CHARGING UP ELECTRIC TRUCKS

California Is Prepared for a 100% Electric Truck Fleet

The California Air Resources Board (CARB) can bring polluting trucks into the future and achieve environmental justice by **adopting the Advanced Clean Fleet (ACF) Accelerated ZEV Transition Alternative that hits 100% electric truck sales by 2036** and by cutting more emissions faster from the biggest and dirtiest big-rigs, tractor trailers, 18-wheelers, and semi-trucks.

The infrastructure needed to support this gradual transition is here and growing. CARB's adoption of a strengthened Advanced Clean Fleets (ACF) rule is supported by investments and advancements from state agencies, industry, utilities, and other stakeholders with various programs to meet the charging needs of new electric trucks now and in the years ahead. This document outlines how the state is already technically and economically prepared to meet the charging needs of a 100% pollution-free medium- and heavy-duty fleet.

The first Electric Vehicle Charging Infrastructure Assessment Report says

157,000

electric truck chargers are needed by 2030.

California already has almost

80,000

public charging stations, including 7,000 DC fast chargers, that already meet the needs of class 2b/3 vehicles.

And, there are plans and funding to build a total of at least

250,000

public and shared-private chargers by 2025.

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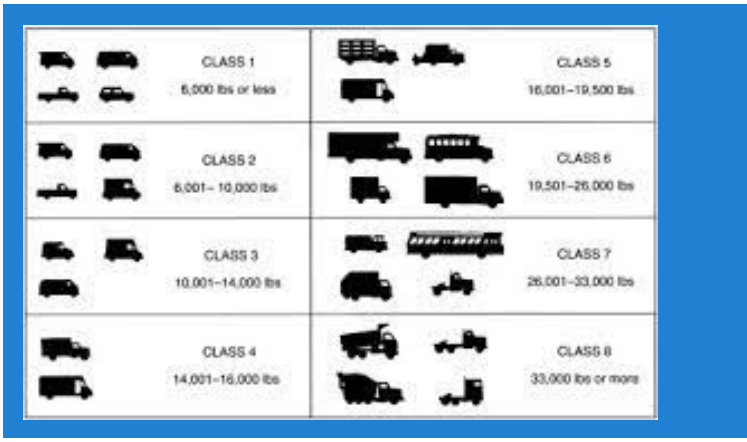
CHARGING ELECTRIC TRUCK BASICS

- The majority (64%) of California trucks are Class 2b-3.
- Most will charge at a home base but can use the same public chargers used by cars.
- Most class 4-8 trucks average less than 100 miles/day and can meet their charging needs with overnight depot charging.
- Class 4-8 and Class 7-8 tractors with daily routes over 200 miles/day will use a combination of depot and publicly accessible charging.



INVESTING BILLIONS AND EMPOWERING FLEET OWNERS TO MAKE THE SHIFT

UTILITY FUNDING

- **$1.8 billion total for EV investment with $700 million for trucks** has been authorized by the California Public Utilities Commission.

PRIVATE FUNDING

- **$650 million private investment for a publicly accessible national network of chargers** from Daimler Trucks of North America and other partners.
- **Volvo Trucks is building a publicly accessible electric truck charging network** in California at several of its dealer sites.
- **WattEV, an EV truck as a service (TaaS) company, is building four locations in Southern California** with a vision for a national network. As part of its TaaS model, it will make DC fast changers and soon Megawatt Charging System chargers available for public use by truck fleets.

PUBLIC FUNDING

- **$623 million over three years for electric truck infrastructure** in the Zero Emission Vehicle (ZEV) Package approved by the California Budget Act of 2021.
- **$1.7 billion for infrastructure for medium- and heavy-duty vehicles over four years including over $700 million for 2022-23 alone** in the Governor's FY 2022-23 budget for the ZEV Package.
- **$384 million for light-duty and commercial vehicle charging infrastructure** in California from the Infrastructure Investment and Jobs Act.
- **Incentives worth 30% of up to $100,000 per charging installation** over the next 10 years from the Inflation Reduction Act.

Many of the above programs support small fleets transition to electrification.

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SUPPORTING INFRASTRUCTURE FOR LONG-HAUL OPERATIONS

- The Federal National Electric Vehicle Infrastructure (NEVI) program funded with $5 billion over five years will build a national corridor network of 500,000 DC fast chargers for light duty (initially) and commercial vehicles.
- A Joint venture forming between Daimler, NextEra and Blackrock initially committing $650 million will build a national publicly accessible network of chargers for electric trucks beginning in 2023. The network will initially be along the east and west coasts and Texas by 2026.
- The National Truck Stop Operators Association has signed a Memorandum of Understanding with ChargePoint to raise $1 billion of public and private capital to install chargers at 4,000 truck stop locations nationally by 2030. Several National Truck Stop Corps. have additionally begun programs on changer installation including Travel Center of America (TA), Love's Travel Stops and Pilot Flying J Travel Centers.
- 17 states, DC and Quebec, have announced the Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan Memorandum of Understanding. Several Midwest states signed a Regional Electric Vehicle Midwest MOU. Both will address electric vehicle charging infrastructure.
- Penske, a leading national truck leasing company with more than 1,300 locations in North America, has begun acquiring electric delivery trucks for lease or rent and installing infrastructure at its sites with plans to expand to additional vehicles.

PLANNING INFRASTRUCTURE

- The California Energy Commission (CEC) is the lead agency for planning and managing the development of charging infrastructure.
- In April 2022, it released the Draft Zero-Emission Vehicle Infrastructure Plan (ZIP).
- In 2021, it produced the first Electric Vehicle Charging Infrastructure Assessment Report (AB 2127) and is currently working on the second biennial report due summer 2023. This is a comprehensive groundbreaking report containing detailed projections for chargers needed by location, power and year and addressing a host of additional issues. The report estimates that 157,000 chargers are needed for medium- and heavy-duty EVs by 2030.
- In October 2021, Governor Newsom signed SB 671 requiring the California Transportation Commission, in coordination with CARB and the CEC, to develop a state-wide Clean Freight Corridor Efficiency Assessment which includes a charging infrastructure plan by December 2023.

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MAKING PROGRESS, SETTING STANDARDS AND CREATING OPTIONS

- The Combined Charging System (CCS) standard is utilized by nearly all light-duty EVs and recently made medium- and heavy-duty vehicles.
- The Megawatt Charging System (MCS) standard is currently being piloted and expected to be finalized in 2024. It will charge a fully loaded long-haul semi in 30 minutes and is CCS compatible.
- Special interim chargers can be installed faster and at less cost so electric fleets can start operations as soon as possible. Examples include:
  - Pre-built Containerized Depot Charging Solutions
  - Portable Charger in a small trailer
  - Off-grid Containerized Fuel Cell generator charger

SPEEDING UP CHARGER INSTALLATION

Installing charging infrastructure is a physical construction process and will take time. While this process can be speeded up, fleet owners should begin at the first opportunity to meet with their utility and plan a realistic project timeframe. Actions currently being taken to speed up the process include:

- Accelerating Permitting - Per AB1236, Go-Biz is making good progress in working with cities and counties to adopt an ordinance that creates a consistent statewide streamlined permitting process for EV charging infrastructure.
- California Building Standards Commission (CBSC) adopted electric truck infrastructure requirements through its CALGreen Building codes to require the installation of chargers for medium- and heavy-duty vehicles at new warehouses, retail buildings and grocery stores.
- SB 2700 just signed by the Governor will enable the utilities to be proactive in upgrading their infrastructure in anticipation of forecast charging need potentially reducing install times substantially.
- The CEC, CPUC, utilities, electric charging providers, and others are working on accelerating gaining interconnection approval from utilities and other processes.

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DESIGNING, INSTALLING AND MANAGING CHARGING STATIONS

Full lifecycle of charging includes:

- Business and truck operational planning.
- Determining optimal charging infrastructure type, location, and power planning
- Taking advantage of available financial incentives and financing options.
- Optimal utility tariff selection.
- Smart charging infrastructure selection, installation, and management to minimize electricity costs.
- Low Carbon Fuel Standards credit harvesting.
- Co-location of distributed energy resources (DERs) such as solar and storage with medium- and heavy-duty deployments to maximize use of clean energy, reduce electricity costs, increase LCFS credit revenues and provide backup power in the event of a grid outage.
- To avoid the responsibility of installing, maintaining and owning their own charging infrastructure, many fleet owners will consider contracting with a **Charging as a Service (CaaS)** vendor, which will provide all capital, design, construction and maintenance for a simple cost per kilowatt hour of electricity used by the customer. Others may contract with an electric vehicle service provider.

ENSURING CHARGER RELIABILITY

Charger reliability is critical and not currently meeting some user's expectations. To address this, Governor Newsom just signed the "EV Charging Reliability Transparency Act" which requires the CEC to develop uptime recordkeeping and reporting standards for charging equipment and stations by 2024.

The commission will develop a definition of "uptime" through a public workshop process and apply it to each electric vehicle charger and charging station and create a formula to calculate uptime to provide consistent, standardized reporting of information at least annually. The commission may adopt tools to increase charging station uptime, including, but not limited to, uptime requirements, operation and maintenance requirements, and may include incentives, including operation and maintenance incentives.

The CEC will be required to use these standards initially whenever any state funds are involved in supporting the charging equipment and infrastructure. The bill promotes the CEC and CPUC to use board authority in addition to their existing authorities to manage this issue effectively.

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SECURING GRID CAPACITY

At the statewide level – According to the CEC, "California's electric grid can accommodate near-term infrastructure goals and longer-term goals can be achieved with planning, which is already underway. California's existing grid and approved investment in it will allow the state to handle millions of electric vehicles in the next few years. Ongoing planning will help prepare the grid for reliance and reliability in the longer term.

At the local level – In the CEC's first Electric Vehicle Infrastructure Assessment report, it details the estimated number of chargers, type, location and year needed for trucks and light duty vehicles. It then uses its "EVSE Deployment and Grid Evaluation" (EDGE) tool that shows where any gaps in capacity may exist now or in the future at a local level. This data is provided to the utilities, CPUC and CAISO. The utilities can then incorporate these needs in their annual Integrated Resource Plans and other planning efforts to upgrade their distribution grids ahead of demand growth to meet the future needs of anticipated new chargers.

ADDRESSING GRID RELIABILITY

Overall, California's grid is highly reliable and the state and its agencies are taking extraordinary steps to prevent power outages including:

- Increasing the reserve margin of contingency generation power significantly beyond its historical 15%.
- Investing $4.3 billion to deploy a Strategic Electricity Reliability Reserve to enhance grid reliability.
- Significant new capacity of generation and storage projects are coming online.
- The retirement of some old gas generation plants have been delayed until this new power generation at the new higher planning reserve margin level are operational.
- The CPUC and utilities are taking significant actions to reduce the frequency, scope and duration of Public Safety Power Shutoffs.

As for impacts on electric fleets, CARB notes that power outages affect all fuel types since fuel pumps cannot work without electricity. Solutions for fleets are available and being developed including:

- Mobile charging services
- Where feasible, fleets would benefit from installing on-site solar and storage to reduce electricity costs, increase the use of clean energy, increase LCFS revenues and provide backup power in the event of an outage.
- Fleets can also establish mutual charging aid arrangements with other fleets, transit agencies, etc. in nearby communities in the event of a local outage.

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For a more detailed report and references, see: 189-acf-comments-ws-AWJTNF0DV2dVO1Ax.pdf (ca.gov)

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