

**Planning/Policy/
Programming****May 2026****Project Title:** Potential Short-Term Impacts of Zero-Emission Vehicle Policy on the Agricultural Freight Fleet**Task Number:** 4714**Start Date:** April 1, 2026**Completion Date:** May 31, 2027**Task Manager:**Kevin Spiker
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Potential Short-Term Impacts of Zero-Emission Vehicle Policy on the Agricultural Freight Fleet

California's agriculture industry is large and spread across the state, especially in the San Joaquin Valley, where air quality is poor and many communities are disadvantaged under Senate Bill (SB) 535. As the state pushes the freight sector toward zero-emission vehicles (ZEVs), the agriculture-serving trucking industry will face major challenges because farms are widely dispersed and lack a coordinated plan for switching to ZEV trucks. Meeting statewide goals will require thousands of chargers and major electrical grid upgrades. This project will study where and how agricultural freight operates, identify routes that pass through disadvantaged communities, assess the challenges of deploying ZEV trucks and charging stations, and develop strategies for building the needed infrastructure. The findings will give Caltrans essential information to plan transportation investments, support cleaner air, and promote more equitable freight movement across the state.

WHAT IS THE NEED?

California's agriculture industry includes almost 63,000 farms spread across 24 million acres, many of them in the San Joaquin Valley, an area that struggles with some of the worst air quality in the state and includes many communities identified as disadvantaged under Senate Bill (SB) 535. The state wants the freight industry serving agriculture to transition to zero-emission vehicles (ZEVs), but this will be challenging because farms are spread out over such a large area and currently have no coordinated plan for adopting ZEV trucks. The California Air Resources Board (CARB) has set major targets for zero-emission truck sales through its Advanced Clean Trucks (ACT) rule and Advanced Clean Fleets (ACF) rule, but meeting these goals will require careful planning to make sure enough vehicles and charging infrastructure are available. The California Energy Commission (CEC) estimates that supporting 180,000 medium-duty and heavy-duty electric vehicles (EVs) by 2030 will require about 157,000 chargers, along with significant upgrades to the electrical grid. This project is needed to help California understand how to plan

for and support the transition of agricultural freight trucks to ZEVs, ensuring that the industry can meet state requirements while improving air quality and supporting rural and disadvantaged communities.

WHAT ARE WE DOING?

The research will begin by examining the current state of California's agriculture industry to understand its scale, distribution, and operational patterns. Building on this foundation, the team will analyze truck traffic associated with agricultural freight, including identifying which routes pass through disadvantaged communities. After establishing this baseline, the researchers will assess the major challenges involved in deploying zero-emission trucks, the charging stations they require, and the electrical grid capacity needed to support them. Using these insights, the team will then create a strategic plan to address these challenges and guide the transition to zero-emission vehicles. Finally, the project will outline a plan for building an effective charging network that supports the widespread use of zero-emission trucks in the agriculture-serving freight sector.

WHAT IS OUR GOAL?

The goal of this research is to understand the challenges the agriculture-serving freight industry will face as it shifts to zero-emission vehicles (ZEVs) and to identify practical ways to overcome those challenges. The study will look at how large and spread out California's agriculture industry is so it can estimate what kind of charging stations and electrical grid upgrades will be needed to make ZEV trucks work in this setting. It will also create a strategic plan for building this infrastructure, including where chargers and grid improvements should go. In addition, the research will examine common freight routes—especially those traveling through disadvantaged communities—to help design a charging network that supports zero-emission adoption in the places that need it most.

WHAT IS THE BENEFIT?

This research will help the California Department of Transportation (Caltrans) better understand how the agriculture industry uses California's transportation system, showing where freight activity is concentrated, how goods move through the state, and which communities are most affected. With this clearer picture, Caltrans will be able to make more informed decisions about future infrastructure investments, plan for the needs of distribution centers, and better understand traffic patterns tied to agricultural freight. The findings will also help Caltrans identify opportunities to support underserved communities and improve how transportation services reach them. Overall, this information will strengthen Caltrans' ability to plan and invest in projects that advance statewide goals for equity, mobility, and clean transportation.

WHAT IS THE PROGRESS TO DATE?

Project is scheduled to begin 08/04/2026.

IMAGES



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