RE: Docket ID No. EPA-HQ-OAR-2023-0216-0007

The comments below are submitted jointly by a group of electric vehicle (EV) advocates, environmental and science non-profits, grasstops advocates, diversity, equity, and inclusion (DEI) advocates, a clean technology consortium, and environmental, climate, and social justice advocates. Collectively, we work with policymakers at the federal, state, and local levels in advancing supportive EV policies to electrify the transportation sector. We also work with and provide information to consumers, businesses, non-profits, and all others who will be directly impacted by the proposed and final guidance for zero-emission clean heavy-duty vehicles, port equipment, and fueling infrastructure deployment. We are grateful for your consideration of our feedback.

A. Technology Availability and Market-Readiness: EPA recognizes that some zero-emission heavy-duty trucks are currently being marketed for sale. Consequently, EPA requests current and expected near-term (within 1, 2, and 3 years) availability of potentially eligible zero-emission class 6 (gross vehicle weight rating 19,501–26,000 pounds) and class 7 (GVWR 26,001–33,000 pounds) vehicles, such as refuse haulers, day cab tractors, cargo vans, school buses, and straight trucks. Additionally, EPA is seeking responses to these same questions concerning commercial trucks that may be used at ports, such as zero-emission service trucks and class 7 and 8 (GVWR >33,000 pounds) dray trucks. EPA requests responses to the questions regarding the current state of zero-emission port equipment and related fuel infrastructure availability, including commercial readiness and production volumes, for near-term as current capabilities, as well as in the 1-, 2-, 3- and 5-year timeframes.

Currently, there are zero-emission models available in every vehicle segment, and availability is only expected to proliferate in the coming years. This rapid growth is driven by accelerating price parity, continued manufacturer investments, and fleet electrification commitments - all furthered by state and federal incentives, funding, and standards. Indeed, a recent CALSTART market update found that as of 2023, there were more than 136 zero-emission medium- and heavy-duty vehicle models[1] - a number which will only continue to increase in the coming years.[2] Specific to this proposal, the growth in Class 7 and 8 trucks has been substantial, increasing by 75 percent since 2021. Currently, 13 manufacturers are producing 28 models of Class 7 and 8 ZE HDVs. Additionally, there are currently nine different models of zero-emission yard tractors available from seven manufacturers, according to CALSTART's Zero-Emission Technology Inventory (ZETI) Data Explorer.[3] Both all-electric and legacy manufacturers have made strong commitments to expanding the range of their electric vehicles: for example, Daimler Trucks has a goal of selling CO2-neutral commercial vehicles across all of their markets, including North America, by 2039,[4] and Volvo has demonstrated a commitment to battery electric Class 8 vehicles, having recently completed a demonstration project in Southern California, which it intends to replicate elsewhere in the United States.[5]

Moreover, electrification is already feasible for business operations among many vehicle segments. As found by the North American Council for Freight Efficiency (NACFE), "market segments like urban and regional trucking can be electrified immediately" and "with existing technology, many trucks can be electrified and continue to be used similarly as ICE trucks…[f]or trucks domiciled in California and New

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[1] CALSTART, *Zeroing in on Zero-Emission Trucks - May 2023 Market Update,* https://calstart.org/wp-content/uploads/2023/05/Zeroing-in-on-ZETs-May-2023-Market-Update.pdf
[2] ERM, *Electric Vehicle Market Update* (Apr. 2023), https://www.edf.org/sites/default/files/2023-05/Electric%20Vehicle%20Market%20Update%20April%202023.pdf
[3] https://globaldrivetozero.org/tools/zeti-data-explorer/
[4] *Supra* fn. 2 at 11.
[5] About Volvo Lights, https://www.lightsproject.com/about/.

York, we found that 65% of MDTs and 49% of HDTs are electrifiable today."[6] Given that many of these vehicles that are readily electrifiable with today's technology are the same ones that the EPA is poised to help fund with these programs, it is clear that the technological readiness of vehicles should not be a barrier to ensuring this funding is used and useful.

And, in no small part due to federal tax credits and other grant programs, manufacturing has seen exponential growth in recent years. Since April 2022, there has been an additional $111 billion invested in US-based EV manufacturing, assembly, and battery production,[7] including four MHD vehicle plants and ten battery production facilities,[8], and growth continues as a result of state and federal programs. For example, ABB E-mobility plans to open an EV charger factory in South Carolina to produce 20 to 180 kW chargers intended for public, school bus, and commercial fleet use.[9] Charging network investment continues to grow as well, though more emphasis needs to be geared toward the medium- and heavy-duty vehicle markets. This growth has been facilitated in significant part by, for example, grants under the Bipartisan Infrastructure Law (IIJA) and tax credits under the Inflation Reduction Act (IRA), as well as state measures designed to increase infrastructure availability publicly and privately. Private investment has significantly ramped up as well. Italian company Enel has announced plans to add 2 million fast chargers in the United States, citing the favorable environment facilitated by the Inflation Reduction Act's tax credits.[10] Efforts to build out charging stations also include legacy vehicle manufacturers: Daimler Truck North America will invest $650 million for an MHDV electric and hydrogen fuel cell charging network, while Volvo Trucks North America has plans for a public MHD EV charging network at existing Volvo dealerships.[11]

Increased availability of clean and efficient ZE HDVs will lead to increased adoption and further market expansion. This expansion will help to drive both manufacturing and upfront costs down. While many ZE HDV models are more expensive than their combustion counterparts today, the current body of market research suggests that price parity will be reached for most model types by the end of the decade. A 2023 study from the International Council on Clean Transportation estimates that price parity between diesel and BEV Class 8 short-haul tractors will be reached by 2028, thanks to the commercial vehicle incentives in the IRA.[12]

However, the total cost of ownership parity will likely be reached even sooner, with some classes of ZE HDVs having preferable economics today. In its 2022 Total-Cost of Ownership Discussion document for the Advanced Clean Trucks Rulemaking, the California Air Resources Board estimated that zero-emission regional haul tractor trucks would reach total-cost parity with their diesel counterparts by 2025.[13]

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[6] RMI, *Charting the Course for Early Truck Electrification* at 7, 23 (May 2022), https://nacfe.org/wp-content/uploads/2022/05/Final-Mobility-Electrify-Trucks_050222.pdf.
[7] ERM, *Electric Vehicle Market Update* at 46 (Sep. 2022), https://blogs.edf.org/climate411/files/2022/09/ERM-EDF-Electric-Vehicle-Market-Report_September2022.pdf.
[8] *Id.* at 47.
[9] *Id.* at 59.
[10] Jennifer Hiller, *Fast EV Chargers to Nearly Double on U.S. Highways Under Expansion Plan,* Wall Street Journal (Apr. 13, 2023), https://www.wsj.com/articles/italian-company-plans-10-000-fast-chargers-across-u-s-to-meet-ev-demand-959fd135?mod=Searchresults_pos5&page=1.
[11] *Supra* fn. 7 at 59.
[12] Peter Slowik et al., "Analyzing the Impact of the Inflation Reduction Act on Electric Vehicle Update in the United States," The International Council on Clean Transportation, January 2023, https://theicct.org/publication/ira-impact-evs-us-jan23/
[13] California Air Resources Board, "Draft Advanced Clean Fleets Total Cost of Ownership Discussion Document," September 2021, https://ww2.arb.ca.gov/sites/default/files/2021-08/210909costdoc_ADA.pdf

The following types of zero-emission cargo handling equipment are commercially available and/or being demonstrated today according to the Moving Forward Network comments submitted Jan. 17, 2023[14]:

- Electric rubber-tired gantry (RTG) cranes are mature technologies that have been utilized at ports for decades, including in North America, Asia, and Europe.[15] Existing RTG cranes can either be replaced with or converted to grid-electric technologies.[16] The Ports of LA and Long Beach recently finalized a technology assessment analyzing the availability, feasibility, and economic workability of zero-emission equipment. For RTG cranes, the study found that both new and conversion RTGs are "fully commercial products" that achieve the highest level of technical feasibility.[17]
- Zero-emission battery-electric yard tractors are available, feasible technologies today, according to recent technology assessments completed by the California Air Resources Board and the Ports of LA and Long Beach.[18] In California, the Clean Off-Road Equipment Voucher Incentive Project (CORE) program provides incentive funding for zero-emission technologies and lists several eligible and available zero-emission yard truck and tractor models.[19] At Port Newark, New Jersey, 10 battery-electric yard tractors are currently being deployed.[20]
- Zero-emission small-capacity battery electric forklifts have been commercially available for many years, and are often used in warehouse applications.[21] Large-capacity forklifts are also currently offered by several manufacturers and is operated at the Port of Stockton, but have not yet been put to the test at large container ports.[22] California's CORE program also lists several available

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[14] Public Comment by Moving Forward Network on Clean Heavy-Duty Vehicles and Grants to Reduce Air Pollution at Ports, Docket No. EPA-HQ-OAR-2022-0874-0001, https://www.regulations.gov/comment/EPA-HQ-OAR-2022-0874-0028

[15] San Pedro Bay Ports, Clean Air Action Plan, 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (July 2022), at p. 23, *available at* https://cleanairactionplan.org/2022/08/25/san-pedro-bay-ports-release-final-cargo-handling-equipment-assessment/.

[16] *Id.*

[17] *Id.* at 3.

[18] Cal. Air Res. Bd., Proposed Fiscal Year 2021-22 Funding Plan for Clean Transportation Incentives, Appendix D: Long-Term Heavy-Duty Investment Strategy, at p. D-44, *available at* https://ww2.arb.ca.gov/sites/default/files/2021-10/fy21-22_fundingplan_appendix_d.pdf; San Pedro Bay Ports, Clean Air Action Plan, 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (July 2022), at p. 2, *available at* https://cleanairactionplan.org/2022/08/25/san-pedro-bay-ports-release-final-cargo-handling-equipment-assessment/.

[19] California CORE, "Terminal Tractors," https://californiacore.org/equipment-category/terminal-tractors/ (last visited Dec. 28, 2022).

[20] In August 2021 the Red Hook Container Terminals LLC began the operation of ten BYD Motors battery electric yard tractors. BYD Motors, Red Hook Container Terminal Begins Commercial Operation of Fleet of 10 BYD Heavy-Duty Zero Emission Battery Electric Yard Tractors, *available at* https://en.byd.com/news/red-hook-container-terminal-begins-commercial-operation-of-fleet-of-10-byd-heavy-duty-zero-emission-battery-electric-yard-tractors/.

[21] San Pedro Bay Ports, Clean Air Action Plan, 2018 Feasibility Assessment for Cargo Handling Equipment (Sept. 2019), Appendix C, pp. 94-95, *available at* https://cleanairactionplan.org/strategies/cargo-handling-equipment/.

[22] San Pedro Bay Ports, Clean Air Action Plan, 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (July 2022), at p. 28, *available at* https://cleanairactionplan.org/2022/08/25/san-pedro-bay-ports-release-final-cargo-handling-equipment-assessment/.

electric forklift models, including heavy-duty models.[23] Additional demonstration projects and deployments can help to support the use of these technologies in heavy-duty freight applications.
- Zero-emission battery-electric top handlers have been demonstrated in California ports, and at least one manufacturer is developing a commercial product that is expected to be available by 2024.[24]

The California Air Resources Board's Initial Statement of Reasons to support the Advanced Clean Fleet Rule contains an overview of currently available ZE technology for medium- and heavy-duty vehicles, starting on page 69.[25]

D. Domestic Materials Sourcing and Manufacturing: EPA requests information regarding the extent to which materials are sourced from the U.S. and if manufacturing occurs in the U.S. to comply with BABA requirements currently, or in the near term, especially concerning electric charging and other fueling equipment.

A domestic supply chain for clean trucks and charging infrastructure is essential to ensure: 1) a smooth and rapid transition to cleaner fleets, 2) a stable supply of critical technologies that are secure against global disruptions, and 3) the maximal dissemination of program benefits to communities across the country, including those where clean vehicles, fueling infrastructure, and components are manufactured. EPA must adhere to the domestic manufacturing requirements laid out by the Build America, Buy America Act in the IIJA, and limit the use of general waivers without clear phaseout timelines. Funding must be made available for all essential emissions-reducing technologies. Where feasible, funding should support technologies made in the U.S., with U.S.-made components and materials according to Buy America rules. Where infeasible, Buy America waivers should be narrowly tailored and time-limited, creating a clear timeline and incentive for manufacturers to onshore their supply chains.

E. Other Practical Considerations: EPA requests information that can inform the implementation of zero-emission heavy-duty vehicles, port equipment, and related charging/fueling infrastructure projects. Please provide information such as necessary training, maintenance facility modifications, required safety equipment, and the availability of hydrogen from different sources that produce zero emissions.

EPA should consider combining Notice of Funding Opportunities to make the process as simple as possible, providing a light administrative load while getting money out as quickly as possible. Planning for port authorities should either be completed or required to be completed alongside funding deployment to ensure program success.

Topics for Areas of Interest

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[23] California CORE, "Forklifts," https://californiacore.org/equipment-category/forklifts/ (last visited Dec. 28, 2022).
[24] San Pedro Bay Ports, Clean Air Action Plan, 2021 Update: Feasibility Assessment for Cargo-Handling Equipment (July 2022), at p. 47, *available at* https://cleanairactionplan.org/2022/08/25/san-pedro-bay-ports-release-final-cargo-handling-equipment-assessment/.
[25] Cal. Air Res. Bd., Public Hearing to Consider the Proposed Advanced Clean Fleets Regulation, Staff Report: Initial Statement of Reasons (Aug. 30, 2022), at p. 69, available at https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf

In this section, the Agency requests responses to specific topics. Please indicate in your written comments the topic number(s) you are commenting on and provide specific examples or information to illustrate your comments where possible.

Topics

A. Technology Availability and Market-Readiness

1. Using the following categories as a guide, please identify specific types of vehicles or equipment that you are providing information about in response to this RFI. For each item you identify, please provide a description, and specify the type of powertrain (e.g., electric [non-battery], battery-electric, hydrogen fuel cell electric, or other zero-emissions technologies).

c. Zero-emissions fueling infrastructure: including but not limited to heavy-duty electric vehicles, equipment, and locomotive chargers, as well as hydrogen refueling infrastructure.

Electric Vehicle Supply Equipment useful in ZE-MDHV applications is available and ready for port applications; so too is infrastructure tailored to port equipment. Technology catalogs are available from the California Energy Commission's EnergIIZE program and the CARB CORE program. Each of these is reviewed to work with the state's incentive programs for ports and to comply with California state port regulations, which in terms of eligible equipment these should be taken into account and replicated as far as possible.[26]

2. For each of the items you identified in response to Topic 1, please:

b. Provide information on the near-term demand outlook for this equipment. For entities that are eligible for funding, please describe how many and what types of zero-emission heavy-duty vehicles and port technologies you anticipate purchasing in the near term.

It is clear that demand is increasing and that the market is rapidly increasing to embrace zero-emissions technology. Companies operating large fleets reflect their commitment to electrification in orders: FedEx and Walmart have invested in thousands of electric delivery vans;[27] Maersk has ordered 110 Class 8 trucks, growing its fleet to 126 trucks with a target deployment of 450 through 2023; Penske ordered 750 Ford E-Transit vans for its rental services; Sysco Corporation, one of the largest foodservice distribution companies in the world, ordered 800 Class 8 electric tractors to be delivered by 2026, to name a few.[28] In addition, large entities that ship goods and governments have set ambitious goals as well: this includes Ikea, which has a goal of 100% EV deliveries by 2025; the purchase of 100,000 delivery vans by Amazon; 100% fleet electrification by 2030 at Unilever, Schneider Electric, and LG Energy Solutions, and a plan to transition to a zero-emission fleet by 2040 at Walmart, including long-haul; and goals by state and local governments, including the governments of New Jersey, Los Angeles, Chicago, Montgomery County, Maryland, and New York City, to transition to 100% electric transit and school buses, urban delivery vehicles, and sanitation vehicles by a certain date.[29] Deliveries of even the largest ZE HDVs have already begun. In California, Tesla made the first deliveries of its 500-mile range Semi model and supporting

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[26] *EnergIIZE Commercial Vehicles Project,* https://www.energiize.org/infrastructure?section=infrastructure.more-details.technology; https://californiacore.org/equipmentcatalog/; *see also* EPRI, *EPRI's Vetted Product List*, https://www.epri.com/vpl.
[27] *Supra* fn. 7 at 40.
[28] *Id.* at 42.
[29] *Id.* at 44-45.

charging infrastructure to PepsiCo.[30] The Ports of LA and Long Beach have already deployed 98 battery-electric trucks according to the Port of Long Beach The Green Port: Year 2 Spending Plan released in May 2023.[31]

5. For each battery-electric item you identified in response to Topic 1, please describe whether and how the batteries can be upgraded or replaced.

EPA should ensure batteries are reused, repurposed, and eventually recycled. Battery replacement and repair can be done through refurbishing and replacing battery modules or cells, something that can be enabled through design for disassembly. Funding for a pilot project on battery swapping could be useful to test its potential for long-haul trucking and other intensive duty cycles.

C. Pricing

8. For each of the items you identified in response to Topic 1, please:

b. Provide information on the price outlook through the calendar year, and, where applicable, through the near-term future. Please identify and describe any opportunities for reducing prices.

An ERM analysis conducted for EDF found that the incentives, manufacturing funding, and charging infrastructure funding from the Inflation Reduction Act (IRA) will substantially accelerate purchase price parity for most medium- and heavy-duty (MHD) ZEVs, and then further reduce the total cost of ownership.[32] Specifically, the IRA accelerates the year price parity is reached compared to business-as-usual, depending on vehicle class, ranging from five to twelve years.[33] All vehicles reach purchase price parity by 2031 with the IRA purchase credit, while many will see the same happen sooner.[34] For nine vehicle categories (Class 5 Service, Class 6 Box Truck, Class 6 Bucket Truck, Class 8 Box Truck, Class 8 Dump Truck, Class 8 Transit Bus, Class 8 Refuse Packer, Class 8 Day Cab, Class 8 Yard Tractor), cost parity will be achieved by 2027, and two (Class 5 Cutaway, Class 5 walk-in Van) will see cost parity potentially as early as the end of this year.[35]

It should be noted that even without subsidies, ZEVs are already cost-competitive because of their lower overall cost of ownership - a result of lower operations, maintenance, and fuel costs. In addition, with reduced upfront purchase price and other incentives, including credits for charging infrastructure, the total cost of ownership for ZEVs will continue to decrease, leading to substantial growth in sales in the coming decade. These findings reflect those of a National Renewable Energy Laboratory and Department of Energy report which found that EVs will become cost-competitive with medium-duty trucks by 2030 and short-haul heavy-duty trucks by 2035, while electric buses are already competitive in many cases because of lower total costs of driving than diesel buses.[36] By 2030, CALSTART predicts that all MHD EVs will have a lower total cost of ownership than diesel vehicles even without incentives because of low operational costs, falling battery prices, and high diesel fuel costs.[37] NACFE compared lifetime costs

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[30] https://electrek.co/2023/04/12/tesla-delivers-fleet-tesla-semi-electric-trucks-pepsico/
[31] https://polb.com/port-info/mission-vision#green-port-policy
[32] ERM, *Technical Memo - Investment [sic] Reduction Act Supplemental Assessment: Analysis of Alternative Medium- and Heavy-Duty Zero-Emission Vehicle Business-As-Usual Scenarios* at 1 (Aug. 19, 2022), https://www.erm.com/contentassets/154d08e0d0674752925cd82c66b3e2b1/edf-zev-baseline-technical-memo-addendum.pdf.
[33] *Id.* at 5.
[34] *Id.*
[35] *Id.*
[36] *Supra* fn. 7 at 30.
[37] *Id.*

between diesel and electric medium-duty box trucks and found that electric truck owners could avoid $6,269 in fuel costs.[38] Even assuming current battery prices, another study found an electric long-haul truck's total cost of ownership saved a net $200,000 over the vehicle's lifetime, costing as much as 13 percent per mile less.[39] A similar study from 2022 conducted by Roush Industries - predating IRA - expected some MHD vehicles, such as refuse trucks, shuttle buses, and delivery trucks, to reach price parity on a total cost of ownership basis in 2023, including the cost of the charging station, with many others following suit in 2027.[40]

The bottom line is that despite some differences in conclusions, studies agree that cost parity on an upfront and total cost of ownership is imminent.

A key consideration of vehicle price and therefore price parity is battery cost. Battery packs have been dropping in cost and almost all experts agree that $100/kWh is a turning point for EVs to reach parity.[41] While experts predict that supply chain constraints will lead to relatively modest increases in battery prices, they expect that the "battery price [will] start dropping again in 2024, when lithium prices are expected to ease as more extraction and refining capacity comes online."[42] Of course, these predictions will only be favorable with the advent of IRA incentives and funding, such as the $35/kWh battery cell credit and an extra $10/kWh for American-produced battery modules.[43]

E. Other Practical Considerations for Program Design

14. For each of the items you identified in response to Topic 1, please provide examples of best practices relating to project development, installation, and adoption of zero-emissions equipment and related electric, hydrogen, or other fueling infrastructure you identified in response to Topic 1.

EPA should require that all EV charging infrastructure that it funds through the Clean Heavy Duty Vehicles and Clean Ports programs be interoperable using the Open Charge Point Protocol (OCPP) 2.0.1 and capable of performing smart charge management that communicates between a charger and a management system to control the power demand and timing EV charging loads. Smart charge management will be critical to managing potential adverse impacts on the electrical grid as a result of large-scale fleet charging, and shields fleet operators from costly demand charges that reduce the total cost of ownership savings delivered by electrification over a vehicle's lifecycle. Smart charge management may also enable vehicle-to-grid capabilities for electric fleets with the proper setup to export power. Power export can create value streams that will further reduce the total cost of ownership and operations of EVs. This would mirror the requirements for software interoperability of EV chargers funded by the Federal Highway Administration in the National Electric Vehicle Infrastructure Program Minimum Standards.

Early and meaningful community engagement must be prioritized for program deployment. Ensuring that the communities most impacted by the shipping and receiving of goods derive the most benefits from

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[38] *Id.* at 30.
[39] *Id.*
[40] *Id.* at 8; *see also* Emerging Futures, *New Jersey Medium Duty Fleet Electrification Infrastructure Summary Report* (May 2022), https://blogs.edf.org/energyexchange/files/2022/05/New_Jersey_Medium_Duty_Fleet_Elecrtification_Infrastructure_Summary_Report.pdf (which found that for many large fleets, the total cost of ownership is at parity with conventional vehicles, even with make-ready and charging station costs included).
[41] *Supra* fn. 7 at 27.
[42] BloombergNEF, *Lithium-ion Battery Pack Prices Rise for First Time to an Average of $151/kWh,* https://about.bnef.com/blog/lithium-ion-battery-pack-prices-rise-for-first-time-to-an-average-of-151-kwh/.
[43] *Supra* fn. 7 at 27.

these programs. In addition, early engagement with utilities to ensure sufficient grid capacity is available for fleet transitions and streamlining interconnection timelines is critical – mainly if upgrades to accommodate vehicle electrification will be needed.

17. If known, please describe opportunities and best practices to:

a. Maximize environmental benefits such as replacing the oldest, highest use, highest emitting equipment with available zero-emission technologies.

The EPA should consider a holistic approach while considering what equipment is causing the greatest pollution. This approach could look at which market segments are causing a disproportionate amount of pollution to ensure the greatest impact on the program.

In developing plans which complement ongoing efforts by other air pollution strategies concerning transportation, ports should identify in action plans proposed transportation investments in regional and state goods movement Transportation Improvement Programs which are capable of supporting Action Plan proposed investments.

Where planning for surface transportation system improvements are considered as means to achieve overall emission reduction at ports, emissions reduction-supportive technology project options or attributes should be required to be explored for these projects, either as project attributes (elements to be included in such projects) or as alternative project options to achieve stated goals. These include freight rail system improvements, signal and freight rail yard or access improvements, active transportation and freight conflict reduction, freight climate resiliency planning, eco-routing or smart route optimization, intermodal capacity or efficiency improvements, freight signal priority, traveler information systems, truck parking, truck parking information systems, emissions reduction infrastructure for idling vehicles or vessels, and connected or vehicle improvements.

d. Maximize benefits for workforce development and jobs training outcomes.

Federal funding must support the protection and creation of high-quality jobs in a clean economy. This must include the manufacturing workers and communities that will bring the vehicles and infrastructure funded by this program to life. To this end, EPA should make the existing Request For Information on OEM Job Quality and Workforce Development Practices a requirement for all manufacturers who will provide buses to recipients of program funds. RFI responses should be considered and appropriately weighted when making competitive awards, such that applicants sourcing vehicles from high-road employers (such as those with workers protected by a collective bargaining agreement) score highly in EPA's selection process. Additionally, the programs' union neutrality requirements must be made enforceable and explicitly applicable to OEMs, as well as all contractors and subcontractors receiving program funds directly or indirectly.

In addition, EPA should consider future workforce development needs in the sector and promote opportunities relating to them. A 2021 Environmental Defense Fund Study[44] isolated the areas in the workforce which are important for MDHV electrification. EPA should target workforce development strategies pertaining to the following areas:

- Electrical engineering
- Utility work and interfacing with utilities

[44] Environmental Defense Fund, *Charged-Up: Analysis of the Jobs, Investments and Companies in the Zero Emissions Medium and Heavy Duty Vehicle Supply-Chain Economy* (Oct. 2021), https://blogs.edf.org/energyexchange/files/2021/11/CA-State-report-MHD-ZEV-Supply-Chain-Analysis-11.15.21.pdf.

- ZEV site acquisition, design, development
- Charger installation (deploying chargers and specific install jobs related to this, etc.)
- Various consulting and R&D related to site development
- Fleet maintenance
- Site maintenance
- Intelligent Transportation Services (ITS)
- Manufacturing of vehicle, grid, and charging equipment

The Comments are submitted by:

CALSTART

Clean Energy Works

EarthJustice

Electrification Coalition

Environmental Defense Fund

Evergreen Action

GreenLatinos

League of Conservation Voters

Mobilify Southwestern PA

Plug In America

Reno + Sparks Chamber of Commerce

Rocky Mountain Institute

Sierra Club

Tri-State Transportation Campaign

Union of Concerned Scientists