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AP Comments on ZIP

Additional submitted attachment is included below.

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February 4, 2022

Commissioner Patty Monahan
California Energy Commission
715 P Street
Sacramento, CA 95814

RE: 2022 Statewide Zero Emission Vehicle Infrastructure Plan (ZIP) Docket No. 21-TRAN-03

Dear Commissioner Monahan,

Air Products is pleased to provide comments in support of the California Energy Commission's (CEC) 2022 Statewide Zero Emission Vehicle (ZEV) Infrastructure Plan (ZIP).

Government and industry stakeholders in California have worked together to build the hydrogen fuel cell electric vehicle (FCEV) market for the past two decades with a primary focus on light-duty vehicles. Given the state's planning for requiring 100% ZEV sales and the prospect of a significant expansion into heavy-duty FCEVs, Air Products is providing recommendations on what improvements can be made across key areas of market development to better enable a more vibrant decarbonization of the transportation sector, based on its leading role designing, building and operating hydrogen fueling infrastructure in the state.

Air Products (NYSE:[APD](#)) is a world-leading industrial gases company in operation for 80 years. Focused on serving energy, environment and emerging markets, Air Products provides essential industrial gases, related equipment, and applications expertise to customers in dozens of industries, including refining, chemical, metals, electronics, manufacturing, and food and beverage.

As the early leader in developing hydrogen fueling technology, including the development of codes and standards for light-duty vehicles, no one has as much depth and understanding of hydrogen or hydrogen for mobility applications as Air Products. The company has hands-on operating experience in over 250 hydrogen fueling station projects worldwide in 20 countries. Our dispensers have completed over 11 million vehicle fills since 2005 and our equipment is currently providing over 100,000 fills per month to a wide range of vehicles.

In California, Air Products:

- operates nine hydrogen production plants in five locations – Sacramento, Wilmington, Carson, Martinez and Torrance – and approximately 30 miles of hydrogen pipelines;
- supplies hydrogen for the mobility market in California; and
- operates six retail light-duty hydrogen refueling stations (HRS) and one heavy-duty transit bus refueling station for the Orange County Transportation Authority (OCTA).

With the state [goal](#) of 100% light-duty (LD) ZEV sales by 2035 and 100% of medium/heavy-duty (M/HD) ZEVs by 2035-2045, it's clear that fueling infrastructure needs in California are now well beyond the 200 LD hydrogen refueling station (HRS) goal called for in Governor Brown's [Executive Order B-48-18](#). It is now more appropriate to look towards the more ambitious hydrogen mobility [goals](#) set forth by the California Fuel Cell Partnership (CaFCP) of 1,000,000 LD FCEVs and 1,000 LD HRS by 2030, along with the [goals](#) of 70,000 M/HD fuel cell trucks supported by 200 M/HD HRS by 2035. In addition, numerous transit agencies throughout the state are committing to convert their bus fleets to hydrogen fuel cell vehicles in meeting the goals of the Air Resources Board (ARB) Innovative Clean Transit (ICT) regulation.

Recommendations

Based on our years of operational experience in the California hydrogen FCEV market, Air Products is providing recommendations in six areas for the state to consider in its ZEV infrastructure planning:

- Policy and Incentives
- Energy Supply
- Hydrogen Refueling Station Network
- Permitting
- Reliability
- Cost of Fuel

Policy and Incentives

- Technology Agnostic: Both ZEV technologies (battery electric vehicles and fuel cell electric vehicles) should be prioritized equally in state policy, regulations, incentives, and program grant funding levels, and those policies should be based on a robust analysis of clean power and hydrogen requirements to meet the state's decarbonization goals. Such an analysis must determine energy production and infrastructure needs for both technologies to inform policy priorities and ensure a smooth energy transition.
- More specifically, the state should build upon the success of the Low Carbon Fuel Standard (LCFS) hydrogen refueling infrastructure (HRI) and DC fast charging infrastructure (FCI) capacity credit programs by extending these capacity credits to medium/heavy-duty ZEV stations as appropriate.
- In addition, policy priorities need to expand their focus from ZEV sales and refueling stations to development and deployment of commercial scale clean hydrogen production and distribution for the California mobility market.

Energy Supply

- As the State accelerates its ZEV infrastructure deployment goals, it should carefully analyze and plan for the clean sources of energy required to ensure a reliable and affordable supply. Clean electricity and clean hydrogen will be needed in abundance to support the growth in ZEV infrastructure, ensure a positive customer experience, and promote broader adoption of zero-emissions transportation vehicle technology.

- Today, California's existing energy needs are met through a combination of both significant domestic supply and imports of electricity (28%), crude oil (66%), and natural gas (90%) from other parts of the US, Latin America, Africa and the Middle East. State electricity planning identifies a future need for out-of-state electricity supplies, and Air Products' own clean hydrogen and power demand estimates for mobility and other industrial sectors anticipate imports of both will be needed in significant quantities. We recommend the State develop a plan for the best use of existing clean energy resources and the appropriate mix of domestic and imported energy supply. Additionally, other forms of energy beyond electricity and hydrogen are likely to be important to achieve broad decarbonization of certain transportation sub-sectors such as commercial shipping.

Hydrogen Refueling Station Network

- We applaud California's ambitious goal and financial support for the early development of zero emissions fueling infrastructure. Given the success of that support in light-duty infrastructure development, we recommend it be extended into M/HD hydrogen fueling applications targeting the most impactful areas, regions, and clusters and to the extent this is viewed as necessary for infrastructure expansion.
- To date, light-duty retail hydrogen fueling stations have most prevalently been retrofitted into existing retail gasoline stations due to California Environment Quality Act (CEQA) exemptions. Although this has resulted in many stations being constructed, several have not been built to a scale consistent with traditional fossil based fueling infrastructure, thereby adversely impacting customer experience and impeding greater ZEV technology adoption. As the State continues to support the expansion of fueling station infrastructure with a goal of 1,000 light-duty hydrogen fueling stations by 2035, we recommend the CEC incorporate other metrics in its financial support should that continue to be a cornerstone of its ZEV infrastructure deployment plan including:
 - Providing funding only for stations deployed at a scale equivalent to or greater in terms of total energy inventory and dispensing capability consistent with traditional fossil fuel stations. This ensures robust supply and inventory of fuel for commercial scale applications to ensure a positive consumer experience supportive of broader ZEV adoption.
 - Consideration for CEQA exemptions for the installation of commercial scale hydrogen fueling infrastructure at brownfield or greenfield locations to avoid delays in the replacement of existing fossil fuel infrastructure.
 - Consideration of financial support to encourage legacy fossil fuel station owners in key locations or geographies, to replace entirely their refueling infrastructure today and replace it with zero-emissions fueling infrastructure at scale. Demonstration of full conversion will assist with more rapid ZEV deployment and demonstrate market readiness for rapid ZEV adoption.

- It is also critically important in this early commercial market for hydrogen infrastructure development that should financial incentives continue to be a part of California's overall ZEV strategy, that clear market signals are sent in terms of levels and frequency of funding. While legacy financial incentives have been key to early market development, inconsistency in the funding and frequency of incentives may have been a detriment to more rapid market development. A comprehensive, robust and routine program with clear communication to the market will better assist in moving California rapidly towards its vehicle and infrastructure goals.
- Proactively build out M/HD hydrogen refueling infrastructure applying lessons learned from the light-duty FCEV market and leverage multi-modal fueling opportunities. Such facilities will provide numerous benefits including economies of scale and reliability.

Permitting

The removal of HRS permitting bottlenecks such as those listed below will not only facilitate the opening of individual HRS facilities, but also enable the HRS network to achieve commercial scale more rapidly.

- Most of today's retail HRS have been incentivized to be built on existing fueling sites where they are most able to use categorical exemptions from CEQA review, thus saving development time. To establish a commercial scale HRS network in the state, retail HRS will need to be located on greenfield and brownfield properties going forward. As development of HRS on these sites may be a new use for the property, there is a higher likelihood of triggering a CEQA review, thus adding development time and cost. Therefore, removal of CEQA barriers to developing purpose-built HRS on greenfield and brownfield properties and leveraging multi-modal fueling when appropriate focused on all FCEV applications (LDV, MDV, HDV) will help expedite project completion.
- The process of setting up utility connections to new HRS properties can be complex and can significantly lengthen a project timeline, especially because each site is unique and may follow a different process for setting up new service. We recommend the state work with California utility providers to establish a streamlined and potentially preferential utility grid connection process or specific program for more rapid deployment of HRS throughout the state.
- Expand public outreach and education efforts with local authorities having jurisdiction (AHJ) to increase levels of awareness and familiarity with the beneficial environmental attributes of hydrogen and the well-established safety codes that govern the safe operation of HRS.

Reliability

- Pay for Performance: Any financial incentive funding contemplated for ZEV infrastructure deployment should incorporate a robust set of performance metrics beyond just total number of stations deployed. This single metric does not result in an efficient deployment of incentives and does not adequately consider the availability and reliability of fueling over an extended time interval at a scale necessary to ensure a robust consumer experience that promotes rapid adoption of ZEVs. Consideration should be taken to provide funding to stations on a scale and reliability with traditional fossil-based stations.

Cost of Fuel

- In addition to ZEV infrastructure, consideration of a comprehensive strategy for commercial scale production, distribution and dispensing of energy in the most reliable manner to support ZEV adoption will result in rapid and sustained reductions in fuel cost.
- As mentioned, multi-modal HRS facilities can also enhance individual HRS and network economies of scale, resulting in reduced fuel prices for FCEV end-users.

We look forward to working with you on these important transportation decarbonization efforts.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric J. Guter". The signature is fluid and cursive, with the first name "Eric" being the most prominent.

Eric J. Guter
Vice President, Hydrogen for Mobility
Air Products & Chemicals, Inc.