SENATE THIRD READING
SB 500 (Min)
As Amended June 23, 2021
Majority vote

## SUMMARY

Requires Autonomous Vehicles (AV) model year 2031 and later to be a zero-emission vehicle (ZEV) in order to receive a deployment permit from the Department of Motor Vehicles (DMV) to operate on public streets.

**Major Provisions**

1) Specifies that DMV shall not commence the rulemaking for the adoption of regulations implementing this provision until January 1, 2027.

2) Limits the application of the ZEV requirement to AVs with a gross vehicle weight rating of 8,501 pounds.

## COMMENTS

In 2012, the Legislature passed SB 1298 (Padilla), Chapter 570, Statutes of 2012, which permitted AVs to be operated on public roads for testing purposes by a driver under certain conditions. In 2014, DMV released regulations to allow for the testing of AV's with a test driver, and in April 2018, DMV finalized regulations for the testing and deployment of AV's on public roads without a driver, with certain limitations. Fifty-eight companies currently have a testing permit with a driver, and eight companies have received a testing permit without a driver. One company has received a deployment permit.

AVs have the potential benefit of saving hundreds of thousands of lives. According to the National Highway Traffic Safety Administration (NHTSA), 94% of all vehicle collisions are the result of human error. From 2000 to 2017, 620,709 individuals were killed in a car collision on American roads.

Yet, non-electrified AVs, especially those operating as "robo taxis", also have the potential to have negative environmental and transportation impacts by significantly increasing VMT, resulting in increased congestion, and greenhouse gas (GHG) emissions. Similar to the effect the state has already seen with TNCs.

According to *Three Revolutions, Steering Automated, Shared, and Electric Vehicles to a Better Future,* written by California Air Resources Board (CARB) member and Director of University of California's Institute of Transportation Studies Daniel Sperling, ″In a study of urban passenger travel worldwide, researchers at the University of California, Davis, estimated that with driverless cars, but with little pooling and electrification, GHG emissions would increase 50% and vehicle use 15 to 20% between now and 2050." In contrast, "where driverless cars are pooled and electrified, vehicle use would drop by 60% compared to business as usual, GHG emissions would drop by 80%, and overall cost of vehicles, fuel use, and infrastructure would drop by more than 40%-- representing a savings of $5 trillion per year."

*California and electrification of vehicles.* According to CARB, the transportation sector accounts for roughly 40% of the state's GHG emissions.

The federal government has granted California the authority to set its own emissions standards, so long as they are more stringent than the federal standards. Using that authority, in 1990 California introduced the country's first ZEV mandate. After the introduction of GM's prototype electric vehicle, Impact, CARB introduced a ZEV mandate to require 2% of all vehicle sales to be ZEVs by 1998 and 10% by 2003. According to *Three Revolutions,* "When CARB issued its 10% by 2003 ZEV requirement in 1990…it motivated the US government in 1991 to launch the Advanced Battery Consortium, a large applied research and development program intended to help US industry leap beyond lead-acid batteries to the next generation for more powerful and compact batteries."

According to *Three Revolutions,* that mandate was far too aggressive, in large part because battery technology at the time made ZEV vehicles too costly. In 2003, CARB weakened its mandate, and in 2007 under Governor Schwarzenegger introduced a smaller EV and plug-in hybrid mandate. In 2012, CARB proposed "an aggressive strengthening of the ZEV mandate, requiring automakers to produce approximately 1.5 million electric vehicles (EVs) by 2025, representing about 15% of all sales in that year.

In April 2018, recognizing that TNCs can increase VMT and their potential role in increasing or reducing GHG emissions, the CPUC released a whitepaper, *Electrifying the Ride-Sourcing Sector in California: Assessing the Opportunity,* to "1) serve as a useful starting point for the CPUC to assess the opportunity for GHG reduction in the TNC sector through increased use of EVs, 2) offer framework for comparison of available regulatory options, and 3) identify key questions for the CPUC to consider, should it choose to initiate regulatory changes". Using very limited data and noting a major analytical gap, the report found that for the month of October 2017, Uber and Lyft total VMT amounted to 2% of the total VMT traveled on the California state highway system (approximately 17.22 billion miles). In comparison, ARB has estimated that the state needs to reduce VMT by 7% below projected VMT levels to meet our 2030 climate goals.

In 2018, the California Legislature passed SB 1014 (Skinner), Chapter 369, which established the Clean Miles Standard and Incentive Program with the goal of decreasing GHG emissions from vehicles used by drivers of TNCs and AV operated TNCs. In May of 2021, CARB finalized the Clean Mile Standard that requires TNCs, including AVs, which have an annual VMT greater than 5 million to have 90% of their VMT be zero emission by 2030.

In 2020, Governor Newsom announced Executive Order (EO) N-79-20, establishing the goal that 100% of in-state sales of new passenger cars and trucks will be zero-emission by 2035. Since that announcement, the United States largest auto manufacturer announced that it will only produce ZEVs by 2035, and it has plans for 30 new EV vehicles by 2025.

Cumulative ZEV sales reached 760,000 in September 2020 and currently account for about 8% of new vehicle sales in California. ZEV sales include battery-electric vehicles (59%), plug-in hybrids (40%), and hydrogen fuel cell electric (1%).

*Committee comments:* This bill requires model year 2031 and later AVs under 10,000 to be ZEVs by 2030. On one hand, 2030 is consistent with CARB's Clean Mile Standard that AVs operating as TNCs be electric. This bill's requirement would be less stringent than the Clean Mile Standard because it applies to all models, not just 2031 and later models). On the other hand, this bill requires electrification earlier for AVs not covered by the Clean Mile Standard—

this would include TNCs with fewer than five million miles traveled, limousines, taxis, delivery vehicles and personal use AVs.

This earlier adoption date may be warranted because of the increased VMT projected for AVs with little pooling and electrification. The Clean Mile Standard sets an earlier ZEV adoption rate from the Governor's EO because TNCs operate differently than personally-owned vehicles and typically have higher VMT and therefore are a greater impact on the environment.

**According to the Author**
California has set ambitious and necessary climate goals, namely five million zero-emission (ZEVs) by 2030 and all new passenger vehicles to be ZEVs by 2035. Automated vehicles (AVs) can be part of a clean, equitable transportation system provided they are electric, result in increased pooling of trips, and support a multi-modal, high-occupancy transportation system. Smart policies are needed to steer AV deployment, along with other parts of the transportation system, towards a shared, electric future. One important policy is to establish requirements that future AVs be zero-emission. SB 500 helps California move toward this electric future by requiring light-duty autonomous vehicles (AVs) under 8,501 pounds to be ZEVs by 2030.

**Arguments in Support**
General Motors writes "GM envisions a world with zero crashes, zero emissions and zero congestion. A critical part of that vision is our support for an all-electric future. We recently announced our plan to offer 30 new EVs globally by 2025, initially featuring the Bolt EUV, Hummer EV and Cadillac Lyriq. To that end, we have increased our investment commitment for EVs and AVs to $35 billion from 2020 through 2025. GM supports the GHG reductions goals laid out by California in its 2019 framework and will produce more electric vehicles to achieve the same environmental benefits through 2026. We believe that every AV should be an electric vehicle."

**Arguments in Opposition**
The Alliance for Automotive Innovation writes "this bill is inconsistent with existing and planned California ZEV regulations and goals."

## FISCAL COMMENTS

According to the Assembly Appropriations Committee, DMV reports it is unable to estimate the costs to implement this bill, because the bill takes effect so far in the future. DMV notes it is undertaking a complete overhaul of its information technology systems. DMV also notes that the cost to develop and issue regulations is relatively minor.

Typically, DMV estimates the cost of a bill that requires DMV to modify an existing DMV program to be in the hundreds of thousands of dollars. However, given that DMV is creating a new IT system, and given the dramatically delayed implementation called for by this bill, it seems reasonable to expect DMV could incorporate into its new IT system any programming required by this bill without entailing significant new costs.

## VOTES

**SENATE FLOOR: 29-7-4**
**YES:** Allen, Archuleta, Atkins, Becker, Bradford, Caballero, Cortese, Dodd, Durazo, Eggman, Glazer, Gonzalez, Hertzberg, Hueso, Hurtado, Kamlager, Laird, Leyva, Limón, McGuire, Min, Newman, Portantino, Roth, Rubio, Skinner, Stern, Umberg, Wiener
**NO:** Bates, Borgeas, Dahle, Grove, Jones, Ochoa Bogh, Wilk
**ABS, ABST OR NV:** Melendez, Nielsen, Pan, Wieckowski

**ASM TRANSPORTATION: 11-4-0**
**YES:** Friedman, Berman, Daly, Gipson, Kalra, Lee, Medina, Nazarian, O'Donnell, Ward, Wicks
**NO:** Fong, Cunningham, Davies, Nguyen

**ASM COMMUNICATIONS AND CONVEYANCE: 9-3-1**
**YES:** Santiago, Boerner Horvath, Bryan, Eduardo Garcia, Holden, Low, Quirk-Silva, Rodriguez, Akilah Weber
**NO:** Patterson, Davies, Valladares
**ABS, ABST OR NV:** Bennett

**ASM APPROPRIATIONS: 12-4-0**
**YES:** Lorena Gonzalez, Bryan, Calderon, Carrillo, Chau, Mullin, Eduardo Garcia, Luz Rivas, Quirk, Kalra, Stone, McCarty
**NO:** Bigelow, Megan Dahle, Voepel, Fong

## UPDATED

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