March 9, 2018

VIA ELECTRONIC MAIL

Bureau of Air Management, Mobile Sources Division
Connecticut Department of Energy and Environmental Protection
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RE: Comments Regarding Connecticut's Draft Mitigation Plan under the Volkswagen Environmental Mitigation Trust Agreement

To Whom It May Concern:

Thank you for the opportunity to comment on the Connecticut Draft Mitigation Plan ("Plan") under the Volkswagen Environmental Mitigation Trust Agreement ("EMT") developed by the Connecticut Department of Energy and Environmental Protection ("DEEP" or "the Department"). We thank the Department for its transparent decision making process to date and for its continued engagement of Connecticut residents in the development of this Plan.

The recommendations identified below seek to ensure that the investments pursued by DEEP through the EMT are consistent with the state's long-term transportation and climate goals while meaningfully reducing nitrogen oxides ("NOx") and other contaminants in communities most heavily burdened by air pollution. As recognized by DEEP, Connecticut suffers from elevated levels of ground-level ozone, significant precursors of which are emitted by the state's transportation sector. The VW settlement provides a timely opportunity to mitigate these harmful precursor emissions while simultaneously helping to ensure Connecticut achieves the greenhouse gas ("GHG") reduction targets establish in the Global Warming Solutions Act.[1] We offer the following recommendations to improve the Plan and maximize the impact of EMT funds:

- DEEP should increase the impact of its commitment to investing 15 percent of the EMT funds in light-duty electric vehicle supply equipment ("EVSE") by coordinating its investments with other infrastructure investments occurring through Appendix C of the VW settlement and by pairing its investments with education and outreach regarding other federal, state and local electric vehicle ("EV") incentives and programs that promote EV ownership.

- DEEP should emulate other states in ensuring that a large percentage of the EMT funds is reserved for projects that will occur in and directly benefit communities in Connecticut most heavily burdened by NOx and ozone pollution.

[1] State of Connecticut, An Act Concerning Connecticut Global Warming Solutions (2008), available at https://www.cga.ct.gov/2008/ACT/PA/2008PA-00098-R00HB-05600-PA.htm.

- DEEP should prioritize use of electric technologies over fossil-fueled alternatives to promote the long-term transformation of Connecticut's transportation sector and achieve important climate co-pollutant benefits.

- Investments that defray the incremental up-front cost of electric transit buses are a highly cost-effective use of VW settlement funds that can yield significant air pollution benefits in overburdened communities, produce transformative change in Connecticut's transportation sector, and achieve significant reductions in GHG emissions. Bringing electric school buses to low-income and communities of color where students and families have been disproportionately impacted by air pollution would also be a beneficial use of VW settlement funds.

We explain each recommendation in more detail below.

I. DEEP should magnify the impact of its committed 15 percent investment in light-duty EVSE by coordinating this investment with other infrastructure investments and pairing it with education and outreach efforts.

In October 2013, the Governor of Connecticut along with governors of seven other states signed a Memorandum of Understanding agreeing to put 3.3 million zero emission vehicles on the road in the signatory states by 2025 ("ZEV MOU").[2] As of January 1, 2018, Connecticut has approximately 7,500 EVs.[3] In order to achieve the commitments under the ZEV MOU, Connecticut must aggressively promote electric vehicle sales by overcoming barriers for both drivers and vehicle dealers. As access to convenient EV charging infrastructure represents one of the largest remaining barriers to EV adoption, we strongly support DEEP's use of the maximum 15 percent of its Volkswagen EMT funds for light-duty EVSE. To maximize the impact of this investment, we urge that it be supplemented by other strategic efforts.

One strategy that would amplify DEEP's EMT efforts is to pair buildout of EVSE with (separately funded) education and outreach regarding federal, state and local incentives for EVs and EV charging infrastructure.[4] This includes providing information about existing federal tax credits for purchasing electric vehicles as well as state rebates such as Connecticut's CHEAPR Program, which was recently commended for its two-pronged approach to encouraging EV sales.[5]

It is also critical that Connecticut synergizes its EVSE buildout with investments already occurring in the state and on the broader northeast highway corridors through other sources of

[2] CT DEEP ZEV Program Implementation Task Force, Multi-State ZEV Action Plan (2014), available at http://www.ct.gov/deep/lib/deep/air/electric_vehicle/path/multi-state_zev_action_plan_may2014.pdf.
[3] Advanced Technology Vehicles Sales Dashboard (sales data for Connecticut for 2011 through 2017), available at https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/. The 7,501 total includes 2,896 battery electric vehicles and 4,605 plug-in hybrid electric vehicles.
[4] EV education in not an eligible use of Appendix D funds.
[5] Governing, A Critical Partnership in the Push for Electric Cars (2018), http://www.governing.com/commentary/col-electric-car-sales-connecticut-dealer-rebate.html. By providing rebates for not just the consumer but also the dealer, Connecticut is forward thinking in its approach to electrifying our transportation sector.

funding. One key EVSE effort is through the Volkswagen settlement's ZEV Investment (Appendix C), of which the first cycle of investments is scheduled to complete by the end of the present year,[6] and for which Electrify America was seeking comment for the second cycle through March 1, 2018.

In making any investments in direct current fast charging stations to promote intercity travel, DEEP should make use of the Georgetown Climate Center and M.J. Bradley & Associates' electric vehicle corridor analysis tool.[7] This tool includes an interactive map of public fast charging infrastructure along corridors in the region and identifies which highway exits are best candidates for additional charging investments. However, given the ongoing efforts to promote EV corridor travel through Appendix C settlement funding, investments by Connecticut in intracity fast chargers may provide the greatest incremental benefit to Connecticut residents. Not only is the intracity fast charging market segment currently underserved by the competitive market, but unlike fast chargers on major highway corridors (which may be used by drivers passing through the state), these intracity fast chargers will be more heavily used by Connecticut residents. Moreover, these intracity fast chargers can promote more equitable adoption of EVs by providing access to convenient charging for residents who live in multi-family homes or otherwise lack access to dedicated off-street parking, a group that is less affluent and less well served by the current market for EVs and EVSE.

II. DEEP should ensure that a large percentage of the EMT funds is reserved for projects that will occur in and directly benefit communities in Connecticut most heavily burdened by NOx and ozone pollution.

Section 5.2.10 of the Volkswagen EMT Agreement specifically states a Beneficiary's Plan must provide:

> A description of how the Beneficiary will consider the potential beneficial impact of the selected Eligible Mitigation Actions on air quality in areas that bear a disproportionate share of the air pollution burden within its jurisdiction.

To date, a number of states have not only *considered* potential benefits on disproportionately burdened communities, but have actually earmarked funding for projects that will benefit these communities. For example, Washington D.C. in its mitigation plan identifies overburdened communities by overlaying asthma rates with income level, and then goes on to provide that 52 percent of its funding go towards mitigation projects servicing these neighborhoods at least 75 percent of the time over an eight year period.[8] Washington D.C.

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[6] Electrify America, Cycle 1 National ZEV Investment Plan (2017)), https://www.electrifyamerica.com/our-plan.
[7] Available at http://www.georgetownclimate.org/articles/new-ev-corridor-analysis-tool-for-northeast-and-mid-atlantic-states.html.
[8] DC Department of Energy and Environment, The District's Draft Spending Plan For Volkswagen Settlement Funds (2017) , available at https://doee.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/The%20District%27s%20Draft%20Spending%20Plan%20for%20Volkswagen%20Settlement%20Funds%20%28Draft%20Beneficiary%20Mitigation%20Plan%29.pdf.

further encourages equitable project development by offering additional funding to projects targeting the top two most at-need of these neighborhoods in the District.[9]

Multiple states have further highlighted environmental justice concerns in their Plans by listing specific tools used to identify disproportionately impacted communities. For example, Washington State will use environmental justice tools such as *Washington Tracking Network* and *Ecology Comprehensive Emissions Inventory*.[10] Additionally, Ohio includes a map in its Plan highlighting communities identified using the U.S. EPA's *EJScreen: Environmental Justice Screening and Mapping Tool*. Ohio states these environmental justice communities will receive primary and secondary priority for available funds.[11]

While listing its objectives, DEEP notes it will support "statewide energy, environmental and economic development goals while also taking into account environmental justice considerations associated with each proposed eligible mitigation project." Recognizing DEEP's commitment to environmental justice in its own 1993 Environmental Equity Policy, we urge DEEP to: (1) include benefits to overburdened and environmental justice communities as a stand-alone priority for the state in its Plan, (2) commit to allocating a significant portion of EMT funds towards these communities, and (3) include a map/list of Connecticut's environmental justice communities in addition to non-attainment counties in order to allow project developers to align their proposals with the most at-need populations within Connecticut.

III. DEEP should prioritize use of electric technologies over fossil-fueled alternatives to promote the long-term transformation of Connecticut's transportation sector and achieve important climate co-benefits.

The Volkswagen EMT Agreement authorizes different cost share percentages for different fueling technologies with the intention of making fully electric conversions more feasible. DEEP should take advantage of this opportunity and drive forward our transportation sector towards a completely electric future. As such, we are supportive of DEEP's use of Diesel Emissions Reduction Act ("DERA") funds to drive electrification of transport vehicles and equipment, such as through truck stop electrification and electric repowering of diesel-fueled transport refrigeration units.

A valuable strategy to further support electrification, as employed by the Colorado Department of Public Health and Environment,[12] is to use the Volkswagen EMT funds to cover the incremental costs of cleaner electric vehicles as compared to dirtier fossil-fueled vehicle counterparts (e.g., diesel, compressed natural gas, propane), thereby eliminating the up-front cost differential between technologies. Connecticut should be pursuing this type of transformative change rather than simply subsidizing incremental changes that will not allow Connecticut to achieve its Global Warming Solutions Act goals. While the primary focus of the EMT is on

[9] *Id.*
[10] Department of Ecology State of Washington, Proposed Volkswagen Beneficiary Mitigation Plan (2017), available at https://ecology.wa.gov/DOE/files/41/417a6510-a669-4a10-927d-4ebc02282f4a.pdf.
[11] Ohio EPA, Draft Beneficiary Mitigation Plan (2017), available at http://epa.ohio.gov/Portals/42/documents/VW/OH%20Draft%20VW%20Beneficiary%20Mitigation%20Plan.pdf.
[12] CDPHE, Proposed Beneficiary Mitigation Plan Volkswagen, Audi, and Porsche Clean Air Act Settlements (2017), available at https://www.colorado.gov/pacific/sites/default/files/AP_VW_Beneficiary_Mitigation_Plan.pdf.

reducing NOx emissions—which, as recognized by DEEP in its Plan, is a critical need for Connecticut given its nonattainment ozone levels—strategies to mitigate NOx emissions can also have substantial climate co-benefits. As other states have recognized, these co-pollutant benefits are important. For example, Colorado identifies as a goal of its mitigation plan to "[m]aximize the trust's air quality benefits in Colorado, including reductions of NOx, greenhouse gases, and other pollutants."[13] The District of Columbia likewise notes that "[t]he principal air pollutants of concern in the District are NOx, fine particles (PM2.5), ozone, greenhouse gases (GHG), and air toxics" and that, "[a]lthough the VW Settlement is primarily focused on reducing NOx emissions, the District has also decided to consider reduction of PM2.5, GHGs, and air toxics in developing this spending plan."[14] And Minnesota expressly targets emission reductions in three categories: NOx, PM2.5 and GHGs.[15] Based on the composition of the New England grid and commitments Connecticut and the other Regional Greenhouse Gas Initiative States have made to further reduce electric sector GHG emissions and promote renewable energy, the co-pollutant benefits of electric vehicles relative to fossil-fuel alternatives are large and will continue to grow.

Moreover, electric vehicles predominate over fossil-fueled technologies in other categories besides climate benefits. Although some commenters on the initial Draft Plan suggest diesel and compressed natural gas ("CNG") fueled vehicles are the most cost effective options, this fails to consider lifetime costs. As explained below in Section IV below, low and stable electric fueling costs combined with minimal maintenance costs for electric transit buses (70 percent less) result in hundreds of thousands of dollars in lifecycle savings for fleet managers per vehicle. Additionally, although diesel and CNG backers argue the technology is well-recognized, electric medium- and heavy-duty vehicles have long since joined the ranks of demonstrated, proven transportation technologies. As of September 2017, California has over 400 zero-emission buses in operation and awarded throughout the state,[16] and as of September 2017, Worcester Regional Transit Authority has reduced 780 tons of CO_2, eliminated 110,700 gallons of diesel, and saved over $100 thousand in fuel costs alone with six battery electric transit buses in operation since 2013.[17] The VW EMT is Connecticut's opportunity to fully join this national shift away from fossil fueled vehicles and towards electric transit.

Unlike any other investment, a commitment to electrification of the transportation sector will completely eliminate tailpipe emissions, maximize health improvements for Connecticut residents long-term, and benefit our in-state economy by shifting money away from foreign fossil fuels and funneling money instead towards in-state generated electricity. Although we

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[13] Colorado Proposed Beneficiary Mitigation Plan: Volkswagen, Audi, and Porsche Clean Air Act Settlements (Aug. 28, 2017), at 8, available at https://www.colorado.gov/pacific/sites/default/files/AP_VW_Beneficiary_Mitigation_Plan.pdf.

[14] DC Department of Energy and Environment, The District's Draft Spending Plan For Volkswagen Settlement Funds (2017), at 2, available at https://doee.dc.gov/sites/default/files/dc/sites/ddoe/page_content/attachments/The%20District%27s%20Draft%20Spending%20Plan%20for%20Volkswagen%20Settlement%20Funds%20%28Draft%20Beneficiary%20Mitigation%20Plan%29.pdf.

[15] Minnesota Pollution Control Agency, Minnesota's Volkswagen Settlement Beneficiary Mitigation Plan – DRAFT (Feb. 2018), at 13, available at https://www.pca.state.mn.us/sites/default/files/aq-mvp2-32a.pdf.

[16] California Air and Resources Board (2017) Battery and Fuel Cell Electric Buses in California https://arb.ca.gov/msprog/ict/zbusmap.pdf.

[17] MassDOT, Worcester Regional Transit Authority Battery Electric Bus Deployment Project (2017), avialble at www.umasstransportationcenter.org/Document.asp?DocID=319.

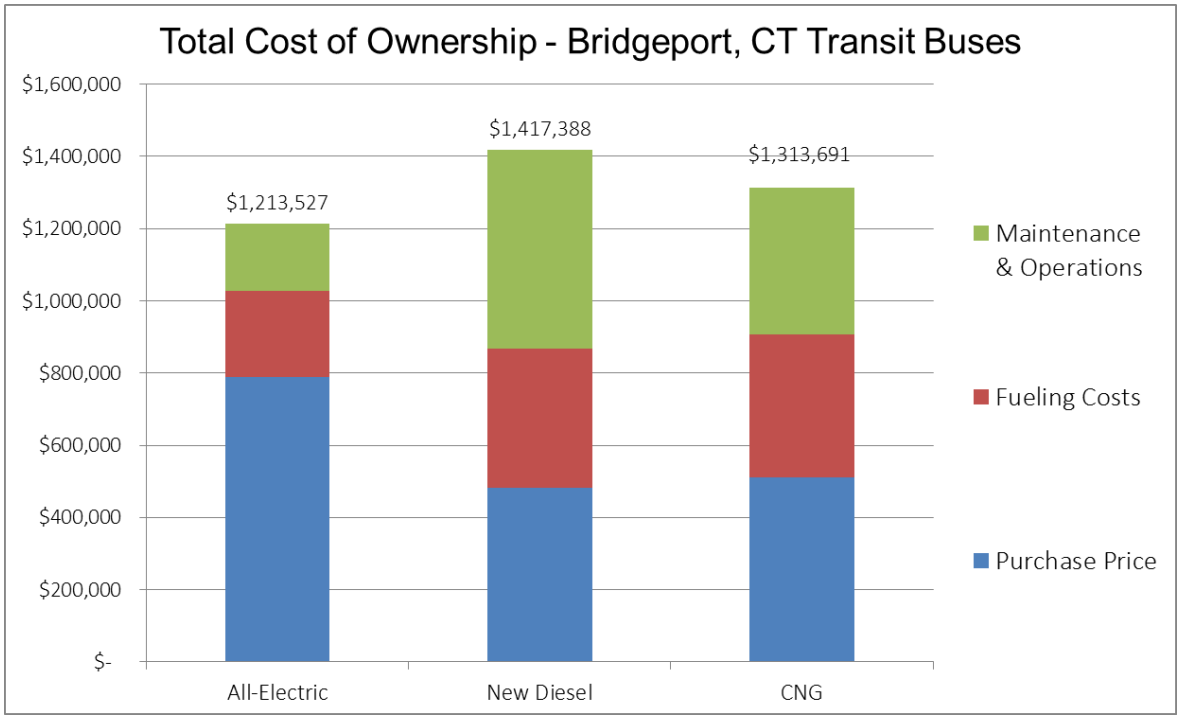
appreciate DEEP's intention to select the most cost-effective proposals in attempts to maximize EMT funds, adopting a myopic view of cost-efficacy that focuses only on up-front costs is shortsighted and hinders the opportunity for citizens to fully benefit from long-term economic, environmental, and health gains achieved through electrification of Connecticut's transportation sector.

IV. Investments that defray the incremental up-front cost of electric transit buses are a highly cost-effective use of VW settlement funds that can yield significant air pollution benefits in overburdened communities, produce transformative change in Connecticut's transportation sector, and achieve significant reductions in GHG emissions.

We urge DEEP to allocate a substantial fraction of its EMT funding to defraying the up-front cost of electric transit buses so that Connecticut's communities, especially those most impacted by pollution, do not miss a unique opportunity to upgrade their public transportation. Further, even if transit buses do not receive earmarked funding in the Plan, we urge DEEP to ensure that requests for proposals ("RFPs") for EMT funding are updated so as not to exclude or dissuade project proposals involving electric technologies—especially electric transit buses.

Electric transit buses are market-ready technologies that will promote electrification of our transportation sector, further Connecticut's commitment to addressing environmental justice communities, and save money over the lifecycle of the transit bus. No non-electric technology will completely eliminate all tailpipe emissions or appreciably reduce GHG emissions. DEEP should consider the long-term, net impacts of the EMT investments, recognize that low fueling and maintenance costs of electric transit buses lead to lower lifecycle costs as compared to diesel or CNG (see Figure 1), and therefore prioritize funding towards these electric technologies.

Figure 1. Comparative lifecycle costs of transit bus technologies.



Source: Argonne National Laboratory, AFLEET Model, available at https://greet.es.anl.gov/afleet_tool. Fuel prices are adjusted for Bridgeport, Connecticut and assumptions regarding the electric grid are based on the region containing Connecticut. Model inputs are populated using averages of fuel economy and maintenance costs reported by transit agencies from the years 2014 to 2017

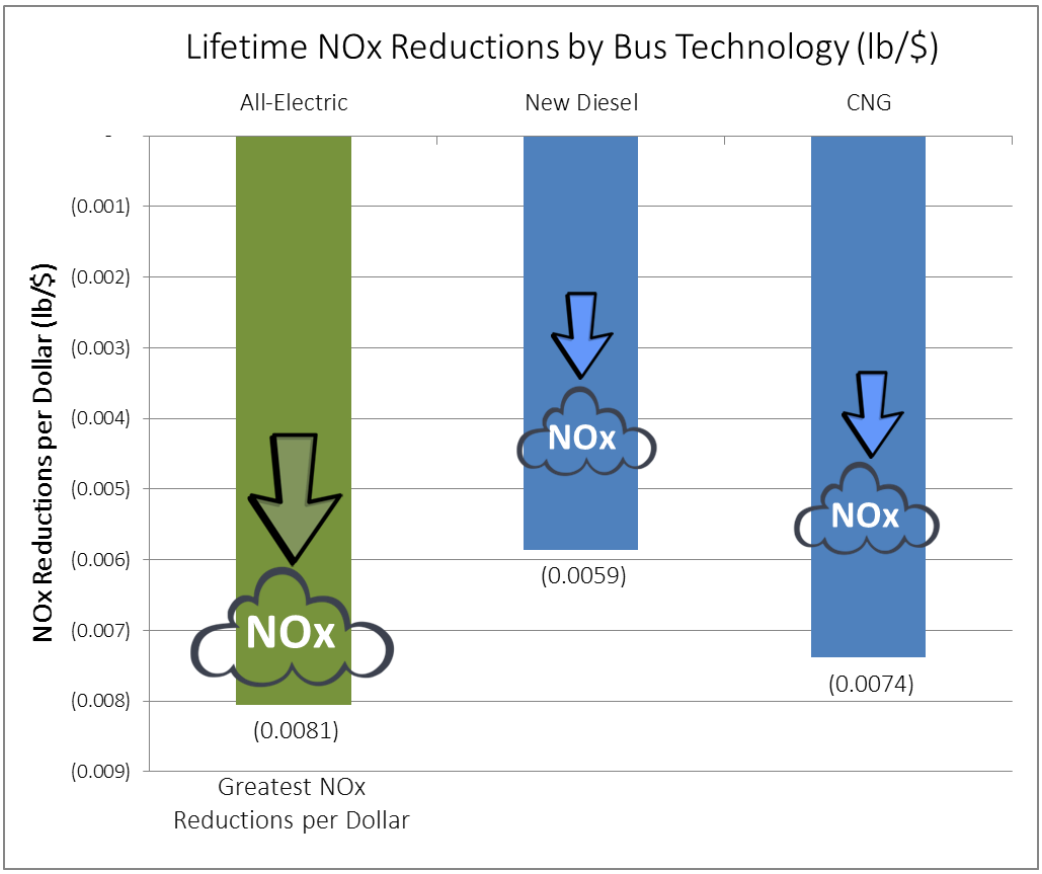
We appreciate that DEEP states it will implement projects that will "expedite deployment and widespread adoption of zero emission and near-zero emission vehicles and engines." Throughout its Plan, DEEP can encourage rather than discourage these zero emission technologies by updating its project criteria using a long-term benefit lens. Specifically, rather than prioritizing "projects scaled to achieve the greatest NOx emission reduction or offset per dollar invested (i.e. capital cost effectiveness in dollars/ton)," DEEP should prioritize projects scaled to achieve the greatest NOx emission reduction or offset per *total* dollar invested (i.e. *lifecycle* cost effectiveness in dollars/ton). With this long-term investment perspective, DEEP will promote rather than dissuade zero emission electric transit bus proposals since these buses achieve the lowest dollars/ton ratio as compared to diesel and CNG fueled transit buses (see Figure 2).[18]

By adapting this lifecycle approach and encouraging electric technologies, Connecticut will truly prioritize its "statewide energy, environmental and economic development goals," commit to making transformative and lasting investments to limit its contribution to climate change, and provide air quality benefits to the urban areas most likely to be disproportionately

[18] Argonne National Laboratory, Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool (2017), available at https://greet.es.anl.gov/afleet_tool.

impacted by air pollution caused by Connecticut's transportation sector. Bringing electric school buses to low-income and communities of color where students and families have been disproportionately impacted by air pollution would also be a beneficial use of VW settlement funds.[19]

Figure 2. NOx emission reduction per dollar invested per transit bus fueling technology.



Regardless of methodology, many states are recognizing the long-term benefits of electric transit buses and are using EMT funding to transform its fleets. Most notably, Georgia has committed 100 percent of its EMT funds towards almost entirely electric transit buses in the Atlanta Metropolitan Area, which bears a disproportionate share of the air pollution in Georgia. This $63 million investment in transit buses will satisfy Georgia's overall goals for EMT funding, including its aim of "implementing Eligible Mitigation Actions that further Georgia's energy, environmental, and economic development goals."[20] In proposing an $18 million investment to replace transit buses, Colorado expressly identified as goals to "[r]emove barriers to the adoption of zero emission transit vehicles," "[p]romote the development of zero emission vehicle technologies by expanding the market for large electric buses," and "[a]ccelerate the future adoption of zero emission or alternative fuel vehicles by demonstrating to transit fleet

[19] CHISPA, Clean Buses for Healthy Ninos, http://www.cleanride4kids.org/about-clean-school-buses/; http://www.cleanride4kids.org/blog/resource/electric-school-buses-webinar-vw-settlement-opportunity/.
[20] Georgia Governor's Office of Planning and Budget, Preliminary Draft Beneficiary Mitigation Plan for the State of Georgia (2017), available at https://opb.georgia.gov/vw-settlement-agreement.

operators and the public that these vehicles are viable and by allowing transit fleet operators to gain familiarity and expertise with them."[21]

Beyond Georgia and Colorado, other beneficiaries such as Washington[22] and Washington D.C.[23] have likewise committed substantial portions of their funding towards electric transit buses in environmental justice communities. We urge Connecticut DEEP to embrace the same commitment throughout its Plan and implementation of EMT funding.

V. Conclusion

We thank DEEP for the opportunity to submit these comments. We look forward to continued engagement of the agency with us and other stakeholders to promote forward looking, transformative, and environmentally friendly use of the Volkswagen EMT funds in Connecticut. Again, this opportunity is a rare chance to stimulate a sustainable, cost-effective, long-term strategy for our state's transportation sector, especially in an age that demands climate solutions more than ever. We urge you to actively advance electrification.

Respectfully submitted,

The Connecticut Electric Vehicle Coalition

- Acadia Center*
- American Lung Association in Connecticut
- Connecticut Fund for the Environment*
- Connecticut Nurses Association
- Connecticut Roundtable on Climate & Jobs*
- Connecticut Citizen Action Group
- ConnPIRG
- Conservation Law Foundation
- ChargePoint*
- Chispa-CT*

[21] Colorado Proposed Beneficiary Mitigation Plan: Volkswagen, Audi, and Porsche Clean Air Act Settlements (Aug. 28, 2017), at 14, available at https://www.colorado.gov/pacific/sites/default/files/AP_VW_Beneficiary_Mitigation_Plan.pdf. Colorado's proposed $18 million investment in transit buses represents approximately 26 percent of the state's initial allocation of trust funds.

[22] According to Washington DES's Proposed Volkswagen Beneficiary Mitigation Plan: "About half of urban transit bus routes occur in in low income and minority neighborhoods. Strategic deployment of electric transit buses could improve air quality and public health in communities that have historically borne an undue share of the air pollution burden. Converting diesel buses to all-electric buses would reduce fuel and maintenance costs by about 10%." (2017)

[23] According the District's Draft Spending Plan: "The DEAL Program only covers the following technologies: electric transit buses and infrastructure, electric refuse trucks and infrastructure, and CNG refuse trucks. The funds will cover approximately 80 percent of the incremental cost of purchasing electric vehicle technologies, and 55 percent of the incremental cost of purchasing CNG technologies, when compared with the cost of purchasing a new diesel vehicle. Although the DEAL Program will not cover 100 percent of the incremental cost, savings made through fuel and maintenance will help cover the remaining costs and provide overall long term savings through the life cycle of the new vehicle." (2017)

- Clean Water Action*
- CT League of Conservation Voters
- Drive Electric Cars New England
- Energy Solutions, LLC
- Environment Connecticut*
- Hamden Land Conservation Trust
- Hartford Climate Stewardship Council
- International Brotherhood of Electrical Workers*
- Northeast Clean Energy Council
- People's Action for Clean Energy
- Proton OnSite
- Plug In America
- RENEW Northeast
- Sierra Club*†
- Solar Connecticut, Inc.
- Tesla, Inc.
- Union of Concerned Scientists
- Westport Electric Car Club

* Connecticut EV Coalition Steering Committee Membership

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