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*Comment Received From: Miles Heller  
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**Air Products comments re July 29th IEPR workshop**

Please find our comments attached

*Additional submitted attachment is included below.*

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August 27, 2025

Commissioner Hochschild  
California Energy Commission (CEC)  
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IEPR Docket 25-IEPR-04

**RE: Air Products' Comments Related to the July 29<sup>th</sup> Hydrogen and Firm Zero-carbon Resources Workshop for the 2025 Integrated Energy Planning Report (IEPR)**

Dear Chair Hochschild:

Thank you for the opportunity to comment on the material presented in the workshop on July 29<sup>th</sup>, 2025. Hydrogen can play an important role in the clean energy transition – particularly in the transportation, maritime, heavy industry, and certain aspects of the power sector. Hydrogen is an important complement to other low and zero emission energy sources, adding to energy diversity and resiliency amid the transition to clean energy.

It is important to recognize that California is home to a world-leading private hydrogen market, which has safely and effectively operated for decades under a strong regulatory regime to competitively serve industrial and transportation customers. Leveraging and building on these existing, functioning markets will allow California to bolster its leadership position in the global clean hydrogen market, while also driving policy and economic changes on the regional, national, and international levels.

**Background on Air Products**

Air Products is a global, and the only United states-based industrial gases company with substantial experience producing, storing, and deploying hydrogen in a safe and environmentally conscious manner. Worldwide and in California, Air Products is the largest hydrogen producer, with approximately 10,000 metric tons per day of production capacity. Within California, for more than 50 years, Air Products has safely operated hydrogen systems, including 9 hydrogen-production facilities and 30 miles of hydrogen pipelines. Air Products also supplies a network of light-duty hydrogen fueling stations.

**Hydrogen as a Zero-Carbon Resource for Power**

In your IEPR analysis, we recommend that the CEC evaluate more rapid scenarios for decarbonizing the power sector through the use of hydrogen. The state must ensure that it adopts the policies needed to take full advantage of this versatile resource, including in turbines. Hydrogen turbines provide a clear pathway for converting existing natural gas plants to produce zero-carbon electricity, especially since leveraging existing assets that are already interconnected

to the grid is one of the most expedient paths to decarbonizing power generation. Critically, grid operators and utilities already rely on these plants to follow load and meet system and local reliability needs. Conversion to hydrogen turbines will provide the same reliability characteristics and avoid the need to develop new resources to provide local reliability and/or develop costly and challenging new transmission projects. We provide some specific recommendations for the CEC to consider as you evaluate hydrogen use in the electricity sector:

- Consider new or expanded incentives for procuring hydrogen in the electricity sector, including clean resource adequacy provisions;
- Consider directives to load-serving entities (LSE) to procure hydrogen baseload or dispatchable capacity;
- Consider procurement directives for hydrogen as a long-term storage solution (e.g. PG&E's third-party partnership to develop a hydrogen fuel cell project to improve grid resiliency at substations as approved by Commission Resolution E-5261);<sup>1</sup>
- Consider distributed generation and grid resiliency in the California Public Utilities Commission's (CPUC) Integrated Resource Planning process and procurement orders for electric LSEs that includes hydrogen fueled equipment; and
- Update the Renewable Portfolio Standard (RPS) Guidebook to include renewable hydrogen used in turbines, as well as fuel cells, as RPS eligible.

### **Guiding Principles to Expand California's Leading Hydrogen Market**

California is home to one of the nation's largest, well-established competitive hydrogen markets. Much of the hydrogen deployed in California and across the United States already serves hard-to-abate sectors like heavy industry and transportation. The CEC's work on hydrogen through the draft IEPR and other efforts, including the Governor's directive to develop the Hydrogen Market Development Strategy, the Senate Bill 1075 (Skinner) process and future work on SB 100, SB 423, SB 643, and SB 905 implementation, can help create more momentum to expand California's robust hydrogen economy.

As California writes the next chapter for its established hydrogen economy, guiding principles that shaped other clean energy programs, like the electricity RPS and the Low Carbon Fuel Standard (LCFS), can serve as a template for effective policy frameworks to support the continued growth of the clean hydrogen market by:

- Preserving and expanding competitive markets to accelerate project development, innovation, cost reductions, wide-scale emissions reductions, and long-term success.
- Creating new long-term visible market incentives to enable private sector investments in hydrogen production and delivery infrastructure, including demand side offtake rules that match investment life cycles (15-20 years).
- Avoiding new frameworks or market regulations that dramatically shift or disrupt existing, functional hydrogen markets.
- Providing technology-agnostic, carbon-intensity-focused approaches for incentives and market frameworks for lowering the carbon intensity of hydrogen that ensures a level-playing field for zero-emission technologies; and

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<sup>1</sup> Resolution E-5261, adopted on April 27, 2023, approved PG&E's plan to develop a Clean Substation Microgrid Pilot Project in partnership with Energy Vault, as presented in PG&E Advice Letter 6808-E.

- Don't pick winners and losers, and allow for innovation and accommodation of new, lower carbon hydrogen technologies as they develop.

Most importantly, the State should avoid creating a vertically integrated, CPUC-regulated hydrogen utility, which would disrupt and destabilize California's leading and growing hydrogen market. Allowing California's regulated natural gas utilities to suddenly enter the existing, functional, competitive hydrogen market, and use current ratepayer funds to enable the utility to unfairly compete against the private sector, will not serve to catalyze an expanded hydrogen market. Instead, it will undermine long-term cost-effectiveness and send negative market signals to the private sector.

Mr. Sasha Cole, representing the CPUC at the workshop, made very germane comments with regards to realistic demand growth projections. Entities advocating for large infrastructure projects, like Angeles Link, with no certain offtake or production, risks billions of ratepayer dollars with a 'build-it and they will come' mentality. A smarter growth strategy would prioritize flexibility and allow organic growth where demand is needed, which is best done by the private market. It is too soon in the hydrogen value-chain growth curve to commit to very large infrastructure projects – which would be akin to building an eight-lane highway that will initially serve only a few vehicles.

We also strongly support Mr. Cole's statement that CPUC jurisdiction for pure hydrogen infrastructure is not clearly established. In fact, this topic is the subject of CPUC proceedings related to the Angeles Link project, and the gas utility has been unsuccessful in getting jurisdiction established in law during the last couple of legislative cycles.<sup>2</sup> The CEC should be cautious in the IEPR analysis assuming that utilities will be able to build-out pure hydrogen infrastructure outside of the competitive market with ratepayer dollars, and certainly not endorse, directly or indirectly, any particular project like Angeles Link. Instead, the CEC should analyze policies that help preserve and advance the private, competitive market in which utilities can compete utilizing shareholder dollars.

### **A Complete Analysis of Hydrogen Demand Is Important for Guiding the Clean Hydrogen Market Development**

- We encourage the CEC to explore a wide array of applications and use cases for hydrogen in the transportation sector. We generally agree with the point that Linde made in their presentation that the heavy-duty on-road transportation sector represents a promising early market for expanded hydrogen use, along with shipping, aviation, rail, maritime and other off-road applications. Given range and weight limitations of heavy-duty battery electric vehicles, increasing electricity costs, and challenges with developing and energizing large new electric vehicle charging stations, especially for high-powered charging for heavy-duty vehicles – it is possible with the correct policy support, that hydrogen infrastructure and fuel cell vehicles could "leapfrog" electric vehicles, especially for medium and heavy-duty zero-emission vehicles (ZEV)s.
- In addition to SB 1075's requirements to evaluate demand in the transportation and electricity sectors, we encourage the CEC to evaluate potential demand for clean hydrogen in the industrial sector, as well. Just as clean hydrogen can be deployed to decarbonize gas power plants, it can also decarbonize cement, glass, and steel

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<sup>2</sup> SB733 in 2022 and AB324 in 2023

manufacturing as well as other industrial operations. Indeed, the California Air Resources Board (CARB) Draft Report on decarbonizing the cement sector pursuant to SB 596, highlights a potentially promising role for hydrogen to support a net-zero carbon cement sector in California.<sup>3</sup>

- We suggest that the CEC evaluate ports as regional anchors for hydrogen demand growth. Some of the most severe air quality impacts accrue in communities in and around port complexes, which often host heavy industry, aviation, maritime and power production. As the CEC looks across the transportation sector to leverage hydrogen to meet climate and clean air goals, ports should be kept top of mind. Port greening has co-benefits with the potential to expand hydrogen infrastructure and deployment to neighboring industries. Delivery of hydrogen in these regions will have a high impact and result in immediate, dramatic air quality improvements.
- We appreciate that the CEC does not place an emphasis on the use of low carbon hydrogen in the residential heating sector as a blend with natural gas. Any application of hydrogen in this sector needs to be carefully reviewed to ensure safety and continued system reliability. Additionally, blending hydrogen in small quantities into natural gas pipelines should be carefully evaluated to determine if it is in fact an effective emission reduction approach relative to other uses when supply of low-carbon hydrogen is still growing. Additionally, because of the lower energy density of hydrogen, more volume is needed, which may create constraints in the system that require expensive retrofits to pipelines designed to deliver natural gas, with little emission benefit.

### **CEC Should Take a Technology-Neutral Approach to Hydrogen**

The 2023 IEPR focused solely on a single technology – renewable electrolysis – to estimate potential new electricity demands associated with growing use of clean hydrogen. While estimating new electricity demands from hydrogen is an important and appropriate task, we encourage the CEC to include a full and fair evaluation of the complete array of hydrogen technologies throughout the supply chain. Current hydrogen supplies, as mentioned above, can be deployed to support California’s comprehensive energy goals, including supporting fuel cell electric vehicles in the transportation sector and providing feedstock replacement for additional decarbonization. Deploying carbon capture on fossil-based projects can deliver similar – and potentially better – emissions outcomes than green hydrogen pathways. Biomass, biogas, and other clean hydrogen production pathways deserve complete evaluation; as well, including their ability to support the State’s Forest management, avoided agricultural burning, and other biomass-related goals. Indeed, SB 1075 calls on CEC to evaluate all hydrogen production and demand, not just renewable hydrogen or electrolysis, directing that “the commission shall study and model potential growth for hydrogen and its role in decarbonizing the electrical and transportation sectors of the economy.”

Additionally, while we agree with the conclusion in your “Hydrogen Potential” presentation on slide 18 on the value of hydrogen pipelines to serve large, primarily industrial, end users, we do not agree that truck delivery of hydrogen is only for “limited transportation end uses”. The current expansive transportation fuels market is well-served by truck delivery. Developing new, dedicated hydrogen pipeline infrastructure requires matching identified demand with dedicated clean hydrogen supplies, which requires significant planning, expertise, and capital investment. Relying

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<sup>3</sup> <https://ww2.arb.ca.gov/sites/default/files/2025-03/Draft%20Net-Zero%20GHG%20Emissions%20Strategy%20for%20the%20Cement%20Sector.pdf>

on pipeline infrastructure to serve smaller, near-term and growing loads – such as hydrogen refueling stations – may be impractical and slow development of the hydrogen market.

We do note that in the same presentation conclusion slide there is an assertion that a conventional steam-methane reforming (SMR) hydrogen production process coupled with carbon capture and sequestration requires more water than an electrolyzer process. We note that there are many factors that can impact water usage in both production processes so the assumptions that are behind this assertion are important because the assertion by CEC is not true in every case. For example – water reuse options for SMR processes, assumed cooling water make-up and recirculation rates, carbon dioxide (CO<sub>2</sub>) capture technology, degree of air cooling for each production process assumed, etc. We request that the CEC provide additional information in the IEPR related to the assumptions behind this statement – especially assumed cooling water rates for both processes.

### **Conclusion**

California is a global leader in the green economy, with renewable and low carbon energy markets that drive state, national and international policies. The CEC IEPR process, which produces a comprehensive and effective energy framework, is critical to developing an affordable, safe, reliable hydrogen system that delivers climate and air quality benefits, energy diversity, prioritizes and protects frontline communities and grows our workforce. State programs can provide important market signals for hydrogen that enable expansion of this robust green economy and continued support for private sector investments.

Thank you again for the opportunity to comment. If you have any questions, please feel free to contact me or Miles Heller ([hellermt@airproducts.com](mailto:hellermt@airproducts.com)).

Respectfully,



Miles Heller  
Director, Greenhouse Gas, Hydrogen, and Utility Regulatory Policy