Angeles Link – Phase 1
Quarterly Report (Q3 2024)

For the period of July 1, 2024 through September 30, 2024

Appendix 1I - Draft Reports: Affordability Framework

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Angeles Link Phase 1 Draft Framework for Affordability Considerations

I. EXECUTIVE SUMMARY

On December 15, 2022, the California Public Utilities Commission (CPUC) approved Decision (D.) 22-12-055 (Decision), authorizing SoCalGas to establish the Angeles Link Memorandum Account to track expenses related to conducting Phase 1 feasibility studies for Angeles Link, a proposed clean renewable hydrogen pipeline system in Central and Southern California. This Draft Plan is prepared pursuant to the Decision's Ordering Paragraphs 5(a) and 6(k). Ordering Paragraph 5(a) requires SoCalGas to demonstrate how "the planning process address[es] affordability concerns in the development of the [Angeles Link] Project." Ordering Paragraph 6(k) further requires SoCalGas to provide certain findings from Phase 1 studies, including: "Plans for addressing and mitigating affordability concerns."

During Phase 1, SoCalGas received feedback from Planning Advisory Group (PAG) and Community Based Organization Stakeholder Group (CBOSG) members about Angeles Link development costs, cost effectiveness vis-à-vis alternatives, and affordability to customers and ratepayers, and pursuant to the Decision, SoCalGas conducted various studies during Phase 1 that pertain to these issues, including (i) analyses of the cost effectiveness of Angeles Link compared to alternative hydrogen delivery systems and non-hydrogen alternatives and (ii) the development of high-level cost estimates for constructing potential conceptual Angeles Link configurations. In particular, SoCalGas released to the PAG/CBOSG the Draft Angeles Link High-Level Economic Analysis and Cost Effectiveness Report (Cost Effectiveness Study) and the Draft Project Options & Alternatives Study (Alternatives Study) on July 26, 2024, and the Draft Angeles Link Phase 1 Pipeline Sizing and Design Criteria Report (Design Study) on July 19, 2024. SoCalGas accepted comments from the PAG/CBOSG on these studies in August and September 2024. The results of these studies and PAG/CBOSG feedback received in Q3 2024 on these studies and affordability issues more broadly informed the development of this Draft Framework.

As described throughout this Draft Framework, California has set ambitious decarbonization goals to achieve by 2045, including carbon neutrality and supplying 100% of electric retail sales from renewable and zero-carbon sources.[1] There is a

[1] For example, in 2022, the California Legislature passed Assembly Bill (AB) 1279, which mandates the State achieve statewide carbon neutrality by 2045. That same year, California passed Senate Bill (SB) 1020, reaffirming the State's commitment to a carbon-free retail electric grid by December 31, 2045. SB 1020 requires 90% of all retail electricity sales come from renewable energy and zero-carbon resources by December 31, 2035, 95% by December 31, 2040, and 100% by December 31, 2045, with 100% of electricity procured to serve all state agencies by December 31, 2035. Additionally, California has set emissions reduction mandates for ports, trucks, and transit buses by 2035−2045, including the Advanced Clean Trucks Rule (see CARB, Advanced Clean Trucks Regulation, 13 Cal. Code Regs., §§ 1963 *et seq*.). LADWP has also set a more aggressive goal to achieve 100%

growing consensus that fully decarbonizing the State's economy will require increasing electrification and, for some end users, clean alternative fuels, such as clean renewable hydrogen.[2] Angeles Link can support both aspects of decarbonization. It would support electrification at a time when electricity demand is rapidly increasing by providing a clean, firm alternative fuel for use in power generation. Angeles Link can also provide a clean fuel substitute to meaningfully reduce greenhouse gas emissions for hard-to-electrify sectors like heavy-duty transportation and multiple industrial sectors, which have been recognized as the most difficult and expensive sectors to decarbonize.[3] The State recognizes that statewide decarbonization will require significant investment, and various studies indicate that the development and integration of clean firm power technologies – including clean renewable hydrogen – is the most cost-effective option for achieving the State's goals at scale.[4]

Pursuant to Ordering Paragraphs 5(a) and 6(k), this Draft Framework:

(1) Describes the CPUC's general framework for evaluating affordability and approving rates. The CPUC is required by law to make certain levels of energy services affordable for residential customers. The CPUC is currently evaluating what affordability means in the context of the energy transition in a variety of proceedings.

(2) Discusses projected decarbonization costs more broadly to provide context for the proposed investment in Angeles Link. As described in Section III below, studies show that an energy portfolio that includes both clean firm power (like clean renewable hydrogen) and traditional renewable resources is the most cost-effective way to decarbonize.

(3) Summarizes the work SoCalGas has conducted during Phase 1 to consider the costs, cost effectiveness, and affordability of Angeles Link and to address stakeholder feedback. In particular, SoCalGas conducted various studies (i)

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carbon-free power supply by 2035. See LADWP, *Power Strategic Long-Term Resource Plan* (2022), *available at*: https://www.ladwp.com/sites/default/files/2023-08/2022%20LADWP%20Power%20Strategic%20Long-Term%20Resource%20Plan_0.pdf.

[2] *See* NREL, LA100 Study, Executive Summary at 12, *available at*: https://www.nrel.gov/docs/fy21osti/79444-ES.pdf; *id*., Chapter 6 at 3, *available at:* https://www.nrel.gov/docs/fy21osti/79444-6.pdf; see also BCG, Unlocking California's Climate Ambition (July 2024) at 43-44, *available at*: https://web-assets.bcg.com/37/f5/7685135144d38912ab9623dfaf6e/ca-decarbonization-report-2024-07-12.pdf.

[3] *See*, e.g., CARB, 2022 Scoping Plan Update at 155, *available at*: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf (comparing estimated cost per metric ton of reduced Co_2e for various measures, including decarbonizing industrial energy supply).

[4] *See infra* Section III for detail on decarbonization studies and research.

analyzing the cost effectiveness of Angeles Link compared to alternative hydrogen delivery systems and non-hydrogen alternatives and (ii) developing high-level cost estimates for constructing potential conceptual Angeles Link configurations. The findings of these studies and the stakeholder feedback that SoCalGas received in connection with these studies informed the development of this Draft Framework.

(4) Identifies potential strategies for addressing cost effectiveness and affordability in Angeles Link's development, including in coordination with the CPUC and stakeholders on issues that extend beyond SoCalGas's control. For instance, SoCalGas is exploring opportunities for non-ratepayer funding sources to help minimize costs allocated to ratepayers, but many of the opportunities would require legislative action, CPUC approval, and/or a long-term funding source.

As part of the efforts described in this Framework, SoCalGas is looking at affordability on both a system-wide basis and individual basis for customers. SoCalGas is also providing an opportunity for stakeholders to provide feedback on this Draft Framework ahead of seeking authorization to advance to Phase 2 so that interested parties can continue to have an opportunity to meaningfully contribute ideas for mitigating affordability concerns during the planning process.

II. THE CPUC'S REGULATORY FRAMEWORK FOR AFFORDABILITY

This Draft Framework is part of SoCalGas's ongoing process to consider and mitigate affordability concerns in the development of Angeles Link. To help inform SoCalGas's evaluation, SoCalGas has looked to – and will continue to look to – the CPUC's consideration of affordability for the energy transition.

The CPUC is required by law to make certain levels of energy services affordable for residential customers.[5] In addition, all rates charged by utilities to their customers must be approved by the CPUC. In doing so, the CPUC determines whether rates or charges imposed by a public utility are "just and reasonable."[6] For purposes of implementing these statutory mandates, the CPUC has defined "affordability" to mean "the degree to which a representative household is able to pay for an essential utility service, given its socioeconomic status."[7]

The CPUC recognizes that defining and evaluating affordability is challenging because "households will have a wide variety of experiences that cannot be perfectly

[5] Public Utilities Code ("PUC") §§ 382(b), 739(d)(2).

[6] PUC § 451.

[7] D.20-07-032, Decision Adopting Metrics and Methodologies for Assessing the Relative Affordability of Utility Service (July 22, 2020) at 2.

captured by depicting a single household."[8] Depending on the circumstances, the CPUC has considered a variety of factors to evaluate affordability, including but not limited to: (1) whether the investment is cost-effective by providing the most ratepayer benefits at the lowest cost relative to alternatives; (2) whether the investment maximizes existing programs and non-ratepayer funding opportunities; and (3) whether the investment's rate and bill impacts will threaten the ability of customers to pay their utility bills for essential utility services.[9] Although the CPUC may determine "the appropriate type of unique [affordability] analysis required" within the context of an individual proceeding,[10] these factors are often used as a general framework for assessing the affordability of proposed utility programs and investments.

The CPUC's consideration of affordability for the energy transition is evolving in a variety of proceedings, such as:

- **Order Instituting Rulemaking to Continue Electric Integrated Resource Planning and Related Procurement Processes, Rulemaking 20-05-003 (Central Procurement):** The CPUC is currently evaluating if there is a need for the centralized procurement of certain eligible energy resources based on integrated resource plans. Centralized procurement can promote and maximize economies of scale, which in turn can reduce costs. As part of this evaluation regarding the need for centralized procurement, the CPUC is considering affordability to ratepayers, including existing and potential burdens on ratepayers with respect to electric rates.[11]

- **Order Instituting Rulemaking to Consider Distributed Energy Resource Program Cost-Effectiveness Issues, Data Access and Use, and Equipment Performance Standards, Rulemaking 22-11-013 (Societal Cost Test):** The CPUC recently adopted the Societal Cost Test as an informational tool for the CPUC to consider when evaluating the cost-effectiveness of distributed energy resource programs. The Societal Cost Test is designed to incorporate the quantified societal costs and benefits of avoided energy generation, including the costs to the

[8] *Id.* at 10. "Representative household" is based on the local distributions of income and housing cost data and the specific portion of the income distribution that is of interest (e.g., the lowest-earning 20%).

[9] D.23-11-069, Decision on Test Year 2023 General Rate Case for Pacific Gas and Electric Company, (Nov. 17, 2023) at 273-278; D.24-01-004, Decision on Southern California Edison Company Proposed Building Electrification Programs (Jan. 22, 2024) at 21; D.20-07-032, Decision Adopting Metrics and Methodologies for Assessing the Relative Affordability of Utility Service (July 22, 2020) at 95.

[10] D.22-08-023, Decision Implementing the Affordability Metrics (Aug. 9. 2022) at 57.

[11] D.24-08-064, Decision Determining Need for Centralized Procurement of Long Lead-Time Resources (Aug. 22, 2024) at 55-56.

environment and air quality.[12] The CPUC defines societal costs as the monetized indirect costs that result from providing energy services borne by all members of the public and include costs of adverse health impacts, air pollution, climate change, and other environmental damages resulting from energy production.[13] Here, as demonstrated by Phase 1 feasibility studies, Angeles Link would promote public benefits in the form of increased energy system reliability, greenhouse gas emissions reductions, and improved air quality and public health.

- **Order Instituting Rulemaking to Establish Policies, Processes, and Rules to Ensure Safe and Reliable Gas Systems in California and Long-Term Gas System Planning, Rulemaking ___ (Long-Term Gas Planning):** The CPUC has proposed to open a successor rulemaking to R.20-01-007, the Long-Term Gas Planning OIR, which will consider long-term gas planning and the energy transition. The proceeding is expected to consider issues related to how the energy transition and related ratemaking activities can be structured to support affordability, reliability, and safety; funding opportunities in support of the gas transition; and interim actions that could be taken to reduce system costs and facilitate decarbonization.

SoCalGas will continue to monitor and consider the application of the CPUC's evolving affordability considerations for the energy transition as part of Phase 2 (e.g., to inform the selection of a preferred route and advancement of engineering design and project cost estimates) and beyond (e.g., in consideration of a future Certificate of Public Convenience and Necessity [CPCN] application) to inform Angeles Link development. In future phases, as a single preferred route is selected and project design has advanced with refined cost estimates, affordability factors, including how those may evolve by the CPUC over time, will be considered.

In addition, regulated utilities are required to present revenue and rate impacts by customer classification in their applications to the CPUC requesting rate increases above 1%.[14] As of 2022, regulated utilities are also required to present affordability impacts for any proposed rate increase above 1%.[15] By adopting metrics and methodologies to assess the relative affordability of utility services, the CPUC and stakeholders can understand the impact of potential rate changes and identify geographic concentrations of unaffordability of key utility services.[16] The CPUC has also

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[12] D.24-07-015, Decision Adopting the Societal Cost Test (July 15, 2024) at 2, 17.

[13] *Id.* at 2-3.

[14] CPUC Rules 3.2(a)(3), (d).

[15] D.22-08-023, Decision Implementing the Affordability Metrics (Aug. 9, 2022) at 58, 60.

[16] CPUC, *Environmental and Social Justice Action Plan Version 2.0* (April 7, 2022) at 15, *available at*: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/news-office/key-issues/esj/esj-action-plan-v2jw.pdf.

indicated that "[c]ontinuing to assess the cumulative impact of rates on households and working to mitigate these impacts on the most burdened households will remain a priority in all actions the CPUC takes."[17] SoCalGas will comply with the CPUC's affordability metrics analysis and disclosures in connection with applicable future revenue and rate requests, including, any further requests.

The CPUC's methods for assessing affordability also currently do not formally extend to non-residential customers; however, non-residential customers, such as industrial customers, have identified affordable energy costs as an important factor for the CPUC to consider.[18] Moreover, traditional noncore[19] customers represented by certain organizations in the Angeles Link PAG have expressed feedback during Phase 1 that it is important to consider cost and affordability impacts to those noncore customer classes' transportation rates, as discussed further below in Section IV.A.[20]

III. COSTS OF DECARBONIZATION

The affordability of Angeles Link should be considered in the broader context of decarbonization solutions because it is widely recognized that achieving the State's decarbonization goals by 2045 will require significant investments in energy infrastructure. Studies demonstrate that a portfolio consisting exclusively of traditional renewable energy (i.e., wind and solar) and batteries is the most costly pathway to decarbonize.[21] Rather, an energy portfolio that includes both clean firm power (like clean renewable hydrogen) and traditional renewable resources is the most cost-

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[17] *Id*. at 22.

[18] For example, California industry has raised concerns about cost increases because industrial customers compete in national and international markets and cannot pass along cost increases. *See* Cal. Large Energy Consumers Assn., *Non-Ratepayer Sources of Funding, Affordability Rulemaking* (Feb. 28, 2022), *available at*: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/en-banc/yap-slides-w-alt-image-and-link-text.pdf.

[19] "The overwhelming majority of natural gas utility customers in California are residential and small commercial customers, referred to as 'core' customers. Larger volume gas customers, like electric generators and industrial customers, are called 'noncore' customers." *See* CPUC, Natural Gas and California, *available at*: https://www.cpuc.ca.gov/industries-and-topics/natural-gas/natural-gas-and-california.

[20] For example, in comments submitted on August 21, 2024, regarding the Draft Pipeline Sizing and Design Criteria Report, the Southern California Generation Coalition discussed potential rates for noncore customers for hydrogen transportation services, and the impact that route selection could have on the costs of service.

[21] EDF/E3, *Clean Firm Power is the Key to California's Carbon-Free Energy Future* (March 24, 2021), *available at*: https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/ (see Figure 2); *see also* SoCalGas, *The Role of Clean Fuels and Gas Infrastructure in Achieving California's Net Zero Climate Goal* (Oct. 2021) at 6, *available at* https://www.socalgas.com/sites/default/files/2021-10/Roles_Clean_Fuels_Full_Report.pdf.

effective way to decarbonize.[22] Finally, for the development of clean renewable hydrogen, it is well-established that pipelines are the most cost-effective way to transport bulk hydrogen at scale.[23] These factors demonstrate the role of hydrogen in supporting a cost-effective energy transition that is well positioned to keep energy rates as affordable as possible given the goals established by the Legislature.

A. The Costs of the Energy Transition

The State has recognized the significant costs associated with achieving its net-zero mandate and has determined those costs are justified because of the societal value of a decarbonized energy system. For example, CARB modeling of its Proposed Scenario estimated that achieving the 2022 Scoping Plan's targets would cost $18 billion in 2035 and $27 billion in 2045. Note that CARB estimated its No Combustion Scenario to cost $58 billion to reach the 2045 target, almost double the proposed scenario which includes renewable hydrogen as a key resource.

A substantial element of the cost of decarbonization is clean energy infrastructure. For example, in May 2024, the California Independent System Operator (CAISO) identified a need for 26 transmission projects for a total infrastructure investment of $6.1 billion in order to add more than 85 gigawatts of electric capacity by 2035 "as a solid trajectory to achieving the state's 2045 goals."[24] CAISO's May 2022 20-year transmission outlook estimates $30.5 billion in transmission development.[25] Similarly, Southern California Edison Company (SCE) has indicated that for its service territory it plans to invest $38 to $43 billion from 2023 to 2028 in preparation for

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[22] EDF/E3, *Clean Firm Power is the Key to California's Carbon-Free Energy Future* (March 24, 2021), *available at*: https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/ ("Renewable energy can inexpensively provide at least half of the carbon-free energy needed by 2045, but clean firm technologies complement renewable energy to ensure reliability while keeping whole system costs low.").

[23] DOE, Office of Energy Efficiency and Renewable Energy, *Alternative Fuels Data Center: Hydrogen Production and Distribution*, *available at*: https://afdc.energy.gov/fuels/hydrogen_production.html; DOE, *Pathways to Commercial Liftoff: Clean Hydrogen* (March 2023) at 4, 14, *available at*: https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-Clean-H2-vPUB.pdf ("Pipelines and geologic storage are costly upfront to develop, but at high hydrogen volumes provide critical economies of scale" and "Pipelines are the preferred solution at large volumes" as offtake scales ~2030); *id*. at 16 ("Dedicated hydrogen pipelines can move large volumes over long distances to achieve economies of scale").

[24] CAISO, *2023-2024 Transmission Plan* (May 23, 2024) at 2-3, *available at*: https://www.caiso.com/documents/iso-board-approved-2023-2024-transmission-plan.pdf.

[25] CAISO, *20 Year Transmission Outlook* (May 2022) at 3, *available at*: https://stakeholdercenter.caiso.com/recurringstakeholderprocesses/20-year-transmission-outlook.

widespread electrification and to support the reliability and resiliency of the electric system.[26]

Further, research shows that the cost of ***not*** decarbonizing may be even higher, particularly from a non-energy cost perspective (e.g., climate risks and public health impacts). Preliminary analysis from the SB 100 Joint Agency Report (2021) indicates that reaching the SB 100 2045 targets would result in estimated avoided social costs (i.e., avoided economic damage) ranging from approximately $900 million to $3.5 billion in 2045, depending on the discount rate.[27] The federal Office of Management and Budget (OMB) has found that the federal government could spend an additional $25 billion to $128 billion annually due to climate-related risks.[28] "Thus, unmitigated climate change is expected to leave a more significant imprint on the Federal budget over the course of this century."[29] On the other hand, the benefits of achieving net-zero GHG emissions are substantial—for example, a recent UCLA study found that the monetary savings of achieving net-zero GHG emissions in California by 2050 exceed the costs by $109 billion per year.[30]

B. Clean Renewable Hydrogen Supports a Cost-Effective Energy Transition

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[26] Edison International, Business Update (July 25, 2024), *available at*: https://download.edison.com/406/files/202407/eix-july-2024-business-update.pdf?Signature=yavFchmCzBxxW9QsNi19w37SurU%3D&Expires=1723236119&AWSAccessKeyId=AKIAJX7XEOOELCYGIVDQ&versionId=yWVVmTmS2cmObEYaOOTCcQQiC0f58Vt2&response-content-disposition=attachment.

[27] CEC, *Report to the Governor on Priority SB 100 Actions to Accelerate the Transition to Carbon-Free Energy*, CEC-200-2021-008 (Sept. 2021) at 17, *available at*: https://www.energy.ca.gov/sites/default/files/2021-09/CEC-200-2021-008.pdf.

[28] OMB, *Federal Budget Exposure to Climate Risk* (April 2022) at 277, available at: https://www.whitehouse.gov/wp-content/uploads/2022/04/ap_21_climate_risk_fy2023.pdf. In addition, the International Energy Agency (IEA) has found that the cost of inaction disproportionately affects low- and middle-income populations because it increases the costs or reduces the reliability of services. *See* IEA, *Strategies for Affordable and Fair Clean Energy Transitions* (2024) at 62-63, *available at*: https://iea.blob.core.windows.net/assets/86f2ba8c-f44b-494a-95cc-e75863cebf95/StrategiesforAffordableandFairCleanEnergyTransitions.pdf.

[29] OMB, *Federal Budget Exposure to Climate Risk* (April 2022) at 277, *available at*: https://www.whitehouse.gov/wp-content/uploads/2022/04/ap_21_climate_risk_fy2023.pdf.

[30] UCLA, *Sustainable LA Grand Challenge, Environmental and Public Health Benefits from Achieving Sustainable Energy in California, available at*: https://sustainablela.ucla.edu/research-portal/project/environmental-and-public-health-benefits-achieving-sustainable-energy.

Investment in batteries plus traditional renewable energy resources alone has been demonstrated as the least cost-effective way to decarbonize by 2045.[31] Instead, clean firm power (such as power generated from clean renewable hydrogen), in combination with traditional renewable resources, provides the most cost-effective way to achieve the State's decarbonization goals and maintain energy system reliability and resiliency, particularly as demand for electricity grows and intermittency needs to be effectively managed.[32]

A study by the Environmental Defense Fund, E3, and groups from Princeton University and Stanford University (EDF/E3 Study) demonstrates that traditional "[r]enewable energy can inexpensively provide at least half of the carbon-free energy needed by 2045, but clean firm technologies complement [traditional] renewable energy to ensure reliability while keeping whole system costs low."[33] The EDF/E3 study shows that an all-renewable decarbonization scenario is estimated to cost approximately 15 cents per kilowatt-hour (kWh).[34] That cost, however, could be reduced to approximately 7-10 cents per kWh if renewable energy provides about half of the carbon-free energy needed by 2045, with clean firm technologies complementing the portfolio.[35] The EDF/E3 study concludes that having more than one clean firm power option helps reduce costs even further.[36] Prior SoCalGas estimates are consistent with the EDF/E3 study and indicate that clean fuels can support a lower-cost path to achieve California's net-zero goals.[37]

Moreover, state agencies have reiterated the importance of clean renewable hydrogen in achieving California's climate mandates affordably, without sacrificing reliability, by 2045. The 2022 CARB Scoping Plan concludes that clean renewable hydrogen is needed to replace fossil fuels in heavy-duty transport and industrial

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[31] EDF/E3, *Clean Firm Power is the Key to California's Carbon-Free Energy Future* (March 24, 2021), *available at*: https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/ (see Figure 2); *see also* SoCalGas, *The Role of Clean Fuels and Gas Infrastructure in Achieving California's Net Zero Climate Goal* (Oct. 2021) at 6, *available at*: https://www.socalgas.com/sites/default/files/2021-10/Roles_Clean_Fuels_Full_Report.pdf.

[32] EDF/E3, *Clean Firm Power is the Key to California's Carbon-Free Energy Future* (March 24, 2021), *available at*: https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/

[33] *Id.*

[34] *Id*. (*see* Figure 2).

[35] *Id.*

[36] *Id.*

[37] SoCalGas, *The Role of Clean Fuels and Gas Infrastructure in Achieving California's Net Zero Climate Goal* (Oct. 2021) at 6 (Ex. ES.1), *available at*: https://www.socalgas.com/sites/default/files/2021-10/Roles_Clean_Fuels_Full_Report.pdf.

applications.[38] CARB identifies the need for a more diverse portfolio of clean energy resources to "maintain reliability and affordability" in the electric generation sector—particularly those resources that can provide clean firm power when solar and wind cannot.[39] Specifically, CARB identifies new zero-carbon resources required to meet the State's 2045 zero-carbon retail electricity targets, which include hydrogen as capacity for a new electric generation resource—on the order of approximately 4 GW of hydrogen capacity in 2035, and 9 GW by 2045.[40] Similarly, the California Energy Commission's (CEC) 2023 Integrated Energy Policy Report (IEPR) also identifies clean renewable hydrogen's potential to support electric generation, transportation electrification, and industrial decarbonization.[41] Likewise, the Governor's Office has recognized that investments in hydrogen "will support customer electric bill affordability by advancing commercialization, and scaling the deployment, of promising technologies."[42]

C. Pipeline Transportation Is the Most Cost-Effective Method to Deliver Clean Renewable Hydrogen at Scale

As discussed in Section III.C, above, pipelines are recognized as the most cost-effective means to transport bulk hydrogen at scale. As the U.S. Department of Energy (DOE) has explained, "[o]pen access for pipeline transport and storage of hydrogen is the key trigger to enable low-cost hydrogen energy storage for long duration and for resilience events. . . an open-access H2Hub in a region with net-zero grid requirements could likely use hydrogen for long term and seasonal storage for otherwise curtailed

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[38] CARB, *2022 Scoping Plan for Achieving Carbon Neutrality* (Dec. 2022) at 73-74, 78, 190, 207, 209, *available at*: https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf.

[39] The 2022 CARB Scoping Plan notes that "California must accelerate deployment of diverse clean energy resources to maintain reliability and affordability in the face of climate change." *Id*. at 198. The Plan explains that today, "fossil gas power plants provide about 75 percent of the flexible capacity for grid reliability as more renewable power enters the system," and that, "[m]oving forward, other resources such as storage and demand-side management are essential to maintain reliability with high concentrations of renewables." *Id*. at 204. On this point, "[h]ydrogen produced from renewable resources and renewable feedstocks can serve a dual role as a low-carbon fuel for existing combustion turbines or fuel cells, and as energy storage for later use." *Id*.

[40] *Id.* (*see* Figure 4-5).

[41] CEC, *2023 Integrated Energy Policy Report, Chapter 2: Potential Growth of Clean and Renewable Hydrogen* (Feb. 2024), *available at*: https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report.

[42] Office of Governor Gavin Newson, *Building the Electricity Grid of the Future: California's Clean Energy Transition* (May 2023) at 14, *available at*: https://www.gov.ca.gov/wp-content/uploads/2023/05/CAEnergyTransitionPlan.pdf.

power."[43] Open access hydrogen pipelines are also a key component of Europe's hydrogen strategy.[44]

Building on these findings, the Angeles Link Phase 1 studies demonstrate that clean renewable hydrogen provides a cost-effective way to decarbonize hard-to-electrify sectors, as discussed further in Section IV.A.

IV. AFFORDABILITY CONSIDERATIONS FOR ANGELES LINK

A. Key Findings on Affordability Issues in Phase 1 Studies

As noted in Section I, SoCalGas conducted various studies during Phase 1 that pertain to affordability issues, including (i) analyses of the cost effectiveness of Angeles Link compared to alternative hydrogen delivery systems and non-hydrogen alternatives and (ii) the development of high-level cost estimates for constructing potential conceptual Angeles Link configurations. These studies, which are focused on costs and cost effectiveness, address one aspect of affordability and can serve as a building block for future affordability analyses. Pertinent results from the studies are briefly summarized below:

- The **Cost Effectiveness Study** analyzed the cost-effectiveness of Angeles Link compared to alternative hydrogen delivery systems, as well as compared to non-hydrogen alternatives, such as electrification and carbon capture and storage (CCS), across a range of use cases in the mobility, power, and industrial sectors. The Cost Effectiveness Study found that, for Phase 1 purposes (e.g., in evaluating the feasibility of developing a project like Angeles Link), a pipeline system like Angeles Link offers a cost-effective solution to transport clean renewable hydrogen to serve Central and Southern California, including the Los Angeles Basin, at scale.[45] The Cost Effectiveness Study also determined that clean renewable hydrogen delivered by Angeles Link would be cost effective relative to electrification and CCS as alternative decarbonization pathways for certain hard-to-electrify sectors, dispatchable power generation, and heavy-duty transportation.[46]

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[43] DOE, *Pathways to Commercial Liftoff: Clean Hydrogen* (March 2023) at 41, *available at*: https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-Clean-H2-vPUB.pdf; *see also id.* at 39.

[44] *See*, e.g., BCG, *Unlocking California's Climate Ambition* (July 2024) at 16, *available at:* https://www.bcg.com/publications/2024/united-states-unlocking-californias-climate-ambition (discussing Netherlands' national hydrogen pipeline network).

[45] *See* Draft Cost Effectiveness Study (July 2024) at 23.

[46] *Id*.

- The **Alternatives Study** identified and assessed the ability of potential alternatives to Angeles Link to meet enumerated objectives, incorporating information from the Cost Effectiveness Study.[47] The study identified hydrogen delivery alternatives as well as non-hydrogen alternatives, such as electrification and CCS, and considered their high-level alignment with the purpose and need for Angeles Link.[48] One of the identified purposes of Angeles Link is to provide a cost effective and affordable open access clean renewable hydrogen transportation system at just and reasonable rates"[49]; therefore, the costs of and economic considerations for each potential alternative were considered. The Alternatives Study concluded that Angeles Link is the best suited option to meet the Alternative Study's evaluation criteria for the delivery of clean renewable hydrogen at scale across Central and Southern California, including the Los Angeles Basin. The Alternatives Study also found that Angeles Link is well positioned to serve hard-to-electrify industrial consumers, dispatchable electric generation, and heavy-duty transportation.[50]

- The **Design Study** provides high-level cost estimates for constructing potential conceptual Angeles Link configurations. As part of the Design Study, SoCalGas developed cost estimates for various scenarios and route options, including single and dual-run scenarios.[51] Running multiple project design scenarios and cost estimates will assist SoCalGas in designing a final project proposal that accounts for affordability concerns, including those raised by stakeholders during the PAG/CBOSG (see Section IV.B. below).

As discussed below, the findings of these studies and feedback on these studies have informed the development of this Draft Framework.

B. Phase 1 Stakeholder Feedback and Study Findings

SoCalGas received high-level feedback from PAG/CBOSG members concerning costs and affordability, including recommendations regarding how SoCalGas should analyze costs and affordability as part of the scope of Phase 1 studies. Key feedback received to date is summarized below, along with how that feedback was addressed. All

[47] *See* Draft Alternatives Study (July 2024) at 9.

[48] *Id.* at 11-13.

[49] *Id.* at 93-94.

[50] *Id*. at 11-13.

[51] Draft Design Study (July 2024) at 52-56. All estimates developed are Class 5 estimates. Class 5 estimates are the most preliminary class of estimate addressed in the Association for the Advancement of Cost Engineering International (AACEi) classification system. The Class 5 estimates presented in the Design Study have accuracy ranges of -20% to -50% on the low side and +30% to +100% on the high side.

feedback received, along with SoCalGas responses, is included, in original form, in the quarterly reports. These reports, along with transcripts from the PAG and CBOSG meetings, are submitted to the CPUC and published on SoCalGas's website.

- ***Feedback Theme: SoCalGas should assess the estimated costs of Angeles Link compared with other alternatives as part of its assessment of whether hydrogen is an appropriate way to decarbonize various sectors.***

This feedback has been addressed in the Alternatives Study and the Cost Effectiveness Study, which compare the estimated costs of Angeles Link with other non-hydrogen alternatives, including electrification and CCS. Based on preliminary cost estimates developed during Phase 1, these studies determined that clean renewable hydrogen delivered by Angeles Link would be a cost-effective option, relative to electrification and CCS as alternative decarbonization pathways for certain hard-to-electrify sectors, dispatchable power generation, and heavy-duty transportation.

SoCalGas has also considered feedback about how the cost of hydrogen is expected to go down over time. For example, stakeholders noted that the DOE Hydrogen Shot seeks to reduce the cost of clean hydrogen by 80% to $1 per kilogram by 2031. Angeles Link can help support these efforts to reduce the delivered cost of hydrogen by providing cost-effective and scalable hydrogen transportation connective infrastructure.

- ***Feedback Theme: SoCalGas should assess the estimated costs of Angeles Link compared with other hydrogen delivery alternatives for various sectors.***

This feedback has been addressed in the Alternatives Study and the Cost Effectiveness Study, which compare the levelized costs of delivered hydrogen via Angeles Link against other hydrogen delivery alternatives, such as liquid hydrogen trucking, gaseous hydrogen trucking, liquid hydrogen shipping, methanol shipping, power transmission and distribution with in-basin hydrogen production, and a localized hub alternative. Angeles Link was found to be the most cost-effective delivery method when compared to the identified hydrogen delivery alternatives in Phase 1 (e.g., in evaluating the feasibility of developing a project like Angeles Link). Angeles Link was also found to be the best hydrogen delivery solution to achieve the scale and volume needed to serve projected demand.

- ***Feedback Theme: SoCalGas should locate and size the project in a manner that considers affordability concerns and avoids stranded asset costs.***

In Phase 1, SoCalGas assessed potential demand for hydrogen in Southern and Central California. Based on the results of the Demand Study, SoCalGas identified an optimal throughput range for Angeles Link that would be capable of delivering a portion of the projected demand. Next, as noted above, SoCalGas evaluated potential pipeline

system configurations and route options to deliver the appropriate capacity of hydrogen in the Design Study, including both single- and dual-run configurations, and calculated the costs of the various configurations and scenarios. By considering the costs of multiple throughput options, routes, and design configurations in Phase 1, SoCalGas can make a more informed decision in Phase 2, when it selects a preferred route.

- ***Feedback Theme: The Phase 1 estimates of how much it will cost to build Angeles Link are high. The cost of the project should be reduced to make the project more economical.***

As discussed in Section III above, decarbonizing California's economy will require significant investments in clean energy infrastructure. As discussed in Section IV.A, the Phase 1 studies demonstrate that a pipeline system like Angeles Link offers a cost-effective solution to transport clean renewable hydrogen to serve Central and Southern California, including the Los Angeles Basin, at scale. The studies also demonstrate that clean renewable hydrogen delivered by Angeles Link would be cost effective relative to electrification and CCS as alternative decarbonization pathways for certain hard-to-electrify sectors, dispatchable power generation, and heavy-duty transportation.

Section IV.F below discusses how SoCalGas will be monitoring and evaluating opportunities for innovative funding and rate design to help reduce costs to ratepayers. In addition, as the project work progresses, SoCalGas will seek to maximize opportunities to reduce project costs, including with respect to project siting and design, while maintaining reliability and safety and minimizing environmental impacts.

- ***Feedback Theme: In future Angeles Link proceedings, SoCalGas should consider the "used-and-usefulness" of Angeles Link, including an assessment of potential customers and cost allocation.***

SoCalGas will use the more refined cost estimates for Angeles Link developed in Phase 2 to assess the potential costs to ratepayers and current and future potential customers for Angeles Link. SoCalGas will consider estimated revenue requirements, capital-related costs associated with the completed project, and ongoing operations and maintenance expenses necessary to support new infrastructure. Relatedly, SoCalGas will also use information developed in Phase 2 to assess potential cost allocation and rate design approaches for Angeles Link, taking into account CPUC requirements and proceedings that may impact cost allocation and rate design.

- ***Feedback Theme: SoCalGas should consider potential rate impacts to different classes of ratepayers, including working class ratepayers.***

As described in Section IV.C below, numerous inputs go into the ratemaking process. SoCalGas is in the early stages of developing preliminary (Class 5) cost estimates for Angeles Link, and more information is needed on the project costs, end users, and other factors before rate impacts on either core or non-core customers can

be determined. Once ready to propose a rate design, SoCalGas will consider available ratepayer assistance programs and incentives, particularly for low-income customers, as applicable.

As Angeles Link progresses, SoCalGas will continue to assess costs and affordability as requested by feedback it received during Phase 1. Stakeholders have been provided an opportunity to comment on this Draft Framework and additional input received on this Draft Framework will be addressed in the final Phase 1 Framework or in future Phase 1 quarterly reports.

C. Ratemaking Process

As described above, some of the feedback SoCalGas received from stakeholders was that the Company should assess cost allocation, rate design, and impacts to ratepayers as Angeles Link progresses. As a regulated public utility, changes to SoCalGas's customer rates are subject to a public review and approval process in front of the CPUC before they can be passed on to customers, as generally depicted below.

Figure 1 – CPUC Ratemaking Components

Through the Phase 1 studies, SoCalGas has developed preliminary cost estimates for potential Angeles Link configurations. In future phases, SoCalGas will select a preferred route and develop refined project cost estimates that would inform development of a revenue requirement (e.g., the total amount the utility is authorized to collect in rates to fund the project) and potential ratemaking proceedings for future phases of Angeles Link. There are several steps and many considerations that go into ultimate rate design.

- First, in order to develop an accurate revenue requirement for the capital costs of the project, SoCalGas plans to develop a more definitive project description upon selecting a preferred route and completing the front-end engineering design (FEED) and a Class 3[52] cost estimate for Angeles Link in Phase 2. SoCalGas must also identify the Project's anticipated

[52] Class 3 estimates are commonly referred to as "budgetary estimates" and are developed when project design has progressed to a 10%-40% design. Such estimates are commonly used as a control estimate against which actual costs and resources will be monitored for variations to the budget (see AACE International Recommended Practice 18R-97).

operating and depreciable life, taking into account variables such as material selection, end-user requirements, and industry practices or benchmarks for depreciation.

- Second, to develop a recommended allocation of costs among customer classes (e.g., core residential customers, core and non-core commercial customers, industrial and power generation customers), SoCalGas plans to assess information developed in Phase 1 and Phase 2 about hydrogen demand, end users, hydrogen offtake contract terms, throughput, and system operations. This assessment will help identify current and future customers and those who are likely to benefit, directly and/or indirectly, from the operation of Angeles Link. This may include evaluating various cost allocation scenarios among beneficiaries, considering any potential changes in CPUC or state policy or regulation concerning cost allocation or non-ratepayer funding for clean energy investments.

- Third, once a revenue requirement and proposed cost allocation are determined, SoCalGas would propose a rate design that incorporates consideration of available ratepayer assistance programs and incentives, particularly for low-income customers, as applicable.

Until these variables are further defined, any calculation of potential rate impacts for the capital costs of Angeles Link would be premature and speculative.

Recognizing that energy and infrastructure projects require significant investment, the State has adopted and SoCalGas offers existing ratepayer assistance programs for its customers. Examples of these programs include:

- **California Alternate Rates for Energy (CARE) Program.** The CARE Program, established by Public Utilities Code section 739.1, offers residential customers and certain qualified businesses a 20% discount on monthly gas bills.[53]

- **California Climate Credit.** The California Climate Credit provides a credit to ratepayers, regardless of income, on their gas and electric bills twice a year, generally in April and October. The credit is funded from the Cap-and-Trade Program.[54]

- **Percent of Income Payment Plan (PIPP) Pilot Program.** The PIPP pilot program caps enrolled customers' utility bills at 4% of monthly household income for electricity and natural gas, with monthly bills not to exceed a certain amount.[55]

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[53] Additional information is available at: https://www.socalgas.com/save-money-and-energy/assistance-programs/california-alternate-rates-for-energy.

[54] Additional information is available at: https://www.cpuc.ca.gov/climatecredit.

[55] Additional information is available at: https://www.socalgas.com/PIPP.

- **Low Income Home Energy Assistance Program (LIHEAP).** LIHEAP is a federally funded energy assistance program that helps eligible residential customers pay utility bills.[56]

1. *Opportunities for Non-Ratepayer Funding*

SoCalGas is exploring opportunities for non-ratepayer funding sources for Angeles Link to help minimize costs allocated to ratepayers.[57] However, many of these opportunities would require legislative action, CPUC approval, and/or a long-term funding source—all of which are beyond SoCalGas's control. SoCalGas looks forward to working with the CPUC and other stakeholders to identify and leverage such opportunities.[58]

Federal Funding Opportunities. SoCalGas has joined ARCHES and Angeles Link is a supporting project in ARCHES obtaining an award of up to $1.2 billion from the DOE.[59] SoCalGas is also monitoring other funding opportunities and grants from the Infrastructure Investment and Jobs Act, which, even if they do not apply specifically to Angeles Link, may help drive down the cost of hydrogen production or accelerate the development of new hydrogen technologies, reducing the delivered cost of hydrogen or otherwise providing efficiencies that would benefit customers and the public. In connection with any funding opportunities, SoCalGas will closely consider the potential financial implications and costs of complying with award terms and conditions.

State Funding Opportunities. SoCalGas could work with the CPUC and stakeholders to explore opportunities for financial support from the General Fund,

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[56] Additional information is available at: https://www.socalgas.com/save-money-and-energy/assistance-programs/low-income-home-energy-assistance-program.

[57] As an open access, non-discriminatory clean renewable hydrogen pipeline transportation system dedicated to public use, Angeles Link would be a regulated public utility service and, as such, if authorized by the CPUC, would be permitted to recover just and reasonable expenses in accordance with Public Utilities Code section 451 and any applicable conditions contained in the project's CPCN. However, SoCalGas is supportive of exploring opportunities to offset ratepayer funding, as described in this section.

[58] At this time, SoCalGas is not endorsing any specific option or combination of options, and will continue to evaluate potential opportunities that might best address Angeles Link's unique circumstances, including as more information and detail is developed in future phases.

[59] ARCHES H2, *California Wins Up to $1.2 Billion From Feds For Hydrogen* (Oct. 2023), *available at*: https://archesh2.org/california-wins-up-to-1-2-billion-from-feds-for-hydrogen/.

Greenhouse Gas Reduction Fund,[60] or other similar current or future funding sources.[61] Prior state budgets have included programs related to clean energy, building decarbonization, and emission reductions from industrial sources.[62] According to the Legislative Analyst's Office, "[m]any of [the] state's clean energy programs historically have been paid for by IOU ratepayers through higher electricity rates, even though some of the primary goals of these programs (such as GHG reductions) accrue to the broader public. We think there is a strong rationale for using [the] General Fund for programs that aim to provide broad societal benefits."[63]

SoCalGas also intends to continue monitoring opportunities for CEC funding. In addition to the Clean Hydrogen Program established by AB 209 (which provides financial incentives to demonstrate or scale-up clean hydrogen projects),[64] the CEC administers a Gas Research and Development Program focusing on new technologies the gas sector could deploy to support California's energy and environmental goals. Recent focal areas of investment include low-carbon hydrogen for hard-to-decarbonize segments of the economy.[65] SoCalGas has been a past recipient of the CEC's research and development funds to advance hydrogen production technologies and hydrogen end-use applications and has experience working with the CEC on these programs.

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[60] Existing law requires the Department of Finance, in consultation with the California Air Resources Board and any other relevant state agency, to develop a three-year investment plan for the Greenhouse Gas Reduction Fund to fund projects and programs that reduce greenhouse gas emissions and deliver economic, environmental, and public health benefits, and further requires that 25% of fund projects benefit disadvantaged communities and 10% fund projects located within disadvantaged communities. *See* Cal. Health & Safety Code §§ 39710-39723.

[61] Other states have developed new, dedicated funding sources for clean firm power investments. For example, in 2023, Texas passed legislation (Senate Bill 2627) designed to address concerns about the reliability of the state's electric grid (the Texas Energy Fund), which provided state funding via low-cost financing or grants for investments in new dispatchable generation.

[62] In addition, some policymakers have proposed legislation that would have created state trust funds for the purpose of advancing the energy transition, while reducing impacts on energy rates (*see*, e.g., AB 2329, SB 1020).

[63] California Legislative Analyst's Office, *The 2022-2023 Budget Clean Energy Package* (Feb. 22, 2022), *available at*: https://lao.ca.gov/Publications/Report/4554.

[64] *See* CEC, *Clean Hydrogen Program*, *available at*: https://www.energy.ca.gov/programs-and-topics/programs/clean-hydrogen-program#:~:text=The%20Clean%20Hydrogen%20Program%20was,derived%20from%20water%20using%20eligible.

[65] CEC, *Staff Report: Gas Research and Development Program 2023 Annual Report* (Oct. 2023) at 1, *available at*: https://www.energy.ca.gov/sites/default/files/2023-10/CEC-500-2023-054.pdf.

Cap-and-Trade Funding Opportunities. The CPUC could consider options to use cap and trade funding to facilitate and/or offset the costs of clean fuel projects. As just one example, a portion of the Natural Gas Climate Credit could be allocated for clean fuel projects. The credit originates from the California Cap-and-Trade Program, a mechanism that mandates power plants, fuel suppliers, and major industrial facilities emitting GHGs to purchase carbon pollution allowances through auctions overseen by CARB.[66] Annually, the State distributes a restricted quantity of GHG emission allowances. A portion of these allowances is auctioned off, and the proceeds are directed towards two purposes: either advancing efforts to further reduce GHG emissions or providing direct benefits to utility customers through the California Climate Credit and other clean energy programs.[67] While the CPUC must adhere to guidelines and regulations governing the use of these funds, it has some flexibility in determining how they are allocated.

Other Opportunities. Additionally, legislative efforts and market forces, programs, and policies may reduce the costs of Angeles Link and the costs of clean renewable hydrogen over time. These include permitting reform to expedite permitting processes and judicial review for climate-friendly projects; the federal Infrastructure Investment and Jobs and Inflation Reduction Acts; tax incentives and credits; DOE funding through its Hydrogen and Fuel Cell Technologies Office; and DOE Hydrogen Shot, which aims to reduce the cost of clean hydrogen to $1 per kilogram in one decade.

2. *Additional Opportunities for Further Evaluation*

SoCalGas is receptive to recommendations from stakeholders and programs identified by others on how to manage the costs of the energy transition. As with potential non-ratepayer funding opportunities, these opportunities would require action by the CPUC and/or the legislature before SoCalGas could implement any measures. Nevertheless, SoCalGas intends to further evaluate such opportunities and may participate in legislative and regulatory proposals or proceedings concerning affordability, as appropriate.[68]

Central Procurement. A report by Boston Consulting Group (BCG) in collaboration with California's investor-owned utilities identifies that the State can "utilize its existing central procurement authority to support the development of reliability resources with long-lead times and broaden the list of qualifying resources to ensure a

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[66] CPUC, *California Climate Credit – Frequently Asked Questions, available at*: https://www.cpuc.ca.gov/industries-and-topics/natural-gas/greenhouse-gas-cap-and-trade-program/california-climate-credit/california-climate-credit---faq.

[67] *Id.*

[68] At this time, SoCalGas is not endorsing any specific option or combination of options and will continue to evaluate potential opportunities that might best address Angeles Link's unique circumstances, including as more information and detail is developed in future phases.

technology agnostic approach."[69] Central procurement can lead to state investment in energy generation to secure development of long-lead time resources. State law currently authorizes the central procurement of certain eligible renewable generation resources, defined as resources that (1) support the State's clean energy goals without increasing reliance on fossil-fuel based resources; (2) are not under contract at sufficient levels; (3) have a construction and development lead time of at least 5 years; (4) do not generate electricity using fossil fuels or fuels derived from fossil fuels; and (5) do not generate electricity using combustion.[70] By excluding combustion, state law currently excludes hydrogen combustion turbines in such centralized procurement mechanism. BCG suggests that a "more technology agnostic criteria that focuses on resource characteristics could give the central procurement entity greater flexibility" and "better socialize costs, including to non-CPUC jurisdictional customers who benefit from these reliability resources, to ensure more equitable distribution of costs."[71]

Fixed Charges. As part of the energy transition, the CPUC authorized electric utilities to change the structure of fixed charges on residential customer bills to more equitably and affordably allocate and recover costs.[72] For gas customers, advancing an enhanced fixed charge[73] (higher than the current $5 per month fixed charge) for all

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[69] *See* BCG, *Unlocking California's Climate Ambition* (July 2024) at 29, *available at*: https://web-assets.bcg.com/37/f5/7685135144d38912ab9623dfaf6e/ca-decarbonization-report-2024-07-12.pdf. The BCG report is the outcome of a collaborative research effort led by BCG with support from SCE, SDG&E, PG&E, and SoCalGas, leveraging subject matter experts at every level across all four IOUs and BCG. The effort also engaged other stakeholders to review and get input on key challenges to achieving the State's climate goals.

[70] *Id.* at 36 (citing AB 1373).

[71] *Id.* at 37. As part of the Central Procurement OIR, SoCalGas encouraged the CPUC to consider opportunities and pathways, including centralized procurement, to advance development of hydrogen and other technologies in a timely manner. See R.20-05-003, SoCalGas's Reply Comments to ALJ's Ruling Seeking Comments on Need and Process for Centralized Procurement of Specified Long Lead-Time Resources (June 5, 2025).

[72] D.24-05-028, Decision Addressing Assembly Bill 205 Requirements for Electric Utilities, (May 9, 2024) at 2-3.

[73] Core gas customers (e.g., residential and small commercial customers) typically see three major rates or charges approved by the CPUC on their monthly gas bills: (1) the procurement rate, if the customer is taking procurement service from SoCalGas; (2) the transportation rate and possibly a fixed monthly charge; and (3) the gas public purpose program (PPP) surcharge rate. Fixed monthly charges allow SoCalGas to recover certain types of standard fixed costs, such as service lines and meters. CPUC, *Natural Gas and California, available at*: https://www.cpuc.ca.gov/industries-and-topics/natural-gas/natural-gas-and-california.

residential customers would be a step in the right direction to align rate design with decarbonization goals and the gas industry transition.[74]

Removal of Existing Charges from Bills. Many ratepayer-funded programs have contributed to energy rate increases; these include wildfire mitigation, grid hardening, and public purpose programs. As part of the energy transition, existing costs unrelated to the production or delivery of energy service could be removed from customer bills to reduce rates or to make room on the bills to recover costs from energy transition investments.[75] Charges removed from bills could be covered instead by other funding sources, such as state taxes or other legislative efforts.[76] BCG identifies a potential option is legislative or regulatory approval to remove certain charges or surcharges from electric bills for funding through state tax revenues or other funding sources besides utility rates.[77] A similar option could also benefit natural gas customers.

Interim Cost Recovery. Interim cost recovery for long-lead time utility clean energy infrastructure development and installation needed to support the State's decarbonization goals could minimize costs to ratepayers. By allowing the utility to collect a portion of the costs as incurred during development and installation, rather than deferring all cost recovery until the project's placement in service, the utility's requirement to finance the project in advance and incur higher interest costs is reduced. This approach directly translates into financial savings for ratepayers, as it mitigates the accumulation of interest charges that would otherwise compound over time, contributes to the financial health of the utility, and supports the maintenance of its credit metrics which helps to keep the cost of borrowing competitive. Further, by spreading the costs over time, ratepayers are shielded from abrupt rate increases that could result from a lump-sum recovery approach.[78]

Innovative Rate Design. The CPUC could commission a study to identify non-traditional rate designs for clean energy infrastructure necessary to support the State's decarbonization goals. As part of this study, SoCalGas could provide input to further support affordability for Angeles Link, given its expected widespread public benefits (including enhanced energy system reliability and resiliency, reduced emissions, and public health benefits). As just one example, some policy proposals have identified cost reallocation as a potential mechanism for handling the costs of the energy transition, particularly given that the gas and electric systems are becoming more interdependent

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[74] *See* BCG, *Unlocking California's Climate Ambition* (July 2024) at 39, *available at*: https://web-assets.bcg.com/37/f5/7685135144d38912ab9623dfaf6e/ca-decarbonization-report-2024-07-12.pdf.

[75] *See id.* at 37.

[76] *Id.*

[77] Legislation has been proposed that would have removed existing charges from certain utility bills, but most proposals have been unsuccessful to date (*see*, e.g., AB 982 (2023), AB 2765 (2022)).

[78] *See,* e.g., D.06-12-040, Opinion on Request for Interim Rate Relief (Dec. 14, 2006).

due to reliability and resiliency needs. The higher levels of economy-wide electrification signal the potential for greater dependency on the gas system even with recent declines in annual gas system throughput. Traditional cost allocation and rate structures could evolve in a manner that spreads the necessary infrastructure costs to support electric grid reliability and resiliency. The result could be a hybrid cost-causation and value-based approach that targets equity and sustainability for all stakeholders and energy customers. Work could be performed to identify and explore other potential rate designs that could be supportive of affordability of the energy transition.

Utility Hydrogen Procurement. SoCalGas could explore procuring hydrogen for certain classes of customers to support more affordable hydrogen commodity rates.

As stated above, these options are largely within the control of the legislature and/or the CPUC, and not SoCalGas. However, SoCalGas is committed to continuing to engage with the CPUC and stakeholders to identify options that could enhance affordability for ratepayers while advancing the energy transition.

V. CONCLUSION

This Draft Framework is part of the ongoing process to address and mitigate affordability concerns in the development of Angeles Link. As described in this Draft Framework, SoCalGas has considered cost, cost effectiveness, and affordability of Angeles Link as part of its Phase 1 studies. SoCalGas will continue to evaluate and explore opportunities to assess costs and cost effectiveness and thus enhance affordability for Angeles Link as part of Phase 2 activities.

In particular, as more refined cost estimates are developed for Angeles Link in Phase 2, SoCalGas will use the costs estimated to assess the potential costs to ratepayers and current and future potential customers for Angeles Link. SoCalGas will consider estimated revenue requirements arising from capital-related costs associated with the completed project, and ongoing operations and maintenance expenses necessary to support new infrastructure. Relatedly, SoCalGas will also assess potential cost allocation and rate design approaches for Angeles Link, taking into account CPUC requirements and proceedings that may impact cost allocation and rate design.