**Comments Regarding Volkswagen's ZEV Investment Commitment**
**Submitted December 16, 2017**

## Introduction

The Fuel Cell and Hydrogen Energy Association (FCHEA) appreciates the opportunity to provide comments to the California Air Resources Board (ARB) regarding Volkswagen's Zero Emission Vehicle (ZEV) investment commitment ("investment") in the State of California. FCHEA applauds the ARB for stating important guiding principles for the investment at the Board's Public Input Workshop, held December 2, 2016.

## Background

The Fuel Cell and Hydrogen Energy Association is the trade association dedicated to the commercialization of fuel cells and hydrogen energy technologies. FCHEA member organizations[1] represent the full global supply chain for hydrogen and fuel cells, including automakers; material, component, stack and system manufacturers; hydrogen producers and energy companies; government laboratories and agencies; trade associations; utilities; and end users.

FCHEA supports ZEV as a key pathway to advancing energy independence and to reducing the carbon intensity of transportation fuels. Because fuel cell vehicles (FCV) combine the emissions-free driving of battery electric vehicles (BEV) with the range and convenience of gasoline-powered vehicles, FCHEA urges building refueling infrastructure ("networks") that support bringing these cars to market. Networks include hydrogen fueling stations (HRS) as well as the supply chain for producing, delivering, and storing hydrogen. Growing networks will spur "first mover" advantages for market entrants, leading to new jobs across the hydrogen industry, new strong, vibrant communities committed to the environment, and "cleaner, greener" vehicle-based transportation systems.

[1] Members include Air Liquide, Air Products, Altergy Systems, Anglo American Platinum, Applied Research Center, AREVA, Black & Veatch, Bloom Energy, BMW, California Air Resources Board, California Fuel Cell Partnership, Connecticut Hydrogen-Fuel Cell Coalition, CSA Group, Daimler, Doosan Fuel Cell America, Fuel Cell Energy, Fuel Cell Seminar & Energy Exposition, Fuji Electric, GE-Fuel Cells, LLC, General Motors, Honda, Hydrogenics, Hyundai, Idaho National Laboratory, Intelligent Energy, ITM Power, Johnson Matthey Fuel Cells, LG, McPhy, Methanol Institute, myFC, National Renewable Energy Laboratory, Nebraska Public Power District, Nel Hydrogen, Nissan, Nuvera, Ohio Fuel Cell Coalition, Pajarito Powder, PDC Machines, Plug Power, Proton OnSite, Sandia National Laboratories, Savannah River National Laboratory, Shell, South Coast Air Quality Management District, 3M, The Linde Group, Toyota, TreadStone Technologies, United Hydrogen, Volkswagen, and W.L. Gore & Associates, Inc.

**Invest in Hydrogen Refueling Stations Now**

FCHEA strongly endorses additional investment in HRS. Investment in HRS is vital to increasing the pace of building the robust network needed to fuel to tens of thousands of FCV.

To minimize or eliminate the hydrogen fueling capacity shortfall forecast in 2020[2], investment should be included in each of the investment cycles.

To assure coordination with funding decisions made by the State of California, investment should use the selection process and scoring methodologies used by the CEC and the ARB.

To enhance meeting consumer expectations for network reliability, investment should be used for HRS operations and maintenance and for HRS network support (e.g. equipment used in HRS commissioning and fuel quality/quantity testing services).

To grow a robust supply chain capable of supporting network growth, investment should be used for community college-based training of technicians supporting each aspect of the network supply chain (e.g. hydrogen production, HRS construction, equipment certification, HRS inspection, vehicle maintenance, other).

**Include FCV and Hydrogen in "Transformative" Green City Projects**

ARB encourages investment to support development of "transformational" programs on "breakthrough e-mobility concepts" to further enhance California's transportation electrification goals.[3] ARB listed operation of ZEV car sharing services among the concepts to be considered. Due to advantageous range and durability characteristics, FCV are well-suited for use in such services. FCHEA urges their inclusion in investment-supported car-sharing service fleets.

Further, hydrogen from renewable sources (biomass, water electrolysis powered by wind or solar power) is well suited for inclusion in projects supporting the anticipated Green City Initiative. So, too, are hydrogen storage technologies that enable integration of multiple energy types across multiple applications and users. FCHEA urges their inclusion.

[2] See https://www.arb.ca.gov/msprog/zevprog/ab8/ab8_report_2016.pdf, Page 11.
[3] See https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/meetings/120216_present.pdf, Page 14.

**Include All ZEV Types in Public Awareness Programs**

To help reach California's transportation electrification goals, public awareness programs (e.g. "Ride and Drive" events, outreach activities, social media, other) should expose consumers to the full range of available ZEV types. Because both FCV and battery electric vehicles (BEV) are commercially available in California, FCHEA urges that investment-supported public awareness programs be required to display and to provide driving experiences and consumer information for both FCV and BEV.

**Conclusion**

FCHEA applauds the ARB for stating important guiding principles for the anticipated investment and urges all investment cycles support new HRS construction and support HRS operation and maintenance. FCHEA looks forward to cooperating with California policy-makers and stakeholders to further advance HRS network expansion, public awareness and consumer satisfaction.

**FCHEA Contact**

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