

Comments on RFI #DE-FOA-0002660

To: U.S. Department of Energy Office of Fossil Energy and Carbon Management

From: Green Hydrogen Coalition

Contact:

Janice Lin

President and Founder

Green Hydrogen Coalition

2150 Allston Way, Suite 400, Berkeley, CA 94704

jlin@ghcoalition.org

O: +1 (510) 665-7811 x101

M: +1 (415) 595-8301

www.ghcoalition.org

February 1, 2022

U.S. Department of Energy
Office of Fossil Energy and Carbon Management
1000 Independence Avenue, SW
Washington, DC 20585

RE: Deployment and Demonstration Opportunities for Carbon Reduction and Removal Technologies (RFI #DE-FOA-0002660)

Dear Principal Deputy Assistant Secretary Wilcox:

Green Hydrogen Coalition ("GHC")¹ submits these comments on the Request for Information ("RFI") issued by the U.S. Department of Energy's ("DOE") Office of Fossil Energy and Carbon Management ("FECM"). GHC appreciates the DOE's leadership in advancing the critical role of carbon capture and storage ("CCS") in the clean energy transition and seeks guidance in coordinating our advanced green hydrogen hub with this important RFI and any future carbon reduction and removal funding opportunity announcements ("FOA").

GHC is an educational 501(c)(3) non-profit organization, formed in 2019 to recognize the game-changing potential of "green hydrogen" to accelerate multi-sector decarbonization and combat climate change. GHC defines green hydrogen as hydrogen produced from non-fossil fuel resources and has climate integrity – emits zero or de minimis² greenhouse gas emissions on a lifecycle basis. GHC's mission is to facilitate policies and practices that advance green hydrogen production and use in all sectors of the economy to accelerate a carbon-free energy future.

GHC is architecting a low-cost, scaled hub for green hydrogen in the Los Angeles (LA) Basin. This initiative – HyDeal Los Angeles – has identified a pathway to achieve <\$2/kg delivered green hydrogen in the LA Basin (consistent with the DOE Hydrogen Earthshot production goal of \$1/kg by 2030) for high-volume off-takers, including: power generation, oil refining, hydrogen fueling stations for on-road transport, and alternative fuel production for maritime shipping and aviation. A summary of key findings from Phase 1 of HyDeal Los Angeles [here](#).

¹ <https://www.ghcoalition.org/>

² "De minimis" means an insignificant amount of non-renewable energy resources (does not exceed 10 percent of the total energy inputs) allowed to be counted as RPS-eligible. See Green, Lynette, Christina Crume. 2017. Renewables Portfolio Standard Eligibility Guidebook, Ninth Edition. California Energy CEC, Publication Number: CEC-300-2016-006-ED9-CMFREV.

In the spirit of these interests, GHC urges the DOE to clarify how upcoming carbon capture and removal funds can be utilized in concert with other DOE funded areas, such as clean and green hydrogen hubs, to further advance the clean energy transition. GHC recommendations include:

- Invest in demonstration and deployment projects for green synthetic liquid fuels, produced from green hydrogen and captured carbon dioxide (sourced from industrial waste streams, direct air capture, and biogenic sources from organic waste-to-hydrogen processes)
- Invest in demonstration and deployment projects promoting carbon capture and sequestration technologies in combination with green hydrogen production via steam methane reforming (SMR) of biogas, and thermal conversion of biomass, resulting in a "carbon negative" hydrogen production process.

GHC's specific comments on the U.S. DOE's FOA-0002660 are below:

COMMENTS

Invest in demonstration and deployment projects for green synthetic liquid fuels, produced from green hydrogen and captured carbon dioxide (sourced from industrial waste streams, direct air capture, and biogenic sources from organic waste-to-hydrogen processes).

GHC is appreciative of the DOE's focus to establish hubs for both green hydrogen and carbon dioxide infrastructure. However, GHC encourages the DOE to seek clarity on the interconnectivity between these regional needs, particularly as related to the production of liquid green synthetic fuels, chemicals, and polymers which can be produced from green hydrogen and captured carbon dioxide.

Synthetic fuels are a key solution to meet the needs of various transportation applications, including hard-to-decarbonize end uses such as maritime shipping, aviation, and long-haul rail transport.

GHC believes that ports are ideal locations to produce and supply these fuels, given their concentration of relevant offtakers, potential to significantly improve air quality and support environmental justice objectives, and opportunity to develop a future export economy for these high value decarbonized fuels. For example, the Ports of Los Angeles and Long Beach and the greater LA Basin has some of the highest year-round levels of particle pollution³. Approximately 10% of the smog-forming emissions in the South Coast air basin come from Port-related sources⁴ which can be improved by converting existing fossil fuel uses to green hydrogen and derivative fuels produced from green hydrogen. This region also contains several oil refineries and other

³ <https://www.lung.org/research/sota/city-rankings/most-polluted-cities>

⁴ <https://www.latimes.com/science/la-me-0218-port-pollution-20150218-story.html>

valuable infrastructure which can be repurposed for production of alternative fuels for an inclusive, efficient workforce transition.

GHC asks the DOE for support in coordinating the complimentary needs of a green hydrogen hub with potential demand for green hydrogen to produce alternative liquid synthetic fuels. Carbon capture, sequestration and utilization infrastructure will be needed to realize this vision and should be reflected in forthcoming funding opportunities.

Invest in demonstration and deployment projects promoting carbon capture and sequestration technologies in combination with green hydrogen production via steam methane reforming (SMR) of biogas, and thermal conversion of biomass, resulting in a "carbon negative" hydrogen production process.

GHC thanks the DOE Office of FECM for their existing R&D funding for hydrogen gas production with carbon management. We believe the DOE's support and expertise in carbon management is critical to also catalyzing the green hydrogen economy and accelerating towards economy-wide decarbonization.

GHC urges the DOE to coordinate CCS and green/clean hydrogen funding to ensure that the production of green hydrogen via steam methane reforming (SMR) of biogas, and thermal conversion of biomass can effectively utilize any resulting CCS infrastructure and technology advancements. If paired with point carbon capture technology, creating green hydrogen from biogas or biomass can be considered "carbon negative".

Demonstration project funding is critical to success. GHC recommends prioritizing investments in the nation's ports, such as the Ports of Los Angeles and Long Beach, which typically also have access to large, recurring sources of organic waste that can be utilized for green hydrogen production. These projects would produce significant quantities of biogenic carbon dioxide, which could be captured and utilized to produce synthetic decarbonized liquid fuels, as noted above.

To support deep decarbonization and development of diverse, non-fossil hydrogen production pathways, GHC requests clarity around how funding for both clean hydrogen hubs and for CCS can be strategically leveraged in combination to achieve integrated, efficient clean energy systems. GHC recommends further investment and study into how the United States can transition existing fossil-based assets to cleaner energy uses – including the related workforce development requirements – to achieve better local health and economic outcomes while accelerating a clean and just energy transition.

CONCLUSION

GHC appreciates the opportunity to submit these comments and looks forward to further guidance on how to integrate these important funding pathways.

Respectfully submitted,

/s/ Janice Lin

Janice Lin

Founder and President

GREEN HYDROGEN COALITION