

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

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

Application 22-02-007  
(Filed February 17, 2022)

**GREEN HYDROGEN COALITION OPENING BRIEF ON APPLICATION 22-02-007**

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In accordance with Rule 13.12 of the California Public Utilities Commission’s (“Commission”) Rules of Practice and Procedure and the requirements set forth in the Assigned Commissioner’s Scoping Memo and Ruling (“Scoping Memo”), Green Hydrogen Coalition (“GHC”) hereby submits its Opening Brief in support of Southern California Gas Company’s (“SoCalGas”) Application for Authority to Establish a Memorandum Account for the Angeles Link Project (“Application”). 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 called the “Angeles Link” to deliver green hydrogen into the Los Angeles Basin (“LA Basin”) and help the State achieve its critical greenhouse gas (“GHG”) reduction targets and climate goals.

**I. INTRODUCTION.**

GHC applauds SoCalGas for its leadership and vision for creating the nation's first and largest dedicated green hydrogen pipeline system to deliver green hydrogen at scale to the Los Angeles region. GHC supports the Application’s intent, scope, and goals. As detailed by SoCalGas, the proposed Angeles Link green hydrogen system would drive deep decarbonization of dispatchable electric generation, hard-to-electrify industries, and heavy-duty transportation in

the LA Basin. GHC strongly believes this Application's approval is appropriate and aligns with State and Federal climate goals. SoCalGas is well-positioned to take a leading role in this effort focused on green hydrogen, but further exploration of Angeles Link cannot reasonably happen without the approval of the Application. The GHC provides the following comments detailing why this Application's approval is critical for California.

**II. ANGELES LINK ALIGNS WITH THE BIDEN ADMINISTRATION'S VISION FOR HYDROGEN AND POSITIONS CALIFORNIA TO BE COMPETITIVE FOR THE DEPARTMENT OF ENERGY'S HYDROGEN HUB FUNDING.**

The bipartisan Infrastructure Investment and Jobs Act ("IIJA") was signed into law by President Biden on November 15, 2021, and included \$9.5 billion in federal investment in clean hydrogen, with much of this investment directed towards facilitating the development of at least four regional clean hydrogen hubs. Just last month, Governor Newsom's economic development office announced California's intention to work with stakeholders, including those in Los Angeles, "to leverage federal investment from the IIJA to establish an environmentally and economically sustainable and expanding renewable hydrogen hub."<sup>1</sup>

The timing and approval of SoCalGas' Application will be critical in sending the proper signal to the federal government that California is taking necessary steps toward evaluating the technical, environmental, and stakeholder issues associated with a utility-scale green hydrogen project. It also signals that California is in the best position to win these highly competitive federal dollars. As states across the U.S. compete for these funds, California must skillfully use every available resource and develop vital information about the potential engineering and design configurations for a green hydrogen hub.

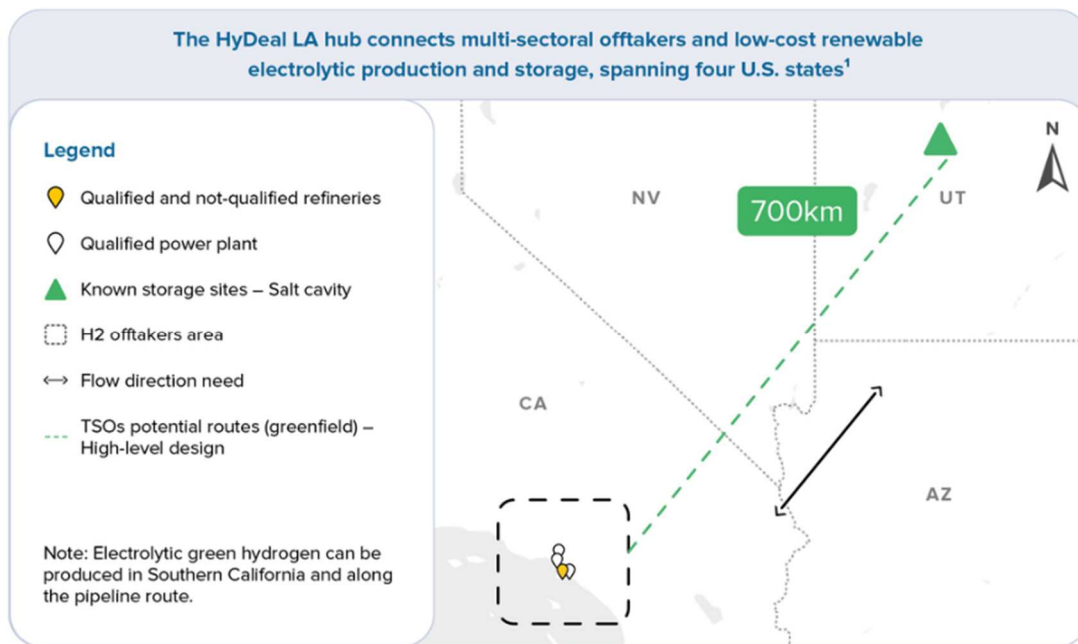
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<sup>1</sup> <https://business.ca.gov/california-formally-announces-intention-to-create-a-renewable-hydrogen-hub/>

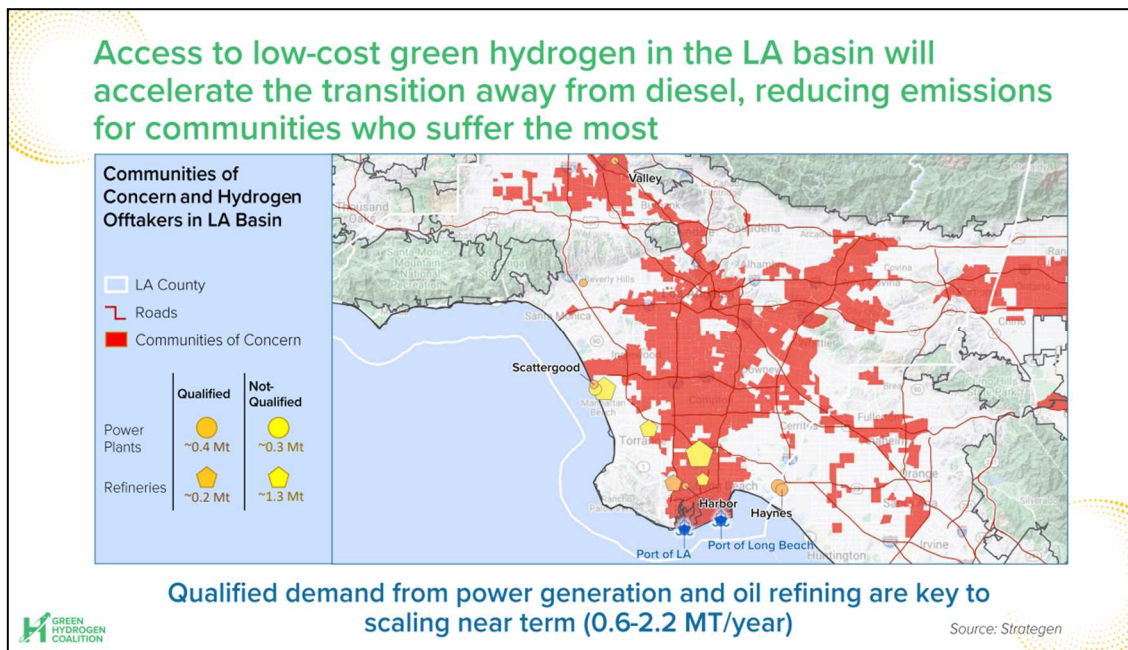
The Commission’s approval now matters more than ever, and swift approval of SoCalGas’ Application will ensure California’s competitiveness since these federal funds are California’s to lose if the state does not work together, and even more so if California is not prepared to support planning efforts to achieve its climate goals. For this reason, the Application is not a stand-alone proposal but instead is critical to supporting a larger clean ecosystem and opportunistically leveraging significant near-term federal funding opportunities.

### III. ANGELES LINK ALIGNS WITH THE FINDINGS FROM HYDEAL LOS ANGELES.

HyDeal Los Angeles (“LA”) is the Green Hydrogen Coalition’s initiative to create the first scaled ecosystem for green hydrogen in North America, targeting under \$2.00/kg by 2030, which is consistent with the \$1/kg DOE Hydrogen Earthshot production goal. The initiative brings together the entire value chain across the LA Basin, including production, transport, storage, and multi-sectoral aggregated offtake.



Phase 1 of HyDeal LA, completed in 2021, forged in a high-level system plan, cost models, preliminary demand scenarios, and sample contract and term sheets. This system plan identified a potential 0.6-2.2 Mt/year in 2030 of qualified demand for green hydrogen in the LA Basin mainly from two types of off-takers – thermal power generation plants and refineries.<sup>2</sup>

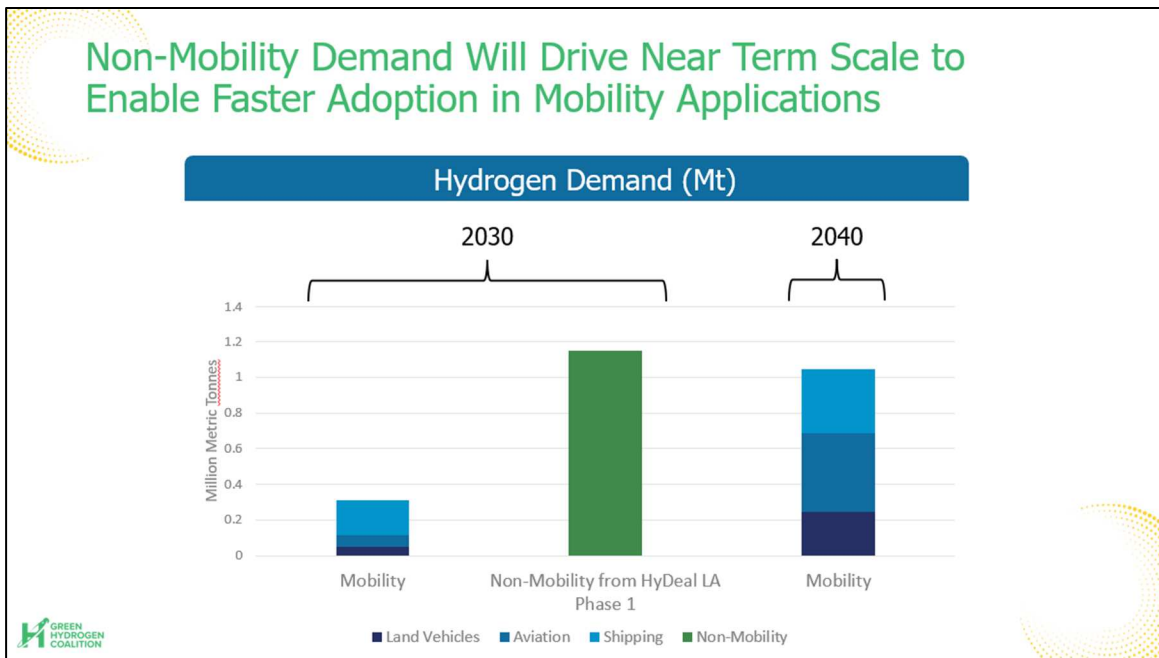


A key finding of Phase 1 was that it is indeed possible to achieve <\$2.00/kg delivered green hydrogen to the LA Basin – **provided that it is delivered via 100% hydrogen pipeline transport infrastructure** connected to large-scale geologic storage in a commercially-proven salt dome formation. For example, the levelized transport cost for the dedicated hydrogen pipeline envisioned for HyDeal LA (e.g., a pipeline connecting Los Angeles with commercially proven salt-dome storage of hydrogen in central Utah) is estimated to be \$0.25/kg.<sup>1</sup> Moreover, HyDeal LA Phase 1 also evaluated the possibility of using electric transmission infrastructure to move renewable electrons into the LA Basin to achieve local green hydrogen production. This analysis

<sup>2</sup> See [Hydrogen Shot Summit Presentation on HyDeal Los Angeles](#) to the US Department of Energy, September 1, 2021.

revealed that there is insufficient electric system capacity to meet identified multi-sectoral green hydrogen demand.<sup>2</sup>

Currently, GHC is conducting Phase 2 of HyDeal LA, which aims to update the system plan to include hydrogen demand from mobility sectors, including shipping, aviation, and heavy-duty trucking (*including the demand from hydrogen derivative fuels*). The ***preliminary*** findings show that the volume of green hydrogen could exceed 1 million metric tonnes by 2040 and that these applications will provide ***significant*** air quality benefits to the residents of the LA basin. Further, findings from HyDeal LA Phase 2 confirmed that access to mass-scale, low-cost green hydrogen is critical to achieving these benefits and transitioning from fossil fuel use to green hydrogen use in these hard-to-abate sectors. In other words, without visibility into a long-term, high volume, competitively priced green hydrogen as an alternative fuel, terminal operators, heavy-duty truck fleet operators, marine shipping operators, and sustainable aviation fuel producers will not make the capital investments needed to transition from fossil fuel use.



Notably, the 2040 demand forecast for green hydrogen use in the mobility sector estimates are additive to the expected demand in 2030 from non-mobility end-uses (*e.g., power generation, industry*) developed in HyDeal Phase 1 (*which was between 0.6 and 2.2 million metric tons*). The quantity of hydrogen these transportation end-users will need in heavy-duty trucking, shipping, and aviation is so large that it will not be cost-effective to deliver the volumes needed exclusively by truck or rail. A 100% green hydrogen pipeline is critically needed for the same reasons that oil and natural gas pipelines already exist today. Without them, the final delivered cost of the fuel would be too high.<sup>3</sup>

While these findings are only ***preliminary*** and reflect demand only in the LA Basin, these findings demonstrate the need to proceed in developing pipeline infrastructure today to support this quantified demand growth across California and to meet the State’s ambitious greenhouse gas reduction goals. For this reason, the Commission must pursue hydrogen-supportive policies and positions to encourage investment to support off-takers in those hard-to-electrify sectors – such as supporting SoCalGas’ Angeles Link Application.

#### **IV. FINDINGS FROM LOS ANGELES LINK WILL HELP INFORM THE COMMISSION’S EFFORTS IN LONG-TERM GAS PLANNING.**

The learnings resulting from this Application (*e.g., engineering impacts around design constraints and requirements, applicable safety and reliability requirements, and analysis of hydrogen storage options to facilitate system operability and reliability, etc.*) will illuminate the Commission’s vision of how the gas pipeline network will evolve safely in line with the State’s climate goals. This will help the Commission address the many decisions about gas investments

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<sup>3</sup> The timing of hydrogen uptake is based on both regional climate goals and cost comparisons between hydrogen-based fuels and alternative fuels (*e.g., electricity, diesel*), with hydrogen demand increasing, if/when hydrogen-based fuels became the cheapest option. End-uses, where electrification was more cost-effective, were assumed to electrify and were excluded from this analysis. The final results from HyDeal Phase 2 will be available in September 2022.

that will build toward a zero-carbon energy system. The Commission can learn from this Application and ultimately support a robust state-wide assessment of alternative solutions to traditional infrastructure needs. Approving this Application will also inform the other California utilities on the best ways to maintain system safety while transitioning the natural gas pipeline network to a hydrogen pipeline network to support those hard-to-abate sectors that require an alternative to electrification.

In future years, a California hydrogen pipeline network will be needed to serve power generation, long-haul trucking corridors, air- and seaports, and connect industrial hydrogen demand with supply. This backbone will require substantial hydrogen volumes. As demand for green hydrogen grows, it will displace demand that would otherwise be served by fossil fuels – liquid and gaseous. A logical transition would be to convert and retrofit existing natural gas pipelines to 100% hydrogen transport over time. Additionally, new hydrogen-dedicated pipelines will need to be constructed. This hydrogen network will enable more rapid scaling of hydrogen producers who are more likely to build scaled systems where the capability exists to transport hydrogen at scale to the broadest set of end-users. Without the ability to transport hydrogen at scale, hydrogen producers will be more prone to develop sub-scaled projects that serve a more localized need. Accordingly, early investments in engineering, design, and environmental work, such as SoCalGas’ Application, will play a critical trailblazing role in catalyzing zero-carbon fuel development.

V. **APPROVING THIS APPLICATION WILL HELP ACCELERATE CALIFORNIA’S GREEN HYDROGEN TRANSITION AND SPUR INVESTMENT AND INNOVATION.**

The approval and execution of the tasks outlined in this Application will undoubtedly help spur investment and innovation in California. Being a first mover, as California’s tradition, sends



an important market signal to investors and innovators looking to support new markets such as a green hydrogen economy. By doing so, it positions California to take economic advantage of all things green hydrogen investment and innovation, which include power generation, industry, fuel cells for electric vehicles, heavy transport such as shipping and aviation, green ammonia production, and electric grid stabilization. Significant private investment is pouring into all aspects of the green hydrogen ecosystem – approving this Application will send an important and needed market signal to these investors that realize a scaled green hydrogen economy is likely to happen first in California. It will also help California develop and maintain jobs, expand business opportunities (*e.g., manufacturing, exports, etc.*), and promote future economic growth for the state. However, if market signals send the wrong message, it can hurt California’s ability to be competitive in the green hydrogen economy (*e.g., Federal hydrogen hub funding*) and will instead drive growth to other states that are making progress today.

**VI. CONCLUSION.**

GHC appreciates the opportunity to submit this Opening Brief and looks forward to collaborating with the Commission and stakeholders in this proceeding.

Respectfully submitted,

/s/ Nicholas Connell

Nicholas Connell

Policy Director

**GREEN HYDROGEN COALITION**

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