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California Air Resources Board
1001 I Street
Sacramento, CA 95812
Delivered via website

Subject: Subject: Shell comments to CARB regarding VW California ZEV Investment Commitment

Dear Sir/Madam:

Introduction

Shell is submitting the below comments in response to CARB's request concerning the Workshop on the VW settlement. Shell is investing in both plug-in electric vehicle (PEV) and fuel cell electric vehicle (FCEV) pathways/arenas, with a focus on California as a state which has demonstrated its commitment to the reduction of greenhouse gases and looks forward to continuing to work with both the Air Resources Board and VW to advance these goals.

Shell is active in PEVs through the development of its smart charging service which seeks to both reduce the cost of charging for electric vehicle owners and integrate the associated new energy load into the power grid system minimizing the system peak and maximizing the use of daytime renewable energy. After 3 years of extensive trials in UK, Germany and California, working with utilities, CAISO and most importantly PEV drivers, Shell is now working with charge-post infrastructure manufacturers to provide, install and subsequently smart charge electric vehicle charging equipment at locations where vehicles are generally plugged in for several hours e.g. workplaces, fleet home bases and multi-family dwellings.

Shell has been a pioneer in the development of hydrogen refueling since the 1960s, including participation in technology and standards development, and has been active in building hydrogen refueling stations since 1999 including early demonstration refueling sites and operating retail sites in California including Torrance (since 2010) and Newport Beach (since 2012). This experience includes developing and evaluating a variety of technical approaches (e.g., onsite steam methane reformation, onsite electrolysis, tube truck delivery, pipeline delivery, gaseous and liquid) and collaboration constructs. Shell is now investing in hydrogen refueling infrastructure at high-value locations within the Shell-branded retail network, which offers customers with convenience and quality of service equivalent to conventional vehicles, with hydrogen dispensers designed for performance, reliability, and safety.

Both PEV and FCEV will be needed long term for California to meet its goals. For both technologies, the energy supply is a key constraint to consumer adoption. As such, we encourage Volkswagen to invest primarily in the fueling infrastructure that will support their future ZEV sales, with a balance between PEV and FCEV.

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PEV

To accelerate and increase ZEV adoption, we encourage Volkswagen investment in the existing PEV infrastructure marketplace with a balanced approach between extending support to those market segments already the focus of existing schemes e.g. workplaces and multi-unit dwellings and new infrastructure incentive programs to potential PEV driver segments who do not qualify under existing schemes e.g. the EV charging infrastructure programs of the Investor Owned Utilities. For example, workplaces and businesses with smaller vehicle fleets/drivers (those with less than 10 PEVs) should be included in a VW infrastructure support investment program. In addition to dedicated support for charging infrastructure in disadvantaged communities, the VW program should also extend to supporting the provision and installation of such PEV infrastructure for those in lower-middle income communities. This would help to create demand and wider spread adoption of new electric vehicles and in turn provide the knock on benefit of a solid used PEV car market within the first 1-2 VW investment cycles.

Investment in PEV charging infrastructure should follow precedents already established under the Investor Owned Utility programs – namely: i) funding covers the necessary local electrical connection and grid upgrade on a 'make ready' basis and ii) customers are given the choice of charging infrastructure types (Level 1 vs Level 2) – with a clear incentive to select chargers and service providers which are capable of smart charging to maximize charging using renewable energy and minimize incremental load at peak ramp times.

A VW PEV infrastructure investment program should be open to all qualified hardware suppliers and service providers on a level playing field and in turn allow end users the ability to choose providers of a packaged PEV infrastructure and smart charging service.

FCEV

Investment in refueling stations is now the critical component for commercial success with FCEV. Vehicle makers are investing, with Shell and others, and are ready to manufacture vehicles at scale when the refueling network is there to support these customers.

In this the first year of commercial activity, over 1,000 FCEV have been purchased or leased with only 24 refueling stations operating. Toyota and Honda are offering sedans for lease at under $400/mo., with fuel included, which compares with a well-equipped VW Passat on 24-month lease and targets squarely the mass market. With this pricing and marketing from vehicle manufacturers, we can reasonably expect accelerated adoption if access to fueling can be assured.

However, unlike PEV and charging stations, which rely on a PEV fleet that has been growing for over 20 years and on existing electric grid infrastructure, the hydrogen refueling network will not be commercially viable until the vehicle fleet has grown enough to drive sufficient station utilization (the classic "chicken and egg" problem). The Light Duty Vehicle Hydrogen Refueling Infrastructure program through the California Energy Commission with funding authorization from AB 8 is proving an effective bridge for this gap with up to $2.3375mln per station for the first 100 stations. Support will be required beyond the 100th station. Thus, ensuring a portion of Volkswagen's ZEV Investment goes to hydrogen refueling will be complementary and additional to this existing program in further bridging the gap to commercial viability.

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Conclusions

We appreciate Volkswagen's support through their ZEV investment for projects, including operations and maintenance, and trust they will select business partners who will stand the test of time and business cycles. This prudent investment judgment from Volkswagen is an important check against the potential distortions from "free" money that may cause infrastructure regret (e.g., poor utilization) or market contraction (e.g., consolidation followed by poor performance) in the long run. Investments need to go where there is a business model to support ongoing use. At the same time, the investment from Volkswagen will best complement the existing programs and commercial marketplace without distortion by helping to overcome pre-commercial or extra-commercial challenges like scale in the hydrogen refueling network for FCEV adoption and customers with smaller vehicle fleets for PEV adoption. There are strong analogues in the build-out history of ubiquitous systems (e.g., rural electrification or cellular). Thus, we encourage the CARB to consider Volkswagen's private sector investment criteria with equal weight alongside its own priorities and guidance when reviewing the Volkswagen ZEV Investment Plans, while also ensuring funds are directed toward the pre-commercial and extra-commercial challenges.

Shell supports the priorities and guidelines proposed by the CARB workshop on 2 December, with recommendations to: 1) consider Volkswagen's private sector investment criteria alongside its own priorities and guidance while ensuring funds are directed toward pre-commercial and extra-commercial challenges; 2) ensure the emphasis on "early, visible" progress in the first 30-month period does not preclude investments with delivery stretching into the second period, 3) ensure that customer segments which have as yet not been able to benefit from other sources of funding are also included 3) consider favorably the associated benefits to other stated priorities of encouraging the majority of investment in ZEV fueling infrastructure, 4) maintain the strong encouragement for Volkswagen to include hydrogen fueling investment in their plans, and 5) maintain efficient, low-cost, high-likelihood processes to minimize the administrative burden on the commerciality of these early stage endeavors.

Shell has been in contact with Volkswagen and will be making proposals for Volkswagen's consideration in their first 30-month ZEV Investment Plan, and will continue to offer partnering opportunities and listen to Volkswagen needs over the 10-year period of ZEV Investment Plans and beyond as we launch a new era of sharing ZEV mobility customers. We encourage Volkswagen to invest primarily in the fueling infrastructure that will support their future ZEV sales, with a balance between PEV and FCEV.

Sincerely,

Wayne Leighty