

Air Products and Chemicals, Inc.  
7201 Hamilton Boulevard  
Allentown, PA 18195-1501  
Telephone (610) 481-4911

November 30, 2011

California Energy Commission  
Dockets Office, MS-4  
RE: Docket No. 11-IEP-1L  
1516 Ninth Street  
Sacramento, CA 95814-5512

**DOCKET**

**11-IEP-1L**

DATE NOV 30 2011

RECD. NOV 30 2011

RE: Air Products and Chemicals, Inc. comments to docket number 11-IEP-IL

Dear IEPR Staff:

On behalf of Air Products and Chemicals, Inc. we thank you for the opportunity to provide comments concerning the 2011 Integrated Energy Policy Report (IEPR) – LCFS Analysis. In review of the November 14, 2011 California Energy Commission staff workshop on the Role of Alternative Fuels in California's Transportation Energy Future our comments are related to the affordability of hydrogen as an alternative fuel contained in the presentation "Perspective & Context of Historic Demand and Alternative Fuels."

In our viewpoint the economic comparison of relative hydrogen cost does not take an objective approach in understanding the true affordability of hydrogen as an alternative transportation fuel, and its societal benefits.

First, we believe the underlying assumption underpinning the hydrogen station cost analysis require some adjustments. Our understanding is hydrogen refueling station capital of \$2.76 million (slide 21) in the analysis is based on CEC Grant Solicitation PON-09-608 award representative of one supplier operating in the infancy stage of a new emerging market. Air Products has supplied the largest number of hydrogen refueling stations to the market and we believe the cost is not fully representative of the current and future market potential where learning rates and market scale will significantly reduce hydrogen station cost.

More importantly we consider the metrics and comparisons established on the affordability of hydrogen in the analysis (i.e. Slides 24, 25) provides little insight on the true affordability of hydrogen as an alternative transportation fuel to consumers. We believe it would be beneficial for the CEC to extend their analysis based on future energy and vehicle platform costs with the paying consumer in mind. As a hydrogen supplier our focus is in making hydrogen affordable to alternative light-duty transportation energy alternatives on a fuel or total cost per mile basis to end consumers. In parallel, the OEM's are focused on introducing affordable fuel cell vehicles to the marketplace. In combination, hydrogen infrastructure and OEM suppliers are focused on minimizing the total cost of ownership to consumers.

Conclusions from collaborative studies among energy companies, automotive OEM's, hydrogen and equipment supplier, non-government organization studies in Europe, North America, and Asia have shown hydrogen fuel cell electric vehicles provide a total cost of ownership comparable to internal combustion engines, and the lowest carbon solution for medium/larger cars and longer trips. When real hydrogen refueling station costs are taken into consideration, and hydrogen refueling stations are adequately utilized, hydrogen as an alternative transportation fuel is affordable to consumers across a large portion of the light-duty vehicle transportation segment. Hydrogen can be affordable when the total cost of ownership to consumers is fully considered.

Air Products would like to thank the California Energy Commission for taking the initiative to understand the underlying facts on hydrogen as a transportation fuel and taking a leadership position to effect such. We appreciate this opportunity to submit comments concerning the subject analysis on the 2011 IEPR, and we welcome the opportunity to discuss our comments and viewpoints further with the Energy Commission.

Please feel free to contact me at (610) 481-5222 if you have any questions or would like to discuss further.

Sincerely,

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

Brian B. Bonner  
Global Product Manager  
Hydrogen Energy Systems