



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

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

Rulemaking 12-12-011
(Filed January 9, 2020)

**COMMENTS OF ZOOX, INC. IN RESPONSE TO THE ADMINISTRATIVE LAW
JUDGE'S RULING ON QUESTIONS REGARDING THE COMMISSION'S
REGULATION OF AUTONOMOUS VEHICLES (QUESTIONS 2-8)**

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In accordance with Article 1 of the Rules of Practice and Procedures (the “Rules”) of the California Public Utilities Commission (the “Commission”), Zoox, Inc. (“Zoox”) hereby submits its comments in response to the Administrative Law Judge’s Ruling dated January 9, 2020, Ordering Parties To Comment On Questions Regarding The Commission’s Regulation of Autonomous Vehicles in Rulemaking 12-12-011, Order Instituting Rulemaking on Regulations Relating to Passenger Carriers, Ridesharing, and New Online-Enabled Transportation Services.

I. INTRODUCTION

Zoox appreciates this opportunity to comment on the Assigned Commissioner’s Ruling and to address critical issues involving Autonomous Vehicle (AV) passenger service. Our mission at Zoox is to solve problems around safety, mobility, and sustainability for cities. As cities continue to get more crowded, polluted, and congested, the idea of the single occupancy gas-powered car becomes increasingly problematic, while other transportation options for Californians are not offering sufficient alternatives.

Zoox was founded on the belief that the full realization of autonomous technology requires three elements. Thus, we are building a fully autonomous, zero-emission vehicle; the software stack to make the vehicle drive; and the mobility service to help people get from door-to-door in a city. The new vehicle architecture will be designed from the ground up and

optimized for three things: zero-emission, sharing, and full autonomy. This mobility solution will also be safe, accessible, affordable, and sustainable. In fact, our mobility solution addresses the “Three Revolutions” framework espoused by University of California Davis Professor and California Air Resources Board Member, Daniel Sperling.¹ As Sperling described in this framework, Zoox is building an autonomous, all-electric, shared, light-duty transportation solution to meet mobility and climate goals.

II. SUMMARY OF COMMENTS

As discussed in our comment submission in this proceeding on January 20, 2020, Zoox urges the Commission to expeditiously adopt rules that will permit fare collection for transportation services provided by autonomous vehicles. AVs will bring important safety, sustainability, and mobility benefits to Californians. California has been home to significant innovation for AV safety and technology, and the Commission has the opportunity to ensure that the State’s residents are able to experience and realize the benefits of the technology.

The AV industry is in its early days and AV passenger service in California is currently limited to a pilot program. The creation of the pilot program was an important step toward deployment of AVs, however, it does not enable companies to offer a commercial passenger service. Operating a commercial passenger service will provide companies with important learning experiences and improve service offerings for consumers. Deployment regulations with fare collection are the next critical step for AV passenger service in California.

The topic areas in Questions 2 through 8 of the ruling are critical areas for discussion by the Commission. However, without the certainty of deployment rules, many of these topics are premature to consider and the Commission should not wait to answer these questions before creating a framework for AV passenger service that includes fare collection. Zoox urges the Commission to take a gradual approach to addressing the questions in Sections 2 through 8 of the ruling. As the industry continues to mature in California, the Commission should retain flexibility to amend regulations in order to promote the State’s accessibility, equity, transportation, and environmental/climate goals.

¹ Sperling, Daniel. Three Revolutions. Island Press, 2018.

III. COMMENTS

1. The Commission should pursue the accessibility, equity, transportation, and climate goals highlighted in Question 2, but first allow for the commercialization of AV passenger service.

Zoox's shared, electric, and autonomous model is built to support California's accessibility, equity, transportation, and climate goals. Zoox believes that the goals outlined in Question 2 of the ruling should be pursued by the Commission in coordination with relevant state agencies in its final regulatory framework for AV passenger service. As discussed in our comment submission on January 20, 2020, Zoox urges the Commission to first adopt rules that enable fare collection for AV passenger service. This will allow the nascent AV industry to gradually enter the market and develop critical learnings and experience, while continuing to work with the State and the Commission to achieve the State's overarching goals.

By enabling commercialization, the Commission would allow for a wider set of actors to participate in the industry and encourage competition. Initial regulations for the industry, particularly in the subject areas covered in Question 2, may affect competition within the industry. Companies with limited financial resources will not be able to enter the market due to regulatory barriers, affecting pricing, rider experience and innovation.

Zoox is excited to share the important safety, sustainability and mobility benefits of AV technology with California residents and encourages the Commission to not delay rules allowing for fare collection in order to answer the overarching topics covered in Questions 2 through 8.

2. The existing AV testing and deployment rules in California provide high levels of safety protections for passengers.

Safety is foundational to the Zoox mission, and we are striving to set the bar for safety in autonomous mobility. Our goal is to offer a safe, reliable, equitable transportation option. Zoox is committed to working with relevant state regulatory entities to ensure that AV technology is safely developed, tested, and deployed.

Zoox believes that the current approach toward AV testing and deployment in California appropriately manages risk. The entities involved (including the State legislature, the Department of Motor Vehicles (DMV), and the Commission) have worked together to pave a pathway that allows for the safe testing and passenger service of this technology. The Commission's focus on common carrier consumer safety is critical to this effort and we applaud the Commission for their work thus far. The Commission should look to the DMV and the National Highway Traffic Safety Administration (NHTSA) as complementary entities as the Commission works toward the safe deployment of AV passenger service on public roads. As part of its AV regulations, the DMV provides for vehicle safety through a number of operational requirements of permit holders and the Commission itself has strong existing safeguards and enforcement mechanisms in order to ensure consumer safety (see our response to Question 2.1).

We are confident that, together with these agencies, the Commission will be able to continue to fulfill its mandate of common carrier consumer safety. Zoox urges the Commission to work with the other state and local entities who have oversight so that regulations are not overlapping or inconsistent. It is important to continue harmonizing DMV and Commission regulations, but the existing regime provides extensive protections. The State has the opportunity to experience the important safety, sustainability, and mobility benefits that this technology can bring to Californians, but this coordination is essential as this technology gradually matures.

3. The existing AV TCP Framework should be used for final rules with two important modifications: the ability to collect fares and provide shared rides, The Commission should continue existing data reporting requirements with no significant changes.

Zoox recommends that the Commission continue to apply the existing AV TCP framework, established in Decision 18-05-043², for prearranged AV drivered and driverless passenger service. The critical modifications needed are the ability to collect fares, provide shared rides, and remove any requirements related to having a physical driver. Creating a new regulatory category for AVs is not necessary to ensure consumer safety, particularly since the Commission has developed an existing framework that can be utilized for AVs. As the first

² CPUC Decision 18-05-043. docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K279/215279920.PDF.

participant in the Commission’s AV TCP pilot program, we can attest to the effectiveness of this framework for ensuring consumer safety.

Zoox recommends that the Commission also continue to use the framework for data reporting established in the Decision 18-05-043 Section 3.B.8., with a quarterly reporting timeframe. Data provided during the pilot program has been important for the Commission to create a regulatory framework, and the types of data gathered have proven sufficient. Increasing these requirements for an emerging industry could stifle a company’s ability to commercialize and providing trip level data could result in significant consumer privacy issues.

4. Accessibility is an important goal for the AV passenger service proceeding and should be a critical component of the final rulemaking after deployment approval from the Commission.

According to the U.S. Centers for Disease Control, 26% of adults in the United States have some type of disability.³ Zoox is committed to increasing access to mobility for people with disabilities and the elderly. Autonomous vehicles present enormous potential for people with disabilities, including but not limited to those with hearing, vision, mobility and cognitive disabilities, many of whom are elderly and/or veterans.

A study by the U.S. Bureau of Labor Statistics found that the unemployment rate for persons with a disability was 8.0 percent in 2018, more than twice that of those with no disability (3.7 percent).⁴ In a 2017 report by the Ruderman Foundation, the scholars noted that “Mitigating transportation related obstacles for individuals with disabilities would enable new employment opportunities for approximately 2 million individuals with disabilities, and save \$19 billion annually in healthcare expenditures from missed medical appointments.”⁵

AVs have the potential to transform accessible transportation options. Zoox is striving to be a solution, by making our technology and platforms available and safe for interactions with all members of the public (including customers and those who would encounter our vehicles on the

³ “Disability Impacts All of Us Infographic.” Centers for Disease Control and Prevention, 9 Sept. 2019, www.cdc.gov/ncbddd/disabilityandhealth/infographic-disability-impacts-all.html.

⁴ Persons with a Disability: Labor Force Characteristics Summary. U.S. Bureau of Labor Statistics, 26 Feb. 2019, www.bls.gov/news.release/disabl.nr0.htm.

⁵ “Self-Driving Cars: The Impact on People with Disabilities.” Ruderman Family Foundation, rudermanfoundation.org/white_papers/self-driving-cars-the-impact-on-people-with-disabilities.

road). Since we are building a vehicle from the ground up, we are able to reimagine vehicle and service features to increase access to mobility services.

Accessibility should be an important goal for the Commission. Zoox encourages the Commission to take an approach to accessibility that allows for enhanced innovation as the industry matures. AV companies that succeed in the market will be able to invest resources into creating innovative accessible products that have the promise of vastly improving accessible transportation options. However, if initial regulations are too prescriptive, it may become a barrier to market entry for companies with limited resources. The Commission should strike a balance to ensure accessibility is a critical part of initial deployment efforts, while more ambitious measures are required as the industry commercializes.

5. Fare splitting should be allowed since it will incentivize shared rides, reduce single occupancy trips, and provide an equitable transportation option.

Shared autonomous mobility is critical to achieving the sustainability and equity benefits that AVs have the possibility of achieving. By enabling fare splitting, companies will be able to incentivize the reduction of single occupancy trips through shared use of the vehicle, which the State of California has established as an important priority. California's goal is to reduce greenhouse gas emissions (GHGs) 40 percent below the 1990 level of emissions by 2030. Shared rides will reduce GHGs and reduce the cost of the fare for the rider, furthering the State's climate and equity goals.

Ensuring passenger safety in driverless and shared AV rides is paramount, and Zoox continues to prioritize developing innovative features to enable safer shared rides. Zoox has been working with local law enforcement to understand the safety challenges associated with shared rides, and we are proactively implementing solutions to address these safety concerns. Zoox urges the Commission to enable fare splitting for AV driverless passenger service to ensure the opportunity for fully realizing the important sustainability and equity benefits of AVs.

III. RESPONSES TO QUESTIONS 2-8

2. Goals Related Questions

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

Zoox believes that the Commission's current approach toward AV testing and deployment in California, along with other state agency safety efforts, appropriately manages risk. The Commission should look to the California DMV and the National Highway Traffic Safety Administration (NHTSA) as complementary entities as the Commission works toward the safe deployment of AV passenger service on public roads. We are confident that the Commission, working together with these entities, will be able to fulfill its mandate of ensuring common carrier consumer safety.

The publicly available annual reports required by the DMV show that AVs have driven nearly 4 million miles on public roads in California, with only 105 incidents involving AVs in California in 2019 – the vast majority of which were caused by the human drivers in other vehicles.

As part of its AV regulations, the DMV provides for vehicle safety through a number of operational requirements of permit holders, including but not limited to the following: training for remote operators and safety drivers; detailed information on the operational design domain (ODD); a Law Enforcement Interaction Plan; written notice to local authorities when testing driverless AVs; a communications link that provides vehicle location, status, and allows for two-way communication between remote operators and passengers of driverless AVs; and maintenance of \$5 million of insurance.

The Commission itself has strong existing safeguards and enforcement mechanisms in order to ensure consumer safety. The Commission has TCP and AV pilot requirements that include liability insurance; vehicle inspection and maintenance requirements; 30-day performance requirements; maintenance of an accurate listing of all vehicles and operators covered by a permit; and annual and quarterly data reporting. Additionally, the Consumer Protection and Enforcement Division (CPED) has the power to initiate investigations into allegations of rules violations, enforce all permit requirements, and has the ability to issue cease and

desist orders and render associated citations and fines. It is important to continue harmonizing DMV and Commission regulations, but the existing regime provides extensive protections.

2.2. How should the Commission define accessibility?

The Commission should utilize a definition that is broad and inclusive of all accessibility communities. Increasing access to mobility for people with disabilities and the elderly is a critical goal of AV deployment. AVs present enormous potential for people with disabilities including those with hearing, vision, mobility and cognitive disabilities, many of whom are elderly and/or veterans.

Zoox is striving to make our technology and platforms available and safe for interactions with all members of the public (including customers and those who would encounter our vehicles on the street). Since we are building a vehicle from the ground up, we are able to reimagine accessibility features.

Accessibility should continue to be an important component of focus for the Commission. Zoox encourages the Commission to take an approach to accessibility that allows for enhanced innovation as the industry matures. AV companies that are able to succeed in the market will be able to invest resources into creating innovative accessible products that have the promise of vastly improving transportation options. However, if initial regulations are too prescriptive, it may limit innovation in the space and become a barrier to market entry for companies with limited resources. The Commission should strike a balance to ensure accessibility is a critical part of initial deployment efforts, while more ambitious measures are required as the industry commercializes.

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?

Accessibility covers a range of demographics and it is important for the Commission to recognize that fact.

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

Ensuring proper securement of wheelchairs and proper passenger restraints are critical to passenger safety. Wheelchairs that are not tied down could slide inside a moving vehicle, causing safety concerns.

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

The Commission should look to incorporate accessibility goals as the industry commercializes, while also understanding that autonomous system platforms can be integrated onto vehicles of different sizes and for different use cases. The Commission should also look to learnings from existing accessibility frameworks for TNCs (as established in R.19-02-012, for example).

2.6. For the sake of the AV Regulatory Framework, should the Commission define and evaluate accessibility service in a manner similar to the process established in Proceeding Rulemaking 19-02-012 (TNC Access for All, Order Instituting Rulemaking to Implement Senate Bill 1376 Requiring Transportation Network Companies to Provide Access for Persons with Disabilities, Including Wheelchair Users who need a Wheelchair Accessible Vehicle)?

The Commission's rulemaking in R.19-02-012⁶ is still in progress. The Commission should use learnings from this rulemaking to inform future AV regulations related to accessibility. However, the Commission should take into consideration that Senate Bill 1376 and its implementation by R.19-02-012 were addressed to TNCs and not to other charter party transportation services.

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

Equity and environmental justice are critical issues for transportation services. A major goal of Zoox's model of shared, electric autonomous mobility is to promote equity and environmental justice. Zoox is committed to providing access to mobility for communities that have limited transportation options. We will incentivize pooling options which will lower the cost of our service for consumers. As the driver becomes automated, the cost of mobility, over time, will come down while the operating domain of the service expands. In time, our model will also help people get to work, either by connecting them to mass transit or providing other affordable and efficient transportation options.

This technology is gradually evolving and the Commission should consider the maturity of the industry when developing such goals and ensure the ability for companies to grow in these areas as the industry matures.

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

City operations and planning are critical components for AV service. The Commission should consider these questions as AVs enter the commercial market and create appropriate risk-management protocols in a later phase.

⁶ *Rulemaking to Implement Senate Bill 1376.*
apps.cpuc.ca.gov/apex/f?p=401:56:0::NO:RP,57,RIR:P5_PROCEEDING_SELECT:R1902012.

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

Today, congestion, traffic, curb use, and public transit are influenced by many reactive decisions between and among local, state, and federal law- and policymakers. Issues that arise within each of these subjects are based on factors such as local politics, the use of private vehicles, and in some instances, data. When AVs are added to the transportation sector, it will be worth evaluating how they impact congestion, traffic, curb use, and public transit so entities can be proactive in managing the benefits and the burdens of this new choice. Zoox plans to provide important first and last mile connection to public transit. Our shared, electric model is built to reduce congestion and traffic in dense environments by encouraging shared rides.

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

The Commission should align its environmental and climate goals with its AV regulatory framework in an appropriate and gradual timeframe. Zoox's mission-driven business model addresses the "Three Revolutions" framework espoused by UC Davis Professor and CARB Board Member Daniel Sperling that states a move to autonomous, light duty electric transportation that is pooled among users, could help to meet future climate and mobility goals. If the Commission were to permit AVs to carry multiple passengers, this would help achieve this sustainable mobility revolution. Promoting AVs to use electric vehicles will have significant local and GHG benefits and align with the Commission's and the State's many climate and environmental goals.

The Commission should prioritize aligning its transportation electrification approved IOU budgets and vehicle-to-grid working group with its AV regulatory framework. Moving passenger carrier vehicles to a fully electric future requires massive capital expenditures and coordinated planning to ensure

EV infrastructure is built in the most cost-effective manner in places where demand exists. Aligning future vehicle-to-grid markets with the AV proceeding will help ensure that AV operators will also be encouraged to charge when charging is most beneficial to the electricity grid.

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

Zoox's entire fleet of AVs will be electric vehicles and will comply with a fleet-level emission requirement. The Commission should consider a fleet-level emission requirement for all AV vehicles in a later phase of the AV regulatory framework after AV passenger service has been commercialized.

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

Zoox believes the Commission should coordinate with relevant state agencies to incorporate these goals in its final regulatory framework for AV passenger service. Zoox urges the Commission to first adopt rules that enable fare collection for AV passenger service, and incorporate these goals into a later phase of the rulemaking. We also encourage the Commission to work closely with other state agencies who have jurisdiction in these areas to ensure these efforts are coordinated and not duplicative.

2.12.1. If so, which laws and programs should the Commission reference? Please comment specifically on SB 32, AB 32, SB, 50, SB 1014, SB 1376, and SB 375.

SB 32, AB 32, SB 50, and SB 375 are state-wide environmental and transportation policy standards that are not directly focused on TNC and AV

regulations. The implementation of SB 1014 already requires the Commission to partner with CARB to set a GHG emission target for TNCs requiring compliance by 2023 by TNC companies that includes a bi-annual GHG emission reduction plan.

In Zoox's opinion, the SB 1014 regulation, and the Principles outlined in its implementation on CARB's website, listed below, could be used for the Commission's AV regulatory framework to ensure environmental and equity considerations are appropriately considered. The Principles include:

1. Decrease GHG emissions and increase zero-emission miles: Develop a new regulation to reduce GHG emissions from TNC fleets using a compliance metric of annual grams-CO₂-per-passenger-mile and increase zero-emission miles traveled, encouraging TNC fleets to provide clean mobility options.
2. Promote pooling, active transport and transit usage: Enable strategies for reduction of vehicle miles traveled (VMT) while supporting passenger miles traveled (PMT), including increased vehicle pooling, connections to public transit, connections to first and last-mile transport modes such as bike and scooter share services, and walking.
3. Forward-looking with automated vehicles: Account for driverless automated vehicle operation and other new modes of transportation emerging from continued innovation in TNC fleets to encourage low-emission vehicles and pooling in new mobility modes.
4. Aligned with other state policies: Ensure the regulation is synergistic with existing incentive programs and current state policies, including SB 375, the Sustainable Communities Program, and the light-duty vehicle GHG and zero-emission vehicle (ZEV) automaker regulations.
5. Maximize transportation access equity: Explore how the regulation design and incentives can promote access of these transportation opportunities to all Californians.

The goals for SB 1376 to ensure disability access in TNCs also should be included, as stated in Question 2.6. It is recommended the goals be further defined after deployment approval is granted by the Commission.

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

The Commission should look to measure progress on these goals in the next phase of regulations, once the AV industry has been able to operate commercial passenger service.

3. Data-Related Questions

3.1. In a new regulatory category, what information should the Commission require to be reported by a person or entity authorized to provide prearranged passenger transportation service using AVs operated without a driver in the vehicle to the Commission; how often (e.g. monthly, annually, per trip, etc.) should this information have to be reported to the Commission; and under what conditions, if any, should this information be made available to the public?

Zoox does not recommend creating a new regulatory category for AVs. Instead, Zoox recommends that the Commission continue to apply the existing AV TCP framework established in Decision 18-05-043, with modifications for fare collection and shared rides. Zoox does not believe that there is a need for a new regulatory category for prearranged AV drivered or driverless passenger service since the existing TCP framework has proven operational.

Zoox recommends that the Commission continue to use the framework for data reporting established in the Decision 18-05-043 Section 3.B.8., with a quarterly reporting timeframe. Data provided during the pilot program has been important for the Commission to create a regulation framework, but the type of data gathered has proven sufficient. Increasing these requirements for an

emerging industry could stifle a company's ability to enter the market and result in privacy concerns.

3.2. How should the information be made available to interested government entities? For example, should information be hosted by a third-party entity (e.g. university, research institution, etc.)?

Distributing information to interested entities is a complex challenge because of the administration of this distribution and consumer privacy concerns. Ensuring that a third party is able to distribute this data in a way that is consistent with the Commission's intent may be difficult to achieve.

3.3. Should the Commission gather and incorporate qualitative feedback, including but not limited to, information should as rider experiences and community feedback, into its decision-making process? If so, how?

Companies will be working diligently to gather information on rider experiences and community feedback in order to ensure the success of our businesses. Since our goal is to be profitable, we must ensure that all feedback is considered. If the Commission worked on gathering such complaints, it would be difficult to ensure that these complaints could be utilized as an objective measure for decisionmaking. The Commission should seek to avoid duplicating these efforts, but should deploy its normal resources for inviting and responding to customer inquiries and complaints, perhaps expanding the scope of the Consumer Affairs Branch to include TNC and AV user concerns.

4. Definition-Related Questions

Zoox urges the Commission to ensure that definitions are not adopted that are inconsistent with those in the California Vehicle Code or DMV regulations. Doing so could cause significant confusion.

4.1. How should the Commission define what constitutes an “autonomous vehicle” used in prearranged passenger transportation service for-hire?

The California Vehicle Code (“Vehicle Code”) Section 38750⁷ defines “autonomous technology” as “technology that has the capability to drive a vehicle without the active physical control or monitoring by a human operator.” The Vehicle Code also defines “autonomous vehicle” as “any vehicle equipped with autonomous technology that has been integrated into that vehicle.” These definitions can be helpful to the Commission in understanding the technology, however, on the narrower question of “what constitutes an ‘autonomous vehicle’ used in prearranged passenger transportation service for-hire” the Commission should understand that autonomous technology can be applied in different use cases.

At Zoox, the first product we are developing is a four-passenger fully autonomous vehicle, capable of operating in geo-fenced environments. We are also developing the capabilities to operate an AV service in cities with these vehicles. In some domains, a company like Zoox may own its own fleet and operate its own service (fleet owner + service provider), in other domains, it may own its own fleet and operate on the platform of an existing transportation network company (here, a company like Zoox would be solely a fleet owner), and in others, it could operate on a public transit network. In no instance is Zoox intending its vehicles to be privately owned.

In the instance when an entity is both the autonomous fleet-owner and the autonomous service-provider, the Commission has a pilot program (through D. 18-05-043) that uses the existing TCP regime and applies it in the context of autonomous vehicles. In the instance when a company is merely providing its autonomous vehicles to an existing TNC (solely a fleet owner), the Commission may wish to classify an autonomous vehicle as one (as defined by the CA Vehicle

⁷ “Code Section 38750.” Law Section, leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=VEH&ionNum.

Code) that is utilized to provide pre-arranged transportation services for compensation using an online-enabled application or platform to connect drivers using their personal vehicles with passengers (a TNC as defined by the CPUC).

4.2. How should the Commission define what constitutes a “remote operator” of an AV used in prearranged passenger transportation service for hire?

The DMV regulations, at 13 CCR §227.02(n)⁸, define “remote operator” as ‘a natural person who: possesses the proper class of license for the type of test vehicle being operated; is not seated in the driver’s seat of the vehicle; engages and monitors the autonomous vehicle; is able to communicate with occupants in the vehicle through a communication link. A remote operator may also have the ability to perform the dynamic driving task for the vehicle or cause the vehicle to achieve a minimal risk condition’.

A “remote operator” is present to offer guidance and suggestions to the autonomous technology should the system encounter a situation it does not know how to handle. Remote operators provide oversight for AVs. They do this through the use of remote human monitoring and guidance. The remote operator supplements the handling of complex, real-world traffic scenarios with remote guidance tools, enhancing a vehicle’s ability to handle challenging traffic situations. For Zoox, it is important to note that remote operators do *not* take control of vehicles. They do not have the ability to drive them remotely. The Zoox vehicle will drive in autonomous mode at all times, and the remote operator provides oversight to the vehicle in order to provide guidance in unknown situations. Zoox recommends the Commission not subject remote operators to the same terms and conditions to which they currently subject TNC drivers, because a human driver and a remote operator who does not have the ability to perform the dynamic driving task partake in two distinct roles.

⁸ *California Code of Regulations*, [govt.westlaw.com/calregs/Document/I3557531BBA5641E5B5FF36273F721289?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=\(sc.Default\)](http://govt.westlaw.com/calregs/Document/I3557531BBA5641E5B5FF36273F721289?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)).

Additionally, the approach that the Commission takes in its AV pilot is reasonable – that it is appropriate to apply the TCP permit requirements *only* (emphasis added) to those remote operators that can perform the dynamic driving task.

4.3. Should the Commission modify the definition of “personal vehicle” pursuant to D.16-12-037 to include AVs used to provide prearranged passenger transportation service using online-enabled applications or platforms?

Yes, the Commission should include AVs in the definition of “personal vehicle”.

5. Permit-Related Questions

5.1. Should the Commission designate a new regulatory category, such as Autonomous Vehicle Carrier, to authorize a person or entity to provide prearranged passenger transportation service using AVs operated without a driver in the vehicle?

Zoox recommends against the creation of a new regulatory category for AVs. Instead, Zoox recommends that the existing AV TCP framework established in Decision 18-05-043 continue to be utilized by the Commission, with modifications for fare collection and shared rides. Zoox believes there is no need for a new regulatory category for prearranged AV driverless passenger service.

5.2. In a new regulatory category, what requirements of Charter Party Carriers, or TNC permit-holders under the Charter Party Carriers Act and all applicable Commission decisions, rules, and orders should the Commission also adopt in order to authorize a person or entity to provide prearranged passenger transportation service using AVs operated without a driver in the vehicle?

Zoox does not support the creation of a new regulatory category for AV passenger service.

5.3. Should the Commission prohibit or impose any requirements on prearranged passenger transportation service to, from, or within airports using AVs operated without a driver in the vehicle?

The Commission should not prohibit prearranged passenger transportation service for AVs to, from, or within airports for driverless autonomous vehicles. AV service providers should be able to work with airports to establish service without Commission limitations.

In the Commission's Driverless AV TCP pilot application, companies are requested to provide a plan for how to prevent their service from going to airports. The Commission should amend this aspect of the application to indicate that AV TCPs may serve airport properties subject to approval by specific airport authorities.

Additionally, the Commission's current approach with regards to airport service limits consumer choice. The Commission should take the opposite approach and permit airport service. An AV company should be able to determine whether there is a viable business in transporting passengers to and from airports. If there is no demand, it is unlikely that the business would continue such service. However, if there is demand, the Commission should not prohibit an additional transportation option for consumers.

5.4. Should the Commission modify D.13-09-045 to allow TNCs to own AVs or allow AVS leased or rented by TNCs from partnering entities on their online-enabled applications or platforms?

The Commission should permit TNCs to allow AVs on their platforms. TNCs and AV developers should be allowed the flexibility to determine what business arrangements and/or partnerships are important for their business model.

6. Passenger Safety-Related Questions

6.1. Should the Commission prohibit or impose any requirements on prearranged passenger transportation for unaccompanied minors in AVs operated without a driver in the vehicle?

The Commission should recognize that as autonomous technology matures, AVs may provide a unique and transformational opportunity to assist families with mobility needs, including the transportation of minors. Such transport, though, should come with strong risk management protocols by entities offering such a service. In the future, the Commission should be open to allowing for transport of minors and should work with service providers to effectively manage risk and ensure safety.

6.2. Should the Commission impose any requirements to ensure the safety of all passengers on the chartering by more than one party (i.e. fare-splitting) of AVs operated without a driver in the vehicle?

By enabling fare splitting, companies will be able to incentivize shared (pooled) rides through shared use of the vehicle, which the State of California has established as an important priority. These rides will reduce greenhouse gas emissions and decrease the cost of the fare for the rider, furthering the State's climate and equity goals.

Ensuring passenger safety in driverless and shared AV rides is paramount, and Zoox continues to prioritize developing innovative features to enable safer shared rides. Zoox has been working with local law enforcement to understand the safety challenges associated with shared rides, and we are proactively implementing solutions to address these safety concerns.

6.3. Should the Commission require that certain information, such as how to contact the person or entity authorized to provide prearranged passenger

transportation service using AVs, be made available to passengers inside an AV operated without a driver in the vehicle?

AV service operators will provide contact information and/or a mechanism in the vehicle or online enabled platform for passengers to contact the entity. The Commission should include this requirement as part of their AV framework, but should not provide specifications on how this is to be accomplished, as each company will have a different mechanism that achieves the same safety and security goals.

6.4. Should the Commission require certain unique identifying information be made available on each AV, operated without a driver in prearranged passenger transportation service, to enable passengers to easily identify the exact AV offered for that trip?

New technologies will usher in new means of connecting riders and vehicles. This includes the opportunity for vehicles to have unique identifiers. The Commission should allow AV companies to have these unique identifiers, but should not define specific parameters for these identifiers so that companies are able to utilize innovative approaches for identification and branding.

6.5. Should the Commission require that a two-way communication link, between passengers and the person or entity authorized to provide prearranged passenger transportation service using AVs, be available and maintained at all times in each AV operated without a driver in the vehicle?

This requirement already exists in DMV rules and is referenced in the Commission's AV pilot (D. 18-05-043). The Commission should refrain from defining the exact protocols for this requirement, outside of including an attestation from operators that the link is operational.

7. Driver-Related Questions

- 7.1. What requirements under the Charter-Party Carriers Act and all applicable Commission decisions, rules, and orders which apply to drivers physically present in vehicles should the Commission also adopt for “remote operators” of AVs used in prearranged passenger transportation service?**

The Commission’s Decision 18-05-043 authorizing an AV TCP pilot has in place adequate requirements for remote operators. Zoox holds its remote operators to high standards and training as also required by the DMV. Additionally, remote operators at Zoox are never in a position to perform the dynamic driving task. The Commission has already recognized a distinction between remote operators who can and cannot perform the dynamic driving task. Decision 18-05-043 specified that, “[w]hile the DMV framework includes a range of functions, we find it appropriate to apply the TCP permit requirements only to those remote operators that can perform the dynamic driving task.” Zoox agrees with this determination.

- 7.2. Should the Commission authorize pilot participants to utilize third party contractors as test operators for the drivered and/or driverless pilots?**

The Commission should allow pilot participants to use third party contractors as test operators. Companies are utilizing third party services in order to attract a larger pool of candidates and assist with screening of the drivers. The test operators are held to the same high standards as employees for test operations. The Commission’s current process of offering the opportunity to apply for an exemption from GO-157-E has proven sufficient and should be utilized moving forward.

8. Vehicle-Related Questions

- 8.1. What amount of insurance coverage (i.e. evidence of ability to respond to judgments for personal injury, death, or property damage) should the**

Commission require of a person or entity to provide prearranged passenger transportation service using AVs?

Zoox believes the current Commission coverage requirements established in DMV regulations and in Decision 18-05-043 are adequate.

8.1.1. Should the Commission establish insurance requirements independently from the insurance coverage required for a DMV AV deployment permit?

The Commission should not establish independent requirements and work toward ensuring consistency across state entities.

8.2. Should the Commission modify D.16-04-041 to allow inspections of AVs performed by the manufacturers of AVs to fulfill the inspection requirements for vehicles used to provide prearranged passenger transportation service using online-enabled applications or platforms?

Our response for this question is for operations by an AV manufacturer with an AV TCP permit. As the Commission recognizes in D. 18-05-043, AV developers or, in the future, licensed AV inspection facilities, are the appropriate entities to conduct AV inspections. The Commission should maintain this policy.

8.3. What are the near-and long-term impacts of interruptions of electric service such as Public Safety Power Shutoffs on AV passenger service?

All Zoox AVs providing passenger service will be electric vehicles dependent on drawing power from a functioning electric grid that can provide electricity 24 hours per day, 365 days per year. Any Public Safety Power Shutoff events in locations where Zoox is operating would, under current conditions, stop the ability to operate. The obvious near and long term impacts from not being able

to operate are reduced mobility options for California passengers. Depending on the number of PSPS events, costs could increase as back-up generators would be needed and the possible purchase of alternative fuel vehicles not dependent on electricity supply. AV technology is also dependent on regular telecommunications infrastructure in order to guide the AVs. The effect of long term PSPS events on telecommunications could also significantly impact service.

Respectfully submitted,

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