

Sidebar: Electric Vehicles

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Electric vehicles constitute one area where the state has a formal policy stating its intention to proactively promote green jobs. At its inception, this strategy made sense from a number of perspectives:

- California in essence created the market for a modern-day electric vehicle industry through its clean air regulations. Beginning with CARB's LEV I regulations in 1990, California has required some level of Zero Emission Vehicles (ZEV) to be offered for sale within the state. As subsequently revised, these requirements now also apply to the nine states which have adopted the California program: Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont. In 2017, California contained 53% of all ZEV sales (battery electric vehicles and fuel cell vehicles) in the US, 51% if plug-in hybrids are included in the total.¹
- Even though job levels are down from previous peaks, California still retains the largest manufacturing base in the nation, with 10.5% of total manufacturing jobs in the most recent data. Southern California remains the country's largest manufacturing center, a position it took over from the New York City region in the second half of the 20th Century. This resource provides a core of experienced workers along with a substantial network of existing supply and sales channels, training resources, and related R&D centers.
- California also has a long history in the auto industry, previously hosting more than a dozen major auto assembly plants throughout the state. In the most recent EDD data, motor vehicle and related parts and body and trailer manufacturing still averaged 31,800 jobs (average annual salary of \$74,300) in 2017, compared to 45,100 in 1990. In fact, the availability of an extant assembly line at the former NUMMI plant in Fremont was a key factor in avoiding potential regulatory, permit, and CEQA delays and thereby securing Tesla, the state's only remaining plant currently producing vehicles, electric or otherwise.
- Beginning in the 1980s, the state also emerged as a major auto design center, starting in Southern California and moving to the Bay Area as technology and R&D have become more critical to a more broadly defined vehicle industry that now includes ride sharing apps, self-driving vehicles, electrification, and an increasing range of high technology components.
- The nature of manufacturing jobs is changing. While some components, in particular some consumer products that function more as commodities, still rely on low-cost labor models, increasing use of automation and need for higher skilled labor in these operations has made other regions more competitive, as shown in the relatively higher growth in other parts of the US and in advanced economies such as Germany that have retained strong manufacturing sectors in the face of growing global competition. Manufacturing growth, however, has followed to regions that address the competitive needs for these jobs.

¹ Auto Alliance, Advanced Technology Vehicle Sales Dashboard, <https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/>.

In 2012, the Governor issued Executive Order B-16-2012 setting a goal of 1.5 million ZEVs on the state's roads by 2025. Components of this Order specifically embraced green jobs development by incorporating provisions to secure related manufacturing jobs development:

[By 2015] The State's manufacturing sector will be expanding zero-emission vehicle and component manufacturing . . .

[By 2020] The private sector's role in the supply chain for zero-emission vehicle component development and manufacturing State will be expanding . . .

[By 2025] The zero-emission vehicle industry will be a strong and sustainable part of California's economy;

Executive Order B-16-2012

Rather than identify and address competitive constraints affecting the potential expansion of manufacturing jobs within the state, the subsequent implementation planning for this Order instead called primarily for data collection and conversations:

Moving forward, state government will play a central role connecting regions to share best practices, gathering economic data to measure ZEV market growth and ensuring our workforce is trained to meet future needs.

Governor's Office (2016), p. 31

Subsequently, Executive Order B-48-18 expanded the sales target to 5 million ZEVs by 2030. The green jobs related component of this Order shifted to developing temporary construction jobs through the installation of charging infrastructure. However, the more permanent jobs goals envisioned under the manufacturing provisions in the earlier Order remain in place.

While a Farady Future operation at a former tire plant in Hanford still appears to be under development, the state has to date been unable to secure any significant manufacturing operations related to the ZEV mandate beyond Tesla. Manufacturers in fact have been choosing locations anywhere but California as their preferred option. As listed in the Center's quarterly updates on this issue, these plants include the following that have been announced since 2016:

- Tesla: Nevada (batteries, components), Minnesota (automation), Germany (automation), China
- BMW: Germany
- Daimler: Alabama, China
- Dyson: TBD (United Kingdom, Singapore, Malaysia, or China)
- Ford: China
- GAC Motor: China (for export to US)
- GM: China
- GM/Honda: Michigan (fuel cell power systems)
- Giant Motors/JAC: Mexico
- Honda/Hitachi: Kentucky, Japan, China
- LG Chem: Michigan (batteries)
- LG Electronics: Michigan (components)

- Lucid Motors: Arizona
- Rivian Automotive: Illinois
- SF Motors: Michigan (R&D)
- Toyota: China
- Volkswagen: Virginia (charging stations), Germany, China
- Volvo: China
- Workhorse: Ohio

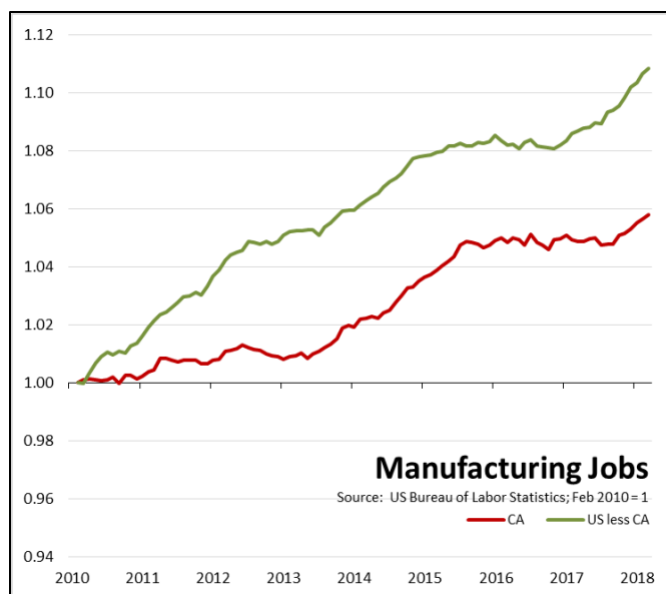
The competitive challenges California faces in actually securing green jobs of this type is well illustrated by Tesla's location decision related to its Nevada Gigafactory. California remained competitive on many fronts, including proximity to the Model 3 assembly line in Fremont, access to renewable energy, and even development of draft legislation containing \$500 million in tax incentives. A key deciding factor, however, remained that "*California's circuitous project-approval process could take too long — a big risk to the Gigafactory timeline.*"²

These broader regulatory, permit, CEQA, and overall operating cost parameters are not a new issue. Rather than identifying these potential constraints up front and developing means to address them in a way to become competitive for the green manufacturing jobs envisioned in the Executive Order, the state instead waited until they became a problem and then choose to propose selective changes that would apply to only one manufacturer rather than reforms that would promote jobs in this industry more broadly.

This challenge is illustrated in the following chart which compares manufacturing jobs recovery and expansion since February 2010 in both California and in the other states, with jobs in both regions indexed to the February 2010 level. As shown, growth has been stronger outside California, with significant acceleration beginning after Fall 2016 for these middle class wage jobs. Overall, California had a net gain of 71,000 manufacturing jobs in this period, while the other states combined gained 1.09 million.

Instead of being on the forefront of electric vehicle manufacturing, California now sees this industry shifting to other states and on a global scale, more rapidly to China. The state—as with growth elsewhere in its two tier economy—remains competitive for the higher end knowledge jobs associated with this industry but once again is facing a shrinking component of the middle class wage jobs that could have resulted.

² "Tesla CEO Musk Makes California an 'Improbable' Gigafactory Contender," Silicon Valley Business Journal, May 8, 2014.



In this respect, California is repeating much of its prior experience with the vehicle manufacturing industry. Increasing regulatory costs combined with broader changing industry conditions to make continued operations in this state uncompetitive. Increasing regulation in this case helped produce job losses rather than a “resilient” economy result. The primary jobs creation in this instance came not from the regulations themselves, but through regulatory credits other employers were able to “mine” as they sought to remain competitive in the state, namely air quality credits such as those from Ford’s former San Jose plant and GM’s former plants in Los Angeles County.

The state is now embarked on a similar outcome. The use of regulations and subsidies will likely increase ZEV sales within this state—to the extent envisioned under the Executive Orders remains to be seen. But regardless of whether those goals are met, the vehicles will be sold here, and the jobs to produce them will now largely go elsewhere. And in this process, the state’s actions are not as likely to reduce GHG emissions overall but to shift where they are produced—directly as manufacturing takes place in locations without similar regulations, indirectly as products are transported over larger distances to the California market, and through regulation as higher sales produced by subsidies and mandates in this state result in credits—both for ZEV and CAFE purposes—that facilitate the continued movement of the market elsewhere to larger and less fuel efficient vehicles.

For example, the most recent data from CARB³ shows a total ZEV credit balance across all vehicle classes and manufactures of 1.079 million in 2016 (468,363 for ZEVs alone) compared to a total transfer of 72,976 credits in the period September 1, 2016 to August 31, 2017. Tesla, in its most recent 10-K filing for 2017, reported total revenues from the sale of regulatory credits (ZEV and CAFE) at \$360.3 million, or 16.2% of total gross margin for the year.

³ CARB, 2016 Zero Emission Vehicle Credits, <https://www.arb.ca.gov/msprog/zevprog/zevcredits/2016zevcredits.htm>.

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