

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on Regulations  
Relating to Passenger Carriers, Ridesharing,  
and New Online-Enabled Transportation  
Services.

Rulemaking 12-12-011  
(Filed December 20, 2012)

**COMMENTS OF SIERRA CLUB ON QUESTIONS REGARDING THE  
COMMISSION'S REGULATION OF AUTONOMOUS VEHICLES**

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**COMMENTS OF SIERRA CLUB ON QUESTIONS REGARDING THE  
COMMISSION’S REGULATION OF AUTONOMOUS VEHICLES**

Sierra Club respectfully submits the following comments on some of the questions posed in the “Administrative Law Judge’s Ruling Ordering Parties to Comment on Questions Regarding the Commission’s Regulation of Autonomous Vehicles” filed on December 19, 2019. These comments are timely pursuant to Administrative Law Judge Mason’s email ruling on January 10, 2020, extending the deadline to respond to Questions 2–8 until February 10, 2020. Sierra Club filed a motion for party status in this proceeding on February 4, 2020.

**I. Introduction**

The Commission’s regulatory framework for autonomous vehicles (“AVs”) in passenger service should include two requirements to ensure that these vehicles do not cause a spike in greenhouse gases and congestion: All AVs with deployment permits for passenger service should (1) be zero-emission vehicles (“ZEVs”) and (2) offer shared rides. The impact of AVs on our climate and the livability of our cities will depend on whether policymakers move aggressively to ensure that these vehicles are zero-emissions and shared. Recently, researchers at University of California, Davis estimated that:

[W]ith driverless cars but little pooling and electrification, greenhouse gas emissions would increase 50 percent and vehicle use 15 to 20 percent between now and 2050. In contrast, in a dream scenario where driverless cars are pooled and electrified, vehicle use would *drop* by 60 percent compared to business as usual, greenhouse gas emissions would drop by 80 percent, and over-all costs of vehicles, fuel use, and infrastructure would drop by more than 40 percent . . . .<sup>1</sup>

The scenario without sharing and electrification is plainly contrary to California’s climate policies. Meeting the State’s climate goals will require a rapid acceleration in the pace of

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<sup>1</sup> Daniel Sperling *et al.*, *Three Revolutions: Steering Automated, Shared, and Electric Vehicles to a Better Future*, at 16 (Island Press, 2<sup>nd</sup> ed. Mar. 2018).

emissions reductions.<sup>2</sup> The Commission has broad power over chartered vehicles,<sup>3</sup> and this crossroads demands that the Commission exercise its authority to protect the public interest.

Further, the Commission should adopt a strong regulatory framework now—at the inception of the AV ride-hailing industry—because delay will only make it harder to set effective standards. Companies that build their businesses around the expectation that they can operate polluting AVs in passenger service will view regulations as an existential threat. The Commission cannot allow this climate-destabilizing business model to become entrenched. Conversely, if the Commission is clear that the future of AVs in passenger service is zero-emissions, the market will respond by investing in the development of clean AVs.

Many companies have already announced aggressive goals for increased deployment of ZEVs in their fleets, including vehicle fleets with intensely power-demanding duty cycles. Amazon has placed an order for 100,000 zero-emission delivery vans from Rivian by 2024.<sup>4</sup> Anheuser-Busch InBev announced a commitment to power 100 percent of its delivery vehicles with renewable energy by 2025, starting with an order for 800 hydrogen-electric semi-trucks.<sup>5</sup> IKEA announced a commitment to using EVs for the last-mile portion of all product shipments by 2025.<sup>6</sup> All of this activity has happened in medium- and heavy-duty commercial fleets, generally thought to be more challenging to electrify than passenger vehicles.

Companies in the autonomous vehicle space have also announced bold plans for electrification. For instance, Lyft has announced that it aims to provide at least 1 billion electric,

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<sup>2</sup> Next10, *California Green Innovation Index* (11<sup>th</sup> ed. 2019) (“If California continues to reduce emissions at the same rate we have most recently (-1.15% in 2017), we would meet our 2030 target 30 years late and our 2050 target more than 100 years late.”), <https://www.next10.org/sites/default/files/2019-10/2019-california-green-innovation-index-final.pdf>.

<sup>3</sup> Pub. Util. Code § 5381.

<sup>4</sup> Chester Dawson & Keith Naughton, *Bezo’s Big Van Order Signals Amazon-Backed Rivian is ‘For-Real’*, Bloomberg (Sep. 19, 2019), <https://www.bloomberg.com/news/articles/2019-09-19/bezos-s-big-van-order-signals-amazon-backed-rivian-is-for-real>.

<sup>5</sup> Chris Morris, *Anheuser-Busch Orders 800 Hydrogen-Electric Semis from Tesla Competitor*, Bloomberg (May 3, 2018), <https://fortune.com/2018/05/03/anheuser-busch-hydrogen-electric-semi-trucks-nikola-tesla/>.

<sup>6</sup> Charles Morris, *IKEA and Delivery Partners Electrify Last-Mile Delivery around the World*, Charged (Apr. 18, 2019), <https://chargedevs.com/newswire/ikea-and-delivery-partners-electrify-last-mile-delivery-around-the-world/>.

autonomous rides annually by 2025.<sup>7</sup> GM has declared that “All AVs Should Be EVs.”<sup>8</sup> But history has shown that we cannot leave the fate of our climate in the hands of industry. Companies must be accountable for transitioning to fully zero-emissions fleets. Without strong policy, laggard companies could derail State climate goals. Therefore, the Commission should set a clear 100-percent ZEV and shared policy for AVs.

## **II. Comments on Goals-Related Questions**

### **2.1. How should the Commission incorporate safety goals into its AV regulatory framework?**

Sierra Club has no comment at this time.

### **2.2. How should the Commission define accessibility?**

Sierra Club has no comment at this time.

### **2.3. Should the Commission clarify that accessibility applies to many demographics, including but not limited to people who are blind or low-vision; are hearing impaired; rely on comfort animals; use wheelchairs or have other physical limitations; or, are elderly?**

Yes. Autonomous transportation for the public must recognize that people have different physical abilities and must be designed and prepared to accommodate those differences.

### **2.4. Should the Commission ensure that the drivers of any manually-driven wheelchair-accessible vehicles used in a commercial AV service are properly trained on the securement of wheelchairs and proper passenger restraint for AVs with a driver?**

Yes. Autonomous transportation for the public must recognize that people have different physical abilities and must be designed and prepared to accommodate those differences.

### **2.5. How should the Commission incorporate accessibility goals into its AV regulatory framework?**

Yes. Autonomous transportation for the public must recognize that people have different physical abilities and must be designed and prepared to accommodate those differences.

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<sup>7</sup> Darrell Etherington, *Lyft sets goal of 1 billion autonomous electric rides per year by 2025*, TechCrunch (June 15, 2017), <https://techcrunch.com/2017/06/15/lyft-sets-goal-of-1-billion-autonomous-electric-rides-per-year-by-2025/>.

<sup>8</sup> General Motors, *Why All AVs Should Be EVs*, General Motors: Commitment, <https://www.gm.com/masthead-story/electric-vehicles-AV-EV.html> (last visited Feb. 4, 2020, 5:41 PM).

**2.6. For the sake of the AV Regulatory Framework, should the Commission define and evaluate accessible service in a manner similar to the process established in Proceeding Rulemaking 19-02-012?**

Sierra Club has no comment at this time.

**2.7. Should the Commission incorporate equity and environmental-justice related goals into its AV regulatory framework? If so, how?**

California must ensure that disadvantaged communities (“DACs”) benefit from zero-emissions vehicles. As the Legislature has declared, increasing the use of zero-emission vehicles in DACs will “enhance air quality, lower greenhouse gases emissions, and promote overall benefits to those communities and other consumers.”<sup>9</sup> Zero-emission vehicles are necessary to address the severe environmental injustices California’s disadvantaged communities suffer as a result of their disproportionate exposure to transportation-sector emissions.<sup>10</sup> Shared, zero-emission AVs can also provide lower-cost connections to transit hubs for communities underserved by other mobility options, thereby increasing access to job- and service-rich regions.<sup>11</sup> Conversely, the Commission must ensure the spread of AVs does not increase the already disproportionate pollution burden faced by many of these communities. When a clean technology must deploy gradually, the Commission should prioritize DACs for early deployment. In the case of autonomous vehicles, the Commission should ensure that DACs and non-DACs alike benefit from a complete transition to clean AVs in passenger service.

The Commission can also require data reporting to monitor whether companies are providing comparable service in DACs. For instance, the Commission should consider the operators of AV ride-hailing fleets to report the following information periodically:

- Of the company’s zero-emissions rides, what percentage begins and/or ends in a DAC?

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<sup>9</sup> Pub. Util. Code § 740.12(a)(1).

<sup>10</sup> People of color and low-income residents are over-represented among the some 40% of Californians living near high volume roads. Gregory M. Rowangould, *A Census of the US Near-Roadway Population: Public Health and Environmental Justice Considerations*, at 61, 64 (Dec. 2013); Ozone-forming and particulate emissions from the transportation sector increase risk of respiratory disease, cardiovascular disease and cancer—causing twice as many deaths as traffic accidents. Fabio Caiazzo *et al.*, *Air pollution and early deaths in the United States. Part I: Quantifying the impact of major sectors in 2005*, at 198–208 (Nov. 2013), <http://www.coolgreenschools.com/wp-content/uploads/2015/07/US-air-pollution-paper.pdf>.

<sup>11</sup> Shruti Vaidyanathan, *Shaping Autonomous Vehicle Deployment to Meet Climate and Energy Goals: A Policy Toolkit for Cities*, at 5 (Dec. 2019), [https://www.aceee.org/sites/default/files/pdfs/av\\_toolkit\\_2-16-19\\_1.pdf](https://www.aceee.org/sites/default/files/pdfs/av_toolkit_2-16-19_1.pdf).

- If the Company also provides non-zero-emissions rides (i.e., provides rides through individual drivers who own combustion vehicles), what percentage of these rides begin and/or end in a DAC?
- What is the average wait time for customers inside and outside of DACs for a zero-emissions ride?

It is important to ensure DACs benefit fully from electric ride-hailing fleets because they may be among the earliest zero-emission passenger vehicles to deploy in DACs. Low-income families are less likely to own a car than their wealthier counterparts and disproportionately rely on taxis for mobility.<sup>12</sup> DAC households that do own cars are also more likely to face barriers to electric vehicle ownership from lack of access to charging infrastructure and the current upfront price premium for electric vehicles.<sup>13</sup> Zero-emissions transit buses and ride-hailing fleets can bring the benefits of vehicle electrification to DACs.

**2.8. Should the Commission incorporate goals related to city operations and planning into its AV regulatory framework? If so, how?**

Sierra Club has no comment at this time.

**2.9. Should the Commission evaluate AVs' impacts on congestion, traffic, curb use, and public transit? Why?**

Yes, the Commission should evaluate all of these impacts. The proliferation of AVs in passenger service could dramatically increase emissions from the transportation sector by increasing congestion and traffic and eroding public transit. It is important for the Commission to understand the total emissions impacts of these vehicles.

Moreover, in SB 1014, the Legislature declared that it intends to reduce emissions from transportation network companies “in a manner that promotes . . . sustainable land use[ and] reduced congestion.” SB 1014 (2018) § 1(p). The policies the Commission adopts for AVs in passenger service will have direct impacts on congestion. Research from the University of

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<sup>12</sup> Sperling *et al.*, *supra fn.* 1 at 135 (“For example, while carless households made only 4 percent of all the US person trips in 2009, they took more than half (53 percent) of all taxi trips. Similarly, households earning less than \$25,000 per year made 17 percent of all person trips but 41 percent of all taxi trips.”).

<sup>13</sup> California Air Resources Board, *Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents*, at 12 (Apr. 2017) (finding that the barriers to clean transportation are “magnified” in DACs and as a result “there is a lack of access and exposure to zero-emission cars, transit buses, and other clean mobility options.”), [https://www.arb.ca.gov/msprog/transoptions/draft\\_sb350\\_clean\\_transportation\\_access\\_guidance\\_document.pdf](https://www.arb.ca.gov/msprog/transoptions/draft_sb350_clean_transportation_access_guidance_document.pdf).

California, Davis, found that “[w]hile ride sharing can cut the numbers of vehicles in use, cutting traffic is not assured: for example a system dominated by single-occupant ride-hailed vehicles would not reduce vehicle trips compared to similar private vehicle trips; moreover, rides could be shifted from public and/or active transport.”<sup>14</sup> Even without automation, ride-hailing has coincided with a decline in public transit ridership in some major cities.<sup>15</sup> For example, one recent study estimated that San Francisco has seen a 12 percent decrease in bus ridership since 2010 due to TNCs.<sup>16</sup> Another study found that TNCs increased congestion, vehicle-miles travelled, and emissions.<sup>17</sup> AVs can exacerbate these trends because AVs “could lower the costs of non-shared ride-hailing trips enough that there is less incentive to share trips or even to take public transport.”<sup>18</sup> The Commission must ensure that AVs in passenger service do not undermine the Legislative policy that transportation network companies reduce their emissions in a way that is sustainable and reduces congestion.

## **2.10. How should the Commission incorporate goals related to environmental and climate impacts into its AV regulatory framework?**

The Commission should require all of the AVs in TNC fleets to be zero-emission and provide regular shared service, and set policies that minimize amount of time on the road spent with no or single passengers. As the introduction section to these comments explains, a transition to AVs without electrification and sharing would be inconsistent with California’s climate goals. To ensure shared passenger service does not compromise the personal safety of passengers, the Commission should follow the recommendations of the San Francisco Municipal Transportation Agency and San Francisco County Transportation Authority and use the pilot stage to evaluate measures that may be necessary to enhance passenger safety in shared driverless rides.<sup>19</sup>

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<sup>14</sup> Lew Fulton *et al.*, *Three Revolutions in Urban Transportation: How to achieve the full potential of vehicle electrification, automation and shared mobility in urban transportation systems around the world by 2050*, UC Davis, at 13 (May 2017).

<sup>15</sup> *Id.*

<sup>16</sup> Michael Graehler *et al.*, *Understanding the Recent Transit Ridership Decline in U.S. Major Cities: Service Cuts or Emerging Modes?* University of Kentucky, (Aug. 2018).

<sup>17</sup> Schaller Consulting, *The New Automobility: Lyft, Uber and The Future of American Cities* (July 2018).

<sup>18</sup> Fulton, *supra fn.* 14 at 7.

<sup>19</sup> R.12-12-011, Initial Opening Comments of the San Francisco Municipal Transportation Agency, at 8–9 (Jan. 21, 2020).

**2.11. Should the Commission establish fleet-level emissions requirements for AV companies that are coordinated with requirements established by Senate Bill (SB) 1014 (the Clean Miles Standard)?**

The Commission should require AVs to achieve 100% zero-emissions much sooner than the traditional vehicles subject to the Clean Miles Standard. When the Legislature passed SB 1014, it was aware of barriers to deploying zero-emission vehicles in transportation network companies that do not apply to autonomous vehicles:

*TNC ZEV deployment faces unique barriers.* Driver income, driver turnover, and ZEV infrastructure limitations may limit the degree to which ZEVs are used through TNCs. Many TNC drivers have limited income and ability to finance a new vehicle, even with available state incentives. According to the Silicon Valley Leadership Group, the majority of TNC drivers identify as low-income. Turnover of TNC drivers may also lead to fluctuations in the availability of specific vehicles. Additionally, ZEV battery range and the availability of charging infrastructure can influence the availability of TNC drivers operating ZEVs.<sup>20</sup>

With autonomous vehicles, driver income is not a barrier to adoption because the owners are venture-backed companies, not low-income individuals. Since these companies are capitalized to make purchase decisions based on total cost of ownership rather than upfront price, the lower fueling and maintenance costs can actually make ZEVs advantageous purely from a business standpoint.<sup>21</sup> Driver turnover is not a barrier because there is no driver. Whatever ZEV infrastructure limitations exist will be easier for the AVs' corporate owners to surmount. SB 1014 standards will accommodate the unique needs of TNC drivers, and those rules must not stand in the way of stricter standards for driverless vehicles.

**2.12. Should the Commission incorporate goals from key climate, transportation, and equity-related legislation into its AV regulatory framework? If so, how?**

Yes. See below.

**2.12.1. If so, which laws and programs should the Commission reference? Please comment specifically on SB 32, Assembly Bill (AB) 32, SB 350, SB 1014, SB 1376, and SB 375.**

The Commission's goals should align with California's ambitious climate goals by requiring all autonomous vehicles in passenger service to provide zero-emissions shared rides. It

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<sup>20</sup> SB 1014 Senate Floor Analysis (Aug. 30, 2018) at 5, [http://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill\\_id=201720180SB1014#](http://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201720180SB1014#).

<sup>21</sup>Vaidyanathan, *supra fn.* 11 at 7.



would be inconsistent with the following State policies to allow the expansion of autonomous passenger service with combustion, single-passenger vehicles:

- SB 32 requires the State to reduce GHG emissions to 40% below 1990 levels by 2030;
- Executive Order B-30-15 orders state agencies to develop and implement GHG reduction programs to reduce emissions to 80% below 1990 levels by 2050; and
- Executive Order B-55-18 sets a goal of statewide carbon neutrality by 2045
- Executive Order B-48-18 directs the state government to meet milestones toward putting 1.5 million zero-emission vehicles on California’s roadways by 2025 and 5 million by 2030.

These policies will require deep emission reductions in all sectors and especially aggressive reductions in the sectors that have made the most progress in developing zero-emission technologies, such as passenger vehicles. As the Legislature declared in SB 350, California’s 2030 and 2050 climate goals “will require widespread transportation electrification.” Public Utilities Code § 740.12(a)(1)(D).

The implementation process for SB 32 requires the deepest reductions from sources that are easier to decarbonize, and set a target for the transportation sector that will be difficult to attain even without the proliferation of carbon-emitting AVs. The California Air Resources Board (CARB) scoping plan for SB 32 sets out the emissions reductions for each sector that could achieve 40% statewide reductions by 2030. For instance, CARB is planning for 51-72% emissions reductions in the electric power sector and 27-32% emissions reductions in the transportation sector.<sup>22</sup> The transportation sector is California’s largest source of climate pollution,<sup>23</sup> making decarbonization of that sector essential for addressing the climate crisis. However, emissions from the State’s transportation sector are increasing.<sup>24</sup> To begin reversing this trend—or at least ensure that the situation does not become more dire—the Commission should require the rapid electrification and sharing of AVs in passenger service. Deep reductions

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<sup>22</sup> California Air Resources Board, *California’s 2017 Climate Change Scoping Plan*, at 31, (Nov. 2017), [https://ww3.arb.ca.gov/cc/scopingplan/scoping\\_plan\\_2017.pdf](https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf).

<sup>23</sup> *Id.*

<sup>24</sup> Tony Barboza, *California’s planet-warming emissions declined in 2017, even as its biggest pollution source keeps rising*, Los Angeles Times (Aug. 12, 2019), <https://www.latimes.com/california/story/2019-08-12/california-greenhouse-gas-emissions-fell>.

from vehicles like corporate AV fleets are necessary to meet CARB's overall transportation emission goals, which include emissions from harder to electrify vehicles.

The regional targets for reducing greenhouse gas emissions from passenger vehicles set pursuant to SB 375 should not dictate the Commission's AV policies. AVs in passenger service are lower-hanging fruit for electrification than other vehicles, and should meet a high standard that reflects their unique circumstance. As discussed above, these AVs' owners are corporate fleets that will accumulate fuel savings quickly through long duty cycles. It is important to demand zero-emission technologies now, as these fleets are being built for the first time, before the industry develops an entire fleet and infrastructure that could lock in years of emissions. The SB 375 targets were based on the transportation options that existed a decade ago, which face barriers to deep decarbonization that are irrelevant for AVs in passenger service.

As discussed in response to Question 2.11, the Clean Miles Standard for traditional vehicles under SB 1014 will be too weak to apply to AVs in passenger service.

**2.13. Should the Commission measure the progress toward achieving each of these goals? If so, how?**

Yes. One of the benefits of requiring 100% of AVs operating in passenger service to be zero-emissions and available for shared service is that a 100% requirement is simple to measure and difficult to game. The Commission should require companies to certify compliance with these requirements when they submit periodic reports on safety and accessibility metrics.

**III. Conclusion**

Sierra Club thanks the Commission for inviting comments on how the Commission's regulatory framework should address the potentially massive impacts of autonomous vehicles in passenger service on the climate and environmental justice. Sierra Club urges the Commission to require these vehicles to be zero-emissions and shared.

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Respectfully submitted,

*/s/ Sara Gersen*

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