



February 23, 2022

HB 829 Department of the Environment – Zero-Emission Medium and Heavy Duty Vehicles – Regulations (Zero-Emission Truck Act of 2022)

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Position: Support

Clean Air Task Force (CATF), a global nonprofit organization working to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies, is pleased to provide these comments in support of Maryland House of Delegates Bill HB 829, titled “Zero-Emission Truck Act of 2022.”

Heavy trucking produces around 2.3 billion metric tons¹ per year of CO₂, of which about 450 million metric tons² per year are emitted in the U.S. This is 24%³ of the emissions from the U.S. transportation sector. In Maryland, transportation is responsible for 30.4 million metric tons⁴ of GHG emissions annually. Trucking makes up a substantial portion of these emissions in Maryland and throughout the United States.

Diesel pollution from trucks also causes significant negative health impacts. According to CATF’s Deaths by Dirty Diesel tool, in 2023 diesel vehicle emissions (both on- and off-road) are projected to contribute to 186 deaths and approximately \$2 billion in monetized health impacts in the state of Maryland.⁵

¹ Calculated by CATF based on fuel consumption data of 31 quads, assuming 74 kg of CO₂ per MMBtu of fuel. See U.S. Energy Info. Admin, *International Energy Outlook 2019*, <https://www.eia.gov/outlooks/aeo/data/browser/#/?id=51-IEO2019®ion=0-0&cases=Reference&start=2010&end=2050&f=A&linechart=~Reference-d080819.14-51-IEO2019&map=&ctype=linechart&sourcekey=0>.

² See Env’t Prot. Agency, *Fast Facts on Transportation Greenhouse Gas Emissions*, <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>; see also Env’t Prot. Agency, Greenhouse Gas Inventory Data Explorer, <https://cfpub.epa.gov/ghgdata/inventoryexplorer/#allsectors/allsectors/allgas/econsect/current>.

³ See Env’t Prot. Agency, *Fast Facts on Transportation Greenhouse Gas Emissions*, <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>.

⁴ See U.S. Energy Information Administration State CO₂ emissions <https://www.eia.gov/environment/emissions/state/> Table 4, Maryland.

⁵ See CATF, *Deaths by Dirty Diesel*, <https://www.catf.us/deathsbydiesel/>.

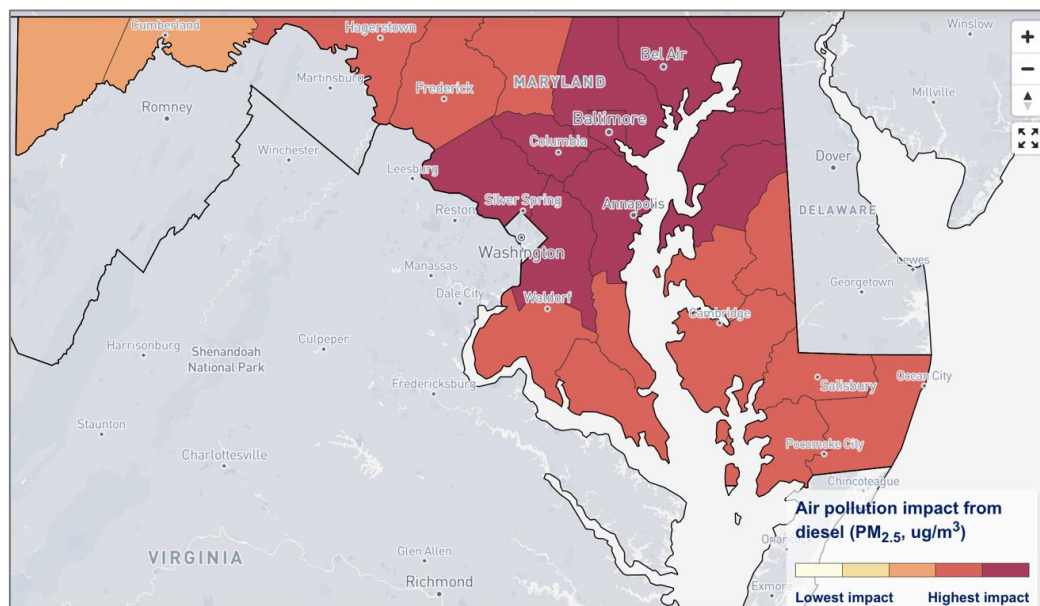


Figure 1: Maryland's air pollution impacts from diesel (CATF's Deaths by Dirty Diesel tool).

Emissions-free electric drivetrains are likely to be a powerful decarbonization tool for the heavy trucking sector. Electric drivetrains can be powered by onboard battery energy storage, similar to the battery systems used in electric cars, or by catenary wires and other continuous electricity delivery systems that are the subject of research and may play a role in very high-throughput corridors. Hydrogen fuel cells can also power electric drivetrains, and the fundamentals of onboard fuel and battery energy storage suggest that hydrogen or other zero-carbon fuels will play a substantial role in long-haul heavy trucking. By adopting California's Advanced Clean Trucks (ACT) regulation, Maryland will promote the continued development of electrification and hydrogen technologies while pursuing a concrete strategy to abate emissions from the heavy-duty truck sector.

California's Advanced Clean Trucks regulation⁶ aims to accelerate the transition of Class 2b to Class 8 medium and heavy-duty diesel trucks to zero emission vehicles (ZEVs). The regulation has two components: a manufacturer sales requirement as well as a large fleet and large employer reporting requirement. By 2035, manufacturers who certify Class 2b to Class 8 chassis or complete vehicles will need 55% of Class 2b – 3 trucks, 75% of Class 4 – 8 straight trucks, and 40% of truck tractor sales to be ZEVs. Large employers are required to report information about shipments and shuttle services and large fleet owners with 50 trucks or more are required to report on their existing fleet operations.

A key attribute of the regulation is that it defines ZEV as an on-road vehicle with a drivetrain that produces zero exhaust emission of any criteria pollutant (or precursor pollutant) or greenhouse gas under any possible operational modes or conditions. This definition allows hydrogen fuel cell vehicle technology to play a role in decarbonizing heavy trucking—something that CATF sees as critical, especially for the difficult-to-electrify long haul routes.

The utility of hydrogen-powered electric drivetrains in long-haul applications is evident from recent estimates from the National Renewable Energy Laboratory (NREL) on the weight, range, and

⁶ See California Air Resources Board Advanced Clean Trucks Regulation, Final Regulation Order <https://ww3.arb.ca.gov/regact/2019/act2019/fro2.pdf>.

refueling time for heavy trucks with plug-in battery electric vehicle (BEV) and hydrogen fuel cell electric vehicle (FCEV) drivetrains. These drivetrains are similar in many ways, but the FCEV drivetrain has a much smaller battery and includes several compressed gaseous hydrogen storage tanks and fuel cells that the BEV does not have.

By supporting the use of FCEV drivetrains, the bill creates flexibility that will likely result in environmental and economic benefits. According to recent NREL research, the advantages of the hydrogen fuel cell drivetrain led to reduced costs for truck owners on certain routes. That reduced cost, in addition to the operational flexibility of hydrogen drivetrains, suggests that availability of hydrogen fuel cell electric trucks and fueling infrastructure would be a significant decarbonization promoter. Major manufacturers see this opportunity and are developing commercial products to pursue it.⁷

While not the majority of truck activity, long-haul (e.g., sleeper) routes, defined by NREL as greater than 500 miles, make up approximately 49%⁸ of fuel consumption in the U.S. heavy trucking sector. Given Maryland's proximity to key commercial hubs along the East Coast and in the Midwest, long-haul routes are expected to make up a good portion of truck activity in Maryland. By allowing for FCEVs in addition to BEVs, including a reporting requirement, and maintaining sensible timeframes for requiring manufacturers to enter the market, the Advanced Clean Trucks regulation sensibly tackles the climate impacts from the trucking sector. Adopting this regulation will reduce the climate impact of medium and heavy-duty trucking, benefiting Maryland into the future.

We urge the Committee to issue a favorable report on HB 829.

Please reach out to Angela Seligman (email: aseligman@catf.us, cell: 314.922.5293) with any questions.

CATF is a global nonprofit organization working to safeguard against the worst impacts of climate change by catalyzing the rapid development and deployment of low-carbon energy and other climate-protecting technologies. With 25 years of internationally recognized expertise on climate policy and a fierce commitment to exploring all potential solutions, CATF is a pragmatic, non-ideological advocacy group with the bold ideas needed to address climate change. CATF has offices in Boston, Washington D.C., and Brussels, with staff working virtually around the world.

⁷ See Air Products and Cummins to Accelerate Development and Deployment of Hydrogen Fuel Cell Trucks, July 2021, available at <https://www.cummins.com/news/releases/2021/07/26/air-products-and-cummins-accelerate-development-and-deployment-hydrogen>. See also <https://www.greencarcongress.com/2021/06/20210614-pola.html> and <https://www.cnbc.com/2021/11/12/too-risky-to-not-use-battery-and-hydrogen-tech-daimler-truck-ceo.html>.

⁸ See Dep't of Transp., *Freight Facts and Figures 2017*, Table 2-3, Figure 2-1, Table 6-8, Table 6-9 (Oct. 13, 2017), https://www.bts.dot.gov/sites/bts.dot.gov/files/docs/FFF_2017.pdf.