



Delivered via email to VWsettle@tceq.texas.gov

April 16, 2018

Texas Commission on Environmental Quality
Air Quality Division
Implementation Grants Section, MC-204
P.O. Box 13087
Austin, TX 78711-3087

ATTN: VW Settlement

Dear Commissioners Baker, Niermann, and Shaw:

BYD America (“BYD”) appreciates the opportunity to submit the following comments that we believe will help Texas successfully and cost-effectively meet its air quality goals via broad, multi-sector deployments of zero-emission vehicles and equipment. Such deployments will take advantage of this unprecedented opportunity to reduce mobile source emissions and, in particular, provide both near- and long-term nitrogen oxide (NOx) emissions reductions in those areas that bear a disproportionate share of the state’s air pollution burden.

BYD is a global company that is changing what is possible in zero-emission transportation. Our commitment to “solve the whole problem” has made BYD an industry pioneer and leader in not only the transportation sector, but also high-efficiency energy storage, solar power, LED lighting, and information technology. BYD and its shareholders, including Warren Buffett’s Berkshire Hathaway, see these environmentally and economically forward products as the way of the future.

Our BYD’s North American headquarters and manufacturing facilities are located domestically in California. We are vertically integrated in order to better control the quality and costs throughout the manufacturing chain – we produce every major vehicle component, including our 100% recyclable batteries, inverters, and traction motors. This business structure ensures seamless communication and efficiency across components, which creates a better operational experience and competitive pricing.

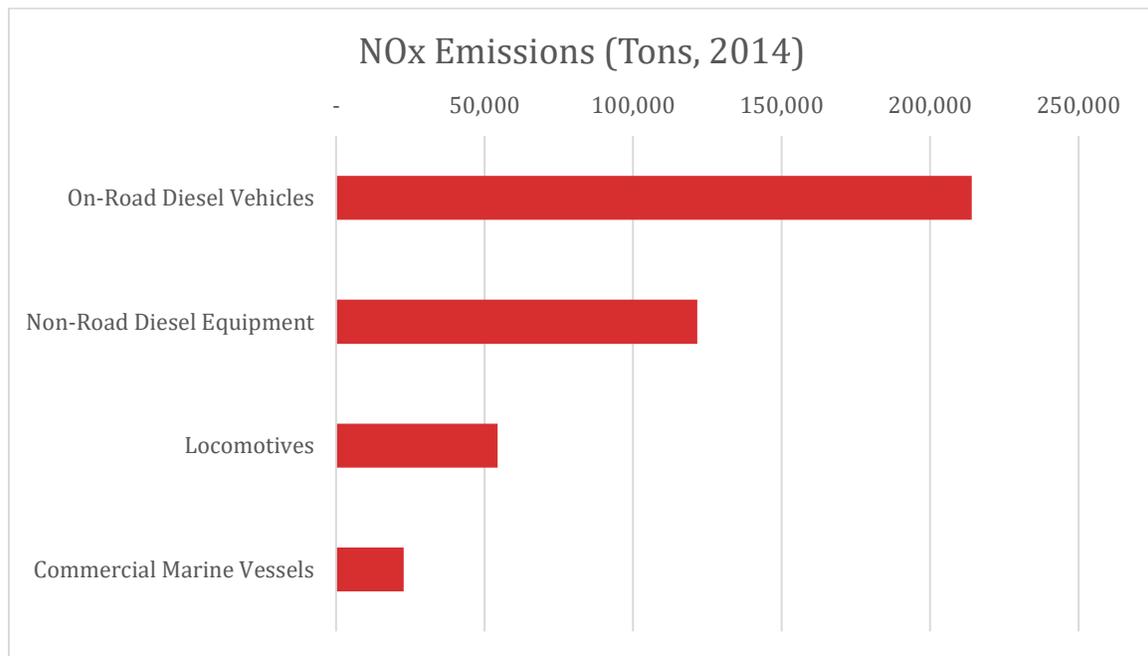
Our recommendations for Texas fall into three categories:

- Concentrate funding for projects based on the largest sources of statewide NOx emissions
- Provide support for long-term and transformative technologies in areas disproportionately burdened with air pollution
- Support innovative transportation solutions by encouraging stakeholder partnerships to overcome price and non-price market barriers
- Leverage Volkswagen funds by aligning projects with other state priorities to yield economic and energy security benefits

BYD urges the Texas Commission on Environmental Quality to take these recommendations into consideration, which will enable Texas to most efficiently and effectively make the most of its allocation of Volkswagen funds.

Texas Should Concentrate Funding for Projects Based on the Largest Sources of Statewide NOx Emissions

As the figure below shows, on-road diesel vehicles and non-road diesel equipment (excluding locomotives and marine) should be the state’s primary focus for these funds as they account for 80% of the state’s NOx emissions from mobile diesel sources.



The on-road sector is particularly important as 52% of the state’s mobile diesel NOx emissions come from this source. Texas should thus ensure that its funds are allocated to address these emissions sources. To do so, Texas can target transit and shuttle buses as well as delivery, cab forward, bucket, and tractor trucks, many of which are “captive” fleets that operate almost entirely within dense communities or areas overburdened with air pollution (e.g., ports and terminals) and are thus capable of delivering immediate environmental benefits.

Transit buses have regular routes so the state can be sure that emissions reductions are staying in densely populated areas that are most disproportionately affected by diesel exhaust. In addition, transit buses are typically older than other on-road vehicles types, making them a priority for replacement. Texas can significantly reduce pollutant exposure for a diverse swath of population by focusing efforts on transit buses.

To best target non-road emissions, focusing funds on terminal tractors (also referred to as yard tractors, yard hostlers, or yard trucks,) presents Texas with a pathway to significant emissions reductions. Terminal tractors receive heavy use in order to move freight quickly

and efficiently through Texas' Ports of Houston, Galveston, and Corpus Christi, as well as inland terminals. However, this productivity is at the cost of clean air as terminal tractors typically use older, high-emitting diesel engines. Texas can therefore make an immediate and lasting impact on local air quality in these disproportionately burdened areas by replacing outdated equipment with zero-emission electric terminal tractors.

Texas Should Provide Support for Long-Term and Transformative Technologies in Areas Disproportionately Burdened with Air Pollution

Texas' air quality issues have led to the designation of two ozone nonattainment areas in the state, which include seventeen counties – Brazoria, Chambers, Collin, Dallas, Denton, Ellis, Fort Bend, Galveston, Harris, Johnson, Kaufman, Liberty, Parker, Rockwall, Tarrant, Waller, and Wise – that are home to 12.2 million residents.¹ Within these areas are Texas' leading population centers of Houston, Dallas / Fort Worth, San Antonio, Austin, and Galveston. It is clear that replacing older diesel engines with zero-emission engines drastically reduces NOx pollution in these regions, and that zero-emission technologies are a wise economic investment that will return dividends for Texas fleets.

For example, by electrifying trucks and transit buses operating in Texas' population centers or along key corridors, such as I-84, I-91, and I-95, Texas can generate even more substantial maintenance and fuel savings than other on-road vehicles. BYD's standard 40' bus yields yearly operational savings over a traditional diesel vehicle on the order of \$45,000 per bus. Over a 15-year vehicle lifetime, that can add up to \$675,000 in reduced maintenance and fuel costs.

Further, BYD's recyclable battery technology enables these vehicles to operate more than 200 miles on a single charge, all while producing zero emissions. Reduced lifetime cost of ownership represents money back in the pockets of cash-conscious transit agencies, which can be used to expand services in disproportionately burdened areas or replace more vehicles with clean alternatives.

As another example, BYD's model 8Y terminal tractor is a 100% battery-electric class 8 truck that is capable of 15 hours of continuous operation between charges with minimal battery degradation. Related to the vehicle's hugely beneficial total cost of ownership, the T8Y saves operators \$19,100 in fuel costs and \$8,800 in maintenance costs per truck each year – lower downtime, fewer moving parts, less wear and tear, and improved environmental efficiency are the hallmarks of BYD's T8Y terminal tractor. Further, they are able to be deployed immediately as they are compliant with Federal Motor Vehicle Safety Standards (FMVSS).²

¹ "Green Book 8-Hour Ozone (2008) Area Information". United States Environmental Protection Agency, February 3, 2017. <https://www.epa.gov/green-book/green-book-8-hour-ozone-2008-area-information>.

² The T8Y is also compliant with Canadian Motor Vehicle Safety Standards (CMVSS).

Texas can Support Innovative Transportation Solutions by Encouraging Stakeholder Partnerships to Overcome Price and Non-Price Market Barriers

The nearly \$200 million allocated to Texas is an opportunity for the state to transform its transportation sector. Simply replacing existing diesel vehicles with new (but still conventional fuel) technology may yield limited benefits, but it will do very little in leading the state towards a cheaper, cleaner, and more reliable energy future with greater energy independence and minimized operating costs.

Partnerships with utilities in particular will play a key role in the increasingly important role of plug-in electric vehicles (PEVs) in the market. BYD's vehicles can provide tremendous air quality and cost-savings benefits to consumers at large, but specific to the utility, PEVs can serve a variety of supporting roles, including energy storage devices, grid management systems, and drivers of efficiency.

One of the core benefits of a BYD vehicle deployment project is that it is modular – this means that deployments are not a “one-off” nor are they designed specifically to suit one location. Rather, BYD's vehicles can be deployed successfully in a variety of settings: bus terminals, distribution centers, ports and marine terminals, etc.

In that way, BYD electric vehicle deployments can help Texas utilities generate a tremendous amount of data and lessons learned that will ultimately inform how utilities approach, deliberate on, and ultimately make business decisions regarding the electrification of transportation.

Market-moving incentive opportunities like the Volkswagen settlement can further support the rapidly maturing commercial-scale heavy-duty electric transportation market. BYD believes early-market incentive funding is critical to achieving more favorable upfront economics and that increasing sales will lead to cost-competitive purchase prices. As evidence of that, BYD has demonstrated price reductions of more than 20% in our bus products over the last five years. We have committed to and successfully delivered substantial price reductions from our first generation of products. We hope to continue this progress in Texas and support the state in addressing a broad spectrum of environmental issues, resiliency and sustainability chief among them.

Texas Should Leverage Volkswagen Funds by Aligning Projects with Other State Priorities to Yield Economic and Energy Security and Resiliency Benefits

Electric vehicles offer the means to achieve energy security, resiliency, and environmental sustainability while simultaneously creating a driver for economic growth. Electric vehicle deployments will increase domestic energy security by offering drivers and operators a choice of fueling options. According to the Electric Drive Transportation Association, domestically produced grid electricity, on average, can power plug-in vehicles at the

equivalent of \$1 a gallon of gasoline. Importantly, this pricing structure is stable as it is insulated from the global volatility that impacts diesel.³

In addition to running on domestically produced grid electricity, BYD electric vehicles themselves are American-made at our California manufacturing facilities. Using the Volkswagen Settlement to fund this advanced vehicle and fuel combination means the funds will not only create cleaner air, but also spur home-grown economic growth and support domestic jobs and industry. We are committed to aligning with this shared goal.

Finally, following Hurricane Harvey, resiliency and sustainability are increasingly important environmental issues. Conventionally fueled vehicles, including those supporting first responders and public transport, can be rendered all but useless if delivery of fuel is impossible in the days and weeks following a storm or other natural disaster. In those trying times, electric vehicles capable of supporting multiple power transfer pathways – vehicle-to-grid (V2G), vehicle-to-vehicle (V2V), and vehicle-to-load (V2L) – would prove invaluable.

BYD's technology and charging system is capable of just such flexibility, effectively turning each BYD vehicle into a mobile power plant capable of supporting first responders in emergency scenarios or utilities in power outages. This yields substantial benefits in safety, durability, cost-effectiveness, and facility factors, while still meeting the demands of heavy-duty fast charging.

While the pure emissions benefits of electric vehicles are vast, BYD encourages the state to take into consideration ancillary benefits when making this investment in its transportation future. Leveraging VW funds to prioritize American-made products and provide energy security for Texans – all while still providing the maximum amount of NOx and other emissions reductions - would be wise long-term planning for the state.

Closing Remarks

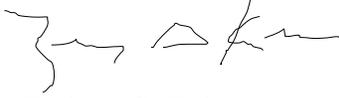
The Volkswagen opportunity represents a unique chance to create immediate emission and economic benefits for Texas' residents, as well as build the groundwork for a sustainable electric transportation marketplace. The economic, emission, and energy-specific benefits of electrified equipment are clear – all-electric trucks, buses, and equipment generate no tailpipe emissions while, over the lifetime of the vehicles, delivering a lower total cost of ownership than conventional petroleum fuels and natural gas while also supporting Texas' existing economic and resiliency goals.

BYD thanks the State of Texas and the Texas Commission on Environmental Quality for the opportunity to submit these recommendations. We would like to work with you and your team to ensure an efficient and effective rollout of the State of Texas Mitigation Plan.

³ "Why Electric Drive?" Electric Drive Transportation Association.
<http://electricdrive.org/ht/d/sp/i/27103/TPL/LandingPageTechIss/pid/27103>.

We look forward to future collaboration that will help Texas meet its environmental, fiscal, and social justice goals.

Sincerely,

A handwritten signature in black ink, appearing to read 'Zachary S. Kahn', with a stylized flourish at the end.

Zachary S. Kahn
Director of Government Relations – North America
BYD America