



January 24th, 2022

Dear esteemed members of the Senate Finance Committee

On behalf of the Center for Community Engagement, Environmental Justice, & Health (CEEJH) at the University of Maryland School of Public Health, I, **Dr. Sacoby Wilson, am writing to express my support for the Transit Equity Act, SB0023 sponsored by Senator Carter**, which will put equity at the forefront of Maryland transportation planning and ensure equitable access to transportation for all Marylanders.

Two-thirds of transit-dependent people in Baltimore face commutes of 90 minutes or more each way. Commuting time is one of the strongest factors in a person's chances of escaping poverty: the longer the commute, the harder it is to maintain a job, keep stable housing, and accumulate wealth.¹ Furthermore, a report by the Environmental Integrity Project (EIP), based on newly available asthma hospitalization rates by zip code, found that the transportation sector is a significant contributor to asthma rates in Baltimore City.² Road traffic is an important source of particulate matter (PM) formation via fuel combustion (e.g., gasoline and diesel), resulting in emissions from: tailpipes, contact between vehicle, and the road surface, and the use of brakes.³ PM emissions from diesel engines are the major source of PM_{2.5}, PM_{0.1}, and PM_{0.05}, which can be deposited deep into the respiratory tract and lead to various adverse health effects, including respiratory, nervous system, autoimmune disorders, and mortality that plague Baltimore, as indicated in the EIP report.^{2,4} In 2019, the Maryland Department of Health (MDH) reported that chronic lower respiratory diseases like asthma were the fifth leading cause of death (29.2 per 100,000 residents) in the State. However, 2016-2018 MDH data revealed that Black non-Hispanic children had significantly higher rates of emergency department visits than other children. This presents an environmental justice issue that warrants a call to action. One CEEJH study of PM_{2.5} exposure in Bladensburg, Maryland found that concentrations may increase around areas due to confluences of heavily-trafficked roadways/truck traffic.⁵ Through the use of EPA EJSCREEN, an environmental justice screening and mapping tool which CEEJH is currently revamping at the state level (MD EJSCREEN) to better contextualize such injustices, we found that 53% of the population within a 1-mile radius of Bladensburg were low income and exposed to an average annual daily traffic count of 1500 vehicles. Findings from our study of traffic-related air pollution (TRAP) are externally validated by and corroborate other nationwide studies. For example, a study conducted in Harlem, New York, recorded mean PM_{2.5} levels that ranged from 26.5 to 53.5 µg/m³, which revealed that local diesel truck traffic may influence PM_{2.5} concentrations.⁶ In South Bronx, New

¹ Bouchard, M. (2015, May 7). *Transportation emerges as crucial to escaping poverty*. The New York Times. Retrieved January 23, 2022, from <https://www.nytimes.com/2015/05/07/upshot/transportation-emerges-as-crucial-to-escaping-poverty.html>

² Environmental Integrity Project. (2017, December). *Asthma and Air Pollution in Baltimore City*. Environmental Integrity Project. Retrieved from <http://www.environmentalintegrity.org/wp-content/uploads/2017/12/Baltimore-Asthma.pdf>

³ Alistair J. Thorpe, Roy M. Harrison, Paul G. Boulter, and Ian S. McCrae. "Estimation of Particle Resuspension Source Strength on a Major London Road." *Atmospheric Environment* 41 (Dec 2007): 8007–8020; Chiang Hung-Lung and Huang Yao-Sheng. "Particulate Matter Emissions from On-Road Vehicles in a Freeway Tunnel Study." *Atmospheric Environment* 43 (Aug 2009): 4014–4022.

⁴ M. Guevara. "Emissions of Primary Particulate Matter." 2016: 1–34. <<https://doi.org/10.1039/9781782626589-00001>>; Frank J. Kelly and Julia C. Fussell. "Air Pollution and Public Health: Emerging Hazards and Improved Understanding of Risk." *Environmental Geochemistry and Health* 37 (2015): 631–649; Francine Laden, Joel Schwartz, Frank E. Speizer, and Douglas W. Dockery. "Reduction in Fine Particulate Air Pollution and Mortality." *American Journal of Respiratory and Critical Care Medicine* 173 (Mar 2006): 667–672; Matthias Budde, Rayan El Masri, Till Riedel, and Michael Beigl. "Enabling Low-Cost Particulate Matter Measurement for Participatory Sensing Scenarios." In *Proceedings of the 12th International Conference on Mobile and Ubiquitous Multimedia*, 19:1–19:10. MUM'13. New York, NY, USA: ACM, 2013; Elena Austin, Igor Novosselov Edmund Seto, and Michael G. Yost. "Laboratory Evaluation of the Shinyei PPD42NS Low-Cost Particulate Matter Sensor." *PLoS One* 10 (Sep 2015): e0137789.

⁵ Ezeugoh, R. I., Puett, R., Payne-Sturges, D., Cruz-Cano, R., & Wilson, S. M. (2020). Air Quality Assessment of Particulate Matter Near a Concrete Block Plant and Traffic in Bladensburg, Maryland. *Environmental Justice*, 13(3), 75-85.

⁶ Patrick L. Kinney, Maneesha Aggarwal, Mary Northridge, Nicole A.H Janssen, Peggy Shepard "Airborne Concentrations of PM(2.5) and Diesel Exhaust Particles on Harlem Sidewalks." *Environmental Health Perspectives* 108 (Mar 2000): 213–218.



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York, the mean outdoor school-site PM_{2.5} concentrations were 14.3 µg/m³, which were associated with vehicle traffic around the school on weekdays and proximity to roadways.⁷ This has severe ramifications on children's health, particularly neurodevelopment with their developing brain and immune systems. A systematic review of association between fine particle exposure and children's behavior revealed PM_{2.5} exposure will increase the risk of children's behavioral problems, both in the short and long-term.⁸ Through its transit equity initiatives, SB0023 simultaneously addresses public health and climate change by effectively reducing exposure to toxic vehicular emission and thus greenhouse gas emissions.

The American Public Transportation Association reports that public transit emits less air pollution than equivalent car use.⁹ According to the 2021 "*Transit Equity & Environmental Health in Baltimore*," report by researchers at Johns Hopkins: "The Intergovernmental Panel on Climate Change emphasizes that greenhouse gasses must be reduced by 50-85% from current consumption to limit global warming to four degrees Fahrenheit. When compared to the average SUV or sedan, buses produce approximately 33% less pounds of carbon dioxide per passenger mile, while the metro, LightRail, and MARC trains can see as much as a 76% reduction in carbon dioxide per passenger mile. Communities with strong public transportation systems can reduce the nation's carbon emissions by 37 million metric tons yearly".¹⁰ Furthering equity in the process, ensuring that the Maryland Department of Transportation (MDOT) evaluates equity across all transit modes (i.e airport, seaport and toll lanes) via cross-modal-analysis will facilitate a budgeting process that does not overburden environmental justice communities with disproportionate cost.

For all of these reasons and many more, please support the Transit Equity Act to ensure we can advance environmental justice, and serve as a model for other states to follow. I firmly believe a favorable vote for SB0023 is a vote for environmental justice and transit equity for the great residents of Maryland.

Sincerely,
Dr. Sacoby Wilson

⁷ Ariel Spira-Cohen, Lung Chen Chi, Michaela Kendall, Rebecca Sheesley, and George D. Thurston. "Personal Exposures to Traffic-Related Particle Pollution among Children with Asthma in the South Bronx, NY | Journal of Exposure Science & Environmental Epidemiology." 2010. <<https://www-nature-com.proxy-um.researchport.umd.edu/articles/jes200934>> (Last accessed on May 14, 2020).

⁸ Du H, Wang YW, Li TT. [A systematic review of association between fine particle exposure and children's behavior]. *Zhonghua Yu Fang Yi Xue Za Zhi*. 2021 Jan 6;55(1):96-103. Chinese. doi: 10.3760/cma.j.cn112150-20200322-00407. PMID: 33455139.

⁹ Shapiro, R. J., Hassett, K. A., & Arnold, F. S. (2002, July). *Conserving Energy and Preserving the Environment: The Role of Public Transportation*. The American Public Transportation Association. Retrieved from http://www.sonecon.com/docs/studies/enenv_0702.pdf

¹⁰ Johns Hopkins Bloomberg School of Public Health. (2021, September 21). *Transit Equity & Environmental Health in Baltimore*. Bloomberg American Health Initiative. Retrieved January 24, 2022, from <https://americanhealth.jhu.edu/news/transit-equity-environmental-health-baltimore>