



March 27, 2018

California Air Resources Board
1001 I Street
Sacramento, CA 95815

RE: Comments Regarding Environmental Mitigation Plan

Summary

The Fuel Cell and Hydrogen Energy Association (FCHEA) offers the following suggestions regarding nitrogen oxides (NO_x) mitigation projects the Board may develop as part of an Environmental Mitigation Plan (“Mitigation Plan”).¹ The categories of projects are described in Appendix D-2 of the Partial Consent Decree stemming from the Volkswagen “Clean Diesel” Marketing, Sales Practices and Products Liability litigation.²

Overall, FCHEA urges the Board to develop a Mitigation Plan focused on building a balanced portfolio of NO_x emissions reduction solutions. The below comments describe key detailed elements suggested for inclusion in the Mitigation Plan.

1. Fuel Cell Technologies Applicable to All Eligible Mitigation Actions

Fuel cell technologies have the scope and demonstrated capabilities to mitigate diesel emissions in each of the application categories described in Appendix D-2. Fuel cell- powered trucks are operating in leading U.S. ports. Fuel cell electric buses (FCEB) are in transit, shuttle, and student transportation operations in twelve States. Fuel cells power forklift fleets at major distribution centers throughout California.³ Elsewhere, fuel cells power cargo tractors at Memphis International Airport and forklifts operating in warehouses, distribution centers and ports nationwide. More than 3,500 light-duty fuel cell electric vehicles (FCEV) have been purchased or leased in California.⁴ Accordingly, FCHEA urges the Mitigation Plan include all of the categories of Eligible Mitigation Actions described in Appendix D-2.⁵

¹ “VW Settlement Information – NO_x Mitigation Projects,” Bureau of Mobile Sources, New York State Department of Environmental Conservation, Retrieved August 10, 2017.

<http://www.dec.ny.gov/chemical/109784.html>

² “Appendix D-2, Eligible Mitigation Actions and Mitigation Action Expenditures,” United States of America v. Volkswagen AG et al., Case No. 16-cv-295 (N.D. Cal.)

<https://www.vwcourtsettlement.com/en/docs/DOJ/Approved%20Appendix%20D-2.pdf>

³ Coca-Cola, San Leandro [Alameda Co.]; Kroger, Compton [Los Angeles Co.]; Procter & Gamble, Oxnard [Ventura Co.]; Sysco, Riverside [Riverside Co.]; Winco Foods, Modesto [Stanislaus Co.]

⁴ “Fuel Cell Electric Vehicle Sales History,” California Fuel Cell Partnership, December, 2017

2. Hydrogen Fuel Cells Vehicles Are “All-Electric” Vehicles

Fuel cell vehicles – including light-duty vehicles, trucks, buses and industrial equipment - provide superior fuel economy, range, noise reduction and efficiency. To assure that qualified entities can take advantage of the benefits of these vehicles, FCHEA urges the Mitigation Plan explicitly acknowledge that hydrogen is an eligible energy source for an “All-Electric” vehicle and fuel cell vehicles and equipment are eligible “All-Electric” vehicles. The justification for this position is well founded and quite clear. Appendix D-2 defines the term “All-Electric” as follows: ““All-Electric” shall mean powered exclusively by electricity provided by a battery, fuel cell, or the grid.”⁶ Because an electric motor exclusively supplies the motive power to an FCEV, it is appropriate and accurate to confirm that an FCEV meets the definition of “All-Electric.”

Confirming an FCEV meets the definition of “All-Electric” advances California’s existing policies and programs promoting Zero-Emission Vehicle (ZEV) deployment and adoption. Further, doing so helps assure the Board has a robust list of clean energy technology providers from which to select mitigation grant recipients.

3. Fuel Cell Technologies Fulfill Key Project Selection Criteria

FCHEA urges the Board adopt several project selection criteria, including location in areas that are prone to a disproportionate amount of diesel emissions, use of innovative and sustainable technologies, cost effectiveness in reducing NO_x emissions and ability to be deployed in a timely manner.

FCHEA endorses these criteria because fuel cell technologies have the demonstrated capabilities to replace on-road and non-road diesel vehicles and engines regularly operating in or near areas that bear a disproportionate share of the air pollution burden.

As noted above, fuel cells power trucks, buses, cargo tractors and forklifts successfully operate in ports, airports and warehouse distribution centers. Because these facilities are often located in areas with high population and/or traffic density, use of fuel cell powered engines and vehicles at such sites address those concerns.

Fuel cell technologies are in the forefront of innovation and sustainability. Seeking to promote innovation in energy supply, leading global energy, transport and industrial companies have pledged to accelerate their investments in hydrogen and fuel cell development and commercialization.⁷ In the United States, U.S. Department of Energy programs have advanced

https://www.hydrogen.energy.gov/pdfs/htac_may17_14_white.pdf

<https://cafcp.org/sites/default/files/FCEV-Sales-Tracking.pdf>

⁵ “Appendix D-2, Eligible Mitigation Actions and Mitigation Action Expenditures”

⁶ “Appendix D-2, Eligible Mitigation Actions and Mitigation Action Expenditures,” Page 10

⁷ “How Hydrogen Empowers the Energy Transition,” The Hydrogen Coalition, January, 2017

<http://hydrogencouncil.com/>

innovation by successfully generating more than 580 patents, more than 30 commercial technologies, and 65 technologies that are expected to reach commercial scale within the next three to five years.⁸

Hydrogen-powered fuel cells are efficient, using as much as 60 percent of available energy compared to internal combustion engines. Fuel cells do not emit any greenhouse gases (GHG) during operation. Depending on how the hydrogen is produced, there are substantially fewer or no upstream GHG emissions compared with fossil fuels.⁹

Further, FCHEA urges the list of criteria include consideration of project benefits that enhance economic development opportunities. The U.S. Department of Energy estimates FCEV can be responsible for 200,000 jobs.¹⁰ Funding fuel cell infrastructure provides market opportunities for fuel cell manufacturers headquartered in or operating in California.

4. Set Category Funding Allocations

FCHEA urges the Mitigation Plan allocate funding by category. Specifically, 40 percent to 60 percent of funding be allocated for on-road fleet projects; 35 percent to 55 percent of funding for non-road/off-road projects; and 15 percent of funding for light-duty ZEV electric vehicle supply equipment (EVSE). This allocation balances nitrogen oxides emission reduction goals by category while retaining needed program flexibilities.

5. Set Reimbursement Rates to Favor a Broad Number of Projects

The Trust Agreement establishes maximum reimbursement rates between 25—100 percent of eligible project costs for each eligible project type.¹¹ FCHEA urges the Mitigation Plan set reimbursement rates beneath these maximums so as to fund of a broader number of projects. Doing so will help deploy more projects; help expand supply chain interest; and increase cost-share amounts, thus promoting supplier accountability and efficiency. California's FCEV market experience is illustrative; vehicle deployment has grown significantly as additional infrastructure has become available.¹²

⁸ "Pathways to Commercial Success: Technologies and Products Supported by the Fuel Cell Technologies Office," U.S. Department of Energy, Page 3-2

https://energy.gov/sites/prod/files/2016/02/f29/fcto_2015_pathways_commercial_success.pdf

⁹ "Hydrogen Fuel Cell Vehicles," Center for Climate and Energy Solutions

<https://www.c2es.org/technology/factsheet/HydrogenFuelCellVehicles>

¹⁰ "Remarks by Dr. Sunita Satyapal, Director, Fuel Cell Technologies Office, June 5, 2017

https://www.hydrogen.energy.gov/pdfs/review17/01_satyapal_plenary_2017_amr.pdf

¹¹ "Appendix D-2, Eligible Mitigation Actions and Mitigation Action Expenditures"

¹² "Joint Agency Staff Report on Assembly Bill 8: 2016 Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California," January, 2017, Page 2

<http://www.energy.ca.gov/2017publications/CEC-600-2017-002/CEC-600-2017-002.pdf>

6. Dedicate an Impactful Portion of ZEV EVSE Funds to FCEV Refueling

Volkswagen's announced National ZEV Investment Plan (Cycle 1) seeks to increase access to Battery Electric Vehicle (BEV) recharging infrastructure; the Plan specifies a portion of investment for California.¹³ Significantly, the Plan makes no investment in hydrogen fueling stations. Recognizing this, FCHEA urges the Mitigation Plan allocate no less than 80 percent of the ZEV EVSE funds provided by the Environmental Mitigation Trust (EMT) for FCEV refueling infrastructure.¹⁴ Doing so will build on the successful efforts of the Board and the California Energy Commission (CEC) to establish a hydrogen fueling network in California. However, while the increase in the pace of network growth is a welcome development, the Board has reported on the need to sustain momentum and further accelerate the overall rate of network growth.¹⁵ Allocating no less than 80 percent of the EVSE funds to HRS network can help fulfill this need.

7. Funding EVSE Infrastructure for FCEV is Feasible and Prudent

Several factors make funding EVSE infrastructure for FCEV feasible and a prudent use of EMT monies. First, consumer understanding of and interest in ZEV is growing.¹⁶ Increasingly, consumers include vehicle efficiency and new vehicle technology features as a key purchase characteristics. Here, FCEV excel, offering 300-400 miles of driving range per tank, refueling in less than five minutes and operating quietly with highly responsive performance characteristics. FCEV are safe, reliable and require little maintenance.

Second, a changing regulatory environment is evaluating ways to accelerate hydrogen fuel cell commercialization. National standards for hydrogen quality and refueling station safety have been set. California's hydrogen metrology standard facilitates consumer acceptance of FCEV. States and municipalities are evaluating roadway access and transport rules to assure facility safety and to improve the efficient movement of hydrogen.

Third, State policymakers have ready access to network planning expertise. Station developers with "real world" experience gained from planning and building California's hydrogen station network are available to share best practices. The U.S. Department of Energy-affiliated research laboratories provide sophisticated technical services; for instance, network planning tools that model preferred station locations, hydrogen production, and FCEV costs.

¹³ "National ZEV Investment Plan," April, 2017, Page 5.

<https://www.electrifyamerica.com/downloads/get/38726>

¹⁴ "Appendix D-2, Eligible Mitigation Actions and Mitigation Action Expenditures," Page 8.

<https://www.vwcourtsettlement.com/en/docs/DOJ/Approved%20Appendix%20D-2.pdf>

¹⁵ "2017 Evaluation of Fuel Cell Electric Vehicle Deployment and Hydrogen Fueling Station Network Development," California Air Resources Board, August, 2017, Page 4.

https://www.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2017.pdf

¹⁶ "Monthly Plug-In Sales Scorecard," Inside EVs

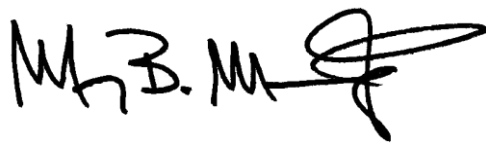
<http://insideevs.com/monthly-plug-in-sales-scorecard/>

Forth, hydrogen producers, fuel cell manufacturers and infrastructure component manufactures are capable of utilizing eligible Mitigation Actions to deliver projects successfully. Hydrogen producers include highly capitalized multi-national industrial gas companies and leading automakers have FCEV development programs. Together they are estimated to have invested more than \$9 billion to improve technical performance and manufacturing efficiencies.¹⁷ As the hydrogen fuel cell supply chain rapidly matures, hydrogen refueling station construction costs and completion times are shrinking; hydrogen production costs are dropping; and new production processes have enhanced renewable hydrogen availability.¹⁸

Finally, FCEV are a pathway to deliver long-term emissions reductions. As describe in the ZEV Action Plan, all ZEV are crucial to achieving the State's 2050 greenhouse gas goal of 80 percent emission reductions below 1990 levels, as well as meeting federal air quality standards.¹⁹

Thank you for your consideration of these comments. If you have any questions, please contact me at mmarkowitz@fchea.org.

Sincerely,



Morry Markowitz
President
Fuel Cell and Hydrogen Energy Association

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FCHEA is the trade association dedicated to the commercialization of fuel cells and hydrogen energy technologies. FCHEA member organizations represent the full global supply chain for hydrogen and fuel cells, including automakers; material, component, fuel cell stack and system manufacturers; hydrogen producers and energy companies; utilities; and end users.

¹⁷ "The Hydrogen Transition: This Time, for Real?," Institute of Transportation Studies. Retrieved June 28, 2017 <https://its.ucdavis.edu/blog-post/the-hydrogen-transition-this-time-for-real/>

"Fuel Cell Electric Vehicles," H₂USA. Retrieved June 28, 2017 <http://h2usa.org/fuel-cell-electric-vehicles>

¹⁸ "Joint Agency Staff Report on Assembly Bill 8: 2016 Assessment of Time and Cost Needed to Attain 100 Hydrogen Refueling Stations in California," January, 2017, Page 2 <http://www.energy.ca.gov/2017publications/CEC-600-2017-002/CEC-600-2017-002.pdf>

¹⁹ "ZEV Action Plan." Office of the Governor, February, 2013, Page 4. [http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf)