

CALIFORNIA LEGISLATURE

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SACRAMENTO, CALIFORNIA
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SENATE TRANSPORTATION COMMITTEE & SENATE BUDGET SUB-COMMITTEE #2 JOINT INFORMATIONAL HEARING

CALIFORNIA'S ZERO EMISSION VEHICLE STRATEGY

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BACKGROUND PAPER

Ambitious Goals

California has a long history of supporting zero emission vehicles (ZEV) as a primary policy for reducing our greenhouse gas emissions. Beginning in 2004, Governor Schwarzenegger issued Executive Order S-07-04 to support clean and renewable fuel cells through the creation of a hydrogen highway. Over the following two decades, Governor Brown and then Governor Newsom built on that foundation by each issuing additional executive orders with increasingly ambitious ZEV goals. These goals were capped by our current goal that 100% of new passenger cars and trucks sales will be ZEVs by 2035 and that 100% of medium- and heavy-duty vehicles in the state will be ZEVs by 2045.

Zero Emission Vehicle Executive Orders

2004 -- Governor Schwarzenegger issues Executive Order S-07-04 to develop a network of hydrogen fueling stations.

2012 -- Governor Brown issues Executive Order B-16-12 establishing a goal that the state's zero emission vehicle infrastructure supports one

million ZEVs by 2020 and that 1.5 million zero emission vehicles be on the road by 2025.

2018 -- Governor Brown issues Executive Order B-48-18 establishing a goal of 5 million ZEVs on the road by 2030, and that 200 hydrogen fueling stations and 250,000 electric vehicle charging stations, including 10,000 direct current fast chargers, be installed by 2025.

2019 -- Governor Newsom issues Executive Order N-19-19 to accelerate progress towards meeting the goal of 5 million ZEVs by 2030.

2020 -- Governor Newsom issues Executive Order N-79-20 establishing a state goal that 100% of in-state sales of new passenger cars and trucks will be zero emission by 2035 and that 100% of medium- and heavy-duty vehicles be zero-emission by 2045 with drayage trucks meeting that goal by 2035.

This is in keeping with California's history of supporting clean technology, which has resulted in technological innovations that have created benefits reaching far beyond California's borders.¹

Where Are We Now?

California leads the nation in ZEV sales and infrastructure deployment. Despite this, we are lagging well behind our goals. At the end of 2020 487,832 light duty ZEVs had been sold in California² (98% of which are EVs), well short of our goal of one million ZEVs by 2020 and about one third of the way to our 2025 goal of 1.5 million ZEVs. To meet our 2025 goal the rate of ZEV sales will need to be double the sales rate in 2020, which was a record. Meeting our 2030 goal, which CARB calculates to be 8 million ZEVs based on the goal of 100% light duty ZEV

¹ California's clean vehicle emission standards have leveraged lower emissions throughout the country as manufacturers built all their vehicles to California's cleaner standards. California's long support for renewable energy has created the policy support and market to help drive down the cost of renewables such that renewable energy globally is cost competitive with fossil fuel generated electricity. In addition, California's support for electric vehicles provided fertile ground for the EV industry to emerge and grow, producing world-leading EVs in California, providing not just global environmental benefit but also economic and wealth-creation benefits. In this way, California's green technology policies have reached far beyond our borders.

² CEC ZEV database. The CEC totals also include plug-in hybrid electric vehicles, which are not ZEVs.

sales by 2035, seems even further out of reach, requiring a sales rate seven times faster than 2020. Moreover, the situation is no better on the deployment of charging infrastructure, which is crucial for ZEV sales. A CEC analysis projects that California will need 1.5 million chargers to supply the 8 million light-duty ZEVs³. As of the end of 2020, there were just 70,479.

California's goals for medium- and heavy-duty (MHD) vehicles are less immediate but no less ambitious. CARB projects California will need 180,000 MHD ZEVs in 2030 to be on track to comply with Governor Newsom's executive order calling for 100% of MHD vehicles on the road in California to be ZEVs by 2045. In addition, the CEC projects that California will need 157,000 fast chargers to power these vehicles. Today there are very few of either.

How Do We Get There from Here?

The gap between where we are and where we need to be to meet our goals is substantial. While California has numerous programs to support ZEV deployment, funding for many of them has been unpredictable and nowhere near sufficient to meet our goals. Our bold goals have not been accompanied by similarly bold funding, and our current policy response does not look up to the task. Yet the gap must be bridged if we are to meet our greenhouse gas (GHG) reduction goals.

The first step towards closing that gap is to measure it. We know how short we are on vehicles and chargers but there has been little governmental effort to put a dollar value on it. Fortunately, others have stepped up; unfortunately, they have found that the costs are daunting, probably exceeding \$50 billion for the vehicles and infrastructure to meet our 2030 goals.⁴

While that is a huge gap, it need not be met solely with new direct state subsidies:

- Federal subsidies, both existing and proposed, will narrow the gap. The federal government has historically provided substantial funding for ZEV rebates. Moreover, the Biden Administration's recently proposed American Jobs Plan

³ Assembly Bill 2127 Electric Vehicle Infrastructure Charging Infrastructure Assessment; January 2021. This analysis also notes that an additional 62,000 chargers will be need to meet the 2025 goal of 250,000 chargers

⁴ National Resources Defense Council analysis; January 2019. An updated forecast reflecting the most current Executive Order will be presented in the hearing.

includes \$174 billion to support EV manufacturing, vehicles sales, and a nationwide electric charging network.

- California's existing incentive programs, such as the Clean Vehicle Rebate Program and the Clean Fuel Rewards program, contribute to closing that gap.
- Regulatory mandates could close the gap, which would not necessarily result in a direct and equivalent cost to California consumers.
- EV charging infrastructure costs can be built into electric rates.

Once we know the size of the gap, a strategy with plans and programs can be implemented to bridge it. Yet, while California has many programs intended to incentivize ZEV adoption, there is not an overarching strategy for how to close it. Further, no single state agency has the responsibility or authority to create and implement such a strategy and be accountable for the results. Consequently, coordination and consistency between the different programs seems lacking. It is no wonder we have fallen so short of our goals.

As an example, the two largest programs to subsidize the purchase of light-duty ZEVs are the Clean Vehicle Rebate Program (CVRP) and the Clean Fuel Rewards program. Most ZEV purchasers are eligible for both. The CVRP is sporadically funded, limited to those earning below a specified income, and paid from two to six months after the EV is purchased. In contrast, the Clean Fuel Rewards program is well funded, not income limited, and is provided at the time the car is purchased. Together these programs provide rebates of around \$3,500 per vehicle, a substantial incentive. However, the differences in the programs make them confusing to customers and hard to market, lessening their effectiveness.

A further example is the effort to support electric vehicle charging stations. There are two separate efforts, one managed by the California Energy Commission and one managed by the Public Utilities Commission, each managed and funded in entirely different ways. While there appears to be regular communications between the commissions and their programs do not appear to be working at cross-purposes, it is hard to see how the programs are managed in a coordinated way so that the strategies are aligned and complementary based on a common view of the problems to be overcome. Each commission works on its own program, but who is responsible for the overall success of the effort, of meeting our ZEV infrastructure goals?

California has implemented many programs to reduce GHG emissions and done far more than any other state. However, while these programs may individually be successful, collectively they do not match our ambitions. What is missing is an overall strategy, a means of coordinating, calibrating, and managing our efforts to achieve our goals. Many basic questions need answering: Who is responsible for meeting our goals? How are we going to meet our 2025 goals? How much will it cost? How should resources be allocated between support for vehicles and support for infrastructure; between light duty vehicles and heavier duty vehicles; between general programs and those directed towards disadvantaged communities? How should incentive programs be structured to maximize ZEV adoption? How and when can regulatory programs substitute for subsidies? How do we meet our 2030 goals?

A New Strategy

California has made numerous plans to organize and strengthen the state's efforts to support ZEV deployment. Beginning in 2013 and then subsequently updated in 2016 and 2018, different state agencies have issued action plans to support the ZEV executive orders. Yet, we remain far behind our goals.

In February 2021 the Governor's Office of Business and Economic Development (GO-Biz) released California's Zero-Emission Vehicle Market Development Strategy. The primary goal of the strategy is to accelerate large scale, affordable and equitable ZEV market development. Each state agency was required to submit their draft action plans to GO-Biz by March 1, 2021. Perhaps this strategy will prove more effective than the prior action plans. But without having a quantitative focus that determines what we need to do to meet our ZEV deployment goals, and then demonstrates how new and existing programs and funding streams will accomplish them, it is difficult to make the case that any particular effort will bridge the gap. We've already failed to meet our 2020 ZEV deployment goals. As 40% of GHG emissions comes from the transportation sector, continuing to fail to meet our ZEV goals almost inevitably means that we've failed to meet our GHG reduction goals.