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Air Liquide Feedback on Renewable Hydrogen Transportation Fuel Production

Additional submitted attachment is included below.

August 21, 2017

David Edwards
Director of Technology Partnerships
Air Liquide Advanced Technologies US LLC
9807 Katy Freeway Ste.100
Houston, TX 77024

RE: Air Liquide Comments on Draft Solicitation Renewable Hydrogen Transportation Fuel Production Facilities and Systems

Dear CEC Representatives,

Air Liquide wishes to express our support of investments and programs to further develop the infrastructure needed to meet the goals of renewable hydrogen transportation fuels by the State of California. As both a hydrogen producer and station operator, Air Liquide is fully committed to the successful scale up of this critical infrastructure and in furthering our partnerships within California to meet the transportation, energy and environmental goals of the State. In this letter, please find our comments and feedback regarding the draft solicitation on renewable hydrogen transportation fuel.

Topic 1: The importance of RNG in meeting the immediate, renewable market needs

Using Renewable Natural Gas (RNG) or upgraded biogas as a source for renewable hydrogen is among the most viable routes to producing green transportation fuels within the state of California. It leverages the existing infrastructure of NG distribution and hydrogen production while enabling low cost RNG recovery from existing sources such as landfills, agricultural, and food waste digesters. It scales well with the hydrogen needs for the next ten years, and enables direct participation from community and economic sectors outside of the traditional energy sectors by making modest investments in local RNG systems. In order for this to be successful, the hydrogen mobility market will need to leverage the available RNG in the same fashion that renewable electricity can be leveraged as a source to produce renewable hydrogen through electrolysis. Unlike the electrolysis route, however, RNG to Hydrogen provides an immediately viable route to producing low cost hydrogen in California, provided the RNG is appropriately valued.

Air Liquide recommends that projects based on RNG be appropriately prioritized with respect to other sources for projects in this solicitation.

Topic 2: Sourcing of RNG within the state of CA

The proposed solicitation calls for the investment in renewable hydrogen production sourced within the State of California. From our reading of the proposed solicitation, the process

appears to favor electric grid based production over natural gas based production by considering the use of REC's. In section 6, for example, Renewable Electricity Sources are defined to include solutions that are connected to an in-state electrical generating facility using REC's registered with WREGIS to account for the renewable source. At the same time, renewable RNG sources are specifically called out to be located within the State of California. Based on this, it would put an undue burden on projects using RNG to develop sources within CA as well as processes to produce H2 in CA while electricity conversion processes would only require investment in production and REC's.

Although CA has recently adopted policies that encourage the development of its biogas sources, RNG project development in the state is still challenging given stringent pipeline specifications and other regulations. These conditions make in-state RNG sourcing challenging, a hurdle not faced by electrolysis-based hydrogen production. While investments are being made in RNG and renewable hydrogen throughout the US, differentiating between in-state and out-of-state RNG sources will make further investments challenging by creating artificial boundaries for renewables. California leads the nation in low carbon fuel policy, and the example it sets for other states establishes a precedent that can either encourage or discourage nation-wide development of renewable fuels. Though minor in comparison to overall policy, this differentiation between in-state and out-of-state RNG in this solicitation could negatively impact the development of low carbon fuels going forward.

Air Liquide recommends that both in-state and out-of-state RNG sources, directed to in-state hydrogen production facilities, be considered eligible for projects in this solicitation.

Topic 3: The need for low cost, high volume, renewable H2 to stations

The immediate support of the current fleet of vehicles and stations with a sufficient volume of low cost, renewable hydrogen is critical to enabling the short term success of this program. While this solicitation includes hydrogen costs at the station as a selection criteria, we believe it should be amongst the highest priorities for as successful proposal. As such, the emphasis on investments focused on new hydrogen production plants may not provide the most cost effective way to increase the supply of renewable hydrogen to the market. In our analysis, the most cost effective way to supply the first and second generation fueling stations is to make investments that enable the existing hydrogen production facilities with excess production capacity close to the markets being served, and to direct product to the station networks.

By investing in purification, compression, and distribution at current production facilities, we can significantly debottleneck hydrogen supply to stations. At the same time, through the use of directed RNG, the added capacity enabled by this debottlenecking, the hydrogen can be entirely renewable, without needing investments in greenfield production or sourcing. Considering investments across the entire production and distribution supply chain will then enable future investments in RNG sources to be immediately integrated into a “station ready” hydrogen infrastructure with minimal additional investment.

Air Liquide recommends that the solicitation consider the a broader portfolio of projects, beyond production, including the entire supply chain, which enables the delivery of the lowest cost renewable hydrogen pathways to the stations.

Air Liquide recognises the challenges faced by the California Energy Commission in furthering the initiatives of the Alternative and Renewable Fuel and Vehicle Technology Program. Air Liquide applauds the California Energy Commission for recognizing the path towards a renewable hydrogen supply chain can be multifaceted, and that industry can play a key role in ensuring state reaches their ZEV mandate in a cost effective and practical way.

If we can provide further information or assistance with regards to this solicitation or the program in general, please do not hesitate to ask.

Sincerely,

David Edwards
david.edwards@airliquide.com
(302) 286 5491