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Public Comment to 22-ERDD-03 Clean Hydrogen Program

Additional submitted attachment is included below.

December 6, 2022

California Energy Commission (CEC)
Commission Staff
Delivered via website

Subject: 22-ERDD-03, Clean Hydrogen Program

Shell supports the proposed funding to stimulate increased production and use of clean hydrogen in California through strategic demonstration and deployment; however, for the proposed large scale centralized clean hydrogen production program, Shell believes the production technology should not be limited to electrolysis, but rather should be **technology neutral.** Technology neutrality encourages utilization of a wide variety of hydrogen production pathways that will help to maximize emissions reductions, cost-effectiveness, and lead to a carbon-neutral future that is resilient, reliable, and self-sustaining. After all, previous CEC and California Air Resources Board (CARB) reports (i.e. CEC's "Roadmap for the Deployment and Buildout of Renewable Hydrogen Production Plants in California", June 2020 and CARB's "2022 Scoping Plan for Achieving Carbon Neutrality", November 2022) have touted that steam methane reformation of biogas/biomethane, electrolysis using renewable electricity, and thermochemical conversion of biomass and waste feedstocks will all play a role in scaling production for California energy systems. Verbal and chat comments made during the workshop on December 1, 2022, were overwhelmingly opposed to limiting the large-scale centralized production program to electrolysis only. The versatility of hydrogen production, storage and end-uses provides many of the same benefits as our fossil-based energy systems with respect to productivity, reliability, resiliency, and economic benefits, without the negative environmental consequences.

Shell recommends the CEC allow flexibility to accommodate a wide range of hydrogen production levels, as appropriate to realize economies of scale, standardization, and product development for commercial viability. The amount of renewable hydrogen that must be made available by the end of this decade to help achieve California's low carbon fuels targets, likely requires a ***minimum daily production capacity standard of 10 metric tons per day***. We applaud the strengthening of proposed funding for clean hydrogen production because previous grant funding provided to awardees (i.e. GFO 20-609, $7 Mln total and $3 Mln max per awardee) only covered ~ 4% of projected project capital costs. In Shell's experience, the ***grant funded share of total capital investment should be at least 40%*** to motivate investment net of the associated taxes, cost increases, and administrative requirements for the grant recipient. For awareness, a 10 metric tons per day capacity hydrogen production plant utilizing either steam methane reforming, electrolysis, or thermochemical technologies can cost upwards of $80 Mln.

In closing, Shell is committed to a low carbon energy future, with more and cleaner energy, and is working to become a net-zero energy business by 2050 or sooner in step with society. Shell already offers

customers a range of decarbonized renewable power, fuels, and energy products, including hydrogen dispensed as a transportation fuel, supplied as an industrial feedstock, and used as a decarbonized energy carrier, in line with LCFS polity intent. Thank you for your consideration.

For further information on this proposal, please contact the undersigned.

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