

HIGHLAND ELECTRIC TRANSPORTATION

Brick Township Board of Education School Bus Fleet Electrification VW Settlement Funding Application Questions and Responses

Applicant Name: Brick Township Public Schools

Owner Name: Highland Electric Transportation, Inc.

1. Provide total estimated project budget, include source, amount of cost share, and administrative costs if applicable:

The total project cost is \$8.4 million. Highland will provide \$2.6 million, a 31% cost share, and is applying for \$5.8 million (69%) in grant funding.

Breakdown of Project Costs:

Electric school buses and extended warranties purchase: \$7.4 million

Charging Infrastructure purchase and installation: \$600,000

Other (development, administrative, legal, etc.): \$400,000

While the infrastructure installation and administrative costs are relatively constant, the number of buses and associated equipment can be scaled up or down relative to the amount of grant funding available for this project.

2. Project Description

This project represents a high-impact, scalable, replicable and innovative model of financing and rapidly deploying electric school buses and associated infrastructure. Highland will purchase and own 20 electric school buses and the charging infrastructure for use by Brick Township Public Schools, deploying 10 for the 2021-2022 school year and 10 for the 2022-2023 school year. Infrastructure would be scaled to support future deployments of up to 40 additional electric school buses beyond the initial 20 in this deployment. Based on projections from the school district, these buses will travel approximately 14,000 miles each annually, for a total project mileage of 4.2 million miles.

3. Will the project benefit one or more communities that are disproportionately impacted by air pollution? If so, please describe?

School children, particularly those who ride the bus, are disproportionately impacted by



diesel air pollution. Children have higher rates of respiration (taking more breaths per minute) than adults, increasing their exposure to harmful volatile organic carbons (VOC), reactive nitrogen compounds (NOx), and very fine particulate matter (PM2.5). The negative health impacts of diesel emissions on students and communities are well documented and deeply concerning, including increased absenteeism, lower test scores, and increased risk of cancer (1, 2). Students who ride the bus are exposed to five to fifteen times more of these compounds compared with baseline air quality (3). Asthma is the most common chronic illness amongst children and results in about 1/3 of the missed school days due to illness annually in America. Students who are chronically absent, even early in their education, are less likely to graduate from high school (4). The American Lung Association reports that Ocean County, where Brick Township is located, has 11,873 cases of pediatric asthma.

School buses present a unique duty cycle and role in transportation, which means they can play an outsized role in environmental equity. Since school buses drive the same route everyday, EVSBs can be routed to areas of a school district that have the largest pollution issues and have been historically underserved by environmental programs. The reduction in pollutants and greenhouse gas emissions benefits whole communities, but electrification of school buses can bring cleaner air to communities that face more barrier to light-duty electrification, including the high cost and lack of chargers at multi-unit dwellings.

In addition, the innovative financial structure of this project presents a model that is readily expandable within Brick Township, but all is replicable to other communities throughout New Jersey and elsewhere.

4. Only shovel ready projects will be considered. Please list project partners.

This project is shovel ready, with communication and planning between the below listed partners occurring presently. With the team that we already have in place, this project has a high likelihood of success, within budget and on schedule.

Highland Electric Transportation- vehicle and charger owner, turnkey project implementation and management

Hoover Truck and Bus- our NJ-based bus dealer will provide Blue Bird EV school bus for project, maintenance and training

Brick Township Public Schools- contracts with HET, Dispatches and operates EV buses for student transportation

Greener by Design- our NJ-based project consultant which has significant local experience and expertise in developing electrical infrastructure projects in NJ and in



working with the local utility and other local authorities-having-jurisdiction
NJ Clean Cities Coalition- a NJ-based nonprofit will provide education and outreach to the many stakeholders involved in this project.

5. Estimated timeframe for implementation? Include a project timeline that identifies start and end dates, as well as the timeline for key milestones.

1. Infrastructure planning, utility interconnection, and charger installation- immediately after contract signing, commencing September 2020, July 2021.
2. Bus and charger purchase- Within one month of contract signing.
3. Delivery of first 10 buses- June 2021
4. EVSB maintenance staff and driver training for district personnel- July 2021
5. V2G testing- August 2021
6. Deployment of buses for student transportation- early August 2021

6. Demonstrated success in implementing similar projects?

Highland has implemented a similar project of turnkey school bus electrification in Beverly, Massachusetts, where it was awarded MA VW funding, and is working with school districts in Maryland, New York, California, and Arizona to deploy fleets for the 2021-2022 school year. The Highland team has extensive experience in alternative fuel student transportation, electrical infrastructure projects, renewable energy integration, and infrastructure finance. Highland's sole focus is providing turnkey school bus electrification solutions to school districts, built on the understanding that expertise and dedicated resources are needed to not just deploy EVSBs, but to ensure communities are gaining the most benefit and are able to continue to electrify their fleets.

7. If your proposed project involves alternative fuels, provide a demonstration of current or future plans to provide adequate refueling infrastructure.

Highland will purchase and pay for the installation of 19 AC chargers and one DC fast charger at the Brick Township Public Schools depot. These will be owned and maintained by Highland, who will ensure charge-readiness at the beginning of every bus route. The fast charger will be used as a pilot for V2G in the Jersey Central Power & Light (JCP&L) service area. Highland's experience and thorough planning in the electric vehicle realm means that we are able to make choices now that support future deployments. Many bus depots need infrastructure upgrades for components such as the transformer; we plan for future deployments to ensure there's no need to double back later and incur more costs. In this instance, we will ensure that the infrastructure at the Brick depot will support an additional 40 chargers in order to bring Brick to 60 EVSBs with the lowest infrastructure cost possible. We're familiar with the electrical utility



interconnection process, which can be time consuming and comes with specific challenges. This is one specific step where our work saves school districts enormous amounts of time, and provides assurance that prudent decisions, grounded in expert knowledge of the subject area, are being made. In addition, while not part of our immediate plans for this project, in the future we will explore the feasibility of integrating such technologies as solar power, battery storage and potential micro grids in our system.

7. Has your organization been approved to receive and expend any other grant funds related to this project? If so, please provide details.

No

8. Please provide any additional information that supports this project.

We at Highland have developed a budget neutral and turnkey solution in order to eliminate diesel and gasoline from student transportation as quickly as possible, without placing financial or logistical burdens on school districts. This creative financing solution enables us to provide clean transportation and make up the difference in cost between EVSBs and diesel vehicles. Public school districts have finite funding, time, and energy, and they should not have to redirecting funding from education to improve their student's health and reduce greenhouse gas emissions with technologies that are available now. Given the budget shortfalls many districts face as a result of the pandemic and subsequent economic downturn, it's more important now than ever to create financially sustainable models for deploying clean transportation.

Highland provides school districts with EVSB at cost parity with their current diesel budget, using vehicle-to-grid (V2G) incentives, managed charging, reduced maintenance costs, strategic infrastructure installation and management, and coordination of clean transportation incentives. Electric school buses are currently much more costly than diesel buses, but much like light-duty vehicles, their initial price, and the total cost of ownership, is declining. By leveraging currently available incentives to provide schools with EVSB now, Highland can improve the health of students and reduce greenhouse gas emissions sooner, while developing an enduring and expandable ecosystem for electric student transportation. The declining price of EVSB, along with increasing market capacity for V2G services means this model will soon be budget neutral for schools without the need for incentives. This initial deployment at Brick Township will be the launching pad for school bus electrification projects across the state of New Jersey.

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1. Steiner, Sandro et al. "Diesel exhaust: current knowledge of adverse effects and underlying cellular mechanisms." *Archives of toxicology* vol. 90,7 (2016): 1541-53. doi:10.1007/s00204-016-1736-5
 2. Austin, W., et al. "School Bus Emissions, Student Health and Academic Performance." *Economics of Education Review*. doi:10.1016/j.econedurev.2019.03.002
 3. Wargo, J., et al. "Children's Exposure to Diesel Exhaust on School Buses." *Environment and Human Health, Inc.*, <http://www.ehhi.org/reports/diesel/diesel.pdf>