Zero-Emission Trucks: The Facts

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Zero-emission trucks (ZETs) are urgently needed to address the harms associated with the significant air pollution and greenhouse gases emitted from fossil-fueled trucks, which threaten the health of American citizens and hinder the nation's ability to achieve carbon-reduction targets and address the climate crisis that threatens the country. ZETs—whether battery-electric or fuel-cell electric—run more efficiently than their fossil-fueled counterparts and emit no tailpipe emissions.

ZETs have grown in popularity and availability in recent years.

- More than 30,000 ZETs are on the road today.
- More than 120 ZET models are available from more than 40 OEMs.
- CALSTART modeling shows that the Advanced Clean Trucks and Fleets regulations are expected to add around 460,000 new ZETs by 2030.
- Existing ZE technology can meet between 49% to 65% of freight routes.
- More than 70 companies are calling for an acceleration in the growth of ZETs.
- The Biden-Harris administration announced the first-ever national goal of ZE freight, with nearly $1.5 billion in federal funding to support the transition.

Electric utilities are well-positioned to meet the new demand from ZETs.

Utilities and public utility commissions have robust planning processes that enable them to sufficiently match demand and supply electricity. Significant new loads have been added to the grid in recent decades, whether in the residential (e.g., air conditioning) or industrial (e.g., data centers) sectors. Furthermore, new demand from ZETs will increase gradually, as fleets scale deployments and coordinate with their utilities.

ZE infrastructure buildout is already underway.

Most ZETs that will be added to the road in the coming years will operate on urban or regional duty cycles. Consequently, the majority of electric truck charging will take place at private depots, often overnight when electricity demand is low, so the need for new electricity generation will be tempered. This new generation is expected to be ZE as well since clean energy is now cheaper than fossil-fuel power plants.

Public infrastructure for ZETs is available today with much more planned in the coming years. Major charging infrastructure projects have been announced across the country, and large charging depots for medium- and heavy-duty (MHD) vehicles have recently been opened or announced in California, Texas, and New Jersey. Public infrastructure can be phased in over time, starting in priority launch areas for a more focused and cost-effective implementation. Historic funding is available to continue supporting infrastructure development. Temporary infrastructure solutions are increasingly available to help fleets in the interim.

Batteries are increasingly sustainable.

ZET battery technology continues to improve, yielding more powerful, longer-lived batteries that require less precious metals.

1. There is also massive investment in domestic manufacturing, with U.S. battery manufacturing capacity expected to increase nearly twentyfold between 2021 and 2030.
2. The industry is also pushing to extract high-value materials more sustainably and domestically.
3. Furthermore, recycling is expected to reduce virgin material demand by 28% by 2050.

Photo Credit: Run on Less – Electric by NACFE

The time for action is now.

Adopting ZETs is no longer a futuristic idea, as many fleets have already deployed them successfully today. Whether meeting environmental goals or seeing the strong ROI in the business case, fleets all over the United States are committed to decarbonizing on-road freight. With strong financial support, an increasing amount of infrastructure available every month, and significant environmental and health benefits, we can drive toward a more sustainable future while enhancing economic and public health outcomes.

The benefits of ZETs far outweigh the costs.

- Battery-electric trucks lower life-cycle carbon emissions by 44% to 79%.
- ZETs are expected to achieve a lower total cost of ownership than diesel trucks for many vehicle types by 2030.
- Fully transitioning to ZETs by 2040 would bring $485 billion in health and environmental benefits.
- Hydrogen/fuel-cell and electric vehicles are the fastest-growing clean energy sectors with employment growth of 77% and 66.1%, respectively, between 2020 and 2022.
- The expansion of charging infrastructure alone could create more than 160,000 jobs by 2032, with 10% of those jobs specific to MHD infrastructure growth.
- Higher utilization of the electrical grid due to ZET deployments will save ratepayers money.

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A mission-driven industry organization focused on transportation decarbonization and clean air for all, CALSTART has offices in New York, Michigan, Colorado, California, Florida, and Europe. CALSTART is uniquely positioned to build the national clean transportation industry by working closely with its member companies and building on the lessons learned from the major programs it manages for the State of California. CALSTART has more than 280 member companies and manages more than $500 million in vehicle incentive and technical assistance programs in the United States.