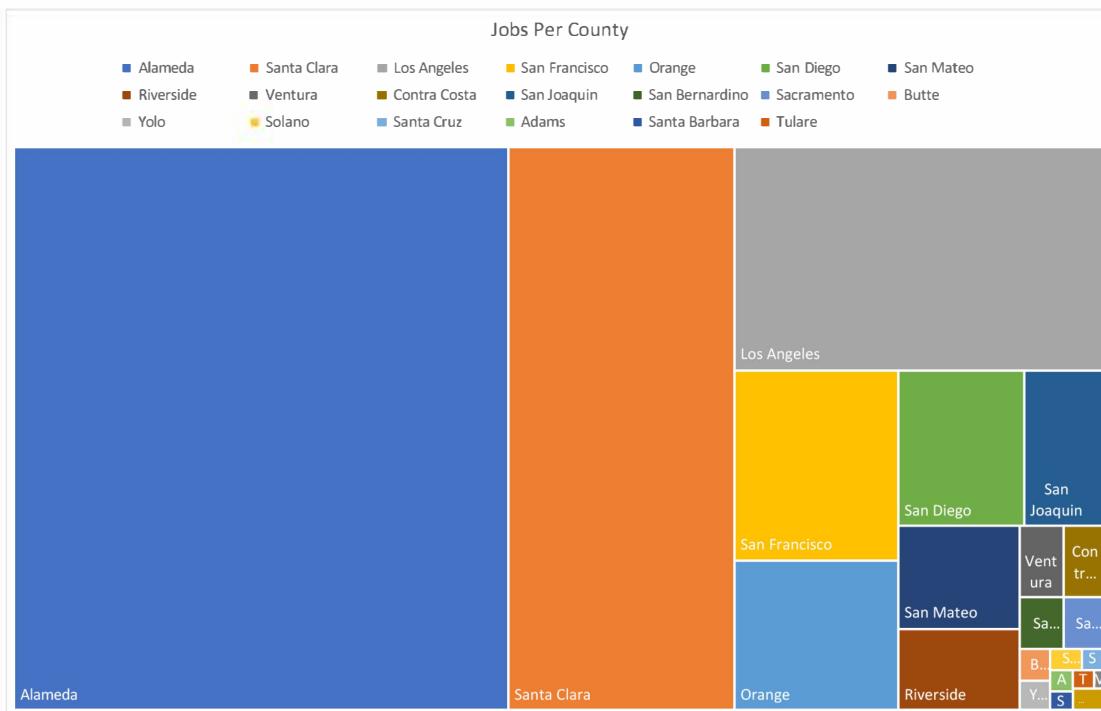




## CALSTART'S California ZEV Jobs Study

California's 10+ years of public investment in zero-emission vehicle technologies has built a major home-grown industry in the state and created thriving small-businesses, demonstrated by CALSTART's recent study, which shows that the zero-emission vehicle (ZEV) industry has already created nearly 70,000 jobs in California. The study concludes that California also likely leads the nation in the total number of "green" vehicle technology companies, many of them small businesses. The study began with a ground-up, location-specific approach that set out to capture a verifiable metric for the impact that ZEV manufacturing has on the California economy. CALSTART hopes that this study helps policymakers better understand the benefits of our public ZEV incentive investments to the California economy.

The study began by constructing an extensive database of companies and manufacturing facilities that work on ZEV technologies, and determining the number of ZEV-specific jobs for each location. The study team sought to ensure verifiable results by establishing a link between each job at each company. CALSTART's preliminary study results have yielded about **70,000 ZEV jobs** in California, with employment at over **360 unique companies**, in at least **419 different locations**. The countywide breakdown of jobs shows that Alameda and Santa Clara counties lead the state in ZEV jobs, with Los Angeles County in 3rd.



The scope of study includes employees that work directly on ZEVs, components of ZEVs, or support ZEV infrastructure and/or technology research. The study does not include "indirect" jobs. The study captured employees in 5 different employment categories:

- 1) Employees who work for ZEV original equipment manufacturers (OEMs)
- 2) "Tier 1" ZEV Suppliers, including companies that manufacture vehicle components directly for OEMs.
- 3) Technology Research and R&D for companies in categories 1 and 2.
- 4) ZEV Infrastructure companies and utility employees that work on EV infrastructure.
- 5) Tier 1 "Support Industries," including additional employees of ZEV companies that don't work in manufacturing, assembly, or research of electric vehicles or their components.

CALSTART's California ZEV Jobs Study grew out of a project that began in 2015, which aimed to model the United States' Green Vehicle Supply Chain. This study was funded by several sources – both public and private – in support of the proposed National Highway Traffic Safety Administration (NHTSA) greenhouse gas regulations. CALSTART continued research between 2015 and 2018, funded primarily by the U.S. Army, resulting in a database of nearly all major Green Vehicle Technology businesses across the country. The ZEV companies from that database laid the foundation for this California specific ZEV-only jobs study. Most recently, work conducted in 2020 and 2021 specifically related to California ZEV industry jobs was funded by CARB through their HVIP program, with supplementary support through a grant from the Energy Foundation.

The chart to the right displays the distribution of jobs between Tesla and other companies with significant ZEV products and/or technologies. According to the study results, Tesla is responsible for nearly half the ZEV jobs in California, with a nearly even distribution of ZEV jobs coming from other large and small employers. The number of employees at small companies is likely underrepresented because they are more challenging to identify.

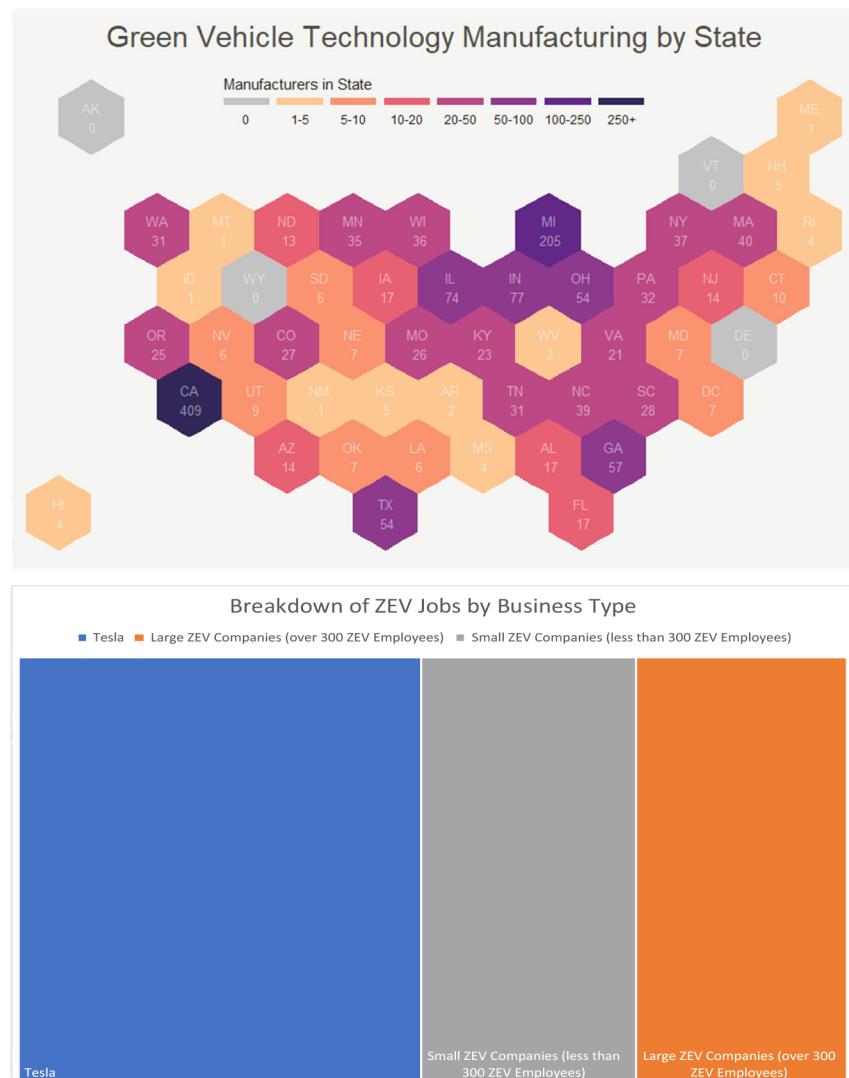
## Study Methodology

This study began with a "ground up approach" that modeled jobs by individual manufacturing/ supplier location. The study team implemented a modeling technique to ensure verifiable results by establishing a link between each job at each company. After building an initial comprehensive list, the study team researched, verified and authenticated employment for each site using data from as many sources as possible, including granular analysis of county and PUMA level economic data. Following this step, the study team scaled employment numbers for non ZEV-only employers to reflect only jobs listed in the criteria above. Multiple sources were used for this scaling exercise, including individual company interviews.

## Further Research

The study likely undercounts several groups of employees, and some ZEV industry sectors were not included in this initial scope. First, the study did not include companies that provide "clean" or zero-emission mobility, such as providers of electric scooters, motorcycles, e-bicycles, and related technology. Despite including Tesla's large component supply chain, the study results do not contain an exhaustive list of other component manufacturers in California, and this group is likely notably underrepresented. There is evidence that the San Fernando Valley and South Los Angeles areas host a wide variety of specialty component manufacturers and likely house a significant number of jobs related to ZEV manufacturing, but these were likely not fully captured, but could be with additional resources. Research and Development (R&D) companies and ZEV branches of R&D facilities that focus on ZEV technology are likely also absent, due to overlap with other industries and their small size. Also, the study likely underrepresents smaller companies (<10 employees), so the study team is working to craft an estimation of the number of missing small businesses. Future versions of this study will include an expanded scope.

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