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DATE: **December 16, 2016**

TO: **Mr. Mark Williams, Mailstop 3E**
California Air Resources Board (CARB)
P.O. Box 2815
Sacramento, CA 95812
Submitted Electronically

FROM: **Center for Sustainable Energy®**

RE: **Response to the Public Workshop to Discuss Volkswagen's Zero Emission Vehicle Investment Commitment Development Process and Investment Areas and California Zero-Emission Vehicle Investment Plan**

Dear Mr. Williams:

The Center for Sustainable Energy® (CSE) is pleased to provide these comments in response to the December 2, 2016 Public Workshop to Discuss Volkswagen's (VW) Zero Emission Vehicle (ZEV) Investment Commitment Development Process and Investment Areas and the California ZEV Investment Plan.

CSE administers the statewide Clean Vehicle Rebate Project (CVRP) for CARB. In addition, CSE has received California Energy Commission funding for a variety of Alternative Fuel Vehicle (AFV) projects including ZEV readiness projects in the San Diego and San Joaquin Valley regions, and for research on driving the integration of Plug-In Electric Vehicles (PEVs) to maximize benefits to the grid. CSE therefore provides these comments based on its diverse experiences in support of the deployment of the State's ZEVs and its in-depth knowledge of the AFV landscape.

CSE applauds CARB's leadership on VW settlement matters, as well as CARB's broader goals of reducing greenhouse gas (GHG) emissions and improving air quality. Noting that transportation sector emissions account for 37% of state GHG emissions—33% of which are emitted directly from the on road sector—widespread deployment of ZEVs via PEV charging and hydrogen fueling infrastructure will remain one of the crucial tools to pursue State reduction strategies. CARB's continued leadership and proactive initiatives on these matters will lead to the effective leveraging of these unique funds.

CSE provides comments in regards to: (1) the four areas of qualified investments (i.e., ZEV infrastructure, public awareness, increasing ZEV access, and green city projects); (2) CARB's draft guiding principles and recommended priorities for the first ZEV Investment Plan; and (3) advisory comments on the difficulties facing the State in administering these investments and associated recommendations for all investment areas.

1) Strong support for CARB's proposed investment areas, with recommendations

CARB's proposed investment areas are fundamentally consistent with the Partial Decree, Appendix C,[1] support all iterations of California's ZEV Action Plan (2013, 2015, and 2016), and are complementary to a diverse array of legislative initiatives, including California's Senate Bill (SB) 350's Transportation Electrification provisions, as well as SB 1275's ZEV attainment targets.

CSE provides the following comments and recommendations on each proposed investment area:

a. **ZEV Infrastructure:** CSE strongly supports the California ZEV Investment Plan's focus on infrastructure deployment. For PEVs, it is widely recognized that to meet the goals of 1 million ZEVs by 2020 and 1.5 million by 2025, consistent with the ZEV Action Plan, there is substantial need for widespread expansion of PEV infrastructure. The National Renewable Energy Laboratory (NREL) California Statewide PEV Infrastructure Assessment provides a forecast of this need, illustrating demand for approximately 102,000 - 167,000 workplace setting charge points, 22,000 - 49,000 public charge points, and 275 - 775 DC fast charge stations by 2020 in order to accommodate 1 million ZEVs,[2] which would require a substantial upswing from current PEV infrastructure availability.

   Moreover, CSE finds the focus on workplace, multi-unit dwelling, and public charging consistent with State need. While the lion's share of PEV charging occurs at home, charging in public and at work plays a key role in the charging experience, especially as illustrated by NREL's high public access scenario.[3] CSE also sees the need for widespread expansion of hydrogen fueling infrastructure, as there are still major gaps that need to be filled to support hydrogen vehicles.

   CSE provides the following recommendations regarding ZEV infrastructure:

   i. ***Prioritize PEV charging infrastructure focused on smart grid technologies and future grid needs.*** CSE appreciates that CARB's presentation notes Vehicle-Grid Integration (VGI). The Investment Plan presents the State with great opportunity to align with California's emergent smart charging infrastructure needs. Notably, California's policy climate prioritizes the development of smart charging,[4] the use of PEVs as Distributed Energy Resources (DERs),[5] and is exploring the use of PEV

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[1] *Appendix C of Partial Consent Decree, Case 3:15-md-02672-CRB Document 1973-1 Filed 09/30/16; Website Access: https://www.epa.gov/sites/production/files/2016-10/documents/amended20lpartial-cd.pdf*

[2] *National Renewable Energy Laboratory; California Statewide Plug-In Electric Vehicle Infrastructure Assessment; May 2014; Website Access: http://www.nrel.gov/docs/fy15osti/60729.pdf*

[3] *Ibid; "In a home dominant scenario, NREL projects that 3% of EVs will charge in public, with 12% charging at work, and 85% charging at home. In a high public access scenario, up to 8% of EVs will charge in public, with 22% charging at work, and 70% charging at home. Website Access: http://www.nrel.gov/docs/fy15osti/60729.pdf*

[4] *2016 ZEV Action Plan; Website Access: https://www.gov.ca.gov/docs/2016_ZEV_Action_Plan.pdf*

[5] *From California's Distributed Energy Resources Action Plan: Aligning Vision and Action Discussion Draft: September 29, 2016: Wholesale DER Market Integration and Interconnection Vision Elements include: "Electric vehicle charging systems, and mobility and driving behaviors, can be predicted and overseen in the grid operations" ; Website Access: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Commissioners/Michael_J._Picker/2016-09-26%20DER%20Action%20Plan%20FINAL3.pdf*

charging with Vehicle-Grid Integration (VGI) capability.[6] This "grid of the future" will be achieved through integrated charging and load management support capability. As such, to support the evolving grid and later generations of California's PEV infrastructure, CSE recommends that priority be given to the deployment of technology with VGI capabilities, including networking, communication, demand response, and bidirectional charging.

ii. ***Include criteria to support the deployment of PEV charging infrastructure in Disadvantaged Communities (DACs)***. It is recognized that there is a lack of charging infrastructure, especially in disadvantaged communities (DACs). Legislation, such as SB 1275 and SB 350, contain provisions specifically to promote ZEV access in these communities. In addition, SB 535 and Assembly Bill (AB) 1550 have set the key policy framework to invest in DAC communities. To support these mandates, there should be minimum percentage requirement for DAC charging infrastructure, targeting regions that lack PEVs and PEV infrastructure. Additionally, these investments should be coordinated with—to the greatest extent possible—the PEV infrastructure applications that have been presented by the three major Investor-Owned Utilities (IOUs) (i.e., San Diego Gas and Electric Company, Southern California Edison, and Pacific Gas and Electric Company[7]) and approved by the California Public Utilities Commission (CPUC).

iii. ***Leverage PEV readiness plans and their outputs.*** CSE appreciates that CARB will provide guidance to VW regarding the State's diverse PEV readiness plans as this will help support the expeditious deployment of PEV infrastructure. Notably, a recent Idaho National Lab study demonstrates the value of such planning; indicating that PEV charging in 'planned' vs 'non-planned' areas experienced an 87% increase in utilization.[8] In addition, CARB should seek to guide investments in initiatives that leverage the output from this planning (e.g., PEV readiness committees, streamlined PEV codes and standards, streamlined PEV permitting practices), which are key signifiers of PEV readiness. Fundamentally, there is a wide range of functional and existing resources—such as the PEV readiness plans—which will support VW to demonstrate expeditious, early, and visible progress towards infrastructure deployment.

b. Public Awareness: CSE applauds the Plan's focus on public awareness initiatives. There remains high-level decision-maker agreement that campaigns to increase ZEV consumer awareness are needed and will only increase in importance as the State strives to meet aggressive statewide ZEV targets. Through the ZEV Action Plan 2013, the Governor's Office and CARB established a policy goal to participate in consumer outreach campaigns that raise awareness about the

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[6] *2016 ZEV Action Plan, Page 28: "Support state- and federally-funded VGI pilots that help commercialize applications that aggregate vehicles as distributed energy resources, enhance communication, and control functionality between vehicle and grid infrastructure, and derive value for vehicles (PEV or FCEV) as flexible load and storage in grid support applications; Website Access: https://www.gov.ca.gov/docs/2016_ZEV_Action_Plan.pdf*

[7] Pending CPUC approval at its December 15, 2016 voting meeting

[8] *How Does Utilization of Non-Residential EVSE Compare Between those Installed in Oregon in Planned versus Unplanned Locations?; April 2015; Website Access: https://avt.inl.gov/sites/default/files/pdf/EVProj/UtilizationOfNonResEVSEInstallationVsPlan.pdf*

availability and benefits of ZEVs and offer driving opportunities.[9] In addition, the draft 2015 ZEV Action Plan supported a statewide public campaign that enables 20 million test-drives of ZEVs by Californians over the next eleven years (2015-2025),[10] which suggests exposure to an average of 1.8 million Californians per year. Education and Outreach (E&O) targets are also embodied in the recently-released 2016 ZEV Action Plan, which sets even more ambitious goals to initiate a national education campaign on ZEVs.[11]

CSE provides the following recommendations regarding Public Awareness:

i. ***CSE recommends the use of a single, statewide administrator for E&O activities***. CSE's experience implementing statewide E&O activities to inform consumers about the CVRP rebate has proven that there are potential benefits to implementing statewide E&O activities through a single entity. These benefits include (and are not limited to): consistent messaging and education (including the assurance of messaging firmly aligned with statewide transportation policy); the streamlining of event processes and practices; economies of scale and the reduction of redundancies; uniform data gathering and communications practices; and homogeneity in evaluating project success and opportunities for improvement. CSE strongly believes that through control of these factors, wide-reaching statewide consumer E&O efforts can act as accelerants to support California to meet its ZEV goals.

ii. ***The E&O campaign should be multi-lingual and culturally-sensitive.*** Recognizing California's multicultural landscape, these funds should be used to facilitate a multi-lingual consumer awareness campaign that targets communities with limited knowledge of air pollution impacts. E&O in remains a critical component to increase awareness in communities that currently do not have high uptake of clean vehicles. These investments should create a multi-lingual campaign that addresses the impact of air pollution and provides solutions to help clean up their community.

c. Increasing ZEV Access: CSE widely agrees with program investments in scrap and replace, car-share services, rideshare or ride hailing services, and autonomous vehicle services. CSE also strongly agrees with investments targeting accelerated adoption in underserved communities, which includes DACs and low- and moderate-income (LMI) households. The State's CalEnviroScreen identifies Central Valley and Southern California communities and corridors — especially in areas surrounding ports and DACs — as exhibiting some of the worst air quality conditions in the State and nation. These challenges are compounded by the fact that highly traveled areas in and around major roadways and freeways were most likely disproportionately impacted by VW's diesel vehicle emissions. Because of the pollution impacts in these communities, it is more crucial to deploy ZEVs to these communities to help reduce air pollution.

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[9] *2013 ZEV Action Plan: A roadmap toward 1.5 million zero-emission vehicles on California roadways by 2025. Website Access: http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf*

[10] *2015 ZEV Action Plan: An updated Roadmap toward 1.5 Million Zero-Emission Vehicles on California Roadways by 2025 Governor's Interagency Working Group on Zero-Emission Vehicles, April 2015, page 10. Website Access: http://gov.ca.gov/docs/DRAFT_2015_ZEV_Action_Plan_042415.pdf*

[11] *2016, ZEV Action Plan: An updated roadmap toward 1.5 million zero-emission vehicles on California roadways by 2025. Page 15; Website Access: https://www.gov.ca.gov/docs/2016_ZEV_Action_Plan.pdf*

CSE provides the following recommendations to help guide practices to increase ZEV access:

i. ***Adopt policy guidance per AB 1550.***[12] Recent legislation modifies funding distribution provisions to the State's DACs and low-income households, which should be used to guide VW's investments. The modifications per AB 1550 will support low-income households who reside outside of CalEnviroScreen-identified DAC census tracts, which can lead to expanded access to low-income consumers where those consumers do not reside in DACs. Low-income consumers should have access to programs even when they reside outside of DACs, which the inclusion of AB 1550's funding distribution provisions would ultimately support.

ii. ***Establish a "group buy" program or aggregated purchasing set price for LMI households.*** These types of programs can offer ZEV purchases at a reduced and set price. There are multiple cases where group purchase programs have dramatically boosted PEV adoption by lowering vehicle purchase and lease costs. Example programs include a recent Fiat 500e group buy program, which led to 100 vehicles sold in a week,[13] as well as a Nissan Leaf group buy in Montreal that sold 2,800 PEVs.[14] Sonoma Clean Power Authority also has an existing Bulk Electric Vehicle Purchase and Lease Pilot.[15] In addition, to promote PEV charging in homes, it is recommended that PEV purchases also include a charging station purchase under similar bulk buy provisions and as part of the program.

iii. ***Prioritize the creation of car-sharing programs in communities that have limited public transportation options and/or no local car-sharing operations*.** More rural areas of California, especially the Central Valley and San Fernando Valley, face additional challenges with access to basic public transportation infrastructure and thus are ideal areas for PEV program investments in car and ride sharing.

d. The Green City Project: CSE strongly agrees with the opportunity to leverage these investments to demonstrate concentrated investments in a high density district or region and agrees with the examples as detailed in slide 27 presented at the workshop.[16] This infrastructure-level

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[12] *AB 1550 requires that 25% of the Greenhouse Gas Reduction Fund (GGRF) be spent on projects located within disadvantaged communities (DACs) and requires that an additional 5% be spent on projects that benefit low-income households.*

[13] *Group Buy Of Fiat 500e Electric Cars Ignites 'Feeding Frenzy,' 100-Plus Bought; Website Access: http://www.greencarreports.com/news/1097299_group-buy-of-fiat-500e-electric-cars-ignites-feeding-frenzy-100-plus-bought*

[14] *2016 Nissan Leaf group buy in Montreal signs up 2,800 for low price on electric car; Website Access: http://www.greencarreports.com/news/1105474_2016-nissan-leaf-group-buy-in-montreal-signs-up-2800-for-low-price-on-electric-car*

[15] *Website Access: https://sonomacleanpower.org/wp-content/uploads/2016/07/2016.09.12-SCPA-BOC-Packet.pdf*

[16] *A Green City project should include multiple types of investments, such as: a) Zero emission transit; b) Zero emission freight vehicles; c) Car Sharing; d) Vehicle grid integration implementation; and e) Incorporation of renewable energy with ZEV infrastructure.*

approach is fundamentally consistent with State policy and complements parallel programs and initiatives underway in the State.[17]

CSE provides the following recommendations to help the guide Green City Project design:

i. ***Set ZEV penetration targets to be achieved by 2020 and 2025***. The Green City Project should be evaluated based on its capability to increase ZEVs, with a clear and concise goal to measure program success based on two key policy dates.[18] Priority should be given to a project that can forecast and demonstrate the most ZEV acceleration. To measure and manage this trajectory, CSE recommends that the Green City Project quantify and publish information on anticipated and attained ZEV adoption rates. CVRP Rebate statistics, which provide a proxy of ZEV adoption, can provide useful data to inform such targets for the Green City Project.[19]

ii. ***Set targets for publicly-accessible EV charging and hydrogen fueling infrastructure***. A successful Green City Project will ensure that there is access to an assorted array of clean technology offerings across diverse geographies and communities. This should take the form of publicly accessible PEV charging and hydrogen fueling, as well as other clean technology offerings, which can be measured and evaluated to analyze project success. It is strongly recommended that specific per capita targets be set to evaluate clean technology infrastructure deployment success. These targets should be consistent with targets that are set by California's policymakers to achieve state ZEV goals and not by VW.

iii. ***Operate the Green City Project using very high renewable energy (RE) content electricity***. CSE appreciates that CARB notes the potential to link RE with ZEV infrastructure via the Green City Project. This project should provide insight into how California's future cities will use and manage energy. As such, the project presents a major opportunity to demonstrate the use of low carbon intensity (CI) electricity for PEV charging and electrification of the Green City Project's infrastructure. Recognizing that electricity generation alone creates 20% of the State's GHG emissions,[20] creating a very high RE electricity strategy aligns and is fundamentally consistent with the State's de-carbonization efforts embodied in the Renewable Portfolio Standard and recent legislation.[21] Through the use of very high RE content electricity, the project could demonstrate the use of electricity with CI well below state averages,[22] while supporting the pursuit of California's more

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[17] Programs with related policy include the Affordable Housing and Sustainable Communities Program, the Transformative Climate Communities Program, and California High-Speed Rail Project.

[18] These two dates (2020 and 2025) represent the ZEV attainment goals as illustrated in the 2013 ZEV Action Plan.

[19] Center for Sustainable Energy (2016). California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics. Data last updated December 01, 2016. Retrieved 12/12/2016 from https://cleanvehiclerebate.org/rebate-statistics

[20] California Greenhouse Gas Emission Inventory: 2000 – 2014; VERSION June 17, 2016; Website Access: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_trends_00-14_20160617.pdf

[21] SB 350 "requires that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50% by December 31, 2030. Website Access: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

[22] As Reported in Low Carbon Fuel Standard Regulation, Table 6, the average mixture for California electricity is 105.16 gCO e/MJ); Website Access: http://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf

aggressive, widespread, and long-term goals aimed at deep GHG emissions reductions for both the transportation and electricity sectors.

2) Support for draft guiding principles and recommended priorities, with proposed modification

CSE widely supports CARB's draft guiding principles and recommended priorities, as each of these diverse tactics are aligned with the goal of accelerated ZEV adoption.

a. **CSE recommends modification to the order of priorities**. As depicted in slide 25 presented at the workshop,[23] CSE suggests that Zero Emission Transit should be moved up to priority 2, with Community-based car-share programs moved down to priority 3. CSE widely supports the development of community-based car-share programs, which can accelerate ZEV adoption in targeted areas. However, placing Zero Emission Transit as a higher priority is justified, as Zero Emission Transit will have greater positive effects on DACs and all communities generally. Zero Emission Transit will induce mode shift, is likely to have a higher participation rate by providing low barriers to its access, and also provides more capacity on a passenger per mile basis. These factors suggest justification for higher prioritization of Zero Emission Transit over Community-based car-share programs, at least in the short term, as community-based car-share programs continue to be scaled across the State.

3) Advisory comments on the difficulties facing the State in administering these investments and associated recommendations for all investment areas

CSE provides advisory comments based on our experience as the CVRP administrator. To ensure program success, CSE recommends the five aspects of successful program administration:

a. Transparency: One major challenge with maintaining support for clean transportation programs is a lack of transparency on the distribution of funds and program evaluation efforts. Publicly and readily accessible program data, including comprehensive reporting and user-friendly dashboards, are now considered to be best practices for ensuring program transparency in clean transportation incentive program management. These types of offerings give the general public and elected officials confidence that programs are meeting intended goals and, if not, can be adjusted accordingly. This confidence further builds stakeholder support for said programs.

b. Equity: Existing programs to promote clean transportation technologies have been critiqued for their uneven impacts on diverse geographies, communities, and stakeholders. A strong focus on outreach to historically underserved communities and small fleets builds broader support for clean transportation incentive programs. In addition to outreach, program design has, in many cases, evolved to increase access for disadvantaged communities (DACs), individuals, and agencies.

[23] *Volkswagen California ZEV Investment Commitment Public Input Workshop December 2, 2016; Powerpoint; Website Access: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-zevinvest/meetings/120216_present.pdf*

c. **Centralized Processing:** The local administration of incentive funds poses challenges and is cautioned against. Local administration, beneath the statewide level, would create a severe duplication of effort, increase overhead costs and fraction impacts. The lack of a consistent point of contact and brand identity would overwhelm and confuse many organizations seeking to apply. Centralized administration reduces overhead costs and provides larger programmatic opportunities. As an example, centralized processing provides better data for state level E&O, which in turn makes it easier for administrators to adjust and improve incentive programs during different phases of market transformation.

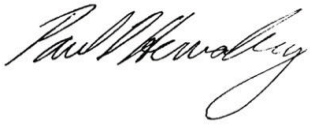
d. **Technical Assistance:** Experience has shown that third-party technical assistance is a key element of successful clean transportation incentive programs. Fleet managers, planners and other decision-makers are generally overwhelmed by advanced vehicle technology options and the infrastructure or facilities modifications that they require. Third-party technical assistance offerings provide fleets with a necessary understanding of the advanced vehicle eco-system (i.e., vehicle options, infrastructure, incentives) frequently otherwise unavailable.

e. **General Program Design Recommendations**: We recommend CARB that incorporate these recommendations and best practices into any Request for Proposals issued for the administration of these funds or in its own program design deliberations. We also encourage CARB to leverage existing market development partners, including but not limited to Clean Cities Coalitions, university extension services, Advanced Transportation Centers, and other nonprofits, as administrators or as recommended partners in a Request for Information. Leveraging stakeholder-based implementers will help guarantee that funds are targeted and spent with maximum impact for air quality benefits and the market acceleration of clean transportation technologies.

Conclusion

CSE appreciates the opportunity to provide these comments for your review. Please continue to consider CSE a resource on these and other matters, and feel free to reach out to Paul D. Hernandez, CSE's Transportation Electrification Policy Manager, with any questions or for clarifications regarding these comments.

Respectfully Submitted,



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ABOUT CSE: *CSE is a national nonprofit organization that works with consumers and organizations of all sizes to accelerate the transition to a sustainable world powered by clean energy. CSE works with policymakers, public agencies, local governments, utilities, business and civic leaders to transform the energy marketplace and accelerate the transition to a clean energy future. Our clean energy future depends on a strong, low-carbon economy that provides abundant jobs and business opportunities, a high quality of life and a clean, healthy environment. This includes the accelerated adoption of Zero-Emission Vehicles (ZEVs) and transportation electrification (TE) technologies, renewable energy (RE), distributed generation (DG), energy efficiency (EE) and building performance (BP) technologies—all of which can work together to contribute to air quality improvements and greenhouse gas (GHG) emissions reductions to meet our long term goals.*