



Committee: Economic Matters – Environment and Transportation

Testimony on: HB0696 – Public Utilities – Electric School Bus Pilot Program

Position: Support

Hearing Date: February 10, 2022

Chesapeake Physicians for Social Responsibility (CPSR) is a statewide evidence-based organization of more than 900 physicians and other health professionals and supporters that addresses existential public health threats: nuclear weapons, the climate crisis, and the issues of pollution and toxic effects on health, as seen through the intersectional lens of environmental, social, and racial justice. As an organization founded by physicians, we understand that prevention is far superior to treatment in reducing costs, death, illness, injury and suffering.

We submit this testimony **in strong support** of HB0696, which will benefit the health and well-being of thousands of Maryland school children as well as adults with chronic respiratory illnesses by establishing an electric school bus pilot program that further promotes, in an economically feasible manner, access to and deployment of electric school buses across Maryland school systems.

One highly favorable aspect of the proposed bill is that it does not add expense to the state's budget, instead harnessing private sector financing (investor-owned electric companies) to support participating school systems to transition their aging fleet of diesel school buses to zero emission electric school buses. In addition, we find this bill to be a win-win-win for Maryland: it will help reduce the direct health threat and costs of airborne pollutants from diesel exhaust fumes to schoolchildren and other at-risk individuals, tackle the climate impact of carbon pollution generated by the transportation sector, and support an innovative partnership between electric utilities and school districts to modernize the energy economy. The sections below offer more detail on each of these positive aspects.

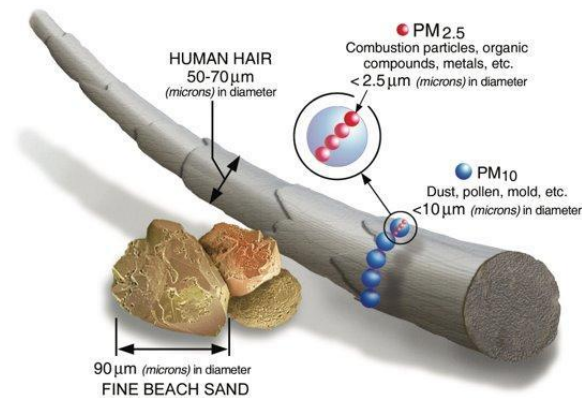
Reducing the health threat of diesel emissions from school buses. More than 7,000 school buses transport approximately 600,000 thousand Maryland students daily.^{1,2} These students are routinely exposed to harmful airborne pollutants that are present in exhaust fumes generated

¹ [Motorists Urged To Follow School Bus Safety Laws As Students Head Back To Class \(maryland.gov\)](https://www.maryland.gov/newsroom/2021/09/09/motorists-urged-to-follow-school-bus-safety-laws-as-students-head-back-to-class)

² [Lawmakers Discuss Challenges Causing Bus Driver Shortage Across Maryland - Maryland Matters](https://www.maryland.gov/newsroom/2021/09/09/lawmakers-discuss-challenges-causing-bus-driver-shortage-across-maryland)

from diesel-powered vehicles including particulate matter (Ultrafine, PM_{2.5}, PM₁₀), hydrocarbons, and nitrogen oxides.³ Ultrafine particles are especially harmful as their microscopic size allows them to enter deep into the lungs and readily permeate into the bloodstream (Figure 1).⁴

Figure 1: Size Comparison for PM Particles



Research studies have consistently demonstrated higher levels of detrimental pollutants and particulate matter within school bus cabins and around moving and idling school buses. For instance, a study comparing pollution levels in school buses with those in surrounding traffic determined that a child riding inside a diesel school bus may be exposed to as much as 4 times the level of diesel exhaust as someone riding in a car ahead of it.⁵ Furthermore, Yale University researchers found fine particulate matter pollution concentrations measured on buses were as much as 5-10 times higher than pollution levels measured at fixed-site pollution monitoring stations.⁶

Importantly, reducing childhood exposure to diesel emissions has been shown to result in improved health outcomes. A natural experiment study of air pollution concentrations involving 188 buses and 275 students pre- and post-adoption of clean air technologies (diesel oxidation catalysts, crankcase ventilation systems) and fuel (ultra-low sulfur diesel, biofuels) over a four year period in the Puget Sound region of Washington found that the use of clean air technologies and ultra-low sulfur diesel decreased PM_{2.5} levels between 10-50%. Crucially, the researchers

³ Beatty, T.K.M and Shimshack J.P. School buses, diesel emissions, and respiratory health. *Journal of Health Economics*. 2011. 30:987-999.

⁴ [Particulate Matter \(PM\) Basics | US EPA](#)

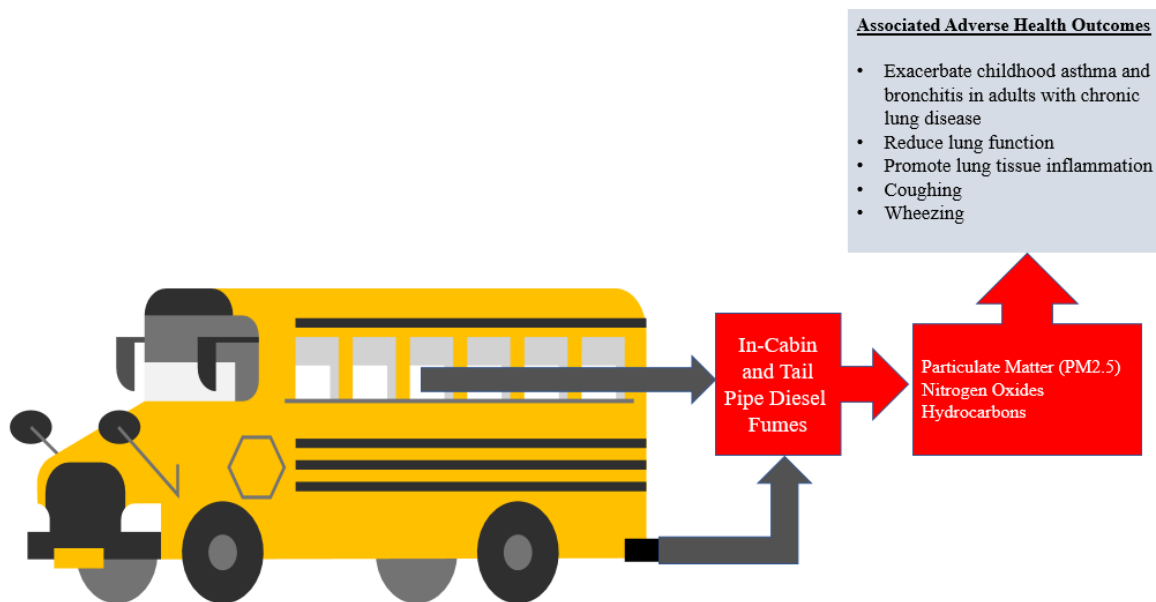
⁵ National Resources Defense Council Coalition for Clean Air, No breathing in the aisles — diesel exhaust inside school buses; <https://www.nrdc.org/sites/default/files/schoolbus.pdf>, January 2001

⁶ Wargo, J. Children's Exposure to Diesel Exhaust on School Buses; *Environment and Health*. 2002

also noted improved health outcomes, including improved lung function, and reduced absenteeism, especially in children with persistent asthma.⁷

Children are more susceptible to the adverse health effects of diesel engine generated pollutants due to their higher respiratory rates, smaller lung size, and ongoing lung development.⁸ These effects are compounded in many at-risk low income and minority communities where schools are often located near major roadways. Preventing children from being exposed to harmful diesel engine generated airborne particles from school buses will improve children's respiratory health while decreasing school absenteeism. It can also reduce the number of missed caregiver workdays and associated lost productivity due to student absenteeism. Figure 2, below, highlights key adverse health outcomes attributed to in-cabin and tail pipe diesel fume exposure.

Figure 2: Diesel School Bus Fumes and Associated Adverse Health Outcomes



Reducing carbon emissions from diesel school buses. Transitioning to all-electric school bus fleets across the US would avert 5.3 million tons of greenhouse gas emissions each year.⁹ Passage of HB0696 can greatly advance the ability of local school districts throughout Maryland to cost-efficiently begin the inevitable transition from our present fleet of aging diesel school

⁷ Adar, S.D., et al. Adopting Clean Fuels and Technologies on School Buses: Pollution and Health Impacts in Children. *Amer. J. Respir. Crit. Care Med.* 2015. 12:1413-1421

⁸ Liu, NM and Grigg, J, Diesel, Children, and Respiratory Disease; *British Medical Journal (BMJ Paediatrics Open)*, 24 May 2018

⁹ Environment America and U.S. PIRG Education Fund, *Accelerating the Transition to Electric School Buses*; February, 2021

buses to electric school buses. As of 2020, every major school bus manufacturer offers electric versions, and electric school buses are now available in every capacity category.

Using an innovative win-win partnership of investor-owned utilities and school districts to make the clean energy transition. The initial cost of an electric school bus is substantially greater than a diesel bus. HB0696 will establish mutually advantageous partnerships between investor-owned utilities and selected school districts to make the cost of electric buses essentially equal to the replacement cost of a diesel bus. Moving to electric buses will also provide substantial future savings to school districts: the U.S. Public Interest Group (US PIRG) determined that the lifetime fuel, operation, and maintenance savings of electric school buses compared to diesel buses are around \$170,000;¹⁰. This type of investor-owned utility/school district electric bus partnership is already operating through Portland General Electric in Oregon, Con Edison in New York, and most recently Dominion Energy in Virginia.^{9, 11} Virginia anticipates expanding their program to have 50% of all diesel school bus replacements in Dominion Energy's footprint to be electric by 2025 and 100% by 2030.

The partnership proposed under HB0696 is an innovative, economically feasible, and future-oriented approach that addresses key health, climate, and energy transition challenges simultaneously. We **strongly urge favorable action** by the Committee on HB0696.

Respectfully submitted,

Snehal T. Patel, M.D.
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¹⁰ US PIRG, Paying for Electric Buses Financing Tools for Cities and Agencies to Ditch Diesel; 30 October 2018

¹¹ Virginia Business, Dominion launches electric school bus program; October 28, 2020