



OFFICE OF RACIAL EQUITY AND SOCIAL JUSTICE

Marc Elrich
County Executive

Tiffany Ward
Director and Chief Equity Officer

MEMORANDUM

April 21, 2023

To: Jennifer Bryant, Director
Office of Management and Budget

From: Tiffany Ward, Director
Office of Racial Equity and Social Justice

Re: Racial Equity Impact Assessment (REIA) Supplemental Appropriation (SA) #23-88
Montgomery County Public Schools (MCPS) Maryland Department of the
Environment Volkswagen Environmental Mitigation Trust Grant, \$349,393

- I. **FINDING:** The Office of Racial Equity and Social Justice (ORESJ) finds that SA #23-88 *Volkswagen Environmental Mitigation Trust Grant* will maintain current efforts to replace diesel-powered school buses with electric powered-school buses in MCPS. This program supports County and school system goals to reduce carbon emissions by removing a diesel fuel-powered bus from the streets and replacing it with an electric bus. ORESJ recognizes the intersectionality between environmental sustainability and racial equity and social justice. However, there is insufficient information to determine if the reimbursable funds supplemental will enhance or accelerate the school system's efforts to transition to an electric bus fleet and its effect on reducing racial disparities and gaps. Therefore, ORESJ's analysis is inconclusive.
- II. **BACKGROUND:** The purpose of SA #23-88 is to fund the replacement of one diesel-powered school bus with an electric-powered bus. The funding will also provide funds to install the required charging infrastructure at a bus depot. The SA funding source is a Volkswagen Environmental Mitigation Trust Grant¹ administered by the MD Department of the Environment (MDE).

¹ In 2015, a Partial Consent Decree was approved following Volkswagen's violations of the Clean Air Act for the inclusion of a "defeat device" in their diesel cars allowing excessive emissions of nitrogen oxides (NOx). An Environmental Mitigation Trust was established in 2016 to remediate the excess emissions.

Electrification of school buses is an emerging industry with costs that can be a barrier to transitioning existing diesel-powered school bus fleets to zero-emissions electric school buses (ESB). The costs for ESBs are in some cases up to three times the cost of a diesel-powered school bus². The funding from the State is intended to cover the incremental cost of one alternative fuel school bus over a diesel school bus³.

In 2021, MCPS entered into a Transportation Services Agreement with Highland Electric Fleets (HEF) to procure turnkey ESB services or Electrification as a Service (EaaS). HEF purchases, designs, builds and maintains the ESBs and charging equipment. The school system pays for the service over time. By 2025, HEF will have provided a total of 326 ESBs to MCPS and be operational in all five bus depot locations. The Bethesda Depot received the first set of 25 ESBs. Additionally, 61 buses were deployed in other depot locations in the fall of 2022. The remaining 240 ESBs are scheduled for delivery in 2023 and 2024. This aligns with the State's Climate Solutions Now Act of 2022 requiring all new school bus purchases and contracts to be electric by 2025. MCPS intends for the school bus fleet to be entirely electric by 2035.

III. **ANALYSIS:** According to MCPS, on a typical day, diesel-powered school buses use approximately 17,000 gallons of diesel fuel, which emit greenhouse gasses and harmful matter from tailpipes⁴. Studies show that diesel-powered transportation produces 5 million tons of carbon dioxide emissions⁵. Each time a diesel-powered school bus is replaced, 229,167 lbs. of carbon dioxide are removed annually⁶. When comparing ESBs to diesel-powered school buses, several benefits emerge for children, bus drivers, as well as the environment overall, which include:

- Electric school buses produce zero emissions and deliver an immediate and palpable health benefit to students and their communities;
- With fewer moving parts, electric bus drive trains require far less maintenance than one powered by fossil fuel;
- Electric school buses spend around 18 hours each day sitting at their depots, which creates an opportunity to use the buses as batteries on the electric grid to support local network stability and resilience; and
- And electricity is a far less expensive and more predictable fuel source than diesel⁷.

² <https://stnonline.com/partner-updates/behind-the-scenes-of-the-nations-largest-electric-school-bus-project/>

³ <https://mde.maryland.gov/programs/air/MobileSources/Documents/MDE%20Alt%20Fuel%20School%20Bus%20Appendix%20D-4.pdf>

⁴ <https://www.montgomeryschoolsmd.org/departments/facilities/sustainability/Electric-Vehicles.aspx>

⁵ <https://www.governing.com/next/theres-a-big-payoff-with-an-electrified-school-bus-fleet>

⁶ <https://www.proterra.com/products/transit-buses/fuel-economy/>

⁷ <https://stnonline.com/partner-updates/behind-the-scenes-of-the-nations-largest-electric-school-bus-project/>

According to MDE, the grant funding for one ESB will be assigned to a route along the I-270 corridor in schools with the highest number of at-risk students identified by English as a Second Language (ESOL), Free and Reduced Lunch Qualifiers, and students with special needs⁸. The Shady Grove North/South Depot serves the Gaithersburg, Magruder, Watkins Mill, Richard Montgomery, Rockville, and Wooten clusters.

Studies show diesel-powered school buses can negatively affect children's health and academic performance. As buses idle at streetlights, they emit pollutants and particulate matter, with additional exposure to pollutants inside the cabin. World Resources Institute's (WRI) Electric School Bus Initiative outlined the harms felt by students.

- The exhaust from diesel school buses is harmful to students' physical health, putting them at risk for serious conditions like cancer and asthma.
- Diesel exhaust pollution is linked to negative cognitive development impacts, endangering students' academic progress and learning.
- These diesel-powered buses also emit high levels of greenhouse gases like carbon dioxide, directly contributing to climate change that increasingly threatens our children's future.
- Communities of color face higher on-road air pollution, and students from Black households, low-income students, and students with disabilities are all more likely to ride the school bus than their counterparts⁹

Nationally, low-income students comprise 60% of school bus riders compared to 45% of non-low-income students¹⁰. This disparity reflects the need for intentionality to ensure that outcomes for minority and low-income communities are more equitable. WRI, the creator of the Equity Framework to Guide the Electric School Bus Initiative provides resources to help center equity-related indicators, (including racial, health, mobility, geographic access, education, etc.) in the transition to ESBs¹¹. According to WRI, putting equity first in electric school bus deployment means: embedding equity in program design; involving stakeholders in decision-making; strengthening partnerships with local organizations; prioritizing underserved school districts by providing funding and technical assistance; and following additional practices related to the supply chain and manufacturing¹².

While beyond the scope of this REIA, MCPS should explore the feasibility of purchasing retrofitted diesel-to-electric buses, also known as repowers, instead of or in addition to contracting replacement ESBs. The National Bureau of Economic Research shares how "diesel retrofits are an immediate and relatively inexpensive way to dramatically reduce

⁸ <https://mde.maryland.gov/programs/air/MobileSources/Documents/MDE%20Alt%20Fuel%20School%20Bus%20Appendix%20D-4.pdf>

⁹ <https://electricschoolbusinitiative.org/why-we-need-transition-electric-school-buses>

¹⁰ <https://www.bts.gov/topics/passenger-travel/back-school-2019>

¹¹ <https://electricschoolbusinitiative.org/sites/default/files/2023-01/Equity%20Framework%20to%20Guide%20the%20Electric%20School%20Bus%20Initiative%20%28Jan%202023%29.pdf>

¹² <https://www.wri.org/insights/electric-school-buses-equity-us>

diesel emissions¹³. New York City deployed one of the first repowered school buses and several companies are beginning to repower diesel buses. WRI offers information on some of the pros and cons of repowering older and newer diesel-powered school buses in comparison to purchasing new ESBs.

Tradeoffs of Repowering Internal Combustion Engine School Buses vs. New Electric School Buses

	Older school bus repower (>7 years)	Newer school bus repower (<4 years)	Brand new ESB
Pros	<ul style="list-style-type: none"> - Lower upfront price point. A bus can be more easily purchased without incentives - More flexibility to source chassis and body components during supply chain challenges - Ends internal combustion engine bus life and associated emissions - Avoids emissions with lesser material and manufacturing demands - Labor for installation can be local - Warranty on electric powertrain and battery - Potential for new business models for bus leasing after repowering 		<ul style="list-style-type: none"> - New condition for interior and exterior - Most generous federal and state incentives available - Longest useful life and maximizes any state limitations on bus age - Dedicated warranty and dealer support
	<ul style="list-style-type: none"> - Removes the most polluting buses from the road 	<ul style="list-style-type: none"> - Lightly used condition limits the need for interior or exterior refurbishing - State rules on maximum bus age can more easily be met 	---
Cons	<ul style="list-style-type: none"> - Variations by bus make, model, and model year; not all buses are good candidates for repowering - Fewer purchase incentives available - In most cases, OEM warranty on the base bus body and chassis are voided - May encounter regulatory hurdles to ensure the bus is up to local and state specifications 		<ul style="list-style-type: none"> - Higher upfront price point. Purchase often needs the support of incentives - All bus components dependent on functioning supply chain - Greater material demand and manufacturing needs
	<ul style="list-style-type: none"> - Heavily used condition likely needs more refurbishing or upgrades - Lesser longevity - State rules on maximum bus age may apply 	<ul style="list-style-type: none"> - If purchasing a used bus to repower, a newer model bus is more costly 	---

Source: World Resources Institute. Available at: <https://www.wri.org/insights/repowering-electric-school-buses>

Purchasing repowered school buses may help accelerate efforts to remove diesel-powered buses that pollute the environment and cause harm to the health and development of students and the community. If there is also potential to reduce the cost of procuring EaaS, savings could be used to create or enhance programs that reduce racial disparities and gaps within MCPS.

cc: Monifa McKnight, Superintendent, Montgomery County Public Schools
 Ken Hartman, Director, Strategic Partnerships, Office of the County Executive

¹³ https://www.nber.org/system/files/working_papers/w25641/w25641.pdf