DOCKETED	
Docket Number:	24-EVI-01
Project Title:	U.S. Department of Transportation's Charging and Fueling Infrastructure Grant Program
TN #:	257452
Document Title:	Gage Zero Comments - RFI Ideas and Considerations for CA Ports USDOT CFI
Description:	N/A
Filer:	System
Organization:	Gage Zero
Submitter Role:	Public
Submission Date:	6/26/2024 4:45:21 PM
Docketed Date:	6/26/2024

Comment Received From: Gage Zero
Submitted On: 6/26/2024
Docket Number: 24-EVI-01

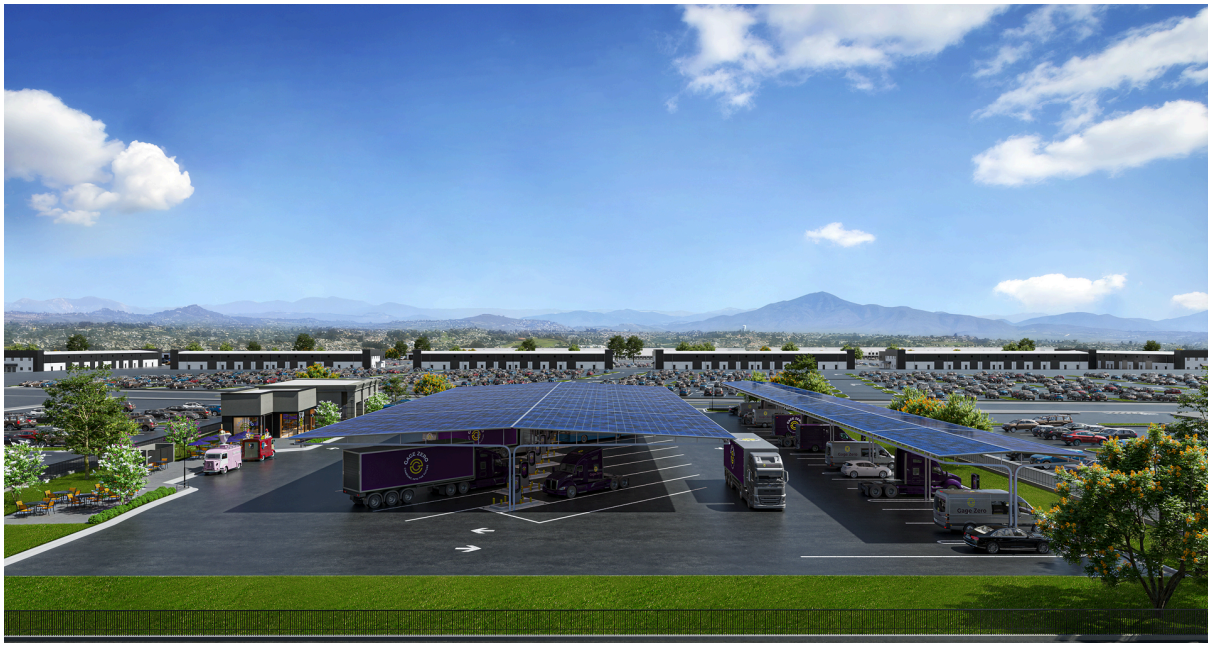
Gage Zero - 24-EVI-01 - RFI Ideas and Considerations for CA Ports USDOT CFI

Additional submitted attachment is included below.

Gage Zero

June 28, 2024

Considerations for the California Energy Commission Zero-Emission Medium- and Heavy-Duty Drayage Infrastructure Application for the U.S. Department of Transportation's Charging and Fueling Infrastructure Discretionary Grant Program



Docket Number | 24-EVI-01

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Cover Letter

June 28, 2024

California Energy Commission
Docket Unit, MS 4
Re: Docket No. 24-EVI-01
715 P Street
Sacramento, CA 95814-5512

Dear California Energy Commission Staff,

On behalf of Gage Zero LLC, I am pleased to submit our response to the Request for Information (RFI) - Considerations for the California Energy Commission's (CEC) Zero-Emission MDHD Drayage Infrastructure Application for the USDOT's CFI Grant Program (docket number 24-EVI-01). Our team is committed to a future where zero-emission fleets are the norm, contributing to a cleaner planet for future generations.

At Gage Zero, we specialize in deploying reliable MDHD electric vehicle charging infrastructure and crafting cost-effective solutions that are pivotal in accelerating the transition to zero-emission fleets, thereby benefiting communities and supporting sustainability goals. Our team's collective experience in large-scale utility, renewable energy, and transportation projects has been instrumental in deploying over $10 billion in capital, showcasing our deep commitment and capability in this sector.

Our mission is to build a future-oriented, equitable, diverse, and sustainable organization, capable of addressing the challenges of one of the world's most vital industries – commercial transportation. With a strong financial backbone, supported by a $300 million equity commitment from ARC Financial, Gage Zero is well positioned to expand electric charging infrastructure across the United States. Our mission aligns perfectly with the objectives of the U.S. Department of Transportation's Charging and Fueling Infrastructure (CFI) Grant Program, to which we aim to contribute our expertise and experience. In 2024, we announced our first two multi-fleet charging hubs in Fontana, California and AllianceTexas.

We are excited about the opportunity to partner with the State of California on this ambitious project. Our response details our approach to developing medium- and heavy-duty vehicle charging to meet the present and future demands of zero-emission drayage transportation in California. We believe that our proven track record, combined with our innovative solutions, position us as an ideal partner in realizing the vision for a sustainable transportation future.

We look forward to collaborating with the California Energy Commission on this transformative initiative.

Sincerely,

Zeina El-Azzi
Co-Founder & Chief Executive Officer
Gage Zero LLC

Responses to RFI Questions

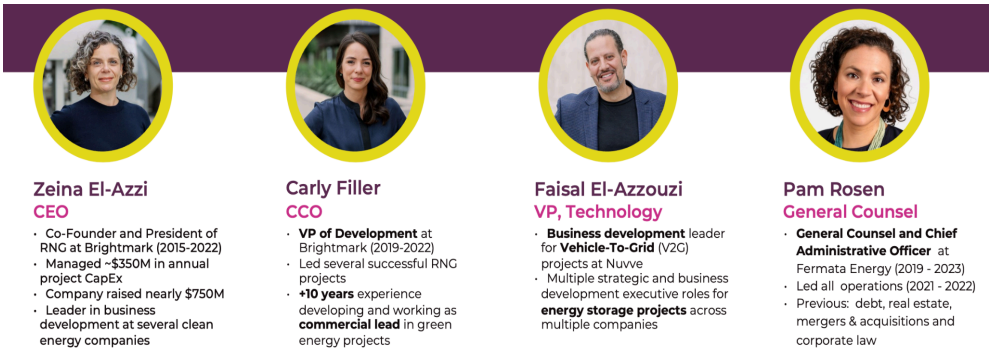
1. **Please disclose your business type and vehicle class, if applicable. Are you a driver, fleet operator, truck stop operator, charging and/or hydrogen fueling provider, installer, manufacturer, utility, public agency, or other? Are you part of a small, veteran-owned, woman-owned, or minority-owned business?**

Gage Zero is a women-owned and women-led team of clean energy and transportation experts with more than $10 billion in combined infrastructure and transportation experience who have come together to develop, own, and operate reliable, multi-fleet electric truck charging hubs nationwide, with planned charging sites in California and across the U.S. These multi-fleet charging hubs will be conveniently located for customers and eliminate upfront costs for fleets related to the build-out of charging infrastructure – which is a key barrier to fleet electrification. Although our core business is focused on electric vehicle charging, our team has the capability to include hydrogen refueling in projects as necessitated by the market.

Gage Zero's multi-fleet charging hub model supports the rapid acceleration of zero-emission trucking by:

A. Allowing fleets to quickly electrify their vehicle base without having to expend the capital or the time required to plan for, and construct, charging infrastructure
B. Allowing for the charging of fleets of all sizes with varied duty cycles and vehicle battery sizes

Gage Zero was established in 2022 by a group of clean infrastructure professionals who have dedicated their careers to the equitable transition to clean transportation. Our executive leadership has a long history of delivering impactful projects on time and on budget, in collaboration with public and private stakeholders across the nation. Gage Zero is a privately held company backed by a $300 million equity commitment from ARC Financial Corp., a North American energy-focused private equity manager.



2. **The purpose of this RFI is to help inform the CEC's application to the Federal Highway Administration (FHWA) for federal funding. If awarded, the CEC will release a competitive grant funding solicitation to provide funding to end recipients who would develop and construct the zero-emission MDHD infrastructure. Would you consider applying for CFI grant funding for site development if the CEC is awarded funding?**

Gage Zero would be thrilled to partner with the California Energy Commission (CEC) on

funding awarded by the FHWA's Charging and Fueling Infrastructure (CFI) Grant Program. Our national build-out strategy includes multiple sites in California and CFI grant funding would greatly expedite the energization of our planned charging hubs through the added capital investment. Gage Zero expressed similar interest to apply for potential future CFI funding as part of our response to the CEC's June 2024 RFI for the tri-state (Washington, Oregon, and California) Interstate 5 corridor.

3. **Do you already operate or plan to use zero-emission MDHD vehicles in the next five years? Please use a 1-5 rating scale where 1= least likely and 5= most likely. Please add additional information regarding your (planned) use of zero-emission MDHD vehicles as desired.**

Gage Zero does not itself own or operate any zero-emission battery electric MDHD vehicles, but we work closely with fleet operators to electrify their vehicle portfolios. Our team also works to connect fleet customers with vehicle manufacturers, and we provide access to EV fleet leasing companies, in addition to supporting fleet operators in assessing the available federal, state, local, and utility incentives and rebates to make the transition to electric more affordable.

4. **Questions 4a - 4e (for fleet operators/drivers) do not apply to Gage Zero.**

5. **For EV charging and hydrogen fueling providers, describe:**

   a. **Your organization's business model for public charging and/or hydrogen fueling offerings.**

Gage Zero provides charging-as-a-service (CaaS) by instituting an energy fee ($/kWh) for opportunity charging (aka public charging), as well as flat monthly reservation fees per charging stall ($/mo/stall) for reserved charging in particular time windows. This model equally benefits fleets of both types through our organization's ability to eliminate fleets' expenditure of the upfront capital that would be required to procure and install charging stations, as well as the ongoing effort and cost of maintenance and operations of those stations. This model also enables fleets of different sizes, routes, and budgets to choose vehicles that best suit their specific needs. It allows them to collaborate with financial institutions for vehicle financing if they already have an established relationship with those institutions, or get assistance finding financing partners through Gage Zero. Finally, by offering CaaS, our team can build and operate multi-fleet hubs. This helps spread the capital cost over a larger number of vehicles and kilowatt-hours (kWh), making charging more cost-effective. We can then better meet the growing demand for zero-emission trucking in a specific area.

   b. **Mechanisms your organization might leverage to provide affordable charging and fueling services to drayage fleet operators.**

Ultimately, charging owner/operators can charge lower energy costs to fleet operators by reducing the capital expenditure to build charging hubs, and amortizing costs over a larger number of fleets/vehicles/kWh. This can be achieved by:

- Stacking various federal/state/local/utility funding programs

- Building sites in a phased manner that meets demand as it grows (see answer to 5.e. below)
- Seeking private investment by securing anchor customers that provide predictable revenue
- Building conveniently located multi-hub fleets that maximize the use of chargers

In addition, charging is most cost-effective if it's slower and occurs during off-peak utility pricing hours. Thus, for return-to-base duty cycles with overnight (or longer-dwell) charging periods, we can calculate the minimum charging capacity that would be needed. Innovative energy storage and management can also shift load to off-peak times (or even participate in demand-response programs), and thus reduce utility demand charges (or derive extra demand-response revenue) that would be shared with fleet customers.

c. The scope of services, facilities and amenities provided at your recharging/refueling locations.

We typically construct a driver amenity building that contains amenities including restrooms, showers, a lounge with healthy food options and refreshments, Wi-Fi, and cell phone charging, among other features. In addition, we utilize a software reservation system for both opportunity charging and reserved charging; for opportunity charging, this allows vehicles en-route to secure a place in the queue, enabling them to have a charger available when they arrive.

d. The anticipated site size, parking configuration (e.g., pull-through), total number of charging stalls capable of simultaneous charging, and total number of truck parking spaces that are not dedicated to charging or refueling.

For a site serving drayage fleets, we would seek a minimum of 1-2 acres and 2-5 megawatts (MW) of power, and a maximum of up to 5+ acres and 10+ MW. Sites in this size range typically have between 20 and 100 stalls. Charging speeds vary from 50 to 120 kW for overnight charging to 350 kW for rapid opportunity charging of heavy-duty vehicles. We would also future-proof our sites to accommodate future MW-level charging when available (see answer to question 5.e. for additional information).

It is common for many drayage fleets, especially those using class 7 and 8 tractors + trailers, to prefer pull-through stalls to minimize the need for turning and backing up. However, it's important to note that pull-through stalls that can accommodate trailers take up significantly more space than pull-in stalls. At Gage Zero, our approach to designing charging sites involves a combination of pull-in and pull-through stalls, depending on the available land area. We aim to maximize the number of stalls and optimize the use of available utility power, while also ensuring that we can accommodate customers who may prefer or require only pull-through stalls in some cases.

e. How your organization approaches right-sizing infrastructure for near-term market demand and future-proofs infrastructure to be responsive to evolving needs.

Ultimately, our operating principle is to right-size the chargers for the trucks expected to utilize each charging hub site at the time each phase of the project is expected to come online. To

remain competitive in this industry, we are constantly monitoring the latest technology developments, including both megawatt charging and hydrogen, and evaluating if/when it may make sense to start folding them into new sites and potentially retrofitting them into existing sites.

A phased approach to building out our sites ensures that the sites are successful. In an “if we build it, they will come” approach, having too many chargers with low utilization means the project is at risk of financial failure. By starting smaller and expanding in phases, we allow the first phase to achieve robust utilization, which leads to greater financial stability for the site. Thus, we typically build our sites in phases, with a specified utilization percentage for the chargers in phase 1 (e.g. 20%) triggering the construction of phase 2. The different phases also depend on how quickly and at what cost the local utility can bring power to the site, and whether utility power increases would also be phased.

Future-proofing is an important concept at Gage Zero, and we are already planning for higher-powered chargers, such as MW+ (aka MCS), as well as evolving charging standards such as J3400 (aka NACS). However, we need to discuss these issues with the utility as part of our power upgrade request. We need to determine if and when they can handle higher-powered chargers with significantly more demand, and how the utility would price this service. We will build each charging hub site so it can accommodate emerging technologies, and we will future-proof the site(s) with upsized raceways, upgradeable equipment pads, and oversizing footprints and vaults to support higher voltage utility and distribution to accommodate potential megawatt charging systems.

Our robust business development process involves not just identifying fleets domiciled around, and transiting through, the location of each charging site, but also a proactive marketing effort towards those fleets. This effort ensures they are fully aware of the site in development, and ideally, secures at least a few contracts for reserved charging. We also leave open the rest of the site for opportunity charging, demonstrating our proactive approach to business development. Finally, we focus on outreach to smaller / independent drayage fleets to ensure that the long tail of drayage fleets is included in the transition to electric trucks.

6. **What distance should separate stations to support zero-emission drayage truck activities around California ports? Provide a description of a typical route or use case considered when making this recommendation. Describe the vehicle class and vocation if it differs from the information provided in question 1.**

Our recommendation is to primarily focus on strategic locations that serve both return-to-base drayage fleets as well as regional long-haul/corridor traffic, rather than specifically choosing a distance between charging sites. This strategy aligns with the Joint Office of Energy and Transportation's National Zero-Emission Freight Corridor Strategy Phase 1 goal (2024-2027) to first establish hubs, then utilize subsequent funding to connect hubs for increased regional freight movement in Phase 2 (2027-2030), and finally in Phases 3-4 completing the network by 2040 to support local, regional, and long-haul travel. In addition, these multi-use sites that serve various duty cycles would effectively maximize CFI grant funding required for these time-intensive and capital expense-heavy projects that necessarily require multi-MW utility upgrades and extensive construction.

7. **If possible, provide any general cost estimates for MDHD charging and/or hydrogen fueling stations you have designed, built, or have experience with, including charger power levels and number of stations installed. Please provide a range of public cost-share as a percentage of the total project cost necessary to support more public charging stations to serve zero-emission trucks along drayage corridors. For example, should the publicly funded cost share be 50% CEC/federal and 50% private/other?**

Build-out costs for multi-fleet charging hubs greatly vary by the underlying power capacity available from the local utility, as well as the underlying rebates/incentives available to bring down the capital costs in each region, the amount of charging predicated by the regional fleet demand, and the actual site conditions upon which the hub is being built. Below, we provide representative costs for 3 example sites for consideration.

Location	# of ports	# of charging stalls	MW per site	# of 350 kW dual-port chargers	# of 180 kW dual-port chargers	# of 120 kW dual-port chargers	Estimated "All In" Build Cost from Site Acquisition to Energization
Los Angeles, CA	34	34	5.1	12	5	0	$19,200,000
Oakland, CA	34	34	5.1	12	5	0	$15,700,000
Fresno, CA	40	40	5.0	10	5	5	$14,800,000

A 60% public funding / 40% private match funding split would best support the rapid build-out of the necessary charging infrastructure to quickly and equitably electrify medium and heavy-duty trucking. Unlike light duty vehicle charging projects, which are most often built by bringing in additional power to existing sites, medium- and heavy-duty charging sites require far more extensive development cycles from site acquisition to site energization.

8. **Use the maps in the "Corridor Segments" section to identify areas where you expect to need zero-emission truck infrastructure in the next three years (2024-2027). These Corridors have been selected to align with the National Zero-Emission Freight Corridor Strategy, the California Transportation Commission's SB 671 Clean Freight Assessment and to complement California, Washington and Oregon's Tri-state application.**
   a. **You can pinpoint sites where you plan to build stations, or where you would like to see a station as a driver.**
   b. **If possible, please provide specific details for each location, including the preferred location, the number of stations, the type of fuel (hydrogen or electric), power levels (if applicable), and vehicle class. Identify any corridor segments you think should be considered that have not been included and how they align with the National Zero-Emission Freight Corridor Strategy.**

As described above, Gage Zero's near-term build out strategy in California prioritizes sites that serve both drayage return-to-base charging, as well as long-haul corridor trucking. In addition, multiple levels of power suiting the various duty cycles as previously stated would best maximize CFI funding. By corridor, the following locations would successfully achieve this

dual-purpose strategy:

Location	California Corridor Segment Group	# of ports	# of charging stalls	MW per site	# of 350 kW dual-port chargers	# of 180 kW dual-port chargers	# of 120 kW dual-port chargers
Fontana	Port of Hueneme (US-101 / SR-134) Ports of Los Angeles & Long Beach (I-10)	46	46	4.7	3	20	0
Sacramento	Port of Oakland (I-80) Stockton (I-80 / US-50 / I-80BL / SR-99)	40	40	5.0	10	5	5
Long Beach	Ports of Los Angeles & Long Beach (I-405 / I-10 / I-110 / I-710)	66	66	4.0	0	0	33
Oakland	Port of Oakland (I-80 / I-580 / I-880)	34	34	5.1	12	5	0
San Diego	Port of San Diego (I-805 / I-8 / SR-94 / SR-905 / SR-125)	40	40	5.0	10	5	5
		266	**266**	**29**	**45**	**40**	**48**

9. Questions 9a - 9b (for utilities) do not apply to Gage Zero.

Conclusion

Our team at Gage Zero greatly appreciates the opportunity to provide feedback to the CEC and look forward to collaborating with you to build out this critical charging infrastructure statewide. We invite further conversation on any of the answers provided above and urge you to contact us with any other information that will help support a successful CFI award.