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Greenlane Infrastructure, Inc Response to CEC RFI Medium- and Heavy-Duty Zero-Emission Vehicles & Infrastructure

Greenlane Infrastructure is committed to supporting initiatives that drive sustainable and efficient infrastructure development. Our team has carefully analyzed the RFI and has provided insights that we believe will contribute to the success of this project. Please find our comments below for your consideration.

Additional submitted attachment is included below.

Greenlane

Feel Good About the Road Ahead

From: Greenlane Infrastructure, LLC
To: California Energy Commission
Docket: 19-TRAN-02
Date: February 7, 2025
Subject: Request for Information - Medium- and Heavy-Duty Zero-Emission Vehicle Public Charging

Thank you for the opportunity to provide public comments to the California Energy Commission's Request for Information (RFI) for Medium- and Heavy-Duty (MDHD) Zero-Emission Vehicle Public Charging (Docket: 19-TRAN-02).

Greenlane's sole business purpose is to facilitate the transition of medium and heavy-duty (MDHD) commercial fleets to zero emission (ZE) by providing critical zero emission vehicle (ZEV) fueling infrastructure along key freight corridors across the country. The transportation sector is now the largest source of GHG emissions in the U.S. MDHD vehicles account for less than 10% of vehicles on the road but are responsible for 23% of GHG emissions in the transportation sector. Furthermore, diesel emissions have a disproportionate impact on air quality and human health. Poor health outcomes from diesel pollution are pronounced and well documented in underserved communities across the country.

Greenlane recently announced its first commercial electric vehicle (EV) charging corridor along I-15 in California. The sites include Colton, Barstow, and Baker, California; combined, the three (3) sites will install more than 100 chargers one mile or less from an Alternative Fuel Corridor (AFC) alongside modern amenities, on-site power generation and energy storage, utilizing carbon free power at every site. Greenlane will open its inaugural flagship location in Colton, California in early 2025. The Colton charging hub will offer a variety of EV charging infrastructure to service MDHD commercial and light-duty vehicles (LDV), with a total of 53 charging ports for MDHD charging and 10 charging ports for LDV cars.

Greenlane recognizes the current infrastructure challenge and is laser focused on providing unmatched expertise, resources and high-quality services for decades to come, to ensure commercial ZEV fleets feel good about the road ahead.

Sincerely,

Andrea Pratt
Vice President Government & Utility Relations
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Greenlane Infrastructure is committed to supporting initiatives that drive sustainable and efficient infrastructure development. Our team has carefully analyzed the RFI and has provided insights that we believe will contribute to the success of this project. Please find our comments below for your consideration.

1. **What does the CEC need to consider when developing "public" / en route charging eligibility criteria for CEC funding opportunities?**

   In developing charging eligibility criteria, the California Energy Commission (CEC) should consider industry requirements for installing medium- and heavy-duty (MDHD) charging infrastructure contrasted to light-duty vehicle (LDV) charging. MDHD "public" charging locations require larger development sites to accommodate the turning radius and safe operations of larger electric MDHD vehicles. To support the quick charging required for MDHD elective trucks, each charging location requires electrical capacity upgrades. Additionally, for public applications, amenities such as restrooms, driver resting area, and workspace are benefits supporting a positive user experience during charging dwell times. The equipment installed at each charging location also requires higher powered charging equipment and enhanced security measures to protect from potential theft, vandalism, and driver safety. MDHD also requires more operating costs than a light duty charging station. CEC could also consider including a portion of land costs (potentially with a cap) as an eligible expense given the majority of use cases today are regional haul, near ports and distribution centers in urban areas where land costs are much higher.

   The additional complexities at the charging locations increase installation and operating costs, requiring the CEC to consider grant awards that exceed the cost of the MDHD charging equipment. Awards should include site development/preparation, including required amenities like restrooms, and electric utility upgrades such as utility make-ready work, transformer upgrade costs and line extensions, to the greatest extent possible. By addressing these factors, the CEC can ensure the successful deployment of MDHD charging stations, which are essential for the transition to zero-emission MDHD vehicles and achieving California's climate goals.

2. **How should the CEC plan for the state's future MDHD charging needs to both accommodate fleets that will need access to chargers while en route to a destination (similar to the diesel truck stop model where the ports are fully publicly accessible first-come-first-served) vs. fleets that need certainty that charging will be available and accessible when it comes time to charge (the reservation system model)?**

   To accommodate MDHD fleets that will need access to chargers, both guaranteed and opportunity charge scenarios, the CEC should consider a balanced approach that incorporates models supporting reservation systems and first-come, first-served. The reservation systems are crucial for managing utility demand, reducing congestion, and ensuring user convenience and certainty by allowing fleets to reserve charging sessions in

advance and plan their routes accordingly. The charging certainly is beneficial in planning long-haul trips, guaranteeing charging availability at points along the route, and planning driver breaks. Also, reservation systems optimize grid capacity allowing grid and site operators to predict and manage energy loads more effectively and avoid expensive peak demand periods that essentially get passed along to customers who are already struggling with Total Cost of Ownership electrifying their fleets. These steps increase grid stability and security.

The first-come, first-served model provides flexibility and freedom for freight travelling along varied delivery routes. Publicly accessible, first-come, first-served charging stations ensure all fleets have access to charging infrastructure, regardless of their ability to plan in advance. Integrating both reservation systems and first-come, first-served models, the CEC can create a flexible, efficient, and reliable charging network that serves the needs of commercial fleet customers. Greenlane believes there should be a mix of chargers where some serve reservations, and a portion are left for opportunity charging to ensure all parties get served. Please note this also requires having capacity – meaning more chargers, lanes and power.

3. **Is a reservation system for use of public chargers needed to meet the needs of the trucking industry?**

   Yes. Due to the low number of existing publicly available MDHD chargers, reservations systems are needed to meet the demand of MDHD electric trucking operations to ensure on time, on budget delivery. The reservation system provides reliability and certainty, ensuring charging stations are available when needed. Allowing fleets to book charging sessions in advance promotes charging certainty and assists in planning for long-haul trips more effectively. These efforts minimize downtime, assisting to keep trucks on schedule, which in turn helps with labor costs and total costs of ownership for freight and logistics companies.

   The benefits of reservations systems can be balanced with first-come, first-served charging availability. Expanding the charging infrastructure to include both reservation and first-come, first-served, the CEC can support the growing number of electric trucks on the road. This combined approach addresses current gaps and positions the state as a leader in sustainable transportation solutions.

4. **What reservation systems exist that could allow use by more than one trucking company?**

   Greenlane Infrastructure (Greenlane) public-charging facilities allow for customer reservation systems today. Our multi-tenant cloud application is used by most of our customers. Greenlane can provide fleets with a variety of options to access public infrastructure, with opportunities to reserve chargers in advance of charging events via the Greenlane app, on-demand reservations or first-come, first-serve options. By integrating advanced technology, Greenlane offers visibility into charging data, allowing fleets to manage sessions from a single interface and seamlessly integrate with their existing tool. Trucking companies have access to

the reservation system, where they can make reservations according to their needs and then reservations are randomly allocated to a charger.

5. **Does a "Trucking-as-a-Service" (Taas) model in which trucks are leased and guaranteed chargers by a site operator provide enough public opportunities for trucks that are not leased through the site operator?**

   A TaaS model supports the largely accepted business model of leasing vehicle for MDHD fleets and can provide a benefit to fleet operators. Any Taas model accepted by CEC should not limit the flexibility and freedom for fleet operators to choose where and when to charge. Trucks domiciled at a depot still require opportunity charging depending on the distance covered on a daily basis and where their routes are planned. A combination of the two also provides range extension and is an absolute must for corridor charging where a truck is driving longer distances. A lack of choice can force operators to incur higher costs, as they may not have the option to select cheaper or more convenient charging alternatives. This limitation can be particularly challenging for smaller fleets or independent operators who may benefit from a more flexible and competitive market environment. Charging infrastructure and truck leases should be decoupled to allow consumers maximum choice for vehicle procurement and make charging infrastructure available to the greatest number of electric trucks on the road.

6. **Should there be a certain percentage of chargers available to the public at all times? Should there be a certain percentage of chargers available for reservation at all times?**

   The CEC should prioritize flexibility when evaluating eligibility criteria for public at all times and reservation systems at all times. It is important to provide a hybrid mix of both reservation and first-come, first-served systems. The hybrid approach allows for planned and spontaneous charging, catering to different operational requirements and duty cycles. Allowing the market to decide the exact number of reservations and first-come, first-served help balance supply and demand effectively. Setting a minimum number of chargers with reservations and without reservations at each site provides a baseline level of accessibility and reliability.

   This flexibility accommodates operators who prefer to plan their charging sessions in advance to plan with confidence, while accommodating other operators who need immediate access to charging. As market demands fluctuate, the percentage of reservation and "walk up" charging can be adjusted accordingly. This combined approach promotes usage and accessibility, supporting the growth of electric trucking and contributing to a more sustainable transportation system.

7. **What is the ideal reservation system or process for MDHD truck charging?**

   An application that is open to all MDHD electric truck operators increases accessibility, regardless of their fleet size or technological capabilities. An ideal MDHD truck charging reservation system must guarantee charger availability and power delivery while providing schedule flexibility for delays, maximizing both fleet uptime and infrastructure utilization.

8. **If a portion of chargers must remain first-come-first-served, what ratio for reservation vs. first-come-first-served chargers would you recommend?**

   To promote freedom in public charging accessibility, a portion of chargers should remain unreservable, allowing charger availability to be first-come, first-served. Instead of creating an exact ratio for first, come-first-served, CEC should establish a minimum baseline for each charging system. Any designated ratio should have freedom to adjust as market data and usage patterns evolve. This will really depend on how many chargers are at each location as well as how many customers are domiciling or home basing trucks at each facility.

9. **Which configuration would be preferred:**
   a. **A site where all chargers can be reserved but can also be used on a first-come-first-served basis if a charger is not reserved or in use?**
   b. **A site where a portion of the chargers are reservation only and another portion first-come-first-served only? In this configuration, is there an optimal percentage of chargers that are always available (not available for reservation)?**

   Configuration B is best suited to meet the needs of MDHD electric truck charging. The configuration permits charging flexibility, accommodating different operational needs. The optimal percentage of chargers that are always available first-come, first- served should be determined by market demand and the number of chargers at each location. A reliable baseline for charging accessibility and convenience is established with a minimum standard of chargers available for reservation and for first-come, first served.

   This approach promotes choice and allows the market to decide the appropriate balance between reservation and first-come, first-served. The system promotes efficient and maximized use of the charging infrastructure for planned and spontaneous MDHD operational charging needs. Offering both options can better meet the diverse requirements of MDHD vehicle operators.

10. **If a truck is charging at a first-come-first-served charger at a site that also allows reservations, and a scheduled reservation arrives while the charger is still in use, what is the protocol?**

    The protocol for a first-come, first-served charger being utilized when a scheduled reservation arrives should include a requirement that a vehicle cannot access a reserved charger prior to reservation. Greenlane's reservation system prevents ad-hoc charging sessions from starting, if a reservation is scheduled to begin, within the next 45 minutes and

ii) automatically stops ad-hoc charging sessions 15 minutes before an upcoming reservation. Additionally, Greenlane will have a station manager on site to assist drivers but also ensure unauthorized vehicles are moved. Drivers will also be notified via text if they are using the application and warned on the station screen prior to starting a charge. This approach promotes accessibility and prevents misuses of the reservations system. This system will promote maximized usage for reserved chargers and balance the needs of spontaneous and planned charging.

11. **The CEC's Clean Transportation Program administers public funding, which must provide a benefit to the state. How does a project with a reservation system benefit the state of California?**

    The CEC's grants supporting the deployment of charging stations for MDHD electric vehicles benefit the entire state of California. The charging stations play a critical role in reducing on-road vehicle emissions from conventional MDHD diesel vehicles, one of the highest polluters in the transportation sector. Providing MDHD electric vehicle operators with reliable and accessible charging infrastructure helps decrease the environmental impact of conventional MDHD diesel vehicles, resulting in cleaner air and a healthier community.

    The reservation system promotes guaranteed access to chargers, increasing charger availability for planned charging routes. This allows for quick and guaranteed charging, encouraging the use of MDHD electric vehicles. Guaranteed access results in higher demand and usage for MDHD electric vehicles, further supporting the state's goals for sustainable transportation and reducing overall emissions. Reservations will promote efficient operation and higher utilization of infrastructure, which maximizes capital investment value for the state and promotes the long-term viability of the public charging business. This dual benefit of environmental impact and operational efficiency underscores the value of a reservation system for charging to the state of California.

12. **Are there driver safety or equipment protection issues that the CEC must consider when determining whether a charger should be "public"? Could a charging site be open to the public without attendees on site?**

    The CEC must consider several driver safety and equipment protection issues. Public charging sites should be well-lit to enhance visibility and safety, especially at night. Installing surveillance cameras can deter vandalism and provide a sense of security for users. Additionally, the charging station layout should include ample space to accommodate the turning radius of large MDHD vehicles, enhancing operation and maneuverability. Bollards or barriers can protect charging equipment from accidental damage. Appropriate fencing and use of motorized gates to provide public access afterhours are needed for security and site operational safety. While on-site attendees are beneficial (but not required and adds significant cost) for public charging operations, it is beneficial to have 24/7 call centers readily

accessible to customers provides support and assist in addressing any issues that may arise. Implementing these best practices ensures a safe and secure environment for all users.

13. **Are there standardization or communication protocol issues that the CEC needs to consider when developing "public" / en route charging eligibility criteria for CEC funding opportunities?**

    CEC needs to ensure interoperability between different charging networks as crucial, which involves adopting standardized communication protocols. Open Charge Point Interface (OCPI) can facilitate seamless communication between charging point operators and e-mobility service providers (EMSP). Standardized protocols for real-time data sharing are also essential. These protocols allow for accurate and timely information about charger availability, status, and pricing, which can be shared with third-party apps to improve customer experience. With these standards, the CEC can ensure a more reliable and efficient charging infrastructure for MDHDs, promoting mass adoption of the new technology. However, considering OCPI alone is not enough for reservations at charging stations as OCPI does not support reservations. Greenlane utilizes a suite of API to enhance the reservation system that provides a robust and intelligent reservation system to be implemented in any ecosystem.

14. **Please describe your optimal public charging network that is a mix of first-come-first-served and reservation systems throughout CA.**

    The optimal public charging network for MDHDs should be a combination of large sites with multiple chargers with the capability to support pull-through lanes and to accommodate truck turning radius, and smaller sites strategically placed along key corridors and at major freeway intersections will maximize their utility, range and accessibility. It needs to be a combination as the capex to build large "truck stops of the future" and limit overall customer adaption and industry growth.

15. **Please describe your optimal site configuration. It may be 100% first-come-first served, 100% reservation system, or a combination of the two.**

    The optimal site configuration for MDHD charging should be decided by market dynamics and number of chargers, balancing the needs of planned and spontaneous MDHD charging. A hybrid model of reservations and first-come, first-served systems promote flexibility for market dynamics to dictate the best approach. Reservation systems can ensure planned travel routes are accommodated with guaranteed charging at the site location. Additionally, reservations systems promote grid reliability by offering better predictability for when demand will be placed on the electrical grid. First-come, first-served sites may not sufficiently support the planned travel operations of fleet vehicles, potentially reducing delivery efficiency and electric grid reliability, but is a required service for the industry. The first-come, first-served model potentially could affect delivery times by requiring vehicles on planned routes to wait in line for charging, and reduction in grid reliability occurs when multiple MDHD electric vehicles pull into a site to charge at once – both will result in increasing the

total cost of ownership for freight and logistics companies. The hybrid approach can guarantee charging for planned routes, provide secure options for spontaneous MDHD charging, and support grid reliability when charging is needed.

16. **If using a reservation system, please describe your optimal set of rules and parameters of how a reservation system would work.**

    CEC should consider the following rules for optimal parameters

    a) Tailored Reservation Options: Offer distinct reservation options to accommodate different charging needs such as quick-charge and slow-charge.
    b) Buffer Time Between Reservations: Have 15-minute buffer time between reservations to facilitate smooth transitions and prevent overlaps.
    c) Accommodate Delays: Permit users a grace period to account for unforeseen circumstances.
    d) Protocols for Reservations and First-Come, First-Served: Have systems in place to manage reservations and first-come, first-served to ensure reliable access to charging and limit disruption to planned fleet operations.
    e) Real-Time Charger Availability: Promote real-time charger availability, enabling users to make informed decisions.