the Los Angeles Basin, the HyDeal Los Angeles initiative,<sup>47</sup> which SoCalGas has joined, aims to achieve at-scale green hydrogen procurement at \$1.50/kilogram in the Basin by 2030. A hydrogen transportation system would assist in achieving this goal by facilitating deployment of green hydrogen in the Basin and providing a path to decarbonize ports and heavy industries that require molecular fuels.

Recent federal actions also support opportunities for Los Angeles to become a green hydrogen hub. The U.S. Department of Energy’s Hydrogen Shot initiative seeks to reduce the price of clean hydrogen to \$1/kilogram by 2031, targeting key opportunities to transition industry and chemicals, transportation, and power and energy storage to hydrogen in the coming years.<sup>48</sup> Likewise, the bipartisan Infrastructure Investment and Jobs Act (“IIJA”) mandates developing a National Hydrogen Strategy and Roadmap and allocates \$9.5 billion for clean hydrogen programs, including \$8 billion for at least four regional clean hydrogen hubs (e.g., networks of

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<sup>47</sup> “HyDeal LA is a collaboration of developers, green hydrogen off-takers, integrators, equipment manufacturers, investors, and advisors coalescing to overcome the biggest barrier to the green hydrogen economy — its high cost — by launching a commercial green hydrogen cluster at scale.” Green Hydrogen Coalition, Press Release: *LADWP Joins HyDeal LA, Targets Green Hydrogen at \$1.50/kilogram by 2030* (May 17, 2021), available at <https://www.ghcoalition.org/ghc-news/hydeal-losangeles>. Unlike the Project, HyDeal does not propose to design or build a capital project. However, the two efforts are complementary, in that the Project would support HyDeal’s goals and objectives by providing a transport pathway for hydrogen supply to meet the demand for hydrogen that HyDeal seeks to address in a cost-efficient manner.

<sup>48</sup> See Office of Energy Efficiency & Renewable Energy, *Hydrogen Shot*, available at <http://www.energy.gov/eere/fuelcells/hydrogen-shot>; DOE, *Hydrogen Shot Summit: Secretary Jennifer Granholm Welcome Remarks* (Aug. 31, 2021), available at <https://www.energy.gov/eere/fuelcells/hydrogen-shot-summit-secretary-jennifer-granholm-welcome-remarks-text-version> (“So if we can lower the cost of clean hydrogen, and I truly mean clean, to \$1 for one kilogram at the same time as we eliminate GHG emissions, we will have the means to decarbonize industrial manufacturing, to refuel hydrogen fuel cell trucks, make alternative low-carbon fuel for planes, to produce clean ammonia, other chemicals, you know, to create longer-duration storage, and so much more.”). SoCalGas submitted several of its research and development initiatives to the DOE’s Earthshot Hydrogen Program’s Request for Information and participated in a breakout panel session on hydrogen deployment and financing at the DOE’s Hydrogen Shot Summit. See SoCalGas, *SoCalGas Aims to Advance Transformative Hydrogen Technologies via U.S. Department of Energy Hydrogen “Earthshot” RFI* (July 26, 2021), available at <https://newsroom.socalgas.com/press-release/socalgas-aims-to-advance-transformative-hydrogen-technologies-via-us-department-of>; DOE, *DOE Hydrogen Shot Summit: Breakout Panel Session Speakers* (Aug. 31, 2021), available at <https://www.energy.gov/sites/default/files/2021-08/hydrogen-shot-summit-breakout-session-speakers2.pdf>.

clean hydrogen producers, potential clean hydrogen consumers, and connective infrastructure located in close proximity).<sup>49</sup> In a recent letter to electric and gas investor owned utilities, the Commission referred to the IIJA as “a one-time opportunity to benefit California utility customers and make critical grid and gas infrastructure investments”<sup>50</sup> including to improve “the reliability and resiliency of our electric and gas systems, and achieve our ambitious climate change goals.”<sup>51</sup> California can be the epicenter for green hydrogen in America.

### **3. Introducing Green Hydrogen in the Basin Reduces Regional Natural Gas Demand, Including Demand Served By Aliso Canyon**

Aliso Canyon is an underground natural gas storage facility that has served the Los Angeles region since 1972. SoCalGas has historically used Aliso Canyon to help balance energy supply and demand to meet seasonal and peak demand requirements and meet system reliability. Aliso Canyon’s inventory is capped and withdrawals are currently restricted under the Commission’s withdrawal protocol.<sup>52</sup>

Pursuant to Senate Bill 380, on February 9, 2017, the Commission opened I.17-02-002, the SB 380 Proceeding, to determine the feasibility of reducing or eliminating the use of Aliso Canyon for natural gas storage, while maintaining energy and electric reliability for the Los Angeles region at just and reasonable rates. The Commission has engaged expert consultants to

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<sup>49</sup> Infrastructure Investment and Jobs Act, Pub.L. No. 117-58 (Nov. 15, 2021) § 40314, 135 Stat. 1008.

<sup>50</sup> Letter to IOUs from Alice Reynolds, President, CPUC dated January 24, 2022 (noting federal funding to develop at least four clean hydrogen hubs).

<sup>51</sup> *Id.*

<sup>52</sup> See Cal. Pub. Util. Comm’n, *Aliso Canyon Withdrawal Protocol* (July 23, 2019); see also Cal. Pub. Util. Comm’n, *Decision Setting the Interim Range of Aliso Canyon Storage Capacity at Zero to 34 Billion Cubic Feet*, D.20-11-044 (Nov. 23, 2020). On November 4, 2021, the Commission increased Aliso Canyon’s interim maximum inventory to 41.16 Bcf. See Cal. Pub. Util. Comm’n, *Decision Setting the Interim Range of Aliso Canyon Storage Capacity at Zero to 41.16 Billion Cubic Feet*, D.21-11-008 (Nov. 4, 2021).

develop portfolios that potentially could be implemented to entirely replace Aliso Canyon.<sup>53</sup> Estimates from the Commission’s consultant identify an energy shortfall of 395 MMcf/d in 2027 and 323 MMcf/d in 2035 if Aliso Canyon were retired in those years; however, recent analysis from the Commission’s Energy Division suggests that the shortfall may be higher.<sup>54</sup>

Introducing a green hydrogen energy transport system into the Los Angeles Basin would provide a clean alternative fuel to help to alleviate natural gas demand served by Aliso Canyon, supporting (along with other clean energy projects and reliability efforts, such as those being evaluated in the SB 380 Proceeding) a path to its ultimate closure while maintaining energy system reliability.

## **B. Commission Jurisdiction Over Hydrogen Transport**

The Commission’s existing statutory authority extends to intrastate hydrogen energy transport systems. “The commission may supervise and regulate every public utility in the State and may do all things, whether specifically designated in this part or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction.”<sup>55</sup> “Public utility”

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<sup>53</sup> The December 31, 2021, Aliso Canyon Investigation (I).17-02-002 Phase 3 Report (Phase 3 Report) by FTI Consulting, Inc. and Gas Supply Consulting, Inc., which assesses certain infrastructure investments (referred to as portfolio solutions) that may allow for retiring Aliso Canyon, is currently under review by the Commission and parties to the SB 380 Proceeding. See Cal. Pub. Util. Comm’n, *Administrative Law Judge’s Ruling Entering Into The Record Aliso Canyon Investigation 17-02-002, Phase 3 Report, Requesting Comments* (Jan. 19, 2022). Notably, among other things, the FTI study “does not examine local reliability or siting conditions or events where multiple systems fail.” CPUC, Aliso Canyon Proceeding 1.17-02-002: Summary of Phase 3 Report (January 2022). Further, as explained in Energy Division Staff’s Phase 2 Additional Monitoring Report, FTI’s assumptions about non-Aliso inventory levels “may be overstated due to inaccurate forecasts or future wells abandonments or outages,” such that “the withdrawal rate required from Aliso Canyon in 2027 and 2035 is higher than the contractor’s shortfall by 177-277 MMcf/d.” Cal. Pub. Util. Comm’n, *Administrative Law Judge’s Ruling Entering into the Record Aliso Canyon Investigation 17-02-002 Phase 2: Additional Monitoring Report, Requesting Comment* (Feb. 10, 2022), p. 5.

<sup>54</sup> *Id.*; see also Cal. Pub. Util. Comm’n, *Modeled Gas Shortfall if Aliso Canyon Closed* (Nov. 2, 2021), available at <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/natural-gas/aliso-canyon/aliso-canyon-2027-and-2035-shortfall-memo-revised.pdf>.

<sup>55</sup> Pub. Util. Code, § 701.

includes “every . . . gas corporation”<sup>56</sup>, which are corporations “owning, controlling, operating, or managing any gas plant for compensation within this state.”<sup>57</sup> “Gas plant” includes “all real estate, fixtures, and personal property, owned, operated, or managed in connection with or *to facilitate the* production, generation, *transmission, delivery, . . . or furnishing of gas*, natural or manufactured . . . for light, heat, or power.”<sup>58</sup>

The Commission has interpreted Section 221 broadly to cover facilities, including pipeline systems, that transport or deliver gas, whether natural or manufactured.<sup>59</sup> Further, the Commission itself interprets “gas” broadly to include any combustible fuel or vapor used to produce heat by burning.<sup>60</sup> Because hydrogen is a “gas, natural or manufactured,” and produces power or heat by burning, as Section 221 contemplates, the Commission has jurisdiction over the potential hydrogen gas energy system as part of SoCalGas’s “gas plant” and may approve a Memo Account application for the Project.

## **II. PROPOSED ACTIVITIES FOR TRACKING IN THE MEMO ACCOUNT**

### **A. Overview of Project Development Activities**

The Project development efforts and related costs that would be tracked in the Memo Account start with an examination of a broad range of possible configurations of a green

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<sup>56</sup> *Id.*, § 216, subd. (a)(1).

<sup>57</sup> *Id.*, § 222.

<sup>58</sup> See *id.*, § 221 (emphasis added).

<sup>59</sup> See *In re Sound Energy Solutions* (C.P.U.C. 2004) 2004 WL 2610071, at \*13 (determining that a liquefied natural gas storage and gasification facility in Long Beach constituted a “gas plant” subject to Commission jurisdiction); *In re SoCal Edison Co.* (1980) 4 CPUC 2d 195, 1980 WL 128929, \*12 (determining that a coal gasification facility that produced synthesis gas composed of carbon monoxide and hydrogen constituted a “gas plant”).

<sup>60</sup> See General Orders 58-A, 58-B. Notably, Public Utilities Code section 221 expressly excludes propane from Commission jurisdiction. There is no such exclusion for hydrogen. The Commission has interpreted the propane exemption carve-out strictly, holding that other gases that may be similar to propane are not so exempt. See *In re SoCal Edison Co.* (1980) 4 CPUC.2d 156, 1980 WL 130264, \*5.



hydrogen energy transport system in the Los Angeles Basin. The foundation of the system would be one or more trunk transmission pipelines that would run from green hydrogen generation sources including, but not limited to, the Central Valley, Mojave Desert/Needles, or Blythe area, into one or more delivery points in the Los Angeles Basin.<sup>61</sup> While the Project details would be developed in Phases 1 through 3 (as those phases are defined below) and presented for approval in a future CPCN application, SoCalGas anticipates that the Project's transmission pipeline(s) would be supported by one or more compressor stations, as needed based on length and operating pressure, connecting to individual customers and/or a distribution system in the Basin.

SoCalGas intends to conduct phased activities to facilitate Project study and development. As described below, SoCalGas would commence with refined supply, demand, pipeline configuration, and storage analyses to support a pre-FEED (front end engineering and design) analysis for options for the green hydrogen transport system ("Phase 1"). This Phase is currently anticipated to take approximately 12-18 months after preliminary engineering contract execution. As preliminary results of Phase 1 are reviewed, SoCalGas may move forward with design, engineering, and environmental studies for the preferred pipeline system, including a FEED study ("Phase 2"), which, depending on the length and complexity of the system, may take approximately 18-24 months to complete. SoCalGas would then use the materials generated in Phase 2 to prepare necessary permit applications, including an application to the Commission

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<sup>61</sup> An intrastate hydrogen energy transport system is subject to the jurisdiction of this Commission, see Section II.B. SoCalGas is aware of efforts by LADWP, the Intermountain Power Agency and others to transition the Intermountain Power Plant in Delta, Utah, from coal generation to hydrogen, with associated underground hydrogen storage. To the extent the results of the Phase 1 and Phase 2 analysis suggest assets located outside California are required to serve California customers, SoCalGas would seek recovery only for costs that are fairly apportioned to California customers.

for a CPCN (“Phase 3”), which SoCalGas estimates would last approximately 18-30 months (again, depending on the length and complexity of the system). At the end of each of Phases 1 and 2, SoCalGas will report on the results to the Commission and parties to the proceeding. Preliminary cost estimates for each phase are discussed below.

Further, and as described below, SoCalGas will conduct a robust stakeholder process throughout each phase. SoCalGas recognizes that a broad range of stakeholders is likely to have an interest in the study and development of this potential Project, whether as potential end users, potential suppliers, environment and environmental justice community members, ratepayer advocates, union workforce, or for other reasons.

### **1. Phase 1 (Pre-Engineering and Design)**

Phase 1 would consist of a pre-FEED design scope and feasibility analysis, which would include, at a minimum, the following elements:

- Refined assessment of expected green hydrogen demand and identification of initial and subsequent end users in the Los Angeles Basin, including the anticipated timing for any necessary facility conversions to allow for the use of hydrogen as a fuel source;
- Refined assessment of potential sources of green hydrogen production to meet the identified demand;
- High-level, preliminary study of hydrogen storage options to facilitate system operability, processing, and reliability;
- Development of Project options and alternatives;
- Preliminary routing analyses, consisting primarily of desktop studies. Routing options to be studied include existing pipeline corridors or rights-of-way, other

known existing rights-of-way, designated federal energy corridors, and the need for new rights-of-way. The routing studies would also evaluate operability technical considerations, major crossings, elevations, terrain types, and other potential geographic challenges, in order to identify up to two preferred routes;

- Pipeline sizing and design criteria (5% design);
- Development of a plan to address safety requirements applicable to the Project;
- Preliminary environmental impact analyses, including direct impacts of pipeline, compressor station, and storage construction and indirect impacts associated with green hydrogen production and end uses;
- Identification of high-level long-term system and operational requirements, including meeting identified safety and reliability requirements;
- A high-level risk assessment and ability to permit analysis;
- A high-level economic analysis of potential Project costs, procurement and execution logistics, schedule, and green hydrogen pricing (supportive of a Class 5 cost estimate for the Project); and
- Stakeholder meetings and engagement.

SoCalGas currently estimates that Phase 1 would take approximately 12-18 months to complete, with an estimated cost of \$26 million.<sup>62</sup> This estimate is subject to refinement as

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<sup>62</sup> The cost estimates for Phase 1 and Phase 2 in this Application are “rough order of magnitude” classified by the Association for the Advancement of Cost Engineering (“AACE”) as Class 5 conceptual cost estimates (-50%/+100%) as defined in AACE International Recommended Practice No. 18R-97. All estimates are based on Q3 2021 U.S. dollars. Estimated costs include anticipated third-party contractor, consultant and legal costs; Company labor; and contingency (20%) and indirect costs, including but not limited to Allowance for Funds Used During Construction, property tax, and labor overheads (35%). The estimates are limited to the activities described in this Application, and are based on actual preliminary engineering costs for previous SoCalGas major capital projects between 2016 and 2021, as adjusted to reflect the additional complexity inherent in the Project.

additional information affecting Project scope is developed and consists predominantly of consultant costs, desktop review of potential routes, engineering and design reports, preliminary environmental and real estate support, and legal support.

If the Phase 1 assessment identifies any serious flaws that would appear to render the Project infeasible, SoCalGas will describe those flaws in a filing to the Commission. Assuming the flaws can be overcome, SoCalGas would proceed to Phases 2 and 3. Therefore, at the conclusion of Phase 1, SoCalGas proposes to issue a comprehensive status update to the Commission and indicate SoCalGas's next steps with respect to Phases 2 and 3.

## **2. Phase 2 (Identify Preferred Option and Refine Design)**

Phase 2 would consist of identifying a preferred option and conducting refined design, engineering, and environmental studies for the proposed green hydrogen transport system. Phase 2 would include the following key elements:

- Identification of a preferred option through:
  - Validation of constraints and requirements for basis of design, including design and capacity criteria;
  - Validation of applicable safety and reliability requirements and a refined plan for complying with those requirements during project construction, operation, and maintenance;

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All engineering estimates assume the following physical Project components: SoCalGas's point of receipt; production compression; hydrogen transmission pipeline, intermediate compression (as needed), and hydrogen storage options to facilitate system operability, processing, and reliability. SoCalGas does not propose developing hydrogen production facilities as part of the scope of the Project.

All cost estimates exclude the following: escalation; costs associated with hydrogen production upstream of SoCalGas's point of receipt; purchasing of land or easements; permit fees; costs associated with schedule delays; and costs associated with equipment vendor purchase orders, including but not limited to, engineering specifications and equipment costs.

- Identification of long-lead procurement risks;
  - Refined analysis of hydrogen storage options to facilitate system operability, processing, and reliability;
  - Identification of a preferred route(s) and more detailed routing analysis for the preferred route(s), to consider easements, geography, and environmental considerations;
  - Desktop evaluation of environmental issues, including environmentally sensitive areas, cultural resources, environmental justice, water crossings, and other issues;
  - Analysis of land rights and permitting strategy and alternatives; and
  - Option analysis and preferred option selection.
- Upon identification of a preferred option, completion of refined engineering and implementation plans, including:
    - A preliminary Project Execution Plan, including a contracting strategy, risk register, and material procurement plan;
    - A FEED study for the preferred system design;<sup>63</sup>
    - Refined environmental impacts analyses;
    - Refined cost and schedule estimates (Class 4 cost estimate or better);
    - Identification of supplier diversity opportunities; and
    - Refined risk assessment.

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<sup>63</sup> The cost estimates in this Application assume that Phase 2 advances to an approximately 30% engineering design for the transmission pipeline. Engineering design for any necessary compression and system storage is anticipated to advance to approximately 30% engineering design in Phase 2.

- Development and execution of a Project Outreach and Communication Plan.
- Stakeholder meetings and engagement.

SoCalGas would use the analysis and materials generated in Phase 2 to advance engineering for select Project components. SoCalGas currently estimates that Phase 2 would take approximately 18-24 months, with an estimated cost of \$92 million. These costs would consist predominantly of consultant costs, desktop reviews and initial field work, environmental, real estate, engineering and design reports, and legal support.

### **3. Phase 3 (Develop CPCN Application)**

Phase 3 would build off of the deliverables and information generated in Phase 2 to develop a formal application for a CPCN from the Commission, as well as other long-lead permit applications, if necessary. Phase 3 would include the following key elements:

- Further refined Project design and engineering drawings, specifications, costs and timelines;<sup>64</sup>
- Updated Project Execution Plan;
- Updated safety requirement implementation plan for Project construction, operation, and maintenance;
- Development of a CPCN application, including supporting testimony and exhibits;
- Development of a Proponent's Environmental Assessment;
- Further refined climate impacts analysis;
- Preparation of other long-lead permit applications, if necessary; and

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<sup>64</sup> The cost estimates in this Application assume that Phase 3 advances design of the pipeline, compressor, and system storage Project components to a level of detail appropriate to inform a CPCN application.

- Stakeholder meetings and engagement.

SoCalGas currently estimates that Phase 3 would take approximately 18-30 months. However, select activities in Phases 2 and 3 could proceed in parallel, which may reduce the overall pre-application schedule.

The extent of the costs in Phase 3 would depend on the length and complexity of the identified preferred option. However, SoCalGas expects that completing Phase 3 activities would cost several hundreds of millions of dollars. A cost estimate for Phase 3 would be developed when the pipeline system length and complexity are more defined. Upon completion of the Phase 3 cost estimate, SoCalGas would provide an update to the Commission.

**B. The Memo Account Application Advances Transparency via Stakeholder Engagement and Is in Itself in the Public Interest**

SoCalGas recognizes that a broad range of stakeholders is likely to have an interest in the study and development of this Project. Authorization of the Memo Account is in the public interest because it will enable stakeholder engagement through the tracking and monitoring of preliminary Project activities and costs throughout the process.

SoCalGas has already engaged in hydrogen-related collaboration with a number of entities, including a variety of hydrogen producers, potential end users such as LADWP, environmental groups, technical experts, and HyDeal LA. In addition, SoCalGas has engaged with leading research institutions—including UC Irvine, UC Davis, and Columbia University—in connection with SoCalGas’s Aspire 2045 sustainability and climate strategy and recent report discussing the role of clean fuels and gas infrastructure in achieving California’s net zero climate goal.<sup>65</sup> SoCalGas intends to collaborate with interested non-governmental and governmental

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<sup>65</sup> See SoCalGas, *supra* note 7.

stakeholders—including the Commission’s Energy and Safety Divisions, the CEC, CARB, and the South Coast Air Quality Management District—at every phase of the proposed Project. As the Project progresses to an identified route and design, SoCalGas will engage and respond to community questions, concerns, and needs—particularly those concerns expressed by local environmental justice communities.

SoCalGas believes the Project could alleviate many environmental justice concerns. For example, should the heavy-duty trucking industry switch from diesel to green hydrogen, this switch alone could eliminate substantial amounts of criteria air pollutants associated with the combustion of diesel fuels, such as NO<sub>x</sub> and PM<sub>2.5</sub>. SoCalGas acknowledges that, while the combustion of hydrogen does not release any carbon dioxide emissions, like other combustion processes, it may result in criteria air pollutant (particularly NO<sub>x</sub>) emissions. SoCalGas anticipates that industrial end users will continue to comply with applicable Clean Air Act and SCAQMD permit requirements when transitioning to hydrogen fuel. SoCalGas does not support relaxation of current NO<sub>x</sub> emissions standards, and stands ready to provide any technical assistance on hydrogen combustion and air quality research.

Specifically, SoCalGas proposes to (1) establish a Planning Advisory Committee for technical advice and collaboration on Project design and development;<sup>66</sup> (2) hold periodic public workshops as the Project proceeds, including at the end of each phase and once preferred routes are identified; and (3) submit interim reports to the Commission and the public regarding Project

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<sup>66</sup> SoCalGas would use its best efforts to identify parties that would be appropriate participants on the Planning Advisory Committee (including extending invitations to the CEC, CARB, and the Commission’s Energy and Safety Divisions) and would coordinate with those parties to form and run the Committee for the purpose of providing input to SoCalGas, on an advisory basis, regarding hydrogen market information and technical aspects of Project design and development.



status and updates. SoCalGas would provide copies of the reports to the service list for this Proceeding and make them publicly available on its website. Thus, the proposed Memo Account itself—in addition to the proposed Project contemplated—is in the public interest.

**C. Relationship Between Project Activities and Aliso Canyon**

By developing a green hydrogen transport system into the Los Angeles Basin, the Project is also intended to support (along with other clean energy projects and reliability efforts, such as those being studied in the SB 380 Proceeding) the state’s objective of closing Aliso Canyon while preserving energy reliability and affordability. To be clear, however, this Application does not seek approval to develop or record Aliso Canyon closure costs in this Memo Account. When appropriate, through a process of appropriately planned steps, consistent with state goals and reliability requirements, SoCalGas would develop closure plans and cost estimates and seek approval to track closure costs in a separate, subsequent Commission process.

**D. Project Benefits and Public Interest Considerations Support the Approval of the Memo Account Application**

The Project would benefit ratepayers and the state in numerous ways. These public interest benefits include: reducing GHG emissions related to natural gas use, including from electricity production; improving regional air quality by supporting the move from diesel combustion in heavy duty transportation and adoption of green hydrogen use in hard-to-electrify industrial sectors; increasing the use of clean fuels to enhance energy system reliability; creating new jobs and economic benefits directly through the construction of an innovative energy infrastructure project; enhancing public participation as discussed above; and more broadly by

catalyzing the green hydrogen economy in the Los Angeles Basin, consistent with the Public Utilities Code’s statutory definition of ratepayer benefits.<sup>67</sup>

The Project would provide important GHG emissions reduction and energy reliability benefits for the public by replacing natural gas with a zero-carbon emissions fuel. An appropriately sized new green hydrogen transportation system could feed in-Basin electrical generating facilities, maintaining electrical grid reliability and flexibility while reducing the demand for natural gas from Aliso Canyon.

Further, bringing green hydrogen into the Basin promotes a “just transition” as the state pursues its decarbonization goals. The DOE estimates that the nation’s hydrogen industry has the potential for 700,000 jobs by 2030, providing continuing career opportunities for current, experienced gas system workers.<sup>68</sup>

In light of the policy context described above, taking the initial step of approving the Memo Account to track Project activities and costs is in the public interest. Given the need to act swiftly to meet the state’s climate goals and timelines while strengthening the state’s electrical grid reliability and resiliency, it is imperative that SoCalGas commence Project activities expeditiously. As described in “California’s Electricity System of the Future,” “[t]he technology exists today to achieve California’s clean energy goals, but we need to build new resources at an unprecedented pace and scale, and we need to start now.”<sup>69</sup>

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<sup>67</sup> In the analogous low-emission vehicle context, the Public Utilities Code provides that such benefits are in the interests of ratepayers. See Pub. Util. Code, § 740.8.

<sup>68</sup> DOE, *supra* note 38.

<sup>69</sup> *California’s Electricity System of the Future*, *supra* note 20, p. 6.

The impacts of climate change are already being felt locally in the Los Angeles Basin. A study based on California’s Fourth Climate Change Assessment (“Climate Assessment”) presented the climate-related risks, and available adaptation strategies, tailored to the Los Angeles area.<sup>70</sup> Some of the most significant impacts of climate change in the region include:

- Increases in average maximum temperatures of 4-5 degrees Fahrenheit (F) by mid-century, and 5-8 degrees F by late-century; extreme temperatures also will increase, with the hottest day of the year projected to be 10 degrees F warmer throughout the region;
- Amplified dry and wet precipitation extremes, with some locations experiencing a 25-30% increase in precipitation on the wettest day of the year, and increased frequency and severity of atmospheric river events; and
- Rising sea levels, with estimates varying significantly depending on the emissions scenario; 1-2 feet of sea-level rise is projected by mid-century, with the most extreme projections forecasting 8-10 feet of sea-level rise by end-of-century.<sup>71</sup>

The impacts of climate change will adversely affect the region’s energy systems, but not in equal measure. While SoCalGas acknowledges the importance of electrification as a critical tool to combat climate change, compared to underground pipeline systems, “existing infrastructure systems used for the transmission and distribution of electricity are likely to be far more sensitive to perturbation from future climate change impacts.”<sup>72</sup> In particular, according to

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<sup>70</sup> Alex Hall, Neil Berg, Katharine Reich, Los Angeles Region Report: *California’s Fourth Climate Change Assessment*, SUM-CCCA4-2018-007 (2018), available at [https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles\\_ADA.pdf](https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf).

<sup>71</sup> *Id.* at p. 6.

<sup>72</sup> *Id.* at p. 39.

the CEC, electricity transmission and distribution systems are expected to be especially sensitive to climate change impacts.<sup>73</sup> Forecasted increases in air temperature could impede the flow of electricity along overhead power lines, which could cause the system to overload and fail, and increases in the frequency and intensity of wildfires could increase the risk of physical destruction,<sup>74</sup> while drought conditions can shrink hydropower capacity<sup>75</sup>—all driving the need for in-Basin generation. These concerns have been acknowledged by the Commission, which recently observed the “reliability risks posed by global warming” in 2021, including “the Bootleg Fire knock[ing] out the California-Oregon Intertie, jeopardizing thousands of megawatts of transmission capacity” and “ongoing drought [cutting] the state’s hydroelectric generation by millions of megawatt-hours even since 2020.”<sup>76</sup>

Thus, there is a critical need for additional climate resilience in our energy system. Green hydrogen is the solution. Underground hydrogen transportation infrastructure, along with hydrogen storage, to facilitate in-Basin electricity generation would provide much needed resiliency for the state’s electric grid.<sup>77</sup> As noted in the LA100 Study, dispatchable power

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<sup>73</sup> See 2021 IEPR, *supra* note 2, Vol. II, p. 3 (“Extreme heat events and drought place increasing strain on the electric system reliability by increasing demand and reducing generation capacity.”); see also *id.* at p. 9.

<sup>74</sup> Hall, *supra*, note 70, p. 39; see also 2021 IEPR, *supra* note 2, Vol. II, p. 4 (“Wildfires are sometimes caused by electricity generation and transmission infrastructure and can threaten generation and infrastructure, compounding reliability concerns.”).

<sup>75</sup> See, e.g., U.S. Energy Information Administration, *California’s hydroelectric generation affected by historic drought* (July 7, 2021), available at <https://www.eia.gov/todayinenergy/detail.php?id=48616>.

<sup>76</sup> Cal. Pub. Util. Comm’n, *Decision Setting the Interim Range of Aliso Canyon Storage Capacity at Zero to 41.16 Billion Cubic Feet*, D.21-11-008 (Nov. 4, 2021), p. 17.

<sup>77</sup> See, e.g., LA100 Study, *supra* note 5, at Ch. 6, p. 8, p. 39 (“Energy storage—in the form of batteries, pumped hydro, and long-duration hydrogen-based storage—also play a substantial role by shifting surplus energy to times of energy deficit.”); *id.*, Ch. 8, p. 53 (“New in-basin firm capacity—power plants that can come online within minutes and run for hours to days—contribute to the least-cost options to maintain reliability at 100% renewable energy. Procuring such resources will likely require LADWP to employ new renewable fuels, such as biofuels, biogas, and hydrogen, the technologies to convert them into electricity, and the associated infrastructure to store and transport such fuels.”).

generation assets “form an insurance policy to keep the lights on when things go wrong, including bad weather, hot weather, and fires that take down transmission lines.”<sup>78</sup>

Commencing development of a green hydrogen transport system now is in the public interest in order to advance the state’s GHG reduction and net zero goals. There is an emerging consensus that faster GHG emissions reductions “result in a higher probability of limiting warming to 1.5°C.”<sup>79</sup> Recognizing the need to achieve GHG emissions reductions more quickly, in July 2021, Governor Newsom directed the Commission and CARB to accelerate their efforts to achieve the state’s climate stabilization and GHG reduction goals, including to “identify a pathway for achieving carbon neutrality a full decade earlier than the existing target of 2045.”<sup>80</sup> The Governor emphasized that severe weather and wildfire risks in California are accelerating as the climate changes, requiring that the state “do everything possible to accelerate our climate targets and increase the pace of action to transition to a low-carbon future.”<sup>81</sup>

California must continue to lead the way on climate solutions. This Project—a first-of-its-kind green hydrogen transport system—would reflect a significant commitment toward innovation and investment in decarbonizing the state’s energy system, and would provide a blueprint for other states and countries that seek to decarbonize reliably and affordably.<sup>82</sup> As

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<sup>78</sup> *Id.*, Executive Summary, p. 29. The underground infrastructure for the Project would also protect energy system resiliency by providing underground energy transportation services in wildfire-prone areas where overhead power lines could present increased fire risk. See, e.g., Cal. Governor’s Office of Emergency Servs., *California Adaptation Planning Guide* (June 2020) p. A-12, available at <https://www.caloes.ca.gov/HazardMitigationSite/Documents/CA-Adaptation-Planning-Guide-FINAL-June-2020-Accessible.pdf>; see also Hall, *supra* note 70.

<sup>79</sup> *Global Warming of 1.5°C*, *supra* note 10, Summary for Policy Makers, p. 6; see also *id.*, Ch. 2, at pp. 97, 130.

<sup>80</sup> See Governor Gavin Newsom, Letter to Liane Randolph, Chair, CARB (July 9, 2021); Governor Gavin Newsom, letter to Marybel Batjer, President, Cal. Pub. Util. Comm’n (July 9, 2021).

<sup>81</sup> *Ibid.*

<sup>82</sup> The need to develop hydrogen infrastructure has been recognized as a key pillar of global decarbonization efforts. The International Energy Agency’s (IEA) “Net Zero by 2050” report states that to reach net zero by 2050 and limit

costs associated with electrolysis and renewable energy generation continue to decline, green hydrogen cost is expected to continue to decline consistent with those trends.<sup>83</sup>

### III. THE PROPOSED STUDY COMPLEMENTS OTHER PROCEEDINGS

SoCalGas recognizes that other entities, including the Commission and the CEC, have commenced proceedings related to the use of hydrogen to advance clean energy goals, gas system reliability and planning as well as the energy system impacts of closing Aliso Canyon. The activities proposed to be recorded in the Memo Account would complement those ongoing efforts, without creating inefficiencies or duplication. SoCalGas's proposed stakeholder process, which would include periodic updates and allow for input on such activities, would also enhance SoCalGas's ability to avoid duplication while remaining aware of other parallel efforts.

The promise of hydrogen as a tool for decarbonization has attracted significant interest. For example, as part of its 2021 IEPR, the CEC is investigating the role of hydrogen technologies in California's clean energy transition. The 2021 IEPR will produce an "integrated assessment of major energy trends and issues facing California's electricity, natural gas, and transportation fuel sectors" and "policy recommendations to conserve resources, protect the environment, ensure reliable, secure, and diverse energy supplies, enhance the state's economy,

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the rise in global temperatures to 1.5 °C, global hydrogen use must expand from less than 90 Mt in 2020 to more than 500 Mt in 2050. "New dedicated hydrogen infrastructure is also needed in the NZE [Net Zero Emissions by 2050 Scenario], for example to move hydrogen produced in remote areas with excellent renewable resources to demand centres." International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector* (July 2021), p. 181, available at [https://iea.blob.core.windows.net/assets/beceb956-0dcf-4d73-89fe-1310e3046d68/NetZeroBy2050-ARoadmapfortheGlobalEnergySector\\_CORR.pdf](https://iea.blob.core.windows.net/assets/beceb956-0dcf-4d73-89fe-1310e3046d68/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf).) As IEA further notes, although the number of governments that have pledged to reach net zero emissions by 2050 continues to grow, so do global GHG emissions. "This gap between rhetoric and action needs to close if we are to have a fighting chance of reaching net zero by 2050." *Id.* at 3. Here, California has the opportunity to put its words into action and once again be in the vanguard of a global campaign to lower emissions by developing zero-carbon hydrogen infrastructure.

<sup>83</sup> Hydrogen Council & McKinsey & Company, *Hydrogen Insights Report 2021* (Feb. 2021), available at <https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021-Report.pdf>.

and protect public health and safety.”<sup>84</sup> The Project would take the next logical step toward accomplishing these objectives by proposing a specific infrastructure project to help meet the environmental and energy reliability goals underlying the 2021 IEPR.<sup>85</sup>

In 2020, the CEC also commissioned a Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California, which provides policy recommendations to successfully launch and scale California’s renewable hydrogen sector to guide future state policy and funding decisions.<sup>86</sup> However, its analysis was focused on hydrogen production opportunities, and expressly did not consider the potential role of new in-state dedicated hydrogen pipelines that might be developed, nor long-distance hydrogen pipelines delivering hydrogen from out of state.<sup>87</sup>

The Commission and the CEC are also presently engaged in hydrogen injection or blending initiatives in which SoCalGas has participated, including the University of California, Riverside’s Hydrogen Blending Impacts Study, and programs under the CEC’s Natural Gas Research and Development Program. The Project would be distinct from these initiatives. Unlike those initiatives, which examine the effects of hydrogen blends on end uses or the

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<sup>84</sup> See Cal. Energy Comm’n, *Integrated Energy Policy Report - IEPR*, available at <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report>.

<sup>85</sup> Specifically, Senate Bill 1389 (SB 1389, Bowen and Sher, Chapter 568, Statutes of 2002) requires the CEC to “conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The [CEC] shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state’s economy, and protect public health and safety.” Pub. Res. Code, § 25301, subd. (a).

<sup>86</sup> Jeffrey Reed, Emily Dailey, Brendan Shaffer, Blake Lane, Robert Flores, Amber Fong, G. Scott Samuelsen. *Final Project Report - Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California*, Cal. Energy Comm’n (June 3, 2020) available at <https://cafcip.org/sites/default/files/Roadmap-for-Deployment-and-Buildout-of-RH2-UCI-CEC-June-2020.pdf>.

<sup>87</sup> *Id.* at p. 39.

blending of hydrogen in existing natural gas pipelines, the goal of this Project is a 100% green hydrogen transport system targeted toward hard-to-electrify sectors seeking green hydrogen, and would be unrelated to any efforts involving blending hydrogen into the existing natural gas transmission and distribution system. For the same reasons, the Project is also distinct from the work described in SoCalGas's 2020 application to the Commission for a hydrogen blending demonstration project memorandum account.<sup>88</sup> No hydrogen blending research costs would be recorded in this Memo Account.

Further, the Commission is currently undertaking a rulemaking to, among other things, "implement a long-term planning strategy to manage the state's transition away from natural gas-fueled technologies to meet California's decarbonization goals" (the "Gas OIR").<sup>89</sup> Through this rulemaking, the Commission intends to answer critical questions that will guide the state's clean fuels transition.<sup>90</sup> The Project would further the objectives of the Gas OIR by developing a project to transport green hydrogen as an alternative to natural gas.

With respect to Aliso Canyon, SoCalGas is actively participating in the Commission's SB 380 Proceeding to determine the feasibility of eliminating the use of Aliso Canyon, while maintaining energy and electric reliability for the Los Angeles region at just and reasonable rates. As part of that proceeding, the Commission and its consultants are investigating various

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<sup>88</sup> See *Application of Southern California Gas Company (U904G), San Diego Gas & Electric Company (U902G), Pacific Gas and Electric Company (U39G), and Southwest Gas Corporation (U905G) Regarding Hydrogen-Related Additions or Revisions to the Standard Renewable Gas Interconnection Tariff*, A.20-11-004 (Nov. 20, 2020) (proposing a Hydrogen Blending Demonstration Program to test how various amounts of hydrogen blending would impact the gas pipeline systems in SoCalGas's and San Diego Gas & Electric Company's service territories).

<sup>89</sup> See *Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Perform Long-Term Gas System Planning*, R.20-01-007 (Jan. 16, 2020), p. 2.

<sup>90</sup> *Assigned Commissioner's Amended Scoping Memo and Ruling*, R.20-01-007 (Jan. 5, 2022).



alternatives to Aliso Canyon, including other clean energy projects and reliability efforts, that could be implemented to replace Aliso Canyon. The development of the Project’s proposed green hydrogen transport system would complement the SB 380 Proceeding and the portfolios evaluated therein by creating an implementable and actionable plan to displace natural gas, ensure local reliability (including during events where multiple systems may fail) and, along with other efforts identified in that proceeding, facilitate the ultimate closure of the Aliso Canyon.<sup>91</sup> In addition, conducting Project development and the SB 380 Proceeding as two parallel processes would advance the Governor’s request that the Commission expedite planning to permanently close Aliso Canyon.<sup>92</sup> So that the two processes complement each other, SoCalGas has proposed periodic updates to the Commission, which the Commission, in its discretion, could decide to utilize in the SB 380 Proceeding. (See *supra* Section II.)

#### **IV. MEMORANDUM ACCOUNT TREATMENT IS APPROPRIATE**

##### **A. Memorandum Account Standards**

A memorandum account is appropriate to facilitate later consideration of the recovery of recorded incremental costs based upon a reasonableness showing at a later time.<sup>93</sup> A memorandum account should be approved unless “the costs are recoverable in a general rate

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<sup>91</sup> The Project alone is not expected to fulfill all of Aliso Canyon’s functions, but would be implemented in conjunction with other clean energy projects and reliability efforts being contemplated now by the Commission in the SB 380 Proceeding, bolstering the feasibility of proposed portfolios to fulfill the objective to close Aliso Canyon. Given the specialized issues and lead time required to analyze and develop the Project, and because the Project is intended to address a broader set of issues in addition to Aliso Canyon, it is necessary to address the Project outside of the SB 380 Proceeding.

<sup>92</sup> Governor Gavin Newsom, Letter to Marybel Batjer, President, Cal. Pub. Util. Comm’n (Nov. 18, 2019).

<sup>93</sup> Cal. Pub. Util. Comm’n, *Decision Approving Establishment of Arsenic Memorandum Account*, D.06-01-018 (Jan. 12, 2006), pp. 5-6.

case, the costs are not substantial, or the existence of the costs is speculative.”<sup>94</sup> “[E]stablishing a memorandum account for a new and significant project is routine and noncontroversial, with important ratemaking consequences to be addressed in a subsequent proceeding.”<sup>95</sup>

Here, the costs were not proposed for recovery in SoCalGas’s last rate case because the Project was not contemplated at the time of the 2019 GRC proceeding. Due to the need to commence work expeditiously (e.g., in 2022), the costs also cannot practically be made part of SoCalGas’s upcoming GRC filing, which seeks authorized revenue requirements beginning with the Test Year in 2024. The costs would be substantial, as described in Section III.A. Finally, the existence of the costs is not speculative, as any new capital project of this type would require engineering, environmental, land, and other known costs.

### **1. Covered Costs Would Be Substantial and Are Not Speculative**

Memorandum accounts are appropriate if the costs to be recorded are not speculative and would be substantial.<sup>96</sup> The costs to be recorded in the proposed Memo Account are currently estimated to be approximately \$26 million for Phase 1 and \$92 million for Phase 2, with Phase 3 costs to be developed upon the refinement of Project scope in Phase 2.<sup>97</sup> The *magnitude* of these

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<sup>94</sup> Cal. Pub. Util. Comm’n, *Alternate Decision Authorizing Establishment of Wildfire Expense Memorandum Account*, D.18-06-029 (June 22, 2018), p. 7.

<sup>95</sup> Cal. Pub. Util. Comm’n, *Interim Decision Authorizing Memorandum Accounts and Interim Rate Increase Subject to Refund*, D.16-08-003 (Aug. 19, 2016), p. 3; see also Cal. Pub. Util. Comm’n, *Administrative Law Judge’s Ruling Directing Parties to Meet and Confer and Setting Prehearing Conference*, A.15-06-013 (July 24, 2015), p. 3.

<sup>96</sup> D.18-06-029, *supra* note 94, p. 7.; see also Cal. Pub. Util. Comm’n, *Decision Authorizing Establishment of California Consumer Privacy Act Memorandum Account*, D.20-05-042 (June 5, 2020), p. 8.

<sup>97</sup> A “lack of full knowledge of the extent of the costs should not stand in the way of the Commission authorizing a memorandum account” when “[i]t is clear that costs will be incurred . . . [and] the Applicant is solely unsure of the amount.” D.20-05-042, *supra* note 96, pp. 9-10; see also Cal. Pub. Util. Comm’n, *Decision Authorizing Establishment of California Consumer Privacy Act Memorandum Accounts*, D.19-09-026 (Sept. 16, 2019), pp. 9-10 (“The utilities have stated that the costs could be up to millions of dollars. Therefore, we find that the utilities have provided sufficient detail regarding costs. We do not find that costs are speculative.”).

costs is not yet fixed but their *certainty* is clear—simply stated, no capital project of this scope could be developed without incurring the costs associated with the diligence, engineering, design, environmental, real estate and permitting activities proposed in Phases 1 through 3.<sup>98</sup> Further, as discussed in Section II, *supra*, SoCalGas would engage in a robust stakeholder process, and provide regular updates to the Commission with details on the activities for which costs are recorded in the Memo Account.

## **2. Costs Are Outside the Scope of SoCalGas’s Approved General Rate Case**

“It is a well-established tenet of the Commission that ratemaking is done on a prospective basis.”<sup>99</sup> Memorandum accounts are appropriate “to track and record incremental costs that could not be included in [the utility’s general rate case (“GRC”)]” due to timing of “the [utility’s] most recent GRC application.”<sup>100</sup>

SoCalGas filed its GRC application for Test Year 2019 on October 6, 2017 (“2019 GRC”). SoCalGas did not include—and could not have included—the proposed Project costs as part of its last GRC application, filed in 2017 for Test Year 2019 because no specific hydrogen energy transport system project was contemplated at that time. The pace of both climate change and technological innovation has accelerated since the last GRC filing in 2017, and it was not

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<sup>98</sup> For example, pursuant to Commission Rule of Practice and Procedure 3.1, an application to construct new facilities must include, among other things, a “full description of the proposed construction or extension, and the manner in which the same will be constructed”; maps showing “the location or route of the proposed construction”; a discussion of franchises and health and safety permits; details regarding the volumes of gas to be transported; and economic feasibility analyses. Pursuant to Rule of Practice and Procedure 2.4(b), a Proponent’s Environmental Assessment is required for any projects not exempt from the California Environmental Quality Act.

<sup>99</sup> See Cal. Pub. Util. Comm’n, *In the Matter of the Application of Southern California Water Company for authority pursuant to Public Utilities Code Section 851 to sell, and, if necessary, lease back its headquarters property in Los Angeles, California (U 133 M)*, D.92-03-094 (March 31, 1992) 1992 Cal. PUC LEXIS 236, p. \*7; see also D.20-05-042, *supra* note 96, p. 6.)

<sup>100</sup> D.20-05-042, *supra* note 96, p. 6.

possible to foresee the newly-identified demand for green hydrogen or the feasibility of the Project.

As part of its 2019 GRC, SoCalGas did request funding for the continuation of its Research, Development, and Demonstration (“RD&D”) program. SoCalGas’s RD&D activities involve developing or testing new technologies or conducting demonstration projects, as opposed to developing a specific new project. For example, the RD&D program includes research into discrete hydrogen-related technologies and demonstration pilots:

- a “power-to-gas” pilot that converts excess renewable power to gaseous fuels (e.g., hydrogen and methane)<sup>101</sup>;
- developing a “novel solar hydrogen production technology that ‘can lower carbon emissions in natural gas applications’”<sup>102</sup>;
- “develop[ing] new applications for clean technologies such as hydrogen fuel cells for electric vehicles”<sup>103</sup>; and
- studying the impact of a hydrogen-natural gas blend on infrastructure and end-use.<sup>104</sup>

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<sup>101</sup> Southern California Gas Company, Direct Testimony of Lisa L. Alexander, 2019 General Rate Case (Oct. 6, 2017) (“Alexander Testimony”), p. LLA-13; see also Southern California Gas Company, Rebuttal Testimony of Sharon Tomkins, 2019 General Rate Case (June 18, 2018) (“Tomkins Testimony”), pp. ST-9 to ST-12.

<sup>102</sup> Opening Brief of Southern California Gas Company (U 904 G) and San Diego Gas & Electric Company (U 902 M) in the Test Year 2019 General Rate Case (Sept. 21, 2018), p. 334 fn. 1665; see also Tomkins Testimony, *supra* note 101, p. ST-5.

<sup>103</sup> Opening Brief, *supra* note 102, p. 331.

<sup>104</sup> See Alexander Testimony, *supra* note 101, p. LLA-B-15; see also Southern California Gas Company, Revised Direct Testimony of Deanna R. Haines, 2019 General Rate Case (Dec. 2017), pp. DRH-41 to DRH-42.

SoCalGas has also conducted initial scoping activities to better understand the feasibility of hydrogen market opportunities, including possible conceptual solutions, challenges, and risks to hydrogen delivery.<sup>105</sup>

Since 2017, when SoCalGas filed its 2019 GRC application, the market for hydrogen changed dramatically in ways that could not have been reasonably anticipated at the time. Most importantly, LADWP has embarked on exploration of opportunities to supply its in-Basin power plants with carbon-free hydrogen.<sup>106</sup> In May 2021, LADWP and others announced the launch of HyDeal LA, an initiative to achieve at-scale green hydrogen procurement in the Los Angeles Basin by 2030.<sup>107</sup> Most recently, on August 5, 2021, LADWP issued a RFI to obtain information about pathways for the delivery of green hydrogen into the Los Angeles Basin.<sup>108</sup>

SoCalGas desires to move forward expeditiously to respond to California's growing climate emergency and to maintain energy system reliability while supporting the state's goal of ultimately closing Aliso Canyon. (See *supra* Section I.A.3.) As such, SoCalGas anticipates incurring substantial costs before the Test Year beginning January 1, 2024. It would not benefit the public if SoCalGas were to wait for its Test Year 2024 GRC application (to be filed in May 2022 but not to be decided until at least late 2023) to be approved to track these costs. Waiting could substantially delay the development of the Project and its climate benefits. Accordingly, this Project appropriately warrants attention in a dedicated memo account application and approval process outside of GRC cycles.

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<sup>105</sup> The costs associated with these activities will not be recorded in the Memo Account.

<sup>106</sup> See *supra* p. 17.

<sup>107</sup> See *supra* note 47 and accompanying text.

<sup>108</sup> See LADWP, *supra* note 45.

**B. Requested Effective Date**

SoCalGas seeks authorization for the Memo Account as of the time of the filing of this Application. Under Public Utilities Code section 1731(a), the Commission “may set the effective date of an order or decision before the date of issuance.” In light of the need to commence study and design expeditiously in order to meet the ambitious climate mandates summarized herein, the ability to record costs from a date earlier than the date of any Commission decision on the Application is appropriate.<sup>109</sup>

**C. No Cost Recovery Is Requested in This Application**

SoCalGas expects to seek recovery of Project costs at appropriate times, in accordance with California law on cost recovery. SoCalGas acknowledges that authorization to record costs in the Memo Account does not authorize recovery of those costs, which would be the subject of a separate rate recovery proceeding or process in which SoCalGas would have the burden of proving that the expenditures were reasonable. SoCalGas acknowledges that if the Memo Account is authorized, any party to this proceeding, regardless of its position in this proceeding, would not be precluded from arguing against the reasonableness of specific costs recorded in the Memo Account. Thus, granting this Application in no way binds the Commission to approve recovery of any of the recorded costs.

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<sup>109</sup> See, e.g., D.18-06-029 at pp. 14-15, *supra* note 94 (allowing recovery from the date of filing); D.18-11-051 at p. 8 (same); *Southern Cal. Edison Co. v. Pub. Util. Comm’n*, 85 Cal. App. 4th 1086, 1090 (2000) (allowing recovery prior to decision date).

#### **D. SoCalGas's Request Is Supported by Commission Precedent**

SoCalGas's Application is consistent with Commission decisions authorizing memorandum accounts for feasibility studies and pre-construction activities. For example, the Commission has approved memo accounts for:

- A two-phased feasibility study to evaluate an Integrated Gasification Combined Cycle plant to promote the state's GHG reduction goals<sup>110</sup>;
- Studies and evaluations regarding carbon sequestration to determine if a Clean Hydrogen Generation plant could be technically feasible and commercially reasonable<sup>111</sup>;
- Pre-construction costs for pipeline re-routing, such as environmental evaluations, surveys, pipeline engineering and design, constructability assessments, and permitting.<sup>112</sup>

The Commission has also approved memorandum accounts for feasibility studies for projects designed to meet Renewables Portfolio Standard goals<sup>113</sup>:

- Studies of specific transmission facilities to accommodate energy from unknown

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<sup>110</sup> Cal. Pub. Util. Comm'n, Resolution E-4227A (Feb. 20, 2009) (approving in part and denying in part Southern California Edison's request to establish a memo account to recover up to \$30M in costs).

<sup>111</sup> Cal. Pub. Util. Comm'n, *Opinion Authorizing Southern California Edison Company to Perform a Feasibility Study of a Clean Hydrogen Generation Plant* (Apr. 10, 2008) 2008 WL 1770094.

<sup>112</sup> Cal. Pub. Util. Comm'n, *Application of San Diego Gas & Elec. Co. (U902m) for Auth., Among Other Things, to Update its Elec. & Gas Revenue Requirement & Base Rates Effective on January 1, 2019 & Related Matters* (Sept. 26, 2019) 2019 WL 5079235, at \*72-\*74.

<sup>113</sup> The Commission approved these accounts pursuant to Decision D.06-06-034 and SB 1078, which directed the Commission to deem necessary new transmission facilities if the Commission found the proposed facilities necessary to meet the state's Renewables Portfolio Standard goals. The Commission should follow a similar approach here and approve memorandum accounts to track costs associated with studies and development of green hydrogen projects designed to achieve the state's net zero goals, followed by a future reasonableness review.

future wind generation projects associated with the state's Renewables Portfolio Standard<sup>114</sup>;

- Studies and pre-construction project development activity costs for a transmission line project to facilitate the use of renewable energy resources to meet statewide renewable energy goals<sup>115</sup>; and
- Feasibility studies and cost-effectiveness analyses of accessing new renewable resources in eastern California, which in turn would identify and inform initial transmission facility scopes, likely transmission routes, preliminary environmental surveys, and more detailed cost estimates.<sup>116</sup>

As described in Section III.A, in Phase 1, SoCalGas intends to evaluate further the technical and commercial feasibility and routing of a dedicated green hydrogen transport system to serve end users in the Los Angeles Basin. The Commission has previously authorized memorandum accounts for similar project related feasibility studies and evaluations; thus, SoCalGas's request should be approved by the Commission.

#### **E. Preliminary Statement; Requested Timing**

SoCalGas includes for approval its proposed preliminary statement, the Angeles Link Project Memo Account, as Attachment A. In light of the need to commence with Project development quickly in furtherance of the state's climate policies and goals, SoCalGas requests

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<sup>114</sup> Cal. Pub. Util. Comm'n, Resolution E-3969 (Feb. 16, 2006).

<sup>115</sup> Cal. Pub. Util. Comm'n, Resolution E-4305 (Dec. 17, 2009) (approving, with modifications, Southern California Edison's request to establish the Eldorado-Ivanpah Transmission Project Memorandum Account, and deferring reasonableness analysis of the amount estimated for project development to the Commission review of the project's CPCN application).

<sup>116</sup> Cal. Pub. Util. Comm'n, Resolution E-4052 (Aug. 23, 2007) (approving Southern California Edison's request to establish a Renewable Transmission Feasibility Study Costs Memorandum Account).



that the Application be granted no later than July 2022, with an effective date of the date of this filing, without the need for prepared testimony or evidentiary hearings.

## **V. STATUTORY AND PROCEDURAL REQUIREMENTS**

### **A. Rule 2.1(a) – (c)**

In accordance with Rule 2.1 (a) – (c), SoCalGas provides the following information.

#### **1. Rule 2.1(a) – Legal Name**

SoCalGas is a corporation organized and existing under the laws of the State of California. SoCalGas's principal place of business is 555 West Fifth Street, Los Angeles, California 90013.

#### **2. Rule 2.1(b) – Correspondence**

Correspondence or communications regarding this Application should be addressed to:

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**3. Rule 2.1(c) – Category, Hearings, Issues, Schedule**

**a. Proposed Category of Proceeding**

In accordance with Rule 7.1, SoCalGas requests that this Application be categorized as ratesetting because it requests establishment of a memorandum account that will ultimately be addressed in a future General Rate Case proceeding or other applicable proceedings.

**b. Need for Hearings**

SoCalGas does not believe that a hearing is necessary for this Application.

**c. Issues to be Considered**

The issues to be considered are described in this Application. Regarding safety considerations, SoCalGas’s feasibility study, preliminary design, engineering, environmental and real estate work, and application development will not result in any adverse safety impacts on the facilities or operations of SoCalGas.

**d. Proposed Schedule**

SoCalGas proposes the below schedule:

<b>ACTION</b>	<b>DATE</b>
Application	February 2022
Response/Protests:	30 days from the Application’s Appearance on the Daily Calendar
SoCalGas Reply to Responses/Protests	10 days from Response/Protest Deadline
Prehearing Conference	April 2022
Proposed Decision on Application	June 2022
Final Decision on Application	July 2022

**e. Rule 2.2 – Articles of Incorporation**

A copy of SoCalGas’s Restated Articles of Incorporation as last amended, presently in effect and certified by the California Secretary of State, was filed with the Commission on October 1, 1998, in connection with SoCalGas’s Application No. 98-10-012, and is incorporated herein by reference.

**f. Rule 3.2 – Authority to Increase Rates**

SoCalGas seeks authority for the establishment of a memorandum account with no rate changes that will result from the Application. Because this application seeks interim tracking and not a rate increase, the requirements of Rule 3.2 are not applicable at this time. Rule 3.2 requirements will be met at the time SoCalGas seeks recovery of amounts tracked within the requested Memo Account.

**g. Rule 1.9 – Service**

This is a new application. No service list has been established. Accordingly, SoCalGas is serving this Application on all parties to its 2019 GRC proceeding, A.17-10-007, and the Commission’s SB 380 Proceeding, I.17-02-002.

**VI. CONCLUSION AND SPECIFIC REQUEST FOR RELIEF**

For all the foregoing reasons, SoCalGas respectfully requests that the Commission approve this Application in all respects. Specifically, in accordance with the foregoing proposed schedule, SoCalGas requests the following specific relief:

1. Approval of authority for SoCalGas to establish an interest-bearing Memo Account for incremental costs incurred associated with a feasibility study, preliminary routing analysis/design, engineering, environmental, permitting and real estate work, and CPCN

application development for the Project, with an effective date of no later than the filing of this Application; and

2. Granting of such other relief as is necessary and proper.

If the Commission requires any additional information to process this Application, SoCalGas would be pleased to provide it in a supplemental filing.

Respectfully submitted,

By: /s/ Melissa Hovsepian

Melissa Hovsepian

*Assistant General Counsel - Regulatory*

**SOUTHERN CALIFORNIA GAS COMPANY**

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February 17, 2022

**OFFICER VERIFICATION**

I am an officer of Southern California Gas Company and am authorized to make this verification on their behalf. The matters stated in the foregoing Application are true to my own knowledge, except as to matters that are stated therein on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 16th day of February 2022, at Los Angeles, California.

By: /s/ Neil Navin  
Neil Navin  
*Vice President, Clean Energy Innovations*  
**SOUTHERN CALIFORNIA GAS COMPANY**