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ATTN: VW Settlement
Via email to VWsettle@tceq.texas.gov.

February 15, 2018

Re: Volkswagen Environmental Mitigation Trust comments by Public Citizen

Dear Mr. Dayton,

Public Citizen appreciates the opportunity to provide these comments. We would welcome the opportunity to discuss our recommendations further. Please contact Adrian Shelley at [REDACTED] 512-477-1155.

Funds should be used for the most cost effective NOx mitigation strategies.

The stated purpose of the Volkswagen Environmental Mitigation Trust is to reduce nitrogen oxide (NOx) pollution in the areas where affected vehicles were sold. The Texas Commission on Environmental Quality (TCEQ) has extensive experience, through the Texas Emissions Reduction Plan (TERP), with cost-effective spending to reduce NOx pollution. The TCEQ should use this experience in selecting projects for funding.

The goals of NOx mitigation are twofold: to bring Texas' nonattainment areas into attainment of the ozone standard, and to benefit public health. The TCEQ should consider both goals. Simply allocating all of the funds to our two nonattainment areas, for example, would not provide health benefits in other deserving areas, such as Texas' other large urban centers. Other considerations in the cost-benefit analysis are below.

Co-pollutant benefits should be considered.



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The Environmental Mitigation Trust was established to mitigate nitrogen oxide (NO_x) pollution emitted by offending Volkswagen vehicles. The trust does permit consideration of the benefits of reducing other pollutants, known as co-pollutant benefits. TCEQ should consider several co-pollutant benefits.

Health Benefits

Many projects that reduce NO_x pollution will also reduce other pollutants that have negative health impacts including particulate matter (coarse, fine, and ultrafine); carcinogenic compounds such as benzene, toluene, ethylbenzene, and xylene (the BTEX compounds) and related compounds; sulfur compounds emitted when burning high sulfur fuels in, for example, marine vessels; and polycyclic aromatic hydrocarbons emitted by diesel vehicles. All of these pollutants have acute and chronic health effects. Air pollution is a serious public health concern; victims of air pollution can suffer asthma attacks requiring hospitalization,¹ heart attacks,² strokes, and other serious medical outcomes. In indigent patients, the cost of treating these conditions is born by the taxpayer.

In determining which projects to fund, the TCEQ should consider co-pollutant benefits of a proposal, including benefits to public health and reduced cost to taxpayers. TCEQ should use available resources and data quantifying the health benefits of emissions reductions in certain areas. For example, as-yet-unpublished emission modeling research conducted at the University of Houston found the following percentage reductions over a base case for three vehicle electrification scenarios:³

¹ See Raun, L. H., Ensor, K. B. and Persse, D. (2014) Using community level strategies to reduce asthma attacks triggered by outdoor air pollution: a case crossover analysis. *Environmental Health*, 13:58. Available at <http://www.ehjournal.net/content/13/1/58>.

² See Ensor, K. B., Raun, L. H. and Persse, D. (2013). A Case-Crossover Analysis of Out-of-Hospital Cardiac Arrest and Air Pollution. *Circulation*. V127, pp 1192-1199. Available at <http://www.ncbi.nlm.nih.gov/pubmed/23406673>.

³ This data is part of an as-yet-unpublished study: Choi, Yunsoo, et.al., "Evaluation of the air quality impacts of newer technologies, emissions controls and fleet electrification in the Houston Metropolitan Area in a future year" (Draft dated 27 July 2017).



Table 1: Future projected scenarios based on varying fleet electrification and turnover

Scenario	Percentage fleet turnover			Emissions Scaling factor
	New	Electric	Current	
Base-year (2013 or BASE)	0	0	100	1
Business as usual (BAU)	0	0	100	1
Moderate Electrification (ME)	33	35	32	0.34
Aggressive Electrification (AE)	15	70	15	0.16
Complete Turnover (CT)	65	35	0	0.033

Table 2: Episode- average 8-county aggregate on-road mobile emissions in the BASE case and comparative changes for the future scenarios.

Species	BASE [tons day ⁻¹]	Differences to BASE [%]			
		Business as Usual	Moderate Electrification	Aggressive Electrification	Complete Turnover
CO	1220.64	48.6	-50	-76.6	-95.2
NO _x	207.51	56.9	-47.2	-75.3	-94.9
NH ₃	5.51	50.8	-49.2	-76.2	-95.1
SO ₂	1.69	50.9	-49.2	-76.2	-95.1
PM ₁₀	16.88	55.3	-47.7	-75.5	-94.9
PM _{2.5}	6.75	61.1	-45.8	-74.6	-94.8

Climate Benefits

The TCEQ should also consider the benefit of reduced greenhouse gas (GHG) emissions, or the cost of additional emissions exacerbating climate change. If trust funds are used to purchase natural gas vehicles, then the GHG emissions of those vehicles—including the upstream emissions generated in natural gas production via enhanced recovery techniques such as hydraulic fracturing—should be considered.

Electric vehicles will also have GHG emissions associated with the energy produced to power them. These emissions will follow the GHG emissions of the energy mix of the entire Texas energy grid. As more renewable energy is added to the Texas grid, the associated GHG emissions (as well as other pollutant emissions) will decrease. Once Texas moves to 100%

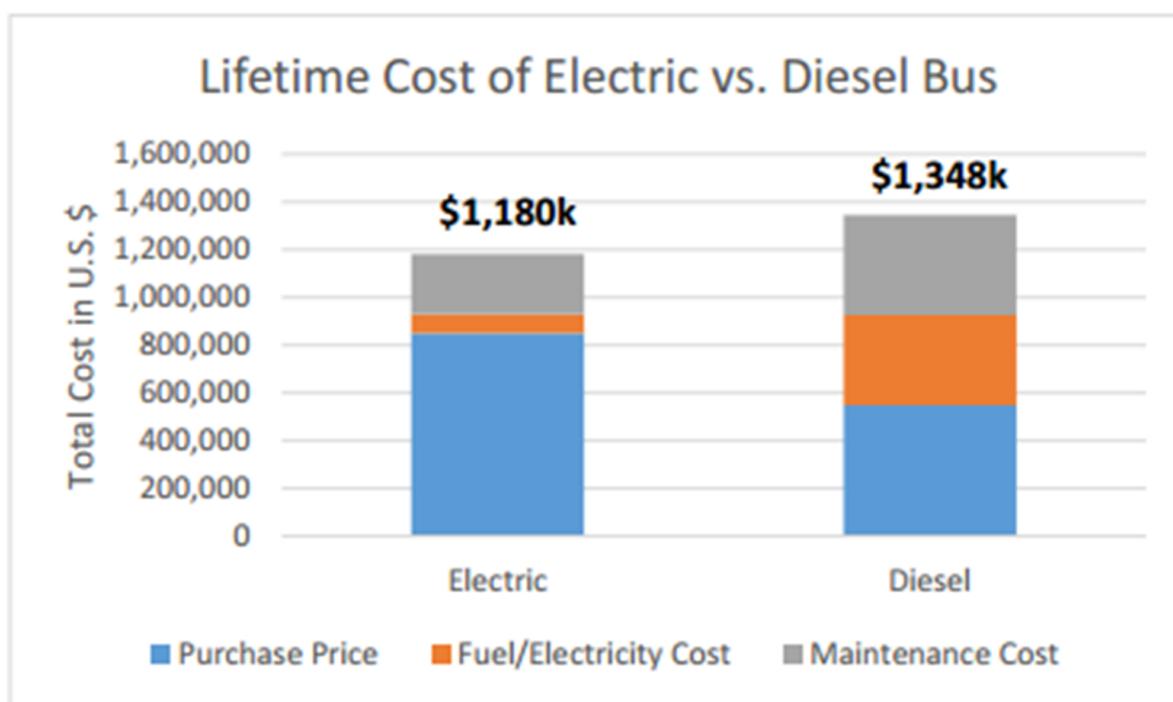


renewable energy (which could happen during the lifetime of some of the vehicles purchase with trust funds) there will be no air pollution emissions associated with that energy production.

The Union of Concerned Scientists has a tool for estimating carbon emissions for electric vehicles by ZIP code.⁴ We recommend that CO₂ and other greenhouse gas emissions be considered when choosing projects for funding.

TCEQ should consider lifetime vehicle costs, including operation and maintenance costs.

Some newer technologies, including all-electric vehicles, have higher initial costs. Today, an electric heavy-duty truck, for example, is more expensive to purchase than a “clean diesel” truck. But vehicles come with lifetime operation and maintenance costs that can tip the scales in favor of electric vehicles. See, for example, this lifetime cost analysis by J. Abrem with Columbia University, which account for purchase price, energy cost, and maintenance cost, and puts an electric bus at \$1,180,000 lifetime (12 years) operation cost versus \$1,348,000 for a diesel bus:⁵⁶



⁴ See <https://www.ucsusa.org/clean-vehicles/electric-vehicles/ev-emissions-tool>.

⁵ See Abrem, J, “Electric Bus Analysis for New York City Transit,” Columbia University (May 2016), available at <http://www.columbia.edu/~ja3041/Electric%20Bus%20Analysis%20for%20NYC%20Transit%20by%20J%20Aber%20Columbia%20University%20-%20May%202016.pdf>.

⁶ See also, “5 - RBorowski – Buses.pdf,” attachment to these comments.



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Clean diesel and natural gas vehicles use fuel that is subject to price fluctuations. A diesel engine can potentially stay on-road for thirty years, meaning that a diesel vehicle purchased with trust funds this year could still be on the road in 2048, paying whatever the current price of diesel may be. Similarly, natural gas vehicles may enjoy cheap natural gas today, but the market for that fuel will also fluctuate over time. Electric vehicles, in contrast, are powered by energy drawn from the electricity grid.

Advancements in renewable energy generation and energy distribution will continue to drive grid-energy costs down. Increasingly more passenger vehicle owners will generate energy with residential scale projects such as solar and wind. Distributed energy storage via car batteries and other batteries located in homes will allow electric vehicles to charge when energy prices are cheap. Battery owners may even have opportunities to sell energy back into the market for a profit. The dynamic nature of energy production in Texas virtually ensures that energy costs will continue to drop. Residential energy users who buy EVs and take advantage of distributed generation opportunities will enjoy reduced energy costs over users of diesel and natural gas fuels. This lifetime costs savings should be accounted for when evaluating the cost effectiveness of a proposal.

Similarly, electric vehicles require less maintenance over the lifetime of the vehicle. This is due in part to the reduced number of parts in a battery system over an internal combustion engine (ICE). Although many EV technologies are relatively new, time will show that these vehicles provide cost savings via reduced maintenance. This cost savings should also be accounted for when evaluating projects.

The trust should not be used to subsidize the natural gas industry.

The Natural Gas Industry is well developed in Texas. Many of the planets most successful natural gas producers, and many of our most productive natural gas fields, are located in Texas. We are aware that the natural gas industry is lobbying for use of some of these funds for their vehicles and infrastructure. We disagree with this use for several reasons.

First, the natural gas industry has a lengthy and profitable history in Texas. The industry had benefitted from lucrative government contracts and concessions over the years.

Second, compressed natural gas (CNG) vehicles are more expensive to operate than the diesel vehicles they would replace. Fluctuations in natural gas prices can also make natural gas vehicles less affordable. As evidence of these challenges, CNG vehicles have underperformed in the Texas Emissions Reduction Plan. These vehicles should not be given priority in the trust.

We do not believe this trust should be used for CNG vehicles or their charging infrastructure. The same is true of propane vehicles and their charging infrastructure.

Some funds should be invested in electric vehicle infrastructure.



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Some of the trust funds should be dedicated to electric vehicle infrastructure. This investment should include publicly accessible fast-charge stations for passenger vehicles and stations for municipally owned fleets.

Under the settlement, Volkswagen has independently established Electrify America, a company that will invest in charging infrastructure over the next ten years. Houston was chosen to participate in an Electrify American pilot project. Electrify America seems to have unilaterally advanced its project with little input from local stakeholders. We have heard that Electrify American's charging stations may be located on the outskirts of the city, on for example a highway in Fort Bend county. We are concerned that Electrify America is proceeding with its plans without taking adequate stakeholder input. We encourage TCEQ to coordinate with Electrify America on any charging infrastructure projects.

Funding should be allocated by region in accordance with the number of offending vehicles.

Funding should be allocated among a variety of projects. No more than 5 percent of funding should be used for administration. 15 percent should be set aside for electric vehicle charging infrastructure (above). Some funding, perhaps 10-15 percent should also be set aside for larger projects, including engine repowers for freight switchers, marine vessels (repowers for ferries and tugs), and ocean going vessel shore power.

A large portion of the funding should be allocated to replacing older, dirty diesel vehicles. This should include a mix of on-road and off-road, as well as light- and heavy-duty vehicles. The largest portion should be spent on replacing aging heavy-duty diesel trucks. We believe that funds for vehicles should be allocated by region in proportion to affected VW vehicles sold.⁷

TCEQ should develop and maintain a database of available technologies.

We have had the benefit of seeing draft proposals from some Texas cities for applications to the trust. We have seen, for example, a draft proposal by the City of Houston that includes 85 refuse trucks, including 71 diesel and 14 compressed natural gas (CNG) vehicles. In our conversations with city officials, we have learned that the draft proposal did not include electric vehicles because the city was not aware of manufacturers of such vehicles. In fact there are a number of companies that are or have the capacity to build electric refuse trucks, including Motiv,⁸ BYD,⁹ Transpower/Peterbilt/Meritor,¹⁰ Orange EV,¹¹ and Tesla.¹²

⁷ The proportion of affected vehicles in certain areas is as follows: Houston-Galveston-Brazoria: 24%, Dallas-Fort Worth: 25%, Austin: 13%, San Antonio: 11%, El Paso: 2%.

⁸ <https://www.government-fleet.com/news/story/2014/09/chicago-debuts-first-all-electric-refuse-vehicle.aspx>

⁹ <https://cleantechnica.com/2017/11/21/byd-delivers-1st-electric-automated-side-loader-garbage-truck-city-palo-alto-greenwaste/>

¹⁰ <http://www.peterbilt.com/about/media/2017/548/>



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Because of this lack of information, we propose that a database of available technologies be created and maintained throughout the life of the trust. We understand that the Clean Cities coalition is working with its city partners to develop their fleet inventories for use in deciding what projects to propose. We believe that someone, possibly the TECQ, possibly Clean Cities, should develop a database of available alternative fuels technologies. This would give applicants all of the information they needed to choose the best products for their proposals. This database should be maintained and updated throughout the life of the trust.

Funded projects should include data gathering requirements where feasible.

Many vehicle grant programs include requirements to collect data about vehicle performance. The Houston-Galveston Area Council, for example, has placed GPS units on vehicles that participated in the Diesel Emissions Reduction Act (DERA) program. This allows them to gather data about, for example, vehicle miles traveled, fuel efficiency, and time spent idling. This data can be used to refine grant programs or develop work practices to increase vehicle efficiency and life.

If feasible, the TCEQ should collect similar data about vehicles purchased with VW trust funds. The TCEQ could potentially require such data collection, or it could give preference to projects that include a data collection component. This data should be used to refine the trust uses and ensure trust funds are spent effectively. Any data gathered should also be shared with entities working on transportation policy.

Priority should be given to vehicles, technologies, and fuel produced in Texas.

The Environmental Mitigation Trust is an opportunity to promote vehicles, technologies, and fuels produced here in Texas. There are a number of manufacturers located in Texas who either are producing electric vehicles or have the capacity to do so. There are also battery manufacturers located here in Texas. Priority should be given to projects that purchase equipment from companies based in Texas.

The size of the trust means that proposals could be sufficient to induce a manufacturer to site a new facility or project in Texas. We recommend that several cities pool their resources to place a large “soft order” of, for example, electric heavy-duty trucks. This soft order would be an incentive for a company such as Texas-based Peterbilt, GM or Toyota to locate a new manufacturing facility or project here in Texas. The CleanCities coalition might be an appropriate vehicle for such a cooperative proposal.

¹¹ <https://www.trucks.com/2016/11/23/orange-ev-startup-heavy-duty-electric-truck/>

¹² <https://www.bizjournals.com/dallas/news/2017/12/15/frito-lay-parent-orders-100-of-teslas-electric.html>



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Regarding fuel produced here in Texas: we do not believe that trust funds should be used for the purchase of natural gas vehicles or the installation of natural gas infrastructure. While it is true that natural gas is produced in Texas, we do not believe that natural gas vehicles are the correct choice for the trust. The cost of operating a compressed natural gas vehicle exceeds even the cost of a diesel vehicle. The lifetime operation costs for an electric vehicle are likely to be lower than either the natural gas or diesel alternatives. Furthermore, natural gas vehicles have underperformed in the Texas Emissions Reduction Plan program and should not be given priority in this program.

By contrast, electric vehicles will draw energy from Texas' electricity grid. This energy is produced in Texas and, over time, will increasingly come from clean, renewable sources. Electric vehicles may have no tailpipe emissions, but they are still responsible for the emissions created in generating the energy they use. In Texas today, this means a mix of coal, natural gas, and renewable energy sources. But whereas natural gas vehicles will always have emissions associated with natural gas production and use, electric vehicles will be as clean as the Texas grid. As the grid transitions to more and more renewable energy sources, these vehicles will be responsible for less and less pollution. And all of the renewable energy on the Texas grid is produced right here in Texas. Texas already has more of its citizens employed in wind energy than in coal energy. Renewable energy is the future of energy production and associated jobs here in Texas. Adding electric vehicles will increase demand for clean, renewable energy produced right here in Texas.

The trust should also consider projects that purchase vehicles equipped with vehicle-to-grid capabilities. As more electric vehicles are owned and operated in Texas, the state will benefit from their capacity to participate in distributed energy storage. This capacity will be maximized if electric vehicles sold in the state today have vehicle-to-grid capabilities. The TCEQ should give priority to these vehicles.

Funding should be reserved for a bulk purchase at a later date.

We understand that TCEQ's intention is to spend the full trust balance quickly, perhaps in as little as 2-3 years. We understand the potential complications in reserving funds for spending at a later date. We also understand that state legislators are likely to confuse and conflate VW funding with TERP funding, and we do not want any use (or delay in use) of VW funds to jeopardize the TERP program or its funding. With that being said, we do think there are advantages to using some of the funding at a later date.

As an example, half of the funding (roughly \$100 million) could be withheld for projects in the second five years of the ten-year trust. This funding could be reserved, for example, for a



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cooperative bulk-purchase that could incentivize EV manufacturing in Texas. Reserving funds for this purpose would give cities an incentive to create such a cooperative proposal.

Furthermore, withholding some funds for use in later years allows new technologies to emerge. Although electric vehicles are a reality today (and far from the “science project” they are described as by some naysayers), there will be more, cheaper, and cleaner alternatives in the near future. Reserving some of the trust funds for use in several years would allow Texas to take advantage of even newer technologies. For example, an analysis of the EV market for heavy-duty trucks shows that many models will not be available on the market until 2023.¹³

Administrative costs should be kept to a minimum.

We appreciate the selection of the TCEQ as the administrator of the Environmental Mitigation Trust. Due to its experience administering TERP, the TCEQ is well situated to administer the trust.

TERP caps administrative expenses at 4%. The trust, by contrast, allows as much as 15% for administrative costs. We recommend a 5% cap on administrative expenses, including TCEQ expenses and expenses of other administering agencies such as local municipalities or councils of government.

We further recommend that local councils of government, the Houston-Galveston Area Council in Houston and the North Central Texas Council of Governments in Dallas among them, have a role in local administration of funds.

TCEQ must maintain a bright line between VW funds and the Texas Emissions Reduction Plan.

There is already some confusion among state lawmakers about the difference between Volkswagen settlement funding and the Texas Emissions Reduction Plan. Due to the failure of the legislature to allocate TERP funds, there is a very large balance in the TERP account. With a tight budget session approaching in 2019, legislators are likely to propose alternative uses for TERP funds, or a reduction in fee collections, or both.

In its communications about the trust, and in its work on TERP, the TCEQ should always make the distinction between VW funds and any other air quality funds, including TERP. We know that TCEQ understands this distinction well, but briefly: the VW trust is necessary to mitigate past harm from vehicles that were not performing as expected. TERP and similar funds are used to reduce future air pollution by funding projects to remove presently polluting vehicles and equipment. The funds should not be confused or conflated, and TCEQ must endeavor to avoid such confusion.

¹³ See <https://cleantechnica.com/2017/12/16/electric-semi-trucks-heavy-duty-trucks-available-models-planned-models/>.



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If “Clean Diesel” vehicles are purchased, they must be fitted with hybrid technology.

We do not believe that trust funds should be used to purchase diesel vehicles, even so-called “clean diesel” technology. If trust funds are used for diesel vehicle purchases, we recommend that the TCEQ require these vehicles to be equipped with hybrid technologies (e.g., [Effenco](#), [Parker Hannifin](#) or other technology). These technologies will reduce the fuel usage of these vehicles and limit the pollution they emit.

The public should have ample opportunity to provide input.

We understand that TCEQ is committed to a robust public input process once the draft plan is published. We suggest that TCEQ engage the public in the early stages of the process, when there is still opportunity to influence the plan. The plan should go through formal notice and comment and TCEQ should answer in writing all salient comments. Public meetings should be held across the state, particularly in our most impacted urban areas. Both nonattainment and near nonattainment areas should be included.

Public Citizen provides additional comments as attachments.

In June 2017, Public Citizen held a stakeholder meeting in Austin on the VW Settlement. We are including as attachments to these emailed comments the presentations that were delivered at that meeting. We can provide further details on the authors or content of these presentations by request. The attached documents are:

- 1 – Tsmith – VISION
- 2 – Ecraft – Settlement Overview
- 3 – Big Questions
- 1 – LCottingham – TX EV Workshop EV RFI Presentation
- 2 – LClark – Fleets for the Future
- 1 – EMunger – Clean Fuels Alliance
- 2 – MRoss – Combustion fuels
- 3 – RFarzaneh – Electric Vehicles
- 4 – VW Challenge Grid Implications v2 –POPHAM
- 5 – RBorowski – Buses
- 6 – EThompson – Natural Gas refuse haulers



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7 – AShelley – Emissions Reductions per option

8 – AHoekzema - Hidden Costs of Emissions

In the summer of 2017, Public Citizen joined with our allies t.e.j.a.s., Air Alliance Houston, Coalition of Community Organizations, Sierra Club, Livable Arlington, Tarrant Coalition for Environmental Awareness, and Arlington Conservation Council to gather input from the community. We were also supported in this effort by NCTCOG, HGAC, Port Houston, Centerpoint, and other members of the Texas Clean Air Working Group.

More than 150 stakeholders and members of the public attended one of these four meetings, held in Houston, The Woodlands, Dallas, and Fort Worth. The community members we spoke with largely support electric vehicle EV technology (85%) over compressed natural gas (CNG) (15%) or diesel (0%). Community members favor projects that focus on school buses, semi-trucks, and public buses. Many expressed their interest in projects with the largest NOx emissions reductions.

In the attached pdf, “VW Summary of Citizen Comments” we have summarized certain citizen comments and quoted others. This summary document is an accurate reflection of the comments we received during these stakeholder meetings. We have also encouraged stakeholders to submit comments directly to TCEQ.

Conclusion

Again, we appreciate the opportunity to provide these comments. If you wish to discuss these issue further, we can be reached by email at [REDACTED] and phone at 512-477-1155.

Respectfully,

Adrian Shelley

Director, Public Citizen’s Texas Office