DAY ONE PROJECT

Zero Emission Fueling Stations for Trucks and Buses

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Summary

The next administration can achieve significant reductions in greenhouse-gas emissions by helping transition the commercial truck and bus industries to cleaner fuels like electric power and hydrogen. A key role for the Federal Government is to support the build-out of a nationwide network of zero-emission (i.e., alternative) fueling stations, including electric charging and hydrogen fueling stations. Achieving this goal will require federal leadership and significant collaboration with Congress, states, electric utilities, the private sector, and others. The amount of effort and time necessary for this effort means that it must be a day one priority to achieve meaningful progress within four years. A robust network of zero-emission fueling stations for trucks and buses will facilitate a significant and permanent reduction in greenhouse-gas emissions, improve air quality for communities nationwide, result in safer highways, and help create of hundreds of thousands of new jobs.

Challenge and Opportunity

The threat of climate change demands immediate action. The transportation sector is the top emitter of greenhouse gas (GHG) emissions in the United States, outpacing the energy, agriculture, residential, and commercial sectors. Any serious effort to cut GHG emissions overall must therefore include serious efforts to cut transportation-related GHGs.

GHG emissions from commercial trucks and buses contribute significantly to the transportation sector's overall emissions. From 1990 to 2018, GHG emissions from commercial trucks and buses increased far more than emissions for passenger cars (emissions increased by 90.1% for commercial trucks, 158.8% for buses, and only 21.6% for passenger cars) despite the lower number of vehicle-miles traveled for commercial trucks and buses.[1] In 2018, the collective emissions from medium-duty and heavy-duty trucks were the second-largest category of transportation-related GHG emissions.[2]

Alternative fuels like hydrogen fuels, biofuels, and electric power present an enormous opportunity to cut transportation-related emissions while boosting the U.S. economy. Alternative fuels are gaining commercial acceptance in the freight and tourism industries. There is also an emerging U.S. industry around manufacturing alternative-powered vehicles that promises to create millions of new jobs in the years ahead. Domestic companies that have already seen success in this space include Workhorse, a company based in Lordstown, OH that is producing electric delivery vehicles for UPS, FedEx and DHL; Rivian has recently signed a contract with Amazon to provide 100,000 electric delivery vans; and Tesla, the world's most valuable car company, is developing its own battery-powered long-haul trucks.

[1] Office of Transportation and Air Quality (2020). Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions. U.S. Environmental Protection Agency, EPA-420-F-20-037.
[2] Ibid.

But there is a major barrier hampering wider deployment of these vehicles: fueling stations. Adoption of zero-emission trucks and buses will be slow until a robust, nationwide network of zero-emission fueling stations is available. Modest efforts are already underway in California and the northeastern United States to build new zero-emission fueling stations, but federal leadership is needed to accelerate and expand these efforts to a national scale. The Federal Government can facilitate build-out of the country's network of zero-emission fueling stations by providing tax credits and other financial incentives for station construction and by providing the nationwide planning and coordination capacities that the private sector alone cannot.

Key Considerations

The U.S. Department of Energy reports that there were 41 open retail hydrogen fueling stations in the United States in 2019, with an additional 36 stations in various stages of development.[3] Most of these stations are in California and the northeastern states. Various electric-fueling stations—most designed for passenger cars—are scattered throughout the United States. The next administration should focus on building out the national network of zero-emission fueling stations in the Midwest and other parts of the United States that currently lack zero-emission infrastructure. The following considerations can guide this effort:

- The commercial truck and bus industry. Most truck and bus companies are small businesses, utilizing fleets of seven to ten vehicles and operating on tight profit margins. Capital is limited for many of these companies, especially in the wake of the devastation that COVID-19 has wreaked on the larger economy and tourism industry. Therefore, it will be difficult for these companies to invest in new, alternative-powered vehicles. Moreover, the rate of fleet turnover for most trucking and bus fleets is slow – a company will typically retain their commercial trucks and buses for a decade or more, and often times these vehicles will then be sold to a secondary market where they will be utilized for several years longer. The next administration should work closely with stakeholders to craft financial incentives that allow commercial truck and bus companies to purchase new trucks and buses that run on alternative fuels.
- Travel-plaza owners. Commercial travel-plaza owners are among the largest distributors of diesel fuel and gasoline in the nation. Travel-plaza owners also generate revenue by selling food and other items to truck drivers and other motorists. The deployment of zero-emission fueling stations could represent an existential threat to many of these operators if handled poorly: for instance, if zero-emission fueling stations become direct competitors to existing travel plazas. But commercial travel-plaza owners could also be important champions of zero-emission fueling stations if deployment is handled well: for instance, if resources are provided to help travel-plaza owners incorporate zero-emission fueling infrastructure into existing facilities, or if operators who build out zero-emission fueling infrastructure are rewarded with grants to upgrade on-site food and retail establishments.

[3] Alternative Fuels Data Center (n.d.). Hydrogen Fueling Infrastructure Development. U.S. Department of Energy. Available at https://afdc.energy.gov/fuels/hydrogen_infrastructure.html.

- Congress. Congress must provide new tools for the federal government to accelerate deployment of zero-emission fueling stations. Specifically, Congress should amend title 23, United States Code (USC) so that federal dollars are eligible to support construction of zero-emission fueling stations, including at truck rest stops and via Community Mitigation and Air Quality (CMAQ) projects.
- Alternative-fuel types. There currently is no "preferred" alternative fuel in the commercial truck and bus industries. While some think hydrogen fuel has the greatest potential, others are betting on natural gas and batteries. For now, most businesses are making decisions based on current advantages and limits of different alternative fuels. For example, battery cells are less attractive for long-haul trucking and bus trips because of the batteries' weight and their limited range compared to motor fuels. But battery-powered vehicles are ideal for city deliveries, where many daily trips can be completed on a single charge. The next administration should therefore work to expand the nation's network of zero-emission fueling stations in ways that support multiple alternative-fuel types.
- Fueling technologies and costs. The reality is that zero emission technologies are relatively new. There is still work that must be done to understand the emissions-reduction and fuel-reduction technologies that are available, the challenges to wider adoption of these technologies, where these technologies effectively fit diverse geography and efficient supply-chain needs, and the potential emissions reductions. But doing this work will result in significant impacts on truck freight emissions and fuel usage.[4]
- Existing federal regulations. The commercial truck and bus industries are highly regulated. New fueling technologies will need to work within these regulations, not against them. For example, federal requirements limit the number of hours a truck or bus driver may work per day. If refueling an alternative-fuel truck takes longer than refueling a diesel truck, drivers will lose valuable driving time. Additionally, weight limits on commercial vehicles designed to prevent damage to road and bridge infrastructure also discourage the use of heavy batteries for long-haul trips, as the weight of the batteries displace the amount of freight a truck can haul. The next administration should be aware of issues like these, crafting policies to encourage development of alternative-fueling technologies that do not inadvertently hurt businesses or undermine other priorities like highway safety or infrastructure maintenance. Truck and bus drivers should also be included in these discussions, to better understand how to successfully integrate existing practices.
- Truck and bus manufacturers and dealers. A handful of companies manufacture the majority of commercial trucks and buses sold and used in the United States. Most of these companies are not significantly invested in alternative-fuel vehicles. The next administration needs to be mindful that it is not pitting established manufacturers against the startups referenced above in supporting the expansion of zero-emission fueling stations, lest it encounter serious opposition among the business community and

[4] National Academies of Sciences, Engineering, and Medicine (2017). Guide to Deploying Clean Truck Freight Strategies. Washington, D.C.: The National Academies Press. https://doi.org/10.17226/24957.

Congress. Finally, the U.S. Department of Transportation reports approximately 12.5 million commercial trucks and buses are currently registered in the United States.[5] There will need to be significant manufacturing capacity to support the widescale adoption of alternative-powered trucks and buses, and these manufacturers could be a valuable partner for this effort, especially if they understand the market potential.

Plan of Action

Keeping the considerations above in mind, there are several concrete actions that the next administration can take to build out of a national network of zero-emission fueling stations. In its first 100 days, the next administration should

- Prioritize passage of critical legislation. This legislation should provide the Federal Government the authorities and resources needed to support the build out of this zero-emission fueling network. Specifically, this legislation should
    - Provide flexibility in title 23 USC to enable states to apply gas-tax dollars towards funding zero-emission fueling stations at truck parking stops and other places along highways – where such projects make sense.
    - Allocate resources for financial incentives, including grants, tax rebates, and credits, to incentivize adoption of zero-emission fueling stations and vehicles.
    - Utilize "Jason's Law" surveys (a federal product that documents truck-parking capacity nationwide, including parking shortages) to identify truck-parking locations that could be used for fueling stations.
    - Authorize pilot programs and public-private partnerships to provide flexibility in developing "best practices" and techniques with key stakeholders, including the private sector, for building out a commercially viable nationwide network of zero-emission fueling stations.
    - Permit fast-track approval to site zero-emission fueling stations, in consultation with local utility regulators.
- Strong White House coordination. The White House should work closely with key agencies to ensure coordination and eliminate redundancy with respect to federal efforts to advance zero-emission fueling stations. These agencies include the Department of Transportation (DOT) for its partnership with the states to maintain the nation's major roads and highways, the Department of Energy (DOE) for its ongoing work to deploy alternative-fueling stations, and the Environmental Protection Agency for its regulatory work on clean air.
- Gather stakeholder input. The business community recently has adopted a new level of urgency in confronting climate change. To discuss opportunities for building out zero-emission fueling infrastructure, the next administration should harness this energy by convening key stakeholders, including vehicle manufacturers, truck and bus companies,

[5] Federal Motor Carrier Safety Administration (n.d). Large Trucks and Buses by the Numbers. https://www.fmcsa.dot.gov/ourroads/large-trucks-and-buses-numbers

metropolitan planning organizations, port authorities, labor organizations, truck-stop owners, and owners of large freight-generating facilities (like hospitals, universities, airports, and convention centers). Opportunities may include the following: partnerships with local utilities to integrate new electric-charging stations with existing electric infrastructure; strategic plans for developing infrastructure tailored to specific routes, applications, and duty cycles in order to minimize refueling costs; and joint efforts that distribute capital expenses of infrastructure construction across private fleets as well as government agencies.

- Establish pilot programs and public-private partnerships. Highly traveled truck and/or bus corridors along the National Highway System are natural places to pilot policies and public-private partnerships (PPP) designed to support construction of zero-emission fueling stations. Because there are relatively few examples of real-world experiences and limited opportunities to test emerging zero emission technologies and the strategies for their deployment, these pilots and PPPs will provide immense benefit in sharing information and developing best practices. Immense benefits towards wider adoption will come from understanding the emissions-reduction and fuel-reduction technologies available, the challenges to wider adoption of these technologies, and where these technologies effectively fit diverse geography and efficient supply-chain needs will have. The next administration should partner closely with states and the private sector on initiating and overseeing such pilots and PPPs.

Cumulatively, these activities and authorities will spur development of a nationwide zero emission fueling network because they provide stakeholders with a federal partner in navigating the risks and challenges of this effort while also providing necessary incentives to accelerate stakeholder investment in zero emission technologies and fueling stations. But the benefits of this effort may take years to fully realize, so it is critical that the next administration begin work on this effort on day one to see this through.

Conclusion

Commercial truck and bus volumes will only continue to grow in the future and with it their GHG emissions. While changing CAFÉ standards for commercial trucks and buses will make modest reductions in their GHG emissions, the reality is that the only way to significantly reduce these emissions is to accelerate the deployment and adoption of zero emission technologies. But because these technologies are relatively new and untested, the Federal Government must help stakeholders navigate the challenges and opportunities that these technologies present while also supporting the build out of critical infrastructure like fueling stations to improve confidence in adopting zero emission trucks and buses. The steps outlined in this proposal provide a roadmap to making that a reality.

About the Author

John Drake is the executive director of supply chain policy for the U.S. Chamber of Commerce. Drake previously served as a senior appointee in the Obama Administration at the U.S. Department of Transportation. There he led the government affairs office of the Federal Motor Carrier Safety Administration, served as a deputy assistant secretary for transportation policy, and was the deputy administrator to the Pipeline and Hazardous Materials Safety Administration. He also spent nearly 10 years on Capitol Hill, including as a professional staff member to the Senate Commerce, Science, and Transportation Committee and the House Transportation and Infrastructure Committee. In addition, he was previously the American Trucking Associations' top representative to the Senate. Drake holds a bachelor's degree in philosophy from the University of California, Santa Cruz. He lives in Alexandria, Virginia with his wife and two children.

The views in this proposal express the opinions of the author alone, and do not represent the views of the U.S. Chamber or its members.

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