

INTRODUCTION

The vehicle electrification movement is rapidly accelerating as automakers worldwide commit to all-EV production as soon as 2030. Historically, most advocacy and effort has been focused on single-occupancy vehicles (SOVs). While this global shift is welcome and necessary to address the climate crisis and urban air quality issues, benefits of private vehicle electrification in the near-term will bring minimal benefit to LMI and BIPOC communities, which disproportionately suffer the immediate and long-term consequences of exposure to toxins related to fossil fuel emissions. Issues of affordability, supply-and-demand shortages, and the longevity of gasoline powered cars will all contribute to a slower adoption of SOV EVs. In fact, a recent study shows that single-occupancy EVs could make up one-quarter of the new car sales by 2035, but only 13 percent of vehicles on the road would be electric.¹ This is because the life of a standard gasoline-powered SOV is at least a decade, if not more. Therefore, to be equitable, we must focus on immediate public health relief from other sources while meeting our climate goals.

Alongside more robust support for transit and active mobility, refocusing our collective energies on medium-to-heavy duty (M/HD) vehicle electrification is one of the strongest ways to bring environmental and social justice to the transportation decarbonization movement. M/HD vehicles' carbon footprints and air quality impacts are disproportionately higher than those of SOVs. Their operations and storage are often located within LMI and BIPOC communities, concentrating their impacts on our most vulnerable neighbors. However, with the right interventions, M/HD electrification has the potential to be widely adopted more quickly, with more immediate effect than SOV electrification.

There are a number of state policies and federal initiatives working to increase the fleets of M/HD EVs and provide the necessary infrastructure to support them. The economic cost of EVs is also rapidly changing, as batteries become less expensive, gas prices continue to rise, and financial incentive programs offset many upfront costs.

Still, there are many challenges in the transition away from gasoline and diesel-powered vehicles. There is concern that massive electrification of fleets will upset an already overloaded electrical grid. Additionally, charging stations would need to be readily accessible and available equally, not just in wealthy, majority-white areas. And there is significant conservative opposition to legislation promoting clean energy and electric vehicles.

As such, it is recommended that: states and businesses implement financial incentive programs; a portion of both federal and state infrastructure funding is allocated specifically to majority-minority and low-income communities; and states enact legislation that would make benchmark requirements towards the electrification of fleets.

Mobilify and stakeholders can support these efforts by engaging with communities early in the planning process, to get their input and feedback, as well as connect them with utility providers and legislators to make their voices heard. Interested parties should also advocate for regulations and legislation in Pennsylvania, similar to California's Advanced Clean Trucks rule,

¹ Plumer, B., Popovich, N., and Migliozi, B. (2021). "Electric Cars are Coming. How Long Until They Rule the Road?" The New York Times, <https://www.nytimes.com/interactive/2021/03/10/climate/electric-vehicle-fleet-turnover.html>

Heavy-Duty Omnibus rule, and Advanced Clean Fleets rule. On the other hand, it is just as important to oppose and petition against harmful legislation that would set back fleet electrification.

SOCIAL EQUITY IMPACT OF M/HD VEHICLES

Medium-to-heavy use vehicles are large units, used to transport large groups of people, goods, construction materials, refuse, and more. They can weigh anywhere between 14,001 to over 60,000 pounds each and are divided into 8 classes, which is shown in the figure below.





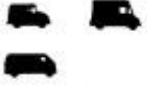
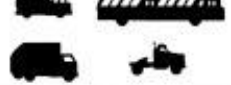


 <p style="text-align: center;">CLASS 1 6,000 lbs or less</p>	 <p style="text-align: center;">CLASS 5 16,001–19,500 lbs</p>
 <p style="text-align: center;">CLASS 2 6,001– 10,000 lbs</p>	 <p style="text-align: center;">CLASS 6 19,501–26,000 lbs</p>
 <p style="text-align: center;">CLASS 3 10,001–14,000 lbs</p>	 <p style="text-align: center;">CLASS 7 26,001–33,000 lbs</p>
 <p style="text-align: center;">CLASS 4 14,001–16,000 lbs</p>	 <p style="text-align: center;">CLASS 8 33,000 lbs or more</p>

Figure 1. Medium-Heavy Duty Classification System ³

The use of gasoline and diesel-powered M/HD vehicles disproportionately affects low-income and BIPOC communities in some of the following ways:

- Black people are 75% more likely to reside near commercial and manufacturing areas that produce higher levels of pollution.²
- Diesel pollution from fleets (i.e., public transportation, school buses, delivery trucks) creates higher levels of particulate pollution than gasoline-powered vehicles. This kind of pollution is substantially more harmful to health and is more concentrated in urban areas and communities with majority low-income and BIPOC residents.³

As shown in Figure 2, below, there is an exposure disparity of particulate pollution that comes from all different sectors, including medium-to-heavy duty vehicles. The x-axis shows the percentage of disparity each demographic experiences, with red bars showing higher comparative levels of exposure. The y-axis shows the percentage of total exposure that a source contributes to each demographic. The higher up on the y-axis a source is, the more

² Palmer, N. (2021). Access to Electric Vehicles Is an Environmental Justice Issue. Scientific American, <https://www.scientificamerican.com/article/access-to-electric-vehicles-is-an-environmental-justice-issue/>.

³ King, P. (2021). Why Equity Must Be Central to Transportation Electrification. CleanEnergy.org, <https://cleanenergy.org/blog/equity-in-et/>.

relative exposure. POC are exposed to much higher rates of particulate pollution, from almost all sectors, when compared to white people. The highlighted sections show the direct and indirect impacts of M/HD vehicles.⁴ It is important to note that “the disparities were seen nationally, as well as at the state level, across income levels and across the urban-rural divide.”⁵

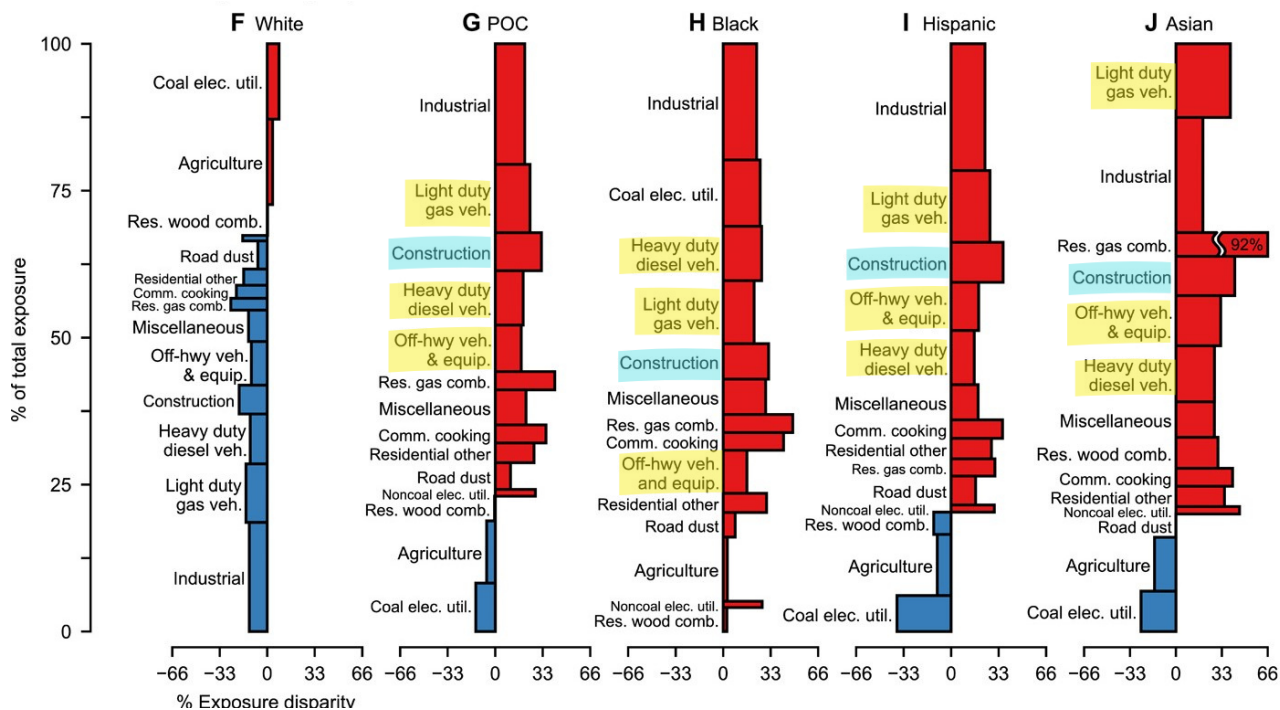


Figure 2. Exposure disparity by race, transportation sources highlighted in green.

Given their disproportionate impact of pollution and emissions on POC individuals, M/HD vehicle electrification strategies take equity into account. Charging stations for M/HD EV infrastructure must be present in all communities and roadways equally, so long-haul truck drivers have access to recharge their vehicles at any point in their trips. Without charging access, it is more likely for diesel powered fleets to continue running through communities of color and low-income areas. Additionally, charging infrastructure installation and operation entities must be engaged with the populations they serve, to receive feedback and build rapport. The populations who are disproportionately affected by the harms of fossil-fuel powered transportation must be included in every conversation and policy decision.

There are some measures already in place that could be widely adopted by states. The Biden administration has committed to investing in 500,000 charging stations and 40% of overall clean energy benefits in disadvantages communities as part of its Justice40 initiative. California and New York have created laws and regulations that require a specific portion of EV charging

⁴ Tessum, C., Paoletta, D., Chambliss, S., Apte, J., Hill, J., & Marshall, J. (2021). PM2.5 pollutants disproportionately and systemically affect people of color in the United States. *Science*, DOI: 10.1126/sciadv.abf4491.

⁵ Tabuchi, H., & Popovich, N. (2021). People of Color Breathe More Hazardous Air. The Sources Are Everywhere. *The New York Times*, <https://www.nytimes.com/2021/04/28/climate/air-pollution-minorities.html>.

funding to be designated for disadvantaged communities. These types of regulations ensure that communities of color and low-income areas will not be overlooked or left out of policies. Without these policies, “you could see a big round of ratepayer-funded charging investments going disproportionately to communities that least need the support.”⁶

CHALLENGES

There are several challenges toward M/HD electrification.

one of the barriers that has remained is the lack of charging infrastructure. Given the variety of M/HD vehicle types, different classes will require different charging stations. Larger trucking companies have started to build in-house charging stations, for trucks to recharge while docked. However, this is often too costly for smaller fleets without the necessary funds, and it doesn’t account for the need to recharge while on the road. There must be readily accessible charging stations, including Level 2 chargers (which are slower and better suited for Classes 2-3) and Direct Current fast chargers (which have faster recharge rates, higher cost, and are better suited for long distance hauls). There is also concern over how prepared utility providers are for the massive influx of EVs on the electrical grid.

Another challenge will be persuading industry leaders, who are often resistant to change, to support fleet electrification. For instance, the US Postal Service recently dealt a huge blow to the fleet electrification movement. The agency is well suited for electrification because of the size of their trucks, large amount of downtime overnight, and relatively low rate of miles traveled each day. Nevertheless, the agency has committed to a multi-billion contract to replace their current fleet, of which 90% of new vehicles will be gas-powered. The Postmaster General insists that EVs are too expensive, and that charging infrastructure is not available. Decisions of this magnitude will have negative implications for decades since diesel-powered trucks often stay on the road upwards of 500,000 to 800,000 miles.⁷

ACTION POINTS FOR STAKEHOLDERS

There are tangible actions that stakeholders can take to support M/HD electrification.

1. Advocate for legislation in PA that would set benchmarks for reducing emissions and investing in clean energy transportation fleets.
2. Support existing working groups and create new collaboratives to discuss M/HD electrification, under the framework of social equity impact.

⁶ Somberg, B. (2021). Study: Few States and Utilities Ensure Equity in Electric Vehicle Charging Investments. American Council for an Energy-Efficient Economy, <https://www.aceee.org/press-release/2021/04/study-few-states-and-utilities-ensure-equity-electric-vehicle-charging>.

⁷ Keaton, S. (2021). How Long Do Diesel Trucks Last? MotorBiscuit, <https://www.motorbiscuit.com/how-long-do-diesel-trucks-last/>

3. Monitor opposition movements and prepare to lead campaigns against harmful legislation.

These are the policies that address M/HD electrification which stakeholders should be aware of.

Federal:

- *Infrastructure Investment and Jobs Act (IIJA)*: This plan allocates \$7.5 billion for construction, maintenance, and operation of a network of charging stations across the country. It requires private and public partnerships to create the infrastructure. Funding will be disbursed to states through competitive grants and formula allocation. The legislation also provides \$5 billion to the Clean School Bus Program, \$250 million for the Electric Ferry Pilot Program, \$250 million for the Reducing Truck Emissions at Ports Program. All of these programs are geared toward EVs and creating the technology needed to support them.

State:

*Currently at the state level, only California has formally enacted policies addressing this issue. New Jersey and New York are considering adopting policies like the ones in California. Pennsylvania has signed onto a Memorandum of Understanding with 14 other states and the District of Columbia regarding M/HD vehicles.⁸ The participating states have agreed that all new M/HD vehicles must be zero emission by 2050.

- *Advanced Clean Trucks*: Speeds up the transition to zero-emission M/HD EVs by enacting a manufacturer sales requirement and a reporting requirement. The sales portion would require certain manufacturers to sell zero-emission trucks in an increasing percentage until 2035. Large fleet owners (with 50 or more trucks) would be required to report information on their vehicles, in order to develop strategies to purchase zero-emission trucks and add them to suitable routes.
- *Heavy-Duty Omnibus rule*: Creates stringent nitrogen oxide and particulate matter emission standards for all new fossil fuel trucks in the state beginning in 2024. The standards will decrease NOx pollution by 75% in new trucks, which many manufacturers have already begun producing. Companies that follow the new standards before the rule comes into effect will receive early-action credits and incentives.
- *Advanced Clean Fleets rule*: Requires California public fleets to purchase exclusively zero-emission trucks by 2027. This is similar to the Advanced Clean Trucks Act, except this rule is targeted for public fleets rather than private manufacturers.

⁸ Young, S. and Miller, P. (2020). 15 states and the District of Columbia join forces to accelerate bus and truck electrification. California Air Resources Board, <https://ww2.arb.ca.gov/news/15-states-and-district-columbia-join-forces-accelerate-bus-and-truck-electrification>