

## Comments of Alliance for Clean Energy New York and Advanced Energy United on the Order Instituting Proceeding and Soliciting Comments in the Proceeding to Address the Electrification Needs of the State's Medium- and Heavy-Duty Electric Vehicle Sector

June 5, 2023

### I. Introduction

Advanced Energy United (United) is a national association of businesses that works to accelerate the move to 100% clean energy and electrified transportation in the U.S. Advanced energy encompasses a broad range of products and services that constitute the best available technologies for meeting our energy needs today and tomorrow. These include electric vehicles, energy efficiency, demand response, energy storage, solar, wind, hydro, nuclear, and smart grid technologies. United represents more than 100 companies in the \$238 billion U.S. advanced energy industry, which employs 3.2 million U.S. workers, including 157,000 individuals in the Empire State.

The Alliance for Clean Energy New York (ACE NY) is a member-based organization with a mission of promoting the use of clean, renewable electricity technologies and energy efficiency in New York State to increase energy diversity and security, boost economic development, improve public health, and reduce air pollution. ACE NY's diverse

membership includes companies engaged in the full range of clean energy technologies - renewable generation, energy efficiency and transportation electrification - as well as consultants, academic and financial institutions, and not-for-profit organizations interested in their mission.

United and ACE NY thank the Commission for initiating this proceeding and appreciate the opportunity to provide these comments in response to the Commission's April 20, 2023 Order Instituting Proceeding and Soliciting Comments (Order). The steps New York State has taken to date are designed to put the State on a path to a zero-emission transportation sector within the next twenty years. The Climate Leadership and Community Protection Act (CLCPA) requires all sectors to reduce their climate emissions by 40% by 2030 and 85% by 2050. The State enacted legislation that restricts all new medium- and heavy-duty (MHD) vehicles sales to Zero Emission Vehicles (ZEVs) after 2045. In 2022, the State budget included language that requires all school bus purchases after 2027 to be ZEVs, and all school bus fleets must be 100% ZEVs by 2035. The State Department of Environmental Conservation (DEC) recently enacted the California standards for zero-emission vehicle sales and Heavy-Duty Omnibus regulations, creating stricter emissions standards for medium and heavy-duty engine manufacturers.

Given these actions, we know that the transportation electrification transformation is underway. As this transformation proceeds, the State will need to ensure that there is careful coordination across a range of issues and entities so that this transformation can be successful. The vehicle sales mandates that the State has adopted to move to 100% ZEVs are vital but to meet these requirements, the State needs to avoid issues with expensive or unreliable electricity delivery or charging equipment and station shortages. Failure on any of these fronts will lead to a loss of support for the transition from the public in addition to an economic loss for fleet owners.

Foremost, charging stations need to be operational before the vehicles are delivered to commercial customers. Among the key issues for fleet owners and operators electrifying their vehicles is knowing that an adequate power supply will be available when and where they are considering installing charging stations. It is easier to predetermine the location and timing of the charging needs of medium- and heavy-duty vehicles compared to light duty vehicles.

The Order mentions that this proceeding will "develop proactive planning approaches to ensure the grid infrastructure is prepared."<sup>1</sup> Identifying these proactive steps should be

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<sup>1</sup> Order Instituting Proceeding and Soliciting Comments, Page 2, Case 23-E-0070.  
<https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={40F19F87-0000-CE10-B9FC-579FE87EB823}>

the critical focus of the Staff Whitepaper. As part of this, the Commission should ensure that utility and state agency forecasting is informed by the expected industry growth, and that utilities are directed and enabled to build out the grid in anticipation of the increased demand. The Commission is still responsible for ensuring that utility investments will be prudent, but the nature of EV load growth, and MHD EV load growth in particular, demands that the Commission adopt practices and policies that facilitate cost-effective, timely development of the necessary infrastructure.

Ratepayer impact should remain an important focus of the Commission, throughout, and ways to alleviate or avoid the financial impact of this transition should be another focus of this proceeding. Piecemeal deployment of infrastructure using current processes is likely to be the most expensive path. A recent study by the California Public Utilities Commission demonstrates both the cost of this transition and the potential for highly localized grid planning and load forecasting to control unnecessary costs in this area.<sup>2</sup> Failure to find creative methods to accommodate such planning approaches and appropriately focus on driving private capital toward the statewide MHD charging goals would be an unfortunate missed opportunity to limit ratepayer or taxpayer impact.

Another study that focused on ratepayer impacts was a recent Synapse study commissioned by the Environmental Defense Fund, titled, Distribution System Investments to Enable Medium- and Heavy-Duty Vehicle Electrification – A Case Study of New York, looked at the costs to ratepayers if the grid investments were socialized across all ratepayers. The revenues from future electricity sales generated by make-ready investments in the grid for MHD vehicle electrification were shown to offset the costs of the upgrades. The study concluded as follows: “The analysis finds that a make-ready program for MHDV electrification would have a positive to neutral impact on electricity rates in both Consolidated Edison’s territory and the western region of National Grid’s territory in New York.”<sup>3</sup> With the use of managed charging, both utilities saw positive net revenues.

This last point highlights the importance of managed EV charging, which is critical to balancing necessary grid investments with reasonable impacts on ratepayers. Other studies - notably, the Transportation Electrification Distribution System Impact Study prepared for NYSERDA in May 2022<sup>4</sup> - show billions of dollars of savings by integrating

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<sup>2</sup> Electrification Impacts Study, CPUC, May 2023.

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M508/K423/508423247.PDF>

<sup>3</sup> MHDV Integration Costs Report, Synapse, April 2023.

<https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3Ab0fd0780-9882-3a25-9ef2-f8c73bd80c92&viewer%21megaVerb=group-discover>

<sup>4</sup> Transportation Electrification Distribution System Impact Study, NYSERDA, May 2022.

<https://www.nyserra.ny.gov/-/media/Project/Nyserda/Files/Publications/Research/Transportation/22-13-Transportation-Electrification-Distribution-System-Impact-Study.pdf>

managed charging behavior into grid investment forecasts. Managed charging for MHD EVs is especially important because these large vehicles have high charging demand concentrated in private depots or public charging hubs along high trafficked truck routes. The Commission recognized the value of load management technologies in its January 19, 2023 Order directing utilities to create programmatic incentives for commercial EV charging customers to add load management technologies to their EV charging projects.<sup>5</sup> As we indicated in our comments in response to the Staff Whitepaper in the Light-Duty EV Make-Ready Program mid-point review,<sup>6</sup> we support load management solutions as eligible make-ready expenses, and emphasize their critical role in limiting ratepayer impact of MHD charging.

Our detailed answers to the questions in the Appendix to the Commission Order follow. Given the wide range of issues addressed in the questions, we have not commented on all of them. The lack of comments on specific topics does not imply a lack of interest or disagreement with including those topics for inclusion in the forthcoming Staff Whitepaper.

## II. Responses to Selected Questions

### **Medium- and Heavy-Duty Vehicles:**

#### **1. What are the specific challenges to developing charging infrastructure for medium- and heavy-duty (MHD) vehicles?**

Fleet operators face many challenges that are best addressed in an electrification transition plan prior to charging infrastructure development. These include issues of site control, site design, best-fit Electric Vehicle Supply Equipment (EVSE) make and model, lead time to design, permit, and construct stations, and site operational changes. These are common to Light Duty Vehicle (LDV) charging infrastructure as well. Specific to MHD, as compared to LDV, the relatively higher power requirements pose a challenge to securing adequate electric service within a project's implementation timeframe, and so

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<sup>5</sup> Order Establishing Framework for Alternatives to Traditional Demand-Based Rate Structures, PSC, January 2023. <https://documents.dps.ny.gov/search/Home/ViewDoc/Find?id=%7B2043A628-EC7D-4064-9F32-662D82598760%7D&ext=pdf>

<sup>6</sup> United & ACE NY Initial Mid-Point Review Comments (Page 13), May 2023. <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7BF0142188-0000-C235-ACBC-DB6A9A5291FF%7D>

the cost and timing of the any upgrades to electric service (or fulfilling new connection requests) may also pose a barrier. Finally, charger uptime and resiliency are relatively more important, if not necessarily more challenging, than LDV, given that MDHD serve critical operations in the movement for people and freight.

Authority and direction should be given to electric utilities to proactively plan and invest in EV charging grid upgrades, especially for MHD fleet charging sites which require large amounts of power capacity. Granting utilities the ability to procure equipment in advance and pre-ordering electrical equipment needed for EVSE infrastructure will allow them to shorten the time window for grid upgrades. Utilities should also plan for long term load growth at EVSE sites and utilize a phased approach when upgrading power to a site. The timely deployment of charging infrastructure depends on increasing the transparency and speed of interconnections, maintaining a consistent process state-wide, identifying constrained areas, and using data and performance metrics to inform future improvements.

#### **a. How do these challenges differ between electric utility service territories?**

We believe that most of the challenges are universal across utility territories. However, utility service interconnection processes and requirements are inconsistent. The most significant factor within a utility's control is the lead time to site service energization. Project lead times can vary by local permitting authority, requirements, and utility processes. The best utility experience includes parallel planning and implementation phases on both sides of the meter to close the gap from construction completion to commercial operation.<sup>7</sup>

Other best practices include:

- Site assessments including “desktop” service adequacy reviews and preliminary service upgrade scopes, costs and timelines.
- Single point of contact for customer portfolio – across utility territory regions or organization – for efficient communication on multiple projects.
- Dynamic load serving capacity maps that direct customers to sites without pending grid capacity constraints.
- Clear, defined, and streamlined requirements communicated via checklist or other simple tools to track requirements and responsible parties, and maintaining clear communication through project planning and implementation phases.
- Coordination between utility and Authority Having Jurisdiction (AHJ) to streamline permitting processes.

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<sup>7</sup> Preventing Electric Truck Gridlock, RMI, 2023. <https://rmi.org/insight/preventing-electric-truck-gridlock/>

## **2. How do charging needs differ for school buses, transit buses, delivery trucks, garbage trucks, box trucks, stake trucks, transport refrigeration units, and other specialized equipment?**

The use case of vehicles determines their charging needs. The listing of vehicles in this question offers a good selection to start. There is early success with these types of fleets when they have access to private depot charging. These types of fleets run return-to-base duty cycles with vehicles running up to 300 miles per day followed by dwell times in depots overnight up to 10 hours. Vehicles that lack access to private depots, drive less efficiently by making frequent stops along a route, or use vehicle batteries to serve ancillary equipment such as refrigeration units, lifts/buckets, etc., will need access to public charging hubs.

That said, charging needs vary across these fleet types and within each type, and require fleet-specific detailed planning and analysis to develop the right charging solution. For example, it is generally assumed that school bus fleets can meet energy needs with L2 EVSE (e.g., 19.2kW) to serve morning and afternoon runs.<sup>8</sup> However, private operator school buses, contracted for transportation services, deploy buses for school trips, athletics, and private events in addition to pupil transportation. In these cases, direct current fast chargers (DCFCs) may be needed, or “hub and spoke” network opportunities using shared private depots or public charging hubs.

### **a. What other types of MHD vehicles, if any, should be considered in this proceeding?**

We recommend an initial focus on return-to-base duty cycles with commercially available vehicles that travel up to 300 miles per day and dwell in a depot overnight for up to 10 hours. The Commission should consider including off-road vehicles operating at container ports, e.g., drayage trucks, terminal tractors and hostlers, and some cargo handling equipment. These vehicles have broad impact on air quality in dense and overburdened neighborhoods and their electrification will have improved localized health benefits.<sup>9</sup>

Another example not included above are coach bus or shuttle bus operators. These private transit vehicles include corporate and campus shuttle services with defined routes and schedules. The in-depot dwell times facilitate the use of managed charging.

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<sup>8</sup> Electric School Bus Analysis Reveals Four Key Lessons for Electrification, CTE, February 2023. <https://cte.tv/electric-school-bus-analysis-reveals-four-key-lessons-for-electrification/>

<sup>9</sup> Accelerating ZEV adoption in fleets to decarbonize road transportation, ZEV Transition Council, May 2023. [https://theicct.org/wp-content/uploads/2023/05/ZEVTC\\_fleets-briefing\\_final.pdf](https://theicct.org/wp-content/uploads/2023/05/ZEVTC_fleets-briefing_final.pdf)

### **3. What segments of MHD vehicles are likely to have broad electric model availability in the near-term and which segments are likely to electrify on a longer timeline?**

The EV market and electric vehicle model availability are constantly expanding. We refer the Commission to the following reports, which provide further insight into Medium & Heavy-Duty electric model availability timelines and trends.

State of Sustainable Fleets – Gladstein, Neandross & Associates<sup>10</sup>

Run on Less – Electric – North American Council for Freight Efficiency<sup>11</sup>

Trends and developments in electric vehicle markets – Global EV Outlook 2021 – Analysis – International Energy Agency<sup>12</sup>

EV Readiness and Market Structure for MHD Vehicles – Environmental Defense Fund<sup>13</sup>

CALSTART Report on Zero-Emission Truck and Bus Model Availability<sup>14</sup>

### **4. What locations or types of locations should be considered as potential hubs for MHD vehicle charging?**

Potential charging locations include existing distribution centers, ports, and warehouse locations where MHD vehicles reside now and for the foreseeable future. Properties secured by ownership or long-term lease are likely to continue serving as fleet depots. School bus fleet depots – publicly or privately held – are also long-term consistent properties with emerging demand and could become electric school bus charging hubs. New York’s implementation of Federal Highway Administration National Electric Vehicle Infrastructure (NEVI) funding will support development of LDV charging at corridor-adjacent locations that could be expanded, where appropriate, to include on-the-go MHD charging.

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<sup>10</sup> <https://www.stateofsustainablefleets.com/>

<sup>11</sup> <https://nacfe.org/research/run-on-less-electric/>

<sup>12</sup> <https://www.iea.org/reports/global-ev-outlook-2021/trends-and-developments-in-electric-vehicle-markets>

<sup>13</sup> <https://www.edf.org/sites/default/files/documents/EDFMHDVEVFeasibilityReport22jul21.pdf>

<sup>14</sup> <https://calstart.org/new-data-tracks-growth-of-zero-emission-truck-and-bus-model-availability-globally-in-midst-of-economic-supply-chain-challenges/>

**a. What criteria should be considered when selecting locations for potential hubs upstate and downstate?**

Some of the criteria that should be considered in selecting potential charging hubs are the location to disadvantaged or overburdened communities, convenience of location to drayage operators, and the higher costs to deploy charging infrastructure downstate.

**5. What considerations should Staff take regarding incentivizing infrastructure siting and MHD charging to mitigate impacts in Disadvantaged Communities overburdened by truck and bus traffic and pollution?**

As we begin this transition, it is important to reduce fossil fuel truck traffic in disadvantaged and overburdened communities. Regardless of where the truck depot is located, the trucks that travel in and through these communities should be prioritized for clean fuels that reduce criteria pollution (e.g., NO<sub>x</sub>, SO<sub>x</sub>, particulate matter) and their resulting health effects. It is better still to reduce air pollution through the entire fuel cycle; we recommend that the Commission consider integrating clean distributed resources and storage that avoid high-polluting “peaker” power plants running on natural gas or fuel oil.

**7. Identify barriers that exist in the current MHD Make-Ready Pilot Program that could be modified in a successor to the pilot.**

United and ACE NY submitted comments<sup>15</sup> regarding, among other topics, barriers and reform of the MHD pilot, on May 15, 2023, in Case 18-E-0138, Midpoint Review of the Electric Vehicle Make-Ready Program. Please refer to those comments for our discussion of restrictions that hinder the workability of the pilot.

**a. Provide comments on how to address the barriers to building publicly accessible charging that serves MHD vehicles (e.g., highway truck stops).**

Potential MHD public charging along highways and interstates are often in remote locations with electric demand only sufficient for facilities such as restaurants, rest areas, and/or refueling stations. MHD charging will add megawatts of demand to these sites with, at least initially, low load factor. Utilities should be ordered and incentivized to meet

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<sup>15</sup> United & ACENY Mid-Point Review Comments, May 2023.  
<https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=306581&MatterSeq=56005>



service requirements with a mix of traditional and non-wires solutions. Those non-wires solutions should include distributed resources such as storage and clean generation, and load management technologies. Solutions that alleviate the long lead time for utility service interconnection and significant grid upgrades should be prioritized. Temporary or portable solutions, e.g., modular batteries that can be repurposed for future use at new sites, should be considered.

As with LDV public charging, MHD public charging utilization will start low and build over time to support investment. A solution is to incentivize projects that co-mingle different end uses and vehicle types. Another solution is to concentrate on sites that complement depot charging, e.g., along port drayage routes or school bus routes.

Finally, we recommend uptime requirements for public MHD charging. This to ensure reliable equipment is available for MHD reliant on public charging need reliable charging. Uptime requirements should align with Federal NEVI standards to allow for consistent preventative maintenance strategies and reporting.

**b. Provide comments on how to address the barriers to building private or limited access charging that serves MHD vehicles (e.g., depots, warehouses, and distribution centers).**

Cost and time are the primary barriers to deployment of private MHD charging. Unfortunately, utility interconnection and new service installations continue to be the longest schedule item, particularly receiving encroachment permits (easements) for the utility work in the public right of way. Streamline utility interconnection and energization timelines through enhanced customer engagement, especially for long-term MHD electrification transition plans that require high power interconnections. Expedited utility service determinations and site pre-investment in utility infrastructure will improve the fleet customer experience.

**8. Through the Make-Ready program, utilities offer fleet assessment services to help prepare for the transition to electric vehicles. What additional technical assistance is needed to support the transition to mass MHD electrification?**

Current New York State fleet assessment programs generally provide analysis appropriately within the utilities' scope including site feasibility, rate analysis, and billing impacts. All are useful in the electrification decision-making process. But to go deeper, utilities can provide proactive assessments of site power availability in order to guide fleets and developers to near-term success. Existing load serving capacity maps are a

good start to providing directional assessments of distribution asset capacity. Utility site feasibility assessments should build on this with on-demand quick-turn “desktop” assessment of service adequacy and the scope, cost, and timeline to meet customer demand.

Proactive planning and investment - discussed further in the section below - can incorporate such analysis of sites before service requests, in anticipation of electrification concentrated on specific feeders, networks, or even properties. Utility programs could then proactively market electrification to depots and other sites immediately capable of accommodating EV charging.

The Commission should consider how utilities participate in the growing marketplace for fleet electrification consulting. A growing number of consultants, engineering firms, and service providers are emerging with expertise to assist fleets in their consideration of vehicles and interoperable hardware, integrating charging infrastructure into depots, coordinating charging sessions with operations, etc. Utilities should work with - and not in competition with - these service providers to provide comprehensive analysis and advice along the fleet’s electrification journey.

## **Proactive EV Infrastructure Planning and Investment:**

### **9. Discuss how proactive EV infrastructure planning differs for light-duty and MHD vehicle market segments?**

The significant differences are not between LDV and MHD charging. It is true that MHD will have relatively higher power demand due to larger batteries, high power DCFC, and the tendency to concentrate charging in large hubs such as private “behind-the-fence” properties.

The main differences are between public and private charging regardless of vehicle class. Fleets of all types – LDV and MHD - congregate in depot locations with consistent schedules. Fleet depots are concentrated “lump” loads that will scale up as older vehicles retire, replaced by EVs per public policy mandates. Proactive utility planning should prepare for large fleet charging loads by engineering and investing on a timeline to meet need. Major grid upgrades, if/when they are needed, can take years - significantly longer than the time it takes to install the charging station. While the Commission is still responsible for ensuring that utility investment is prudent, the nature of MHD EV loads demands that the Commission adopt practices and policies that facilitate cost-effective, timely development of the necessary infrastructure.

For MHD fleet locations, long-term planning and future-proofing infrastructure for future power demand is critical to meeting public policy objectives, and to ensuring that utility grid investments align with plans. Utility planners and EV teams should engage with fleet operators and commercial depot owners, and their electrification partners, to develop cooperative plans to roll out charging infrastructure. Long term plans, due to the potential for high demand and significant investment, should emphasize load management. Load management technologies are critical to optimizing the infrastructure investment and controlling ratepayer impacts.

We support legislation<sup>16</sup> that was proposed earlier this year to create highway and depot charging action plans and coordinate the transition among state agencies. This legislation complements the PSC's potential proactive planning. It directs collaboration among relevant state agencies such as, Department of Transportation, Department of Environmental Conservation, the Energy Research and Development Authority (NYSERDA), and others, in identifying EV charging "priority areas", a needs evaluation describing the scale and timing of adding charging in these areas, and the electric utility infrastructure investment needed to meet these forecasts. We support the bill's original language enabling utilities to prepare and implement cost-effective highway and depot charging capital plans with Public Service Commission oversight and direction. There are no regret locations, such as school bus garages, transit agency garages and depots, ports and railway hubs, where we know with some certainty that grid infrastructure upgrades and investments will be necessary. Collaborative planning among utilities, EV charging operators, community representatives, and other stakeholders is critical to ensure charging is managed to meet public policy goals while mitigating ratepayer impact.

#### **11. Discuss how battery energy storage systems and other distributed energy resources can be implemented in both short-term and long-term planning for electric vehicle charging needs across vehicle classes.**

Energy storage, load management solutions, and other distributed energy resources (DERs) can be implemented as part of both short-term and long-term EV infrastructure planning and development. An integrated approach that leverages these hardware and software solutions can help meet the future needs of all EV classes in the following ways:

- **Short-term planning** – DERs, including energy storage, can be used to address or supplement immediate needs of the EV charging infrastructure by providing additional power during high demand periods, mitigating, and minimizing needs for costly upgrades, and can generate zero-emission clean energy (solar, wind) for powering EV chargers. Some sites, through the use of DERs and automated load

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<sup>16</sup> Bill S.4830-C/A.5052-C, Establishes a highway and depot charging needs evaluation.  
<https://www.nysenate.gov/legislation/bills/2023/S4830>

management (ALM) can even defer or avoid the need to upgrade customer-side and utility-side infrastructure. While site-specific needs vary, DERs and ALM can and should be used when cost-effective in the near-term to reduce infrastructure buildout.

- **Long-term planning** – DERs can be integrated tools for providing resilience and sustainable energy systems in general. Microgrids can be implemented to not only provide reliable energy to charge EVs in emergencies, but also to provide needed grid balancing and other valuable services during high demand periods.

## 12. How can managed charging programs reduce upfront infrastructure needs?

Fleets are well suited to managed charging strategies. Fleet vehicle routes and deployment schedules are often fairly predictable, with fleet operators closely monitoring schedules for operational and economic optimization. At the same time, these vehicles often have long dwell times which are well suited for strategies to shift and shape load.

Managed charging with both hardware- and software-based solutions is an essential strategy to reduce infrastructure costs for fleet charging depots. Depot charging is likely to account for nearly 90% of fleet operating needs, with vehicles on average having 14 hours of downtime per day.<sup>17</sup> Managing these vehicles' charging load to avoid peak periods can substantially reduce the need to upgrade both the facility's infrastructure and the utility-side infrastructure, compared to an unmanaged charging scenario in which vehicles charge simultaneously during peak periods. A recent NREL study found that managed charging in the MHD sector can reduce distribution system investment costs by up to \$1,090 per EV per year.<sup>18</sup>

Modeling based on New York's existing medium- and heavy-duty electrification indicates that managed charging will yield cost savings that will accrue to all ratepayers. A 2023 report from Synapse Energy Economics, leveraging data and tariffs from Consolidated Edison and National Grid, found that managed charging reduced site peak load by 15% and 5% respectively.<sup>19</sup> This data reflects the more rigid charging needs and schedules of fleet vehicles, but is significant, nonetheless. The cost savings associated with managed charging are also likely to lead to faster economic return on investment for fleets in the

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<sup>17</sup> Perspectives on Charging Medium- and Heavy-Duty Electric Vehicles, NREL, December 2021. <https://www.nrel.gov/docs/fy22osti/81656.pdf>

<sup>18</sup> Electric Vehicle Grid Integration, NREL. <https://www.nrel.gov/transportation/project-ev-grid-integration.html>

<sup>19</sup> MHDV Integration Costs Report, Synapse, April 2023. <https://acrobat.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3Ab0fd0780-9882-3a25-9ef2-f8c73bd80c92&viewer%21megaVerb=group-discover>

process of electrification. These economics are a critical factor to speed overall adoption of medium- and heavy-duty electric vehicles in line with state goals.

**14. What types of site locations and use cases should be prioritized for proactive future-proofing, and why?**

First, priority sites should be ones that are either owned or secured under long-term contract by a fleet customer with a long-term commitment to electrification. This is best driven by public policy, such as Advanced Clean Trucks (ACT), New York's school bus electrification mandate, and others. Such sites and customers are highly likely to follow through with scaling up electrification plans.

Priority should be given to disadvantaged communities with the goal of improving air quality in areas hosting MHD fleets and areas highly trafficked by MHD vehicles. However, consideration should be made to the long-term implications of locking in MHD traffic by building out charging infrastructure to serve these vehicles. For example, planning depot charging to encourage less intrusive traffic patterns in these communities is preferable.

**16. Are there alternative financing models for bringing new electric service to sites with additional capacity for future-proofing? Please describe.**

The *as-a-service* business model is an available alternative for EV infrastructure financing. For example, with charging-as-a-service (CaaS), the service provider owns and operates charging infrastructure. There is no upfront cost to the customer. Instead, the fleet and/or site host signs a long-term service agreement to provide services at a contract price, e.g., cost per mile, cost per kWh. This could include utility connection costs (e.g., contribution in aid of construction) - the service provider would include such costs in their offer to the customer. The provider would then consider additional investment in future proofing capacity to serve additional customer vehicles, or, in cases of leased depots, future fleet tenants.

CaaS providers assume responsibility for all charging aspects of an EV fleet including design, engineering, permitting and utility coordination, equipment procurement and installation, and ongoing operations and maintenance. The service provider is responsible for 24/7 network operations, charge management, operational resilience, and reliability. While available to all fleet types, CaaS is more favorable for higher mileage fleets with overnight charging opportunities, as the effective cost per kWh is lower for these customers, as well as fleets with flexible duty cycles that can accommodate off-peak charging with lower-powered EVSE.

The Commission should ensure that utility incentive programs allow eligibility for service providers that are not fleet owner/operators but provide charging services to fleet owner/operators. CaaS providers pursue incentives to reduce cost to the customer, either directly or in partnership with an eligible fleet operator. This includes preparing funding application materials and any data collection and reporting required subsequent to an award.

### **III. Conclusion**

We appreciate the opportunity to provide these responses to the Commission in this important proceeding and look forward to reviewing the Staff Whitepaper when it is released.