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The Honorable Pete Buttigieg
Secretary
United States Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

The Honorable Shailen Bhatt
Administrator
Federal Highway Administration
1200 New Jersey Avenue SE
Washington, DC 20590

RE: Notice of Request for Information (RFI) on Medium- and Heavy-Duty Electric Charging Technologies and Infrastructure Needs [FHWA-2024-0028]

Secretary Buttigieg and Administrator Bhatt:

NATSO, Representing America’s Travel Plazas and Truckstops, SIGMA: America’s Leading Fuel Marketers, and the National Association of Convenience Stores (“NACS”) (collectively, the “Associations”)¹, submit these comments in response to the Federal Highway Administration’s (“FHWA’s” or the “Agency’s”) request for information (“RFI”) on charging technologies and infrastructure needs for medium- and heavy-duty (“MHD”) electric vehicles (“EVs”).²

The Associations are eager to work with the Agency to support the development of heavy-duty (“HD”) electric vehicles alongside other decarbonization alternatives. The expertise of delivering transportation energy to on-the-go motorists transcends the specific energy technology being delivered. The Associations’ members over the past several decades have leveraged government incentives to lower the price consumers pay for fuel while simultaneously displacing petroleum-based fuels with more environmentally attractive alternatives. This began with biofuels, renewable natural gas, and other liquid alternative fuels. In recent years, it has expanded to include “zero” emission fuels such as electricity and hydrogen. Indeed, well over half of all the grant funds under the National Electric Vehicle Infrastructure (“NEVI”) grant program for light-duty vehicle charging have been awarded to our members’ locations.

The practical and commercial impediments to MHD vehicle electrification cannot be overstated. The Agency should not presume that electrification barriers will dissipate on their own in response to government mandates. If the Agency is interested in electrifying MHD

¹ NATSO currently represents approximately 5,000 travel plazas and truck stops nationwide, comprised of both national chains and small, independent locations. SIGMA represents a diverse membership of approximately 260 independent chain retailers and marketers of motor fuel. NACS is an international trade association representing the convenience store industry with more than 1,500 retail and 1,600 supplier companies as members, the majority of whom are based in the United States. Together, the “Associations” collectively represent approximately 90 percent of motor fuel sales in the United States.

² Federal Highway Administration, Department of Transportation, “Notice of Request for Information (RFI) on Medium- and Heavy-Duty Electric Charging Technologies and Infrastructure Needs,” 89 Fed. Reg. 74356 (September 12, 2024), *available at* <https://www.federalregister.gov/d/2024-20423>.

transportation in the United States, it should proactively redress those obstacles to the greatest extent possible. The best way to incentivize MHD electrification is to engender a market environment wherein the economics of electric trucks are comparable to those of existing HD trucks.

While imperfect, the Associations believe the NEVI grant program and the Charging and Fueling Infrastructure (“CFI”) grant program would serve as useful models for future grant programs that incentivize MHD charging investments. It is imperative that any future incentive programs for MHD charging include many of the key elements that have enabled the success of the NEVI and CFI programs.

Under the NEVI and CFI programs, grants are awarded to publicly accessible fast EV chargers for light-duty (“LD”) vehicles, first prioritizing designated highway corridor networks, followed by expansion into rural and urban communities. This approach results in public dollars going toward use cases that are most in need of public investments. The NEVI Program does not allow grants for slower charging stations or chargers that are not available to the general public. Slow chargers are far less expensive than fast chargers and are thus less in need of public investment. Similarly, chargers that are only available to a limited universe of consumers (e.g., employees in an office building, or a private depot where a single company’s LD vehicles are housed) may not receive NEVI or CFI funds.

Any HD charging grant program should be structured similarly. Many of the challenges to LD electrification are magnified in the MHD sector. Long-haul trucking is undoubtedly the most economically challenging use case for over-the-road electrification. For instance, utility demand charges, which are fees designed to meet spikes in commercial demand, are particularly exacerbated for HD vehicles. HD chargers for long-haul trucks will require enormous amounts of power in a short time period, and the businesses operating those chargers will have to absorb massive electricity cost increases.

There are also concerns around power providers’ ability to generate and transmit the electricity necessary to accommodate HD fast charging facilities, including the dedicated substations and other behind-the-meter resources. This is where public investments are necessary.

FHWA should resist efforts to direct HD charging investments toward non-publicly accessible locations. These use-cases are less economically challenging and benefit a very limited universe of consumers. For example, the Associations oppose public incentives subsidizing private “behind-the-gate” charging facilities. Those facilities will generally not need fast chargers and thus will not be exposed to the same exorbitant demand charges and upfront capital expenditures as publicly accessible facilities. Between the companies that have access to facilities and the utility providing power to facilities, sufficient capital can be raised to justify these investments. That is simply not the case with public HD fast charging facilities. Just as the NEVI Program today does not provide grants for an office building’s private parking facilities, HD incentive programs should not provide grants that prohibit public access and thus support only a single or small number of companies’ refueling needs.

The Associations commend the Agency for seeking to understand and address the challenges to heavy-duty electrification that will arise in the coming decades. This RFI represents an important step in that process. The retail fuel sector wants to be partners in this effort.

I. The Associations' Perspective on Heavy-Duty Electrification.

Our members' sole objective is to sell products, in a lawful way, to customers who want to buy them. They are agnostic as to what types of fuel they sell to satisfy consumer demand, just as they are indifferent to whether a customer buys coffee or tea. They do believe, however, that it is best for the American consumer and America's industrial position in the world marketplace to have reasonably low and stable energy prices. Decarbonization policies should let competitive markets, guided by consumers and other incentive structures, innovate to find the best way to meet those goals. Our industry brings a technology-neutral perspective with an overarching focus on consumer preferences and low prices.

Fuel retailers are equipped to leverage public policy and market forces to efficiently and expeditiously bring low-cost energy to consumers. In response to tax policies and other regulatory incentive programs, fuel retailers have invested billions of dollars in the physical and intellectual capital necessary to realign their operations to offer lower-carbon alternatives to consumers. These efforts have already dramatically reduced carbon emissions in the HD transportation sector.³ Indeed, compared to 1970 vehicle models, new HD trucks and buses have reduced their emissions of common pollutants by 99 percent.⁴ In 2020, biodiesel and renewable diesel eliminated 15 million metric tons of carbon dioxide in California alone, the equivalent of taking more than 3 million passenger cars off the roads.⁵ This is because, compared with petroleum-based diesel, advanced biofuels reduce greenhouse gas emissions by up to 80 percent.⁶

We want to continue applying the lessons learned from these experiences to new alternative fuel technologies, including electricity. In the LD sector, our membership has already made significant investments in EV charging to serve the motoring public. In the coming decades, consumers are likely to demand electricity as a fuel for HD vehicles as well. The Associations' membership will sell consumers whatever fuel they want to purchase. We also recognize the need for policies that incentivize emissions reductions from *all* vehicle technologies, including those on the road today.⁷

³ California Air Resources Board, "For First Time 50% of California Diesel Fuel Is Replaced by Clean Fuels | California Air Resources Board," [ww2.arb.ca.gov](https://ww2.arb.ca.gov/news/first-time-50-california-diesel-fuel-replaced-clean-fuels), August 23, 2023, <https://ww2.arb.ca.gov/news/first-time-50-california-diesel-fuel-replaced-clean-fuels>. ("The use of cleaner fuels offers an essential tool to reduce pollution now," said California Air Resources Board Executive Officer, Dr. Steven Cliff. "A 50% reduction in diesel means cleaner air, healthier communities and a commitment to reaching carbon neutrality in California by 2045.")

⁴ Environmental Protection Agency, "Accomplishments and Successes of Reducing Air Pollution from Transportation in the United States," [www.epa.gov](https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-successes-reducing-air), August 20, 2024, <https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-successes-reducing-air>.

⁵ California Energy Commission, "Renewable Diesel Production," January 2022, <https://www.energy.ca.gov/sites/default/files/2022-01/CEC-600-2022-034.pdf>.

⁶ *Id.*

⁷ Climate research has consistently emphasized the importance of near-term emissions reductions relative to future reductions. More efficient diesel engines coupled with low-carbon, biomass-based diesel can reduce emissions

The existing refueling network serving HD trucks today is a logical place to site HD EV charging stations. The refueling industry is eager to be a productive participant in this effort (as we have with LD electrification efforts). Highway travel centers are strategically located throughout the country where HD refueling demand is greatest. So-called “range anxiety” or uptime requirements do not exist for gasoline or diesel. This is because fuel retailers operate in one of the most transparent, competitive markets in the world, constantly competing with one another on price. It is not uncommon to see multiple fuel retailers at the same intersection or exit on a highway competing on price and other services. This leads to lower prices and more desirable amenities for customers.

With respect to HD electrification, policymakers should pursue a regulatory landscape where fleets and refueling stations are commercially incentivized – rather than mandated – to gravitate toward electrification. Mandates are often unachievable, and inevitably result in public resistance, stranded investments, and uninspiring results. That said, subsidies alone will not prompt long-term, sustainable HD electrification. For electrification policies to succeed, there must be a competitive, public charging market to refuel electric trucks.

The current state of HD electric vehicle technology and charging technology render unachievable many of the electrification timelines the Biden Administration has pursued.⁸ This reality necessitates that the Administration not rely solely on a prodigious pace of electrification to decarbonize the trucking sector. Policy initiatives designed to promote HD electrification should not surrender existing environmentally and economically compelling diesel substitutes including biofuels and hydrogen. While we pursue longer-term objectives, we must simultaneously maximize the market’s use of low-carbon technologies that can deliver substantial emissions reductions and cost savings *today*, as well in the future.

No one solution will decarbonize HD transportation energy. Indeed, the best solution today may be surpassed by subsequent ingenuity and innovation. Only by allowing different technologies to compete on emissions reductions—as well as on their appeal to consumers—will the Agency ensure the best possible environmental outcome. Truck manufacturers will be less incentivized to innovate to make more attractive, longer-range electric trucks, for example, if they believe fleets will be required to purchase electric trucks irrespective of their range. Charging operators, similarly, will not be incentivized to maintain strong uptime rates or replace outdated equipment with newer, faster-charging stations if they do not believe there’s money to be made in these investments. At the same time, however, once these investments are financially compelling,

immediately. See G. Cornelis van Kooten, Patrick Withey, and Craig M.T. Johnston, Biomass and Bioenergy 151 “Climate Urgency and the Timing of Carbon Fluxes,” (August 2021) available at <https://doi.org/10.1016/j.biombioe.2021.106162>. (“The current climate emergency dictates that **immediate action is required to mitigate climate change**, which implies that carbon fluxes occurring **20 or more years from now are too late to have any mitigative effect.**”)

⁸ See Environmental Protection Agency, “Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles—Phase 3,” 88 FR 25926 (April 27, 2023) available at <https://www.govinfo.gov/content/pkg/FR-2023-04-27/pdf/2023-07955.pdf>; See also National Highway Traffic Safety Administration, Department of Transportation, “Model Years 2027 and Beyond Corporate Average Fuel Economy Standards and Model Years 2030 and Beyond Heavy-Duty Pickup Trucks and Vans Fuel Efficiency Improvement Program Standards” 88 FR 56128 (August 17, 2023) available at <https://www.govinfo.gov/content/pkg/FR-2023-08-17/pdf/2023-16515.pdf>

businesses will make them *even in the absence of policy inducements*. We are eager to work with the Agency to make this outcome more of a reality.

II. Structural Impediments to MHD Vehicle Electrification.

a. Electricity Markets

There are presently several impediments that make it challenging for private businesses to identify a pathway to profitability with respect to HD charging. Most of these impediments involve an electricity market structure that was not designed to accommodate public HD charging. Unlike light duty electric vehicle purchases, which can be motivated by non-financial concerns, commercial decisions to invest in electric HD vehicles will be grounded in economics. Businesses will only “go electric” if there is an economic justification for doing so.

One of the primary structural challenges faced by the Associations’ members today is that there are virtually no wholesale purchasing options or pricing structures for retailers to provide electricity as a fuel because pricing is controlled by local electric utilities, and ultimately public utility commissions. To create a sustainable market for private investment, all market participants should face the same competitive risks and the same pricing for the electricity needed to charge HD vehicles. Non-utility EV charging station owners today are forced to pay retail prices for electricity, *and* demand charges, *i.e.*, additional charges that most commercial consumers are charged to provide reserve capacity. There is no business case for buying at retail prices and selling at retail prices. HD electrification policies should be designed to help the market overcome this structural obstacle.

Our membership has worked collaboratively with utilities to deploy necessary consumer-facing EV charging infrastructure. Public policy that incentivizes this partnership structure will be the most efficient, cost-effective, and timely method to encourage consumers to adopt electric vehicles and ultimately meet electrification goals.

i. Demand Charges

Demand charges are perhaps the most significant electricity market challenge that needs to be addressed. As noted above, utilities do not simply charge their commercial customers (such as fuel retailers or any other EV charging station site host) a fixed price for electricity that is used. Instead, commercial consumers are charged a rate for the *energy itself*, billed as dollars per kilowatt-hour (“kWh”), and then an *additional* rate to provide *reserve capacity* when needed. These additional rates are known as demand charges (billed as kilowatts, or “kW”).

Demand charges are intended to compensate the utility for having enough power in reserve to meet spikes in demand. HD chargers will require an extraordinary amount of power in a short time frame to charge vehicles quickly, creating large but short-lived spikes in power usage. If the practice of imposing demand charges continues and is permitted to simply become the prevailing model for EV charging, HD electrification efforts will likely fail.

Demand charges are routinely imposed on commercial users of electricity, based not on the amount of electricity that a business uses, but on the *highest rate of usage* the business has during the fifteen-minute periods in a month in which the business draws electricity from the grid

at the highest pace. HD EV fast chargers draw extensive electricity from the grid to charge an EV quickly. When businesses offer EV charging, these large demand costs restrict profitability and increase the cost for drivers of EVs to refuel. Given how much more power is needed in a short time to recharge a HD vehicle relative to a LD vehicle, demand charges would result in inordinate charges to a refueling location's monthly utility bill that could only be recovered if electric truck customers were willing to pay exponentially more for energy than their counterparts driving diesel trucks.

ii. Energy Capacity

Another obstacle is insufficient electricity generation and transmission to supply EV charging stations. The Associations' members are skeptical that electricity providers will be able to increase generation and transmission activity to service the kind of load necessary to provide charging infrastructure for HD trucks at scale in the coming decades. A recent analysis of grid upgrades necessary for HD electrification found that a single highway fast charging site will require the same amount of power as a sports stadium or a small town.⁹ This will require the development of dedicated substations and significant energy resources behind the meter. Utility interconnect costs will not scale linearly from LD investments today.¹⁰

One way to help the market overcome these challenges is to permit unregulated entities that operate charging stations to generate, store, and sell electricity to help support their charging station business – such as through installing solar panels.¹¹ Many states prohibit entities that are not regulated utilities from engaging in this practice. These restrictions are growing more outdated every day, and should be reexamined as part of any effort to electrify HD trucking.

b. Logistics and Economics

Transitioning to battery electric trucks could adversely impact commercial trucking operations by extending refueling times, reducing operation times between refueling sessions, and injecting a patchwork of electricity tariffs and regulations into what today is an efficient private commercial trucking market.

When trucking companies assess their travel center refueling options, the *speed* of refueling often rivals the *cost* of refueling in terms of priorities. Today, a diesel truck can refuel in about 15 minutes and get 1,200 miles of range. By contrast, it takes up to ten hours to charge HD trucks for

⁹ Gideon Katsh, et al., CALSTART et al., “Electric Highways: Accelerating and Optimizing Fast Charging Deployment for Carbon-Free Transportation” (November 11, 2022) available at <https://calstart.org/electric-highways-study/>.

¹⁰ Saral Chauhan, et al., McKinsey & Co., “Fleet decarbonization: Operationalizing the transition” (Dec. 20, 2022) available at <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/fleet-decarbonization-operationalizing-the-transition>.

¹¹ This is commercially comparable to a fuel outlet installing an additional underground storage tank, or taking a position at a nearby fuel terminal, to store fuel and help manage inventory and mitigate exposure to price volatility in petroleum markets. Fuel retailers should have flexibility to deploy distributed generation assets.

only a few hundred miles of range.¹² Dwell times will increase, which will implicate scheduling and Hours-of-Service limits. Prolonged recharging periods will also exacerbate challenges related to truck parking availability and capacity. In a world where customers expect same-day delivery and shipping companies demand that trucks pick up or drop off freight within tight time windows, it is no wonder that nearly 80 percent of long-haul truck drivers say they would “never add an electric vehicle to their fleet.”¹³

Weight challenges prompted by heavy batteries will also curtail the long-haul capabilities of heavy-duty electric trucks. Long-haul electric trucks require two 8,000-pound batteries to operate.¹⁴ This reduces the amount of cargo that trucks can carry and will result in a need for substantially more vehicles on the road to transport the same amount of cargo. Many fleets will need to drastically restructure their operations to accommodate this transition.

Further, ambient temperatures can influence the battery performance of electric vehicles. In northern states, fleets that operate in cold weather conditions will have to account for slowed chemical and physical reactions in truck batteries, leading to significantly longer charging times and a temporary reduction in range.¹⁵

HD trucks currently are responsible for moving 72 percent of the U.S. economy’s freight.¹⁶ Without solutions to these challenges, HD electrification will create large cost increases for virtually all goods sold in the United States and challenge the supply chains needed to get those goods to market.

III. Technical Considerations for MHD Charging Infrastructure.

Properly designed HD electrification incentive structures may result in extraordinary reductions in emissions and criteria pollutants in the HD transportation sector. In order to maximize the country’s ability to realize this potential, the Associations encourage the Agency to design and implement future incentives for HD charging by targeting use-cases that will need the

¹² Jasmin Melvin, S&P GLOBAL, “Trucking industry worries US EPA put ‘cart before the horse’ with emissions proposal,” (April 19, 2023); available at <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/041923-trucking-industry-worries-us-epa-put-cart-before-the-horse-with-emissions-proposal>.

¹³ Tyson Fisher, LAND LINE, “Most truckers have no interest in electric trucks, survey reveals” (Apr. 11, 2023), available at <https://landline.media/most-truckers-have-no-interest-in-electric-trucks-survey-reveals/#:~:text=Truckers%20do%20not%20appear%20to,they%20will%20within%20five%20years>.

¹⁴ See AMERICAN TRANSPORTATION RESEARCH INSTITUTE, “Understanding the CO2 Impacts of Zero-Emission Trucks” (May 3, 2022) available at <https://truckingresearch.org/2022/05/understanding-the-co2-impacts-of-zero-emission-trucks/>.

¹⁵ See AMERICAN TRANSPORTATION RESEARCH INSTITUTE, “Understanding the CO2 Impacts of Zero-Emission Trucks,” (May 3, 2022) available at <https://truckingresearch.org/2022/05/understanding-the-co2-impacts-of-zero-emission-trucks/>. EVs lose significant range in cold weather and Consumer Reports has found that driving short trips with frequent stops in cold weather can reduce EV range by as much as 50 percent. See also Jeff S. Bartlett and Gabe Shenhar, Consumer Reports, “How Temperature Affects Electric Vehicle Range” (Aug. 22, 2022) available at <https://www.consumerreports.org/cars/hybrids-evs/how-temperature-affects-electric-vehicle-range-a4873569949/>.

¹⁶ Bob Costello, American Trucking Associations, “Economics and Industry Data” available at <https://www.trucking.org/economics-and-industry-data>.

most public investment, while allowing the market to create a reliable, uniform, cost-competitive charging experience across the country – just as exists today for diesel and gasoline.

a. *Proximity to Interstate Highways*

For incentive programs designed to promote HD charging along highway corridors, the Agency should maintain the NEVI program’s requirement that charging infrastructure be installed no further than one mile from the Interstate.¹⁷ Without such a requirement, the Agency threatens to divert Interstate traffic to local and secondary roads that were not built to handle the weight and volume of HD trucks. This contributes to increased maintenance costs, traffic accidents, and delays for local commuters and first responders who rely on secondary roads for transportation. Given that the turning radius of a truck is much larger than a LD vehicle, secondary roads are often unable to accommodate the vehicle size of many HD trucks. Removing the Interstate proximity requirements would thus threaten to lengthen trucking routes and exacerbate vehicle range concerns, while making the refueling experience more time-consuming and burdensome for drivers.

Many of the Associations’ members are conveniently located less than one mile from highway exits, are experienced in servicing HD fleets, and already have the restrooms, foodservice, showers, truck care, and other amenities that drivers want when they refuel. HD trucks will also necessitate charging locations with sufficient space for HD vehicle parking. Siting charging infrastructure at the same facilities that fleets are accustomed to refueling at today will help to increase driver confidence in electrification.

b. *Public Accessibility Requirements*

Similarly to federal programs for LD infrastructure, incentives for HD charging infrastructure should require that chargers be made publicly accessible. This requirement will ensure that the entire driving public has access to taxpayer-funded infrastructure investments. Many independent and small HD fleets, which are a critical component of vehicle electrification, lack the capital to install private chargers even with federal incentives. Without public access requirements, the Agency risks enabling electrification only for large, well-capitalized fleets.¹⁸

Private, behind-the-gate charging facilities will generally charge vehicles overnight or over similarly long periods of time, and thus not need fast-chargers that come with exorbitant demand charges. Private capital should be sufficient to justify these investments without an additional subsidy from federal taxpayers. That is simply not the case with public HD fast charging facilities. Congress was right when it limited NEVI to publicly accessible charging stations, and that logic applies to HD charging incentives as well.

¹⁷ A one mile limitation, as it does for the NEVI Program today, will ensure that publicly funded chargers are easily accessible from the Interstate and that they are in close proximity to off-highway businesses and amenities.

¹⁸ The Associations recognize that HD charging differs substantially from the LD sector. The nascency of the HD charging industry may necessitate that in some applications, incentive structures be designed to accommodate the unique needs of HD vehicles. As such, the Associations are amenable to whichever incentive structures result in a successful, robust HD charging market.

c. Compatibility or Infrastructure Requirements

Adaptability is key to the scalability and resilience of EV charging infrastructure. When incentive programs are deployed properly, charging station operators are inherently incentivized to identify and offer the technology that consumers desire. Flexibility with respect to charging technology, or other related infrastructure, will future-proof infrastructure investments by enabling charging station operators to leverage emerging technologies and respond swiftly to market developments. It will also ensure the long-term viability of grant-funded projects.

The Associations urge the Agency to ensure that HD charging incentives do not mandate the availability of specific technologies from certain manufacturers or suppliers. This risks skewing market choices in a way that might well conflict with environmental and market innovations that could benefit HD consumers. The Agency should also prohibit states receiving federal grant funds from imposing similar requirements. Incentive programs should be deployed in a manner that incentivizes charging station operators to remain attuned and responsive to consumers' demands.

IV. Conclusion.

Thank you for the opportunity to provide these comments. The Associations look forward to working with the Aus

gency to build a viable market for MHD electric refueling in the coming decades.

Sincerely,

NATSO, Representing America's Travel Plazas and Truckstops
SIGMA: America's Leading Fuel Marketers
National Association of Convenience Stores (NACS)