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Comments on the Staff Workshop to Discuss Zero- and Near-Zero-Carbon Fuel Production and Supply Funding Concepts

Additional submitted attachment is included below.

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August 3, 2022

The Honorable Patricia Monahan
Commissioner
California Energy Commission
Docket Unit, MS-4
Docket No. 22-TRAN-01
715 P Street
Sacramento, CA 95814-5512

Subject: **Comments on the Staff Workshop to Discuss Zero- and Near-Zero-Carbon Fuel Production and Supply Funding Concepts**

Dear Commissioner Monahan:

Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the California Energy Commission (CEC) public workshop to gather stakeholder feedback on potential funding concepts related to zero- and near-zero-carbon fuel production and supply. Alternative and renewable fuels coupled with advanced transportation technologies are an important tool to help attain the State's climate and clean air goals. As Commissioner Monahan aptly stated during the workshop, "[t]he Energy Commission is continually looking for new and better ways to reduce greenhouse gas emissions and also cut criteria pollutants through alternative fuels and this is particularly important when it comes to diesel pollution reduction…"[1] In addition, the U.S. Department of Transportation (DOT) recently issued program guidance on the Carbon Reduction Program (CRP), authorized by the Bipartisan Infrastructure Law (BIL), which provides that eligible projects include the deployment of alternative fuel vehicles.[2,3] It is in the public interest for the CEC to continue to align with federal momentum on this front in order to attract federal dollars to California.

As such, our comments for the Zero- and Near-Zero-Carbon Fuel Production and Supply Funding Concepts Workshop will focus on Concept II, Renewable Hydrogen Production. We seek to highlight the following point: **Prioritizing a technology-neutral approach to renewable**

[1] *See* Zero and Near Zero Carbon Fuel Production and Supply Funding Concepts Recording, CEC, at: 06:27, available at: https://energy.zoom.us/rec/play/jdANh57S2PTXZw9rt3xIQ9sAiXUMy3KhaG_bz0ABo4O27-gLk1K1oEMRVY9keVZ25mh4muzTjR57n8J5.X5mA1TT8dY3IUtjz?continueMode=true&_x_zm_rtaid=ZXuoGHndSoyR16MGLHAMjg.1659377002023.39b8c4dbd4519537d79b072a2bee5421&_x_zm_rhtaid=696

[2] *See* U.S. Department of Transportation Carbon Reduction Program (CRP) Fact Sheet, Updated on April 20, 2022, available at: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm

[3] *See* U.S. Department of Transportation Memorandum on Carbon Reduction Program Implementation Guidance, April 21, 2022, available at: https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf

hydrogen production today builds a stronger foundation for research and development supportive of the State's hydrogen infrastructure needs in the long-term.

In this section we answer the following question regarding Concept II (Renewable Hydrogen Production): *Technology neutral or preference for electrolysis? Why?*

The statutory definition of clean hydrogen supports a technology-neutral approach. Clean hydrogen is defined as "*hydrogen produced with a carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent produced at the site of production per kilogram of hydrogen produced*, (emphasis added)."[4,5] Using such an inclusive definition of clean hydrogen during the formulation of the upcoming Renewable Hydrogen Production Solicitation is key to building and maintaining synergies with federal funding initiatives for hydrogen development. In addition, California's intent is to reduce greenhouse gas emissions, thus focusing on carbon intensity allows for the State's attention to remain on reduction of carbon rather than selecting technology winners and losers. For instance, the United States Department of Energy (DOE) recently released a hydrogen strategy which explains "gasifying blends of coal, biomass, waste plastics, and other recyclable materials with CCUS (Carbon Capture, Utilization, and Storage) results in hydrogen produced with net-negative carbon emissions and other environmental benefits when CCUS is integrated with the gasifier."[6] Thus, alternative forms of clean hydrogen production could reduce GHG emissions more than electrolysis, while leveraging federal funds to support decarbonizing California's economy.

In addition, developing a broad range of technologies is crucial for achieving the scale of low-carbon hydrogen production required to decarbonize transportation, power generation, and end-use applications that will support California's economy. While electrolysis powered by renewables is a proven technology for hydrogen production, it is not the only pathway that should be analyzed, especially given California's diverse economy. For example, SoCalGas was awarded funding by the CEC to develop a modular hydrogen production technology that uses renewable electricity to convert biogas from landfills, wastewater treatment plants or dairy farms to low-cost, clean hydrogen.[7] As another example, C-Zero is a California-based startup whose technology "[c]onverts natural gas into hydrogen and solid carbon. The hydrogen provides clean, low-cost energy on demand, while the carbon can be permanently sequestered…C-Zero's technology can be used to decarbonize a wide array of industries including electrical generation, process heating,

[4] 42 USC 16166 Sections (a) and (b).

[5] The federal definition of clean hydrogen is subject to the development of an initial standard for the carbon intensity of clean hydrogen production to be developed by the Secretary of Energy in consultation with the U.S. Environmental Protection Agency (EPA) and stakeholders within 180 days of enactment.

[6] *See* Hydrogen Strategy: Enabling a low-carbon economy, Office of Fossil Energy, U.S. DOE, at 3, available at: https://www.energy.gov/sites/prod/files/2020/07/f76/USDOE_FE_Hydrogen_Strategy_July2020.pdf

[7] The California Energy Commission (CEC) recently awarded SoCalGas a $750,000 grant to pursue development of a novel hydrogen production system using biogas to create affordable, scalable, renewable hydrogen. The project will build upon innovations in modular hydrogen production technology to create a system powered by renewable electricity that can use renewable gas such as biogas from landfills, wastewater treatment plants or dairy farms as a feedstock to produce low-cost, clean hydrogen. Additionally, the system will produce hydrogen at a lower temperature, without needing combustion, thereby eliminating nitrogen oxide emissions. The project expects to develop a bench-scale demonstration that is both modular and scalable, offering a flexible means of creating renewable hydrogen. More information available at: https://newsroom.socalgas.com/press-release/hydrogen-innovation-socalgas-awarded-750000-california-energy-commission-grant-to

and the production of commodity hydrogen for fuel cell vehicles, ammonia synthesis, and refining processes."[8] In a third example, Kore Infrastructure uses a pyrolysis process to heat organic waste to 1,000 degrees Fahrenheit in a zero-oxygen environment to produce a blend of gases that could be converted to carbon-negative hydrogen. In addition, Kore's pyrolysis process produces a solid carbon char that can be used to enhance soil quality or help decarbonize cement and steel production.[9]

These projects demonstrate the benefits resulting from a technology-neutral framework when planning for the advancement of hydrogen production technology. Specifically, allowing applicants of this future solicitation to utilize any technology that produces low-carbon hydrogen would lead to emission reductions, spur innovation that could drive down costs, and reduce portfolio risk by broadening and diversifying California's hydrogen production options. An example of where a technology-neutral approach has proven to be successful in California is the Low Carbon Fuel Standard (LCFS). The California Air Resources Board (CARB) Executive Officer Corey explained: "Californians have the widest variety of cleaner low-carbon vehicles available anywhere in the country. The LCFS is catalyzing investments in these cleaner alternative fuels, providing consumers with more choices, and reducing emissions of toxic pollutants and greenhouse gases. These are key reasons why other states and nations are establishing similar programs."[10] As we move toward building California's hydrogen economy, it is important to carefully develop diverse and flexible technology configurations because these choices are incredibly important from a local project level up to alignment with national energy strategy.[11]

Conclusion

In closing, we appreciate the opportunity to comment on the Zero- and Near-Zero Carbon Fuel Production and Supply Funding Concepts. It is in the public interest to advance the research and development of all technologies that enable low-carbon hydrogen production. Technology-neutrality leaves all options on the table, while increasing the potential to leverage federal and private funding for research projects. We offer these comments in the spirit of collaboration, and we look forward to working with CEC Commissioners and Staff to develop a renewable hydrogen production solicitation that positively benefits the State to the greatest extent possible.

Respectfully,

Matt Gregori
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[8] *See* C-Zero, Decarbonizing Natural Gas, available at: https://www.czero.energy/technology

[9] *See* SoCalGas Announces the Commissioning of Carbon-Negative Waste-to-Energy Technology at Los Angeles Facility | SoCalGas Newsroom, available at: https://newsroom.socalgas.com/press-release/socalgas-announces-the-commissioning-of-carbon-negative-waste-to-energy-technology-at

[10] *See* Cleaner fuels have no replaced more than 3 billion gallons of diesel fuel under the Low Carbon Fuel Standard, California Air Resources Board (CARB), available at: https://ww2.arb.ca.gov/news/cleaner-fuels-have-now-replaced-more-3-billion-gallons-diesel-fuel-under-low-carbon-fuel

[11] *See* The Potential of Hydrogen, McKinsey & Company, June 8, 2022, available at: https://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/the-power-and-gas-blog/the-potential-of-hydrogen