



MARYLAND LEAGUE
OF CONSERVATION VOTERS

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February 10, 2021

SUPPORT HB 334: Zero-Emission Bus Transition Act

Dear Chairman Barve, Vice-Chair Stein and members of the Committee:

Maryland League of Conservation Voters strongly urges your support of HB334 – the Zero-Emission Bus Transition Act – and we thank Delegate Korman for his leadership on this important issue. This bill is a priority for Maryland LCV and the Environmental Community. It is an important piece in Maryland’s long-term transition toward clean transportation and fighting climate change. HB334 will provide significant benefits for the health of our communities, for our climate, and for taxpayers for the following three reasons:

ECONOMIC

Battery powered electric buses are a cost-effective alternative to diesel buses – The trend is clear. Transit agencies around the world are transitioning away from diesel buses to electric. There are currently more than 425,000 electric buses on the road worldwide. This trend is also occurring in the US. There are more than 2,000 electric buses circulating across the country.¹ In Maryland, both Frederick County and Howard County have electric buses. The initial cost of an electric bus is greater than a diesel bus; however, the long-term savings in fuel, operation, and maintenance costs make the electric bus a more cost-effective investment over its lifetime.

The U.S. Public Interest Group (US PIRG) determined that while electric buses initially cost around \$200,000 more per bus than diesel buses, lifetime fuel and maintenance savings of electric buses are around \$400,000.² These projected savings are being confirmed by transit systems around the country that have adopted electric buses.

Antelope Valley Transit Authority in Los Angeles County reported that electric buses save the county an average of \$46,000 per bus per year over diesel.³ The Chicago Transit Authority’s (CTA) rollout of two electric buses in 2014 was one of the first major tests of electric bus technology in a cold winter climate.

¹ <https://globaldrivetozero.org/publication/zeroing-in-on-zebz-the-advanced-technology-transit-bus-index-2019/>

² US PIRG, *Paying for Electric Buses Financing Tools for Cities and Agencies to Ditch Diesel*, 30 October 2018

³ Forbes, *The U.S. just spent \$84 million on electric buses*; <https://www.forbes.com/sites/sebastianblanco/2018/08/31/84-million-electric-buses/#50edccc65e40>, 31 August 2018

The vehicles have performed well, even under extreme temperatures, while saving the CTA more than \$24,000 each year in fuel costs and \$30,000 each year in maintenance costs.⁴ In Maryland, Frederick County has found similar results, with reported savings of more than \$50,000 per year per bus over the diesel models.⁵ By switching to electric buses, the Maryland Transit Administration (MTA) can recoup its initial investment in approximately 5 years and continue saving throughout the remaining years the buses will be in operation (buses usually run at least 12 years).

PUBLIC HEALTH

Diesel emissions are the most harmful type of transportation emissions – Diesel exhaust fumes have higher levels of health-harming substances, including particulate matter and nitrogen oxides, than other transportation fuels.⁶ Between 80% and 95% of the particulate matter in diesel soot is of “ultrafine” size – the most harmful type of particles because their microscopic size allows them to enter deep into the lungs and actually penetrate cell walls to enter the circulation system. Particulate matter is strongly associated with pulmonary and cardiovascular risk, and long-term mortality. Nitrogen oxides from fossil fuel combustion, including diesel exhaust, are the major precursors of ground level ozone, which is an important trigger of asthma attacks.

Additionally, diesel exhaust contains over 40 toxic air contaminants, including benzene, formaldehyde, and heavy metals. These and other substances make diesel exhaust exposure a recognized cause of cancer risk; the California Environmental Protection Agency’s Office of Environmental Health Hazard Assessment found that “long-term exposure to diesel exhaust particles poses the highest cancer risk of any toxic air contaminant evaluated.”⁷ As a result of studies of the health effects of diesel exhaust, in 2012 the International Agency for Research on Cancer (a division of the World Health Organization) listed diesel engine exhaust as “carcinogenic to humans.”

There is also strong evidence that exposure to transportation exhaust pollution causes long-term damage to lung development in children.⁸ In the City of Baltimore the use of yellow school buses is very limited, and students usually take diesel fueled MTA buses to get to and from school. They are being directly exposed to diesel exhaust emissions while waiting at bus stops and riding these buses. The developing lungs of children make them especially sensitive to the harmful effects of diesel exhaust exposure.⁹ The high prevalence of asthma in young children increases this susceptibility, and asthma attacks are major contributors to school absence and causes of medical care-seeking for school-age children.

By eliminating diesel emissions from buses in our neighborhoods and cities, we will improve our communities by reducing health risks from air pollution and significantly reducing health care costs. These savings have been quantified in cities such as New York and Chicago. The Chicago Transit Authority estimates that a single electric bus saves the city nearly \$55,000 every year in avoided healthcare expenses resulting from cleaner air.¹⁰ In New York, a study conducted by Columbia University for MTA-New York City Transit calculated that electric buses significantly reduce particulate matter

⁴ Chicago Transit Authority, *CTA Expands Electric Bus Fleet*, archived at <https://www.transitchicago.com/cta-expands-electric-bus-fleet/>, 12 June 2018

⁵ Marshall, Ryan. “County Looks at Adding More Electric Buses to Fleet.” Post, 16 April 2018, https://www.fredericknewspost.com/news/politics_and_government/levels_of_government/county-looks-at-adding-more-electric-buses-to-fleet/article_ec0cba88-7bc5-5aef-a514-83ede66266a9.html

⁶ Union of Concerned Scientists, *Diesel Engines and Public Health*; <https://www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health/diesel-engines>, 2019

⁷ California Environmental Protection Agency, Office of Environmental Health Hazard Assessment and American Lung Association of California, *Health Effects of Diesel Exhaust*, 2001

⁸ Gauderman, WJ, et al, Association of Improved Air Quality with Lung Development in Children; *New England Journal of Medicine*, vol.372, no.10, 5 March 2015

⁹ Liu, NM and Grigg, J, *Diesel, Children, and Respiratory Disease*; *British Medical Journal*, 24 May 2018

¹⁰ Chicago Transit Authority, *Electric Bus*, archived at <https://web.archive.org/web/20180206213131/http://www.transitchicago.com/electricbus/>

compared to diesel buses, and would produce approximately \$150,000 in health care savings per bus per year.¹¹

CLIMATE

Battery powered Electric Buses produce significantly lower greenhouse gas emissions than diesel buses – Transportation is the largest source of carbon pollution in Maryland, responsible for nearly half of statewide emissions.¹² The United Nations’ Intergovernmental Panel on Climate Change (IPCC) has made it overwhelmingly clear that we have 10 years to reduce our climate-disrupting emissions to levels that will avoid the worst-impacts of a warming planet. In order to meet our pollution reduction goals and flourish in today’s economy, Maryland must transform its transportation sector into a sustainable system.

In 2018, the Union of Concerned Scientists found that electric buses produce significantly lower greenhouse gas emissions than diesel, diesel-hybrid and natural gas buses over their entire life cycle. These benefits are found all over the country, even in places where the grid is carbon intensive. Over its entire lifecycle, an electric bus charged with the national electricity mix produces less than half of the carbon dioxide-equivalent (CO₂e) emissions per mile as are produced by natural gas or diesel-hybrid buses. A natural gas bus produces 2,364 grams carbon dioxide-equivalent (CO₂e) per mile and a diesel-hybrid 2,212 grams CO₂e per mile. An electric bus, charged with the national electricity mix, produces 1,078 grams CO₂e per mile.¹³ Additionally, electric buses are getting cleaner as the grid gets cleaner.

The Zero-Emission Bus Transition Act is consistent with Governor Hogan's Greenhouse Gas Reduction Act draft plan, which includes a goal of 50% MTA electric buses by 2030. The Electric Bus Transition Act assumes a more aggressive timeline, but is one that is urgently needed to meet the climate crisis and Maryland’s ambitious emissions reduction goals.

When you add the economic benefits of electric buses to the health and climate benefits from reducing particulate matter, CO₂ and NO_x emissions, the case for the Zero-Emission Bus Transition Act is very clear. This bill has real benefits for our communities and the environment, and for these reasons Maryland League of Conservation Voters strongly urges a favorable report on this priority bill.

Thank you.

Maryland League of Conservation Voters

¹¹ Judah Aber, Columbia University, *Electric Bus Analysis for New York City Transit*, May 2016.

¹² U.S. Energy Information Administration, “Table 3. 2015 State energy-related carbon dioxide emissions by sector,” “Energy-Related Carbon Dioxide Emissions by State, 2000-2015 www.eia.gov/environment/emissions/state/analysis/pdf/table3.pdf.”

¹³ Jimmy O’Dea, Union of Concerned Scientists, *Electric vs. Diesel vs. Natural Gas: Which Bus is Best for the Climate?*, archived at <https://web.archive.org/web/20190920232331/https://blog.ucsusa.org/jimmy-odea/electric-vs-diesel-vs-natural-gas-which-bus-is-best-for-the-climate>, 19 July 2018