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California Air Resources Board
1001 I Street
Sacramento, California 95814

RE: SCPPA Comments on SB 1075 Technical Analysis Workshop, February 25, 2025

The Southern California Public Power Authority[1] ("SCPPA") appreciates the opportunity to provide feedback on the SB 1075 Technical Analysis Workshop hosted by the California Air Resources Board (CARB) staff on February 25, 2025.

The workshop underscored hydrogen's vital role in reducing fossil fuel dependence in California, and how the continued implementation of the Scoping Plan and SB 1075 can help refine the state's understanding of hydrogen production pathways, its scalability, and its infrastructure needs. SCPPA appreciates California's commitment to developing a comprehensive hydrogen market strategy, including both statewide initiatives and localized efforts. The presentation by Energy and Environmental Economics (E3) was particularly insightful, providing a detailed analysis of the costs associated with hydrogen production, transmission and distribution, as well as end-use. It also effectively outlined the methodologies used to evaluate hydrogen's integration into the state's energy landscape, offering a valuable opportunity to foster a more informed discussion on the economic feasibility and long-term deployment of hydrogen as a clean energy resource.

CARB and E3 presented several questions throughout the February 25 workshop, which have the potential to unlock significant benefits for the future of clean energy. In response to specific questions, SCPPA offers the following information:

Question: Please provide information on promising end uses for hydrogen that contribute to California's climate goals beyond those identified in the Scoping Plan.

Although the electric sector end use makes up a smaller portion of demand in end uses than the transportation sector as presented at the workshop, the reliability considerations and decarbonization benefits make that small portion very important and the electric end uses should be considered with the same priority as transportation. SCPPA recognizes the importance of broad hydrogen adoption for the various end uses to be successful. SCPPA Members are leading the way on advancing the end use of hydrogen as a clean energy resource.

[1] SCPPA is a joint powers authority whose members include the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District. SCPPA Members serve nearly 2.3 million California homes and businesses over 9,000 square miles.

SCPPA, as well as several SCPPA Members, own their own natural gas-fired power plants that could potentially convert to hydrogen depending on cost and infrastructure. This conversion would provide immense reliability benefits as SCPPA Members move toward ambitious decarbonization targets. By converting excess renewable energy into hydrogen through electrolysis, it can be stored and later reconverted to electricity using hydrogen-capable turbines when demand is high or renewable generation is low. This is most important during periods of high grid stress such as wildfires and heatwaves, preserving local power plants greatly enhances grid reliability and resilience. California utilities are on a tight timeline to meet increasing electricity demand with carbon-free energy and need additional firm and dispatchable options for their clean energy portfolios. The success of clean hydrogen in California is therefore of great interest to SCPPA Members because it represents a long-duration energy storage opportunity that can be deployed seasonally and, in some cases, locally.

For SCPPA Members, each local publicly owned electric utility is situated differently and therefore the potential uses of clean hydrogen will vary. However, clean hydrogen presents itself as a promising fuel to maintain firm, dispatchable electricity generation with many SCPPA Members. These utilities are making significant investments in generators that can burn hydrogen blended with conventional gases and are engaging with manufacturers who are developing engines capable of utilizing 100% hydrogen. Timely investment in the research and development of 100% hydrogen-capable generators and any necessary changes to the surrounding gas infrastructure and operational characteristics of the plant is critical. Fuel cells are the only commercially available option currently available for 100% hydrogen power generation, but they exist in capacities too small and expensive for use at utility scale.

Two critical considerations that necessitate in-basin hydrogen-fueled power generation are the need to maintain grid stability and local reliability. Natural disasters such as wildfires can directly impact the transmission system, resulting in the loss of access to external resources and make it challenging to serve customer load. In a fully decarbonized future, power plants converted from natural gas to hydrogen are the only dispatchable, electricity-generating resources currently capable of ensuring local reliability during infrequent yet foreseeable events. There are other questions related to hydrogen that must be addressed as well, including, but not limited to, those related to affordability, safety, transmission and storage infrastructure, hydrogen production, availability of renewable energy and transmission infrastructure to power electrolyzers, possibility of unintended consequences such as induced greenhouse gas emissions, and the effect of potential federal and state regulations and incentives.

For example, the Intermountain Power Project (IPP) Renewed in Delta, Utah will be one of the first utility-scale hydrogen power plants in the world when it comes online later this year. IPP, operated under the supervision of Los Angeles Department of Water and Power (LADWP), is a two-unit, 1,800 MW coal-fired plant that is in the process of being replaced to support new, modern, and efficient units – with a net capacity of 840 MW – capable of operation on a fuel mixture of 30% green hydrogen and 70% natural gas by volume with the expectation to achieve full hydrogen capability by 2045. Nearby, Advanced Clean Energy Storage (ACES) Delta will use renewable energy-powered electrolysis to split water into oxygen and hydrogen, storing the latter in underground

salt caverns for use as fuel to drive electricity-generating turbines at IPP. Together, ACES Delta and IPP Renewed will operate as a form of seasonal, long-duration energy storage, converting renewables that would otherwise be curtailed and later utilizing the hydrogen to provide firm electricity generation when the grid calls for it. The participants in IPP Renewed include LADWP, Burbank Water and Power (BWP), and Glendale Water and Power (GWP).

Additionally, LADWP's Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project would allow for the generation capacity of existing Scattergood Units 1 and 2, which are conventional natural-gas-fired steam boiler generators, to be replaced with a rapid-response combined-cycle generating system capable of operating on a fuel mixture of natural gas with a minimum of 30% hydrogen by volume. The existing ocean-water once-through cooling (OTC) system at Scattergood would no longer be used once Units 1 and 2 are removed from service concurrent with commissioning of the project. By ceasing use of the remaining OTC system at Scattergood by December 31, 2029, LADWP will comply with the statewide Water Quality Control Policy on the use of Coastal and Estuarine Waters for Power Plant Cooling.

As a final example, SCPPA owns the Magnolia Power Project (MPP), a 310 MW natural gas-fired combined cycle generating plant in Burbank, California. The MPP, which is located along the Interstate-5 corridor, is 10 miles away from one potential routing concept for the SoCalGas Angeles Link hydrogen pipeline. This highlights the barrier that new infrastructure will be needed to deliver hydrogen to power plants, a situation that is challenging for many of the urban areas served by SCPPA Members. ***SCPPA encourages CARB to consider MPP and other natural gas-fired power plants as potential users of hydrogen and evaluate the most feasible and cost-effective options to deliver hydrogen to those facilities.*** SCPPA aims to ensure that customers see the benefits of the hydrogen projects and investments that are already underway.

Question: If you are currently planning or developing a hydrogen project, can you please share specific cost sources that can be considered in the analysis?

SCPPA's exposure to costs associated with hydrogen project planning and development is limited. For broad cost sources, SCPPA reviews sources such as: Bloomberg New Energy Finance (BNEF), literature from the Electric Power Research Institute (EPRI) and Low-Carbon Resources Initiative (LCRI), National Renewable Energy Laboratory (NREL) reports, and the U.S. Department of Energy (DOE).

Question: Are there additional infrastructure needs or impacts that should be considered in the Analysis? If so, please describe.

As highlighted in the workshop[2], there are three categories of hydrogen transmission & distribution options: 1) co-location of production and potential with pipelines, 2) co-location of production and potential with trucking to

[2] Slides 21 and 22: https://ww2.arb.ca.gov/sites/default/files/2025-02/sb-1075-workshop-022525-presentation-e3.pdf

end-use location, or 3) co-location of production and demand. The presentation accurately emphasized the challenge in deciding between pipeline and trucking logistics. Thus far in Southern California, efforts to produce hydrogen have focused largely on the ports and the recognized air quality challenges that area faces due to trucks and rail traffic. Moreover, as mentioned in the presentation, hydrogen's low volumetric energy density means that transporting it over long distances presents a unique challenge from a cost perspective. These two challenges result in hydrogen being limited to that area. Southern California is a vast area and the benefits of hydrogen for use in vehicles or for power generation has only been available to inland counties by transporting it via trucks. Trucking hydrogen to distribution sites adds significant cost, making it infeasible and thus leaving the inland areas without good access to hydrogen or even funding for hydrogen production. The Inland Empire is home to large portions of California's warehousing industry, with over 4,000 warehouses and hundreds of thousands of truck trips per day, creating opportunity for using hydrogen in transportation.[3] Because of the infeasibility of trucking in hydrogen, the Inland Empire will likely depend on fuel delivery via common carrier hydrogen pipeline. This adds additional variables including the ability of a third party to build a pipeline quickly; the cost of fuel and fuel transmission; and the need to address community concerns on safety and air quality across the common carrier pipeline network. According to the presentation, this pipeline-based transportation is estimated to be around \$0.4-1/kg H_2 over 300 miles. SCPPA appreciates CARB prioritizing community engagement, environmental safeguards, and workforce development initiatives to ensure that hydrogen deployment improves—rather than exacerbates—existing economic and environmental disparities in these regions.

In considering hydrogen fuel for power generation, SCPPA recommends that the analysis include: the estimated volumes and capacities (e.g., metric tons of H_2 per hour) required to meet potential regional demand for carbon-free, firm power generation; analysis of delivering hydrogen at that estimated scale to the power generating stations via pipeline compared to trucks and other means; and the time and resources required to plan, permit, and construct such infrastructure.

A full lifecycle analysis of hydrogen infrastructure and hydrogen related equipment for all segments of the value chain (production methods, transportation, storage options, forms of delivery, and end uses) is necessary to assess the overall economic and environmental impacts. A full lifecycle approach, considering regional energy mixes and specific end use applications (e.g., industrial, transportation, or power generation), will be essential for making informed decisions about hydrogen deployment.

SCPPA encourages regional conversations and consideration to ensure the most effective deployment of hydrogen in Southern California's inland counties, particularly for use in transportation and to ensure that the benefits offered by hydrogen can be realized throughout the supply chain that begins at the ports and culminates in the Inland Empire.

[3] https://calmatters.org/commentary/2023/01/inland-empire-california-warehouse-development/#:~:text=The%20result%3A%20California's%20Inland%20Empire,feet%20of%20the%20Inland%20Empire.

Conclusion

Many SCPPA Members are interested in the potential for hydrogen as a clean fuel for power generation to ensure system reliability and drive decarbonization within their service territories. SCPPA appreciates this opportunity to provide feedback to CARB regarding the February 25, 2025, workshop on the SB 1075 Technical Analysis.

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