



January 14th, 2022

Dear esteemed members of the Environment and Transportation 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 sponsor testimony in support of HB46 Vehicle Emissions Inspection Program-Not Subject to Inspection-Fee.**

It is well understood that greenhouse gas emissions have a lethal impact on our ecosystem and public health. Tropospheric, or ground level ozone which is emitted from motor vehicle exhaust, can exacerbate respiratory conditions like asthma, inflame internal pathways, damage the epithelium of the throat and lungs, and more.<sup>1</sup> According to the Maryland Department of Health (MDH), in 2018 there were 29,534 asthma-related emergency department visits in Maryland (age-adjusted rate of 52.4 per 10,000 residents).<sup>2</sup> In 2019, 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.<sup>2</sup> 2016-2018 data from the MDH revealed that Black non-Hispanic children had significantly higher rates of emergency department visits than other children.<sup>2</sup> This presents an environmental justice issue that warrants a call to action. Moreover, additional negative health effects stemming from ground level ozone are being newly discovered. For example, one study found higher levels of ozone exposure to be associated with increased acute effects of sickle cell disease, a genetic disorder most commonly found in African-American populations.<sup>3</sup>

Road traffic is also 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.<sup>4</sup> PM emissions from diesel engines are the major source of PM<sub>2.5</sub>, PM<sub>0.1</sub>, and PM<sub>0.05</sub>, which can be deposited deep into the respiratory tract and lead to various adverse health effects, including respiratory, nervous system, autoimmune disorders, and mortality.<sup>5</sup> One CEEJH study of PM<sub>2.5</sub> exposure in Bladensburg, Maryland found that concentrations may increase around areas due to industrial truck traffic.<sup>6</sup> 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. Similarly, a study conducted in Hunts Point, New York found increased concentrations of elemental carbon (~2.6 to 7.3 µg/m<sup>3</sup>) at intersections which

<sup>1</sup> Health effects of ozone pollution. (2021, May 5). US EPA. <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>

<sup>2</sup> Maryland Department of Health. (2018). *Asthma*. Maryland Department of Health. Retrieved January 13, 2022, from <https://health.maryland.gov/phpa/OEHfp/eh/Pages/asthma.aspx>

<sup>3</sup> Tewari, S., Brousse, V., Piel, F. B., Menzel, S., & Rees, D. C. (2015). Environmental determinants of severity in sickle cell disease. *Haematologica*, 100(9), 1108–1116. <https://doi.org/10.3324/haematol.2014.120030>

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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.

varied due to large truck traffic.<sup>7</sup> 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<sub>2.5</sub> levels that ranged from 26.5 to 53.5 µg/m<sup>3</sup>, which revealed that local diesel truck traffic may influence PM<sub>2.5</sub> concentrations.<sup>8</sup> In South Bronx, New York, the mean outdoor school-site PM<sub>2.5</sub> concentrations were 14.3 µg/m<sup>3</sup>, which were associated with vehicle traffic around the school on weekdays and proximity to roadways.<sup>9</sup> 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<sub>2.5</sub> exposure will increase the risk of children's behavioral problems, both in the short and long-term.<sup>10</sup>

While current Maryland legislation aims to reduce greenhouse gas emissions through Regional Greenhouse Gas Initiative (RGGI), this “cap and trade” program is not enough because it does not account for “sacrifice zones” and “hotspots.” Corporations and zoning projects have routinely taken advantage of the “path of least resistance” approach to situate facilities and plan highway projects in low-income communities of color.<sup>11</sup> They foresee less potential for community mobilization in such communities, which presents a blatant case of environmental racism. This further emphasizes the need for an effective and synergistic greenhouse gas emissions reduction initiative, as vulnerable and disadvantaged populations have historically faced the brunt of exposure and adverse health outcomes.

Exacerbating the health impacts mentioned above, research shows that greenhouse gas emissions create a feedback loop of increasing (global and local) temperature and giving rise to the “urban heat island effect.” This results in inner city communities absorbing and trapping more heat than other communities due to their lack of greenspaces and cooling spaces through evapotranspiration, and disproportionate exposure to vehicular emissions. Overall, Maryland is projected to experience an additional 30 days of dangerous heat by 2050, which is especially troubling for the estimated 110,000 residents who are highly vulnerable to excessive heat.<sup>12</sup> In 2019 alone, 21 individuals died from heat-related causes, a number which will undoubtedly rise as the temperature rises.<sup>13</sup> According to the CDC, Black, Indigenous, and People of Color (BIPOC) communities are at significantly higher risk of deaths related to heat exposure, making this a matter of environmental injustice and health inequity.<sup>14</sup>

Due to the environmental health impacts and disparities explained throughout this testimony, it is my professional opinion that HB46's contributions towards electric vehicle incentives in the State will help revolutionize our transportation infrastructure, advance environmental justice, and serve as a model for other states to follow. I firmly believe a favorable vote for HB46 is a vote for environmental justice and health equity for the great residents of Maryland.

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<sup>7</sup> Suvendrini T. Lena, Victor Ochieng, Majora Carter, Jose Holguin-Veras, Patrick L. Kinney. “Elemental Carbon and PM(2.5) Levels in an Urban Community Heavily Impacted by Truck Traffic,” *Environmental Health Perspectives* 110 (Oct 2002): 1009–1015.

<sup>8</sup> 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.

<sup>9</sup> 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).

<sup>10</sup> 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.

<sup>11</sup> Schelly, D., & Stretesky, P. B. (2009). An analysis of the “path of least resistance” argument in three environmental justice success cases. *Society and Natural Resources*, 22(4), 369-380.

<sup>12</sup> Staff. (2021, January 22). The impact of climate change on maryland. *The Southern Maryland Chronicle*.

<https://southernmarylandchronicle.com/2021/01/22/the-impact-of-climate-change-on-maryland/>

<sup>13</sup> Maryland Department of Health. (2019, October). 2019 heat-related illness surveillance summary report.

<https://health.maryland.gov/preparedness/Documents/2019%20Summary%20Heat%20Report.pdf>

<sup>14</sup> Vaidyanathan, A. V., Malilay, J. M., Schramm, P. S., & Saha, S. S. (2020, June). Heat-Related Deaths — United States, 2004–2018.

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6924a1.htm>

Sincerely,

A handwritten signature in blue ink, appearing to read 'Dr. Wilson', with a long, sweeping underline.

Dr. Sacoby Wilson  
Director, Center for Community Engagement, Environmental Justice, and Health