

DOCKETED

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Terawatt Infrastructure 24-TRAN-03 Comments

Additional submitted attachment is included below.



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California Energy Commission
Docket Unit, MS-4
715 P Street
Sacramento, California 95814

February 7, 2025

Re: 2024 Zero-Emission Vehicle Infrastructure Plan, 24-TRAN-03

Dear Staff of the California Energy Commission,

Thank you for the opportunity to inform the development of the California Energy Commission's (CEC) 2024 Zero-Emission Vehicle Infrastructure Plan, 24-TRAN-03. Terawatt Infrastructure (Terawatt) provides these comments informed by our experience as a charging provider for commercial fleets, and our mission to provide fleets with the most reliable network of charging solutions. Terawatt has charging sites under development across California designed to provide fleets of all sizes and vehicle types with direct current fast charging to enable a lower cost per mile for goods and people movement. Terawatt owns, develops, operates and manages charging facilities for these customers across several product offerings including corridor charging sites, shared charging depots, built to suit charging sites, and behind-the-fence charger management.

Terawatt appreciates the efforts of the CEC to support the state-wide deployment of fleet charging infrastructure through the development of the 2024 Zero-Emission Vehicle Infrastructure Plan, by funding fleet charging projects through the CEC's Clean Transportation Program (CTC), and crafting regulations that balance consumer protection and innovation. We look forward to informing CEC's work to support the fleet charging industry, and continued partnership in deploying reliable, ubiquitous infrastructure to meet the needs of fleets who choose electrification.

Sincerely,

Sam Vercellotti
Director of Policy
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About Terawatt Infrastructure

Terawatt Infrastructure (Terawatt) is a California-based company building a nationwide network of charging solutions for light-, medium-, and heavy-duty fleet vehicles. Terawatt provides convenient, reliable charging infrastructure that keeps fleets who choose to electrify running efficiently. Terawatt develops, operates, and maintains charging sites bolstered by operational software and maintenance solutions. Terawatt manages more than \$1 billion of capital and land assets to deliver this network of charging sites. With a purpose-built platform that combines a robust portfolio of property assets, capital, asset financing capabilities, and energy and project development expertise, Terawatt is filling the multi-trillion-dollar investment gap in fleet charging infrastructure and leading the way in this pivotal moment in the transition to a zero-emission transportation sector and clean energy economy.

Comment on heavy-duty infrastructure deployment

Infrastructure modeling scenarios

Terawatt's main heavy-duty customer segment is commercial fleets with short-, medium- and long-haul duty cycles, and these comments pertain only to their specific charging needs, and not those of the broader medium- and heavy-duty vehicle (MHDV) sector.

Terawatt supports the CEC's high speed depot alternative future modeling scenario, as it better accounts for the significant demand for high-speed local charging among commercial class 8 vehicles. Terawatt recommends that wherever possible, the CEC separate the charging needs of heavy-duty class 8 commercial vehicles from other MHDV segments, such as school buses and transit buses. In order to accurately forecast the demand for types of charging across MHDV segments (e.g. level 2 vs DCFC, low powered DCFC vs 1 MW+ chargers, etc.), the specific use cases and economics of charging different vehicles must be accounted for. Each MHDV application has distinct charging needs which, when combined in one broad category, can obscure use cases that benefit from greater public investment such as high-powered charging to support class 8 commercial vehicles.

While some segments of the MHDV market benefit from slower powered, potentially overnight charging at a centralized depot facility, commercial fleets require fast charging to reduce downtime. In order to integrate battery electric vehicles (BEVs) into an existing fleet of commercial vehicles, charging times must be reduced as much as possible to enable BEVs to meet fleet customer demand that is currently centered around internal combustion engine (ICE) refueling intervals. The CEC is also correct in its analysis that many depot locations cannot be electrified due to grid constraints, and for many fleets, the expenditures to own and operate charging infrastructure behind its own fence impact the overall economics of transitioning to electric vehicles. Terawatt expects that class 8 commercial vehicles will be predominantly served by high powered charging at shared depots and en-route facilities, not at fleets' owned depots. Low powered depot charging



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will likely be a gap filling use case for charging rather than a primary charging option for commercial fleets.

Terawatt is installing chargers rated to a minimum of 350 kilowatts (kW) at all heavy-duty charging sites, whether they are located on a corridor or high-speed local location based on customer preferences for faster charging. Over time, it is possible that faster charging options will become cost effective enough to render slower powered depot charging entirely obsolete for class 8 applications. This is because heavy-duty EV charging benefits from the economy of scale created by broader light-duty EV adoption as charging hardware becomes cheaper and more efficient over time. At present, heavy-duty truck batteries can be charged from 10% to 80% in a half hour in demonstrations that have used chargers rated for 700 kW¹. While Terawatt is installing chargers rated to 350+ kW today, the company is also future-proofing sites to be able to upgrade to chargers that dispense upwards of 1 MW of power once these systems are commercially available. Fleets that must minimize “downtime” associated with refueling would predominantly be served by “high-speed local” and “en-route” charging infrastructure, rather than slower charging located at fleet-owned depots.

Shared depot charging facilities

Terawatt owns and operates sites that fit into the “high-speed local” and “en-route” charging type categories of the infrastructure deployment modeling scenarios. A primary product offering of Terawatt’s is shared-depot charging. Shared depots are charging sites that serve multiple fleet users through a contractual arrangement with a third-party site owner and operator like Terawatt. Fleets are guaranteed access to charging infrastructure through a contract at a specified price, similar to diesel fuel contracts that fleets are already used to using to guarantee fuel pricing over a period of time. Shared sites differ from private depots which are often smaller scale deployments of charging at a fleet’s owned facility, only accessible to a single fleet. However, the two may be conflated when referring to charging broadly as “depot charging.” Terawatt has provided more information to the CEC in a separate docket “Request for Information Medium- and Heavy-Duty Zero Emission Vehicle Public Charging, 19-TRAN-02.”

Terawatt’s shared depots provide fleets with fast charging infrastructure which fits within the “high-speed local” charging type. The shared depot business model is an outcome of direct feedback from fleets, particularly first-movers to electrify, who are interested in finding high-powered charging infrastructure away from fleet owned facilities. As the CEC notes in the draft plan, many existing fleet depots and intermodal facilities are grid constrained or otherwise not suited for electrification. Shared depots can unlock new charging capacity as third party providers specialize in securing properties that have sufficient power available to charge a significant number of users. These sites are purpose built to charge electric trucks and combine power, operations and management

¹ ABB: [ABB E-mobility and MAN demonstrate megawatt charging on the eTruck for the first time](#)



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capabilities, and long-term stewardship to create a reliable off-site solution for fleets to charge at scale. Due to the strong interest expressed by fleets for this model, the CEC should include high-speed local charging in its primary modeling scenarios going forward as a key part of the state's broader MHDV infrastructure deployment plans.

