



May 04, 2018

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

Re: TCEQ Allocation of funds for the Texas Volkswagen Environmental Mitigation Program

Dear TCEQ Commission:

I am writing on behalf of Voltabox of Texas regarding the Texas Volkswagen Environmental Mitigation Program (VW Fund). Thank you for allowing comments regarding disbursement of these funds. At Voltabox, we believe that the VW Fund represents a tremendous opportunity to invest in a cleaner and brighter future for both the Texas environment and a more robust Texas economy. This investment should leverage these funds to address *both* environmental remediation, and economic growth. We believe that Texas can enjoy much greater advantage with the strong multiplier effects provided by leveraging these funds in areas of emerging technology development and maturation, thereby gaining both environmental and economic returns in the short and long term.

Voltabox is a pioneer in high-performance battery systems, for e-mobility in industrial applications. With its safe and economical lithium-ion battery systems, the company is creating new options in sustainable mobility. The core business of Voltabox is advanced battery systems for industrial use. The company can quickly produce new and complex applications for specialized markets. Battery management is another core competency. Voltabox uses advanced software (battery management system) to ensure that hardware and software work seamlessly with each other. This increases the reliability, efficiency, performance and safety of the systems. These systems are used in forklifts, underground mining vehicles, public transport electric buses, and of particular importance in this discussion; locomotives, heavy-duty on-road vehicles including drayage trucks, and subsequently marine vessels. It is important to note that while Voltabox is an emerging technology company, these products are not new. With a history going back to 2011, Voltabox has hundreds of units deployed in commercial and industrial applications around the world. Our systems have already proven themselves many times over in these applications. It is also important to note that Voltabox of Texas is a Texas based corporation, with offices, engineering development and manufacturing in Leander, Texas.

The United States Environmental Protection Agency (EPA) has identified ozone and its precursor NO_x as critical pollutants under the National Ambient Air Quality Standards (NAAQS). The Texas Commission on Environmental Quality is responsible for monitoring areas

of the state for compliance with the NAAQS and where required, developing a state implementation plan (SIP) to outline strategies that will be implemented to bring those areas into attainment of the NAAQS. Voltabox believes that the most important and beneficial use of the VW Fund would therefore be enabling the market to utilize currently available technology to maximize this NOx reduction, while *also* being a catalyst for a sustained technological and economic transformation. This would provide benefits long after the funding expires.

Given the TCEQ mission and the timeline for the VW Fund disbursements, we submit that TCEQ should prioritize currently viable technologies that allow for *maximum* NOx reduction both today and well into the future. It is important to state that unlike many solutions, Voltabox goes beyond mere NOx reduction; Voltabox provides 100% NOx elimination.

TCEQ data show that the areas of greatest non-attainment within Texas are in the Houston-Galveston-Brazoria Area. Further, TCEQ data indicate that the greatest NOx reduction opportunities are Switcher/Short Haul/Municipal Passenger Locomotives and Class 8 tractor/trucks. Voltabox Lithium-Ion (Li-Ion) Battery System technology benefits both applications and would be a particular benefit in the Houston area. In addition to safety, reliability and performance, this technology offers the benefits of;

- Zero Emissions!
- Zero Noise!
- Zero Fuel Consumption!
- Zero Oil Consumption!
- Zero Maintenance!

Under the VW Environmental Trust Agreement the following Categories of Eligible Mitigation Actions are explicitly qualified;

1. Class 8 Local Freight Trucks and Port Drayage Trucks (repower or replacement)
2. Class 4-8 School Bus, Shuttle Bus, or Transit Bus (repower or replacement)
3. Freight Switchers (repower or replacement)

Voltabox technology can serve as a direct solution to each of these.

Houston Case Study – Utilizing properly configured Lithium-Ion battery systems in port, rail, and Class 8 truck electrification offers the best value per ton of NOx reduction while improving system productivity.

Switcher and Short Haul Locomotives are absolutely vital in keeping Texas' economy robust but it comes at a cost. The NOx emissions are very significant. These locomotives are amongst the least efficient, with perhaps the highest level of NOx emissions relative to the output they achieve. The legacy diesel electric technology has been the only technology that allowed this function. This has now changed. With the development of lithium-ion battery technology, diesel electric rail locomotion can now be effectively obsoleted (at least for short haul, switcher, and municipal applications). A lithium-ion powered locomotive is more productive and safer than the older diesel electric

technology, while at the same time eliminating 100% of vehicle NOx emissions. An additional societal benefit is that there is *zero* noise pollution. As with any business owners, rail operators are slow to adopt new technology. With the VW Funds being utilized as a transformational incentive, a tremendous and beneficial catalyst is created for this critical industry to rapidly adopt this new technology, leading to both greater environmental and economic benefits for our state and country.

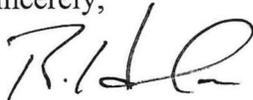
In summary, operating from the assumption that the prime directive of the TCEQ is NOx –ozone mitigation, and in order to satisfy the Volkswagen Environmental Mitigation Program, VoltaBox recommends the following;

- Concentrate resources in the areas of highest need, where NOx emissions are worst and areas currently in non-attainment. TCEQ data show this to be Houston-Galveston-Brazoria Area specifically
- Concentrate resources on the highest environmental value or in other words, highest NOx reduction projects. TCEQ data would indicate this to be locomotive projects which allow for a large emission reduction within a single project. Not only is this a more efficient utilization of funds, but with Voltabox technology, emissions are not reduced, but rather 100% eliminated.
- Concentrate resources on the highest economic value. By investing in this currently available emerging technology it will effectively eliminate the current argument of: “Helping the environment costs businesses money and eliminates jobs.” This technology does just the opposite.
- Concentrate resources on Texas based business and technologies.

By providing funding for rail and port electrification as well as Class 8 trucks, TCEQ has before them an opportunity to provide leadership in showing our country and the world a path forward to making concurrent environmental and economic benefits a reality!

Thank you again for the opportunity to provide public input into this important discussion.

Sincerely,



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