

**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

R.12-12-011

**INITIAL OPENING COMMENTS OF THE SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
AND SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY ON ALJ RULING ORDERING PARTIES
TO COMMENT ON QUESTIONS REGARDING CPUC REGULATION OF AUTONOMOUS VEHICLES**

QUESTION 1 – NEXT STEPS FOR REGULATORY FRAMEWORK

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In response to the December 19, 2019 Administrative Law Judge Ruling Ordering Parties to Comment on Questions Regarding the Commission’s Regulation of Autonomous Vehicles (the “ALJ Ruling”), the San Francisco Municipal Transportation Agency (“SFMTA”) and the San Francisco County Transportation Authority (“TA”) submit these joint initial comments.

I. INTRODUCTION

The San Francisco Municipal Transportation Agency is responsible for managing a transportation network that serves more than a million people every day. We seek to deliver excellent transportation choices to all of these people and to connect the city through a safe, equitable and sustainable system. The TA was designated under the California Public Utilities Code as the Congestion Management Agency for San Francisco County. In this capacity, the TA is charged with programming and allocating federal, state and local funds for multimillion dollar expenditures that affect regional transportation outcomes; monitoring congestion and preparing a bi-annual Congestion Management Program (CMP); maintaining a database of trips and a travel demand modeling tool; and developing San Francisco’s long range transportation plan. The long range transportation plan considers impacts to congestion, transit operations, and street safety and prioritizes City transportation policies and major investments, informed by both past trends as well as by anticipated changes in transportation technologies such as autonomous vehicles (“AVs”).

We are acutely aware of the many challenges we face in our efforts to maintain and improve the San Francisco transportation system. Chief among these challenges – the challenge from which many others flow – is the simple matter of geometry. San Francisco is located at the end of a peninsula in a small fully developed territory. Our streets cannot grow in response to the city’s population and job growth. In this context, methods to *move more people more efficiently* through constrained space are our top priority. For more than 45 years, the SFMTA and predecessor agencies have been guided by a voter approved Transit First Policy. We work to make transit and other sustainable modes of transportation the most attractive and preferred means of travel to address our critical geometry challenge. Achieving greater transportation efficiency is a key factor in the continued economic vitality of the city and the entire Bay Area. We must be able to deliver more

people from every neighborhood of the city to and from their jobs within a reasonable amount of time.

Improving the efficiency of the transportation system is also essential to meeting City, regional, and state greenhouse gas (GHG) reduction goals. The transportation sector generates approximately 46% of San Francisco's GHG emissions. In 2015, more than 90% of these emissions were generated by cars and trucks. Developing the infrastructure, services and policies that can effectively motivate more travelers to use sustainable modes more often is an essential strategy for reducing GHG. In 2017, the City adopted a goal to shift 80% of trips to sustainable modes by 2030. We work with a variety of public and private local, regional and state partners to implement strategies to achieve this goal.¹ Many of those strategies overlap with our strategies to confront the tragic scale of serious injuries and fatalities on San Francisco streets: every year, approximately 30 people lose their lives and 200 more are seriously injured. This record disproportionately affects older adults, youth, non-English speaking people, immigrants, people with disabilities, people experiencing homelessness, low income people, and people of color. Overcoming these disparities and expanding safe transportation options for all of these populations is key to our mission.

We believe that new technology can help the SFMTA and TA address these challenges and meet these goals. We are hopeful that driving automation can contribute to our efforts to provide excellent transportation choices to all and to connect the city through a safe, equitable and sustainable system. In particular, we are hopeful that advanced driving assistance systems (ADAS) and automated driving systems (ADS), when they are fully developed and optimized to operate on congested urban streets where they encounter a dense population of vulnerable road users, can contribute to improving the overall safety of our transportation network.² In addition, driving

¹ [San Francisco Transportation Sector Climate Action Strategy](#), SFMTA, 2017, pp. 10, 21, 22.

² Nationwide, fatal traffic crashes have significantly different characteristics in urban and rural environments. For example, on rural roads, the majority of fatal collisions occur to people in vehicles, including trucks, on roads with speed limits of 55 miles per hour or higher and at non-intersection locations. Urban roads account for more than 70% of deaths to people walking or biking nationally, as well as over half of motorcyclist deaths, and a higher proportion of crashes occur at intersections. The ADAS features and ADS use cases that are best optimized to address these very different safety problems may be quite different. Citation: <https://www.iihs.org/topics/fatality-statistics/detail/urban-rural-comparison>

automation has the potential to create new transportation choices for elders and people with disabilities who have historically had limited mobility.³ Finally, where delivering high capacity public transit is financially infeasible because of a lack of passenger demand – including, for example, at 2 AM along transit routes that serve tens of thousands of passengers during rush hour peaks – it is possible that driving automation may play an important role in providing mobility for workers who otherwise have few good transportation options. We are eager to work with the driving automation industry to help deliver these and other potential transportation *solutions*.

Despite these opportunities, driving automation also has the potential to *accelerate* the worsening global climate catastrophe. As documented in the CARB Base-year Emissions Inventory Report that was recently issued to support implementation of the SB 1014 Clean Miles Standard, TNC driving, which the industry initially described as a climate *solution*, produces GHG at a rate 50% higher per average passenger mile traveled than the overall average for California passenger vehicle driving.⁴ A TA analysis of traffic congestion found that TNC driving (as compared with job growth, population growth and other factors) accounted for 47% of the increase in vehicle miles traveled in

³ Decision 18-05-043, pp. 44, 56 called for Commission staff to launch a working group on accessibility of AV passenger service to “set out a scope of issues to be addressed at the workshop and on an ongoing basis.” SFMTA accessibility experts participated in the working group, which convened only twice, on November 26 and December 5, 2018. The ALJ Ruling poses many questions related to accessibility; to our knowledge, the working group, which includes organizations not on the service list, has not been notified of the ALJ Ruling. Questions related to accessibility should be discussed in additional meetings of the working group. We also understand that the Commission is not offering intervenor compensation on this Order, as it did for the Order Instituting Rulemaking to Implement Senate Bill 1376 (R.19-02-012). The absence of intervenor compensation makes it challenging – if not impossible – for some disability access organizations to allocate resources to respond to the many important questions posed. We urge the Commission to make intervenor compensation available in this proceeding. The potential availability of intervenor compensation may also be important in ensuring input from other key stakeholders, including non-profit organizations that focus on pedestrian and bicycle safety.

⁴ While, on average, the 2018 TNC vehicle fleet is approximately 1.5 years younger than California fleet average vehicles (p.16) and thus shows greater average vehicle fuel efficiency than the overall population of California passenger vehicles (p.41), because TNC trips demonstrate *lower* passenger occupancy than the California average for passenger vehicles, and because of the volume of ‘deadheading’ miles traveled with no passenger in TNC vehicles (as well as other factors), grams of CO2 per passenger mile traveled are fifty per cent higher in TNC vehicles than in the average California passenger fleet.(p.42). SB 1014 Clean Miles Standard: 2018 Base-year Emissions Inventory Report. [SB 1014 Clean Miles Standard: 2018 Base-year Emissions Inventory Report](#), California Air Resources Board, December, 2019.

San Francisco between 2010 and 2016 (as well as associated CO2 emissions).⁵ While it is too early to tell how automated driving will compare, another CARB analysis notes that AVs are likely to significantly increase driving—particularly if they are personally owned.⁶ In San Francisco, research shows that TNC users are more likely to be under 35, have high income, and live in dense inner neighborhoods where transit is most frequent and reliable.⁷ If automated driving expands the already abundant transportation options for people of means while creating additional congestion that slows transportation for the many, it could substantially increase the inequity -- in both kind and degree -- that already burdens our transportation system.⁸ We cannot allow driving automation to maximize personal convenience for the few at the expense of the efficiency of the overall system and its many other users.

We recognize that transportation challenges faced by public entities in different areas of the state differ. For this reason, federal, state and local governments must work together – each within our distinct areas of expertise – to establish guardrails for driving automation that will maximize the potential for this awe-inspiring innovation to improve our many transportation systems. In other words, we must work together to ensure that driving automation delivers more transportation solutions than transportation problems. We welcome the opportunity to work with the industry, the Commission and other California agencies to achieve this vision for the people of San Francisco, for the larger Bay Area, and for the State of California.

With this vision in mind, the SFMTA and the TA submit these initial opening comments in response to the questions in Section 1, “Next Steps for Regulatory Framework.” As discussed below, we believe the next steps for the Commission should be to adopt goals in line with California

⁵ [TNCs and Congestion: Final Report](#), San Francisco County Transportation Authority, October, 2018, p. 21.

⁶ [2018 Progress Report; California’s Sustainable Communities and Climate Protection Act](#), p.83 and sources cited therein.

⁷ [2013-2017 Travel Decision Survey: Data Analysis & Comparison Report](#), prepared for SFMTA by Fehr & Peers, July, 2017, pp. 51-53.

⁸ While inequities in our transportation system are broader than those arising specifically from for-hire point to point services, research on disparities in TNC service may be instructive in considering methods for preventing and reducing discrimination in the delivery of AV passenger service. See, for example, [Racial and Gender Discrimination in Transportation Network Companies](#), Ge, Y; Knittel, C; MacKanzie, D; Zoepf, S.; National Bureau of Economic Research Working Paper 22776, October, 2016.

transportation, climate and equity goals to guide the drivered and driverless pilot programs and to eliminate the existing prohibition on testing shared rides in driverless service. We do not currently support change to the existing prohibition on collecting fares during pilot service. We will amplify these initial comments in subsequent responses to Questions 2 through 8, which we see as directly related to the questions addressed here.⁹

II. NEXT STEPS FOR REGULATORY FRAMEWORK

The ALJ asks in Question 1.1, “What changes, if any, should the Commission make to the requirements governing Autonomous Vehicle (AV) testing established by Decision (D.) 18-05-043?” and poses within Question 1.1.2 specific questions about fare collection and shared rides.

A pilot program should be an opportunity for the Commission and the general public to gain a deeper understanding of AV passenger service and what regulations may be needed to serve the public interest and to avoid or limit negative externalities to the general public before full-scale implementation. As addressed in our oral comments at the Commission’s October 24, 2019 Workshop on AV Pilot Programs, the SFMTA and TA believe the most important change the Commission should make to the existing requirements governing AV passenger service testing is to adopt goals to guide that testing that reflect and are consistent with broader State of California transportation, climate and equity goals. The existing regulations should then be amended to reflect those goals and to provide for submission of data necessary to assess:

- 1) whether and to what extent AV passenger service serves or is consistent with those goals;

⁹ The ALJ Ruling seeks comment on more than 40 separate sub-questions related to the Commission’s regulation of AVs and set a deadline of January 13, 2020 for opening comments on Question 1 and January 24, 2020 for opening comments on Questions 2-8. In light of the breadth and importance of the questions posed in the ALJ Ruling and the interrelationship between the questions posed for two deadlines, the SFMTA sought modification of the Ruling to extend time for response to all questions to a single date of February 28, 2020 (“Original SFMTA Proposal”). After reply from the Silicon Valley Leadership Group and direction from the ALJ, the SFMTA circulated to all parties a Revised SFMTA Proposal calling for response to all the questions in the ALJ Ruling by February 21, 2020. As reported to the ALJ on January 2, 2020, the majority of parties who responded supported the SFMTA’s Revised Proposal while industry parties proposed deadlines of January 20/January 31 or a consolidated date of February 10, 2020. On January 9, 2020, the ALJ granted an extension of the first deadline from January 13 to January 21, 2020 and extended the second deadline from January 24, 2020 to February 10, 2020.

2) what additional requirements could improve delivery of AV passenger service to make it more consistent with those goals; and

3) whether and to what extent AV passenger service causes any other intended or unintended negative effects that call for state or local regulatory response.

In other words, the most important constraints on delivery of AV passenger services during the pilot period should be driven by the State's transportation, climate and equity goals. We are pleased that the ALJ Ruling poses a number of questions related to such goals in Question 2, and we will comment on the goals themselves in our next set of opening comments. Comments submitted in response to Questions 2 through 8 of the ALJ Ruling should guide Commission next steps for the regulatory framework as much as those submitted in response to Question 1.

1.1.2: Shared Rides

Question 1.1.2 calls specifically for comment on potential changes to D.18-05-043 to authorize currently prohibited shared rides in driverless AVs. With respect to "fare splitting," the Decision states:

In order to ensure public safety during the pilot program, fare-splitting is not allowed. The driverless AV must be chartered and used by a single party (although that party may have more than one person riding in the vehicle). This is to prevent two parties unknown to each other from sharing the chartered vehicle without a driver present until the Commission and law enforcement can address how to ensure safety for all passengers in such a situation.

In previously submitted comments, the SFMTA and TA agreed with the Commission that fare-splitting, or "shared rides," should not be permitted during the pilot phase to ensure public safety.¹⁰ Regulation of shared rides should consider both personal safety and climate implications of driverless

¹⁰ Decision 18-05-043 uses the term fare-splitting to describe a situation when two parties unknown to each other both charter a vehicle. See p.36. The ALJ Ruling Ordering Parties to Comment on Questions Regarding the Commission's Regulations of Autonomous Vehicles, in contrast, uses the term "shared rides." We assume these terms are intended to have the same meaning and use the term "shared rides." Because there is so much opportunity for confusion in terminology describing new mobility service models, the Commission may want to consider the taxonomy offered in [Shared ride services in North America: definitions, impacts, and the future of pooling](#), Susan Shaheen & Adam Cohen (2019), Transport Reviews, 39:4, 427-442, DOI: 10.1080/01441647.2018.1497728

passenger service. We address these considerations in order and now recommend that the Commission eliminate the current prohibition.

Personal Safety

Protecting the personal safety of passengers is critically important in both conventional and automated for-hire vehicles and in vehicles with and without drivers. The release of Uber’s US Safety Report, which documents 3,045 sexual assaults and nine fatal physical assaults among TNC drivers and passengers in 2018,¹¹ demonstrates the need for close regulatory attention to personal safety. We acknowledge that the Commission has posed questions about that report in a separate track of this proceeding.¹² The Commission investigation of risks from existing TNC service may generate new regulations that should be considered in the AV context.

The unique risks to future passengers using shared driverless AV service warrant separate attention. We understand that manufacturers are engaged in proprietary research about methods for ensuring personal safety in shared driverless AVs, and some publicly available research on this subject has begun; however, that research seeks to anticipate attitudes of passengers based on their experience with pooled TNC service in conventional vehicles. It does not reflect data from AV passengers.¹³ We know very little about how the absence of a driver in a motor vehicle will affect the behavior of passengers in an autonomous vehicle shared by strangers.

Existing DMV and Commission regulations have already laid a basic foundation to support passenger safety in pooled driverless service. In a vehicle to be used for driverless testing, current DMV regulations require a manufacturer to provide a communication link that enables two-way communication between a remote operator and passengers and require the manufacturer “to continuously monitor the status of the vehicle and the two-way communication link while the

¹¹ Uber’s US Safety Report, 2017-2018, pp. 57-59.), available at: <https://www.uber.com/us/en/about/reports/us-safety-report/>

¹² Administrative Law Judge’s Ruling Ordering Uber Technologies, Inc. to File and Serve Its US Safety Report for 2017-2018 and to Answer Questions Regarding Alleged Sexual Assault and Sexual Misconduct Incidents, issued by Judge Robert M. Mason III on December 19, 2019.

¹³ See, e.g. [Is it OK to Get in a Car with a Stranger? Risks and Benefits of Ride-pooling in Shared Automated Vehicles](#), Sanguinetti, A., Kurani, K, Ferguson, B.; University of California, Davis, Institute of Transportation Studies, 2019.

autonomous test vehicle is being operated without a driver.”¹⁴ While this regulation was apparently intended to support passengers in the event of vehicle software or hardware failures that may endanger passengers, it may also deter or prevent crime and/or support driverless passengers experiencing threats from other passengers. Commission Decision 18-05-043 builds on the DMV requirement by requiring driverless pilot permittees to record and retain communications from the passenger using the required communications link. These recordings must be made available to the Commission upon request and would presumably be subject to subpoena to support law enforcement investigations.¹⁵

The SFMTA and TA recommend that the Commission consider additional accountability measures to enhance passenger safety in shared driverless rides. For example, the Commission should consider requiring permit applicants to submit a Passenger Safety Plan as part of the permit application that details how an AV passenger service applicant plans to protect the personal safety of passengers. The Passenger Safety Plan should be subject to public comment as part of the test permit application process. The Commission should adopt reporting requirements for passenger safety incidents that give the Commission sufficient information to develop additional personal safety regulations. Aggregate reports excluding personally identifiable information should be made available to the public so as to inform the public about personal safety risks arising from use of AV passenger service.

The question of what vehicle and/or service design features are most effective in minimizing risks to passengers arising from other passengers who share a driverless ride is precisely the kind of question for which publicly available research in a pilot permit phase, combined with public reporting requirements, is an irreplaceable public policy tool. Rather than prohibiting shared rides, we urge the Commission to use the pilot permit stage to:

¹⁴ 13 California Code of Regulations, § 227.38(b)

¹⁵ Decision 18-05-043, page 62, bullet 6. We suggest one minor refinement to the language of this Commission requirement. The text requires permittees to record “all communications from the passenger in the vehicle with the remote operator” but arguably does not require recording the remote operator’s responses. We assume the Commission intends to require recording of the full exchange following a passenger request for support. We suggest this be reworded to require recording of “all communications between the passenger in the vehicle and the remote operator.”

1. solicit Passenger Safety Plans from permit applicants;
2. make the Passenger Safety Plans available for public review and comment;
3. authorize permittees whose Passenger Safety Plans demonstrate conscientious efforts to confront risks that can be reasonably anticipated to test those efforts;
4. impose permit conditions reflecting feasible and prudent modifications that may arise from the public review process;
5. require publicly available reporting of pilot phase results; and
6. develop any required additional regulations after careful evaluation of pilot results.

It is reasonable to anticipate that some strategies for protecting the personal safety of passengers during shared rides may raise significant questions about personal privacy, civil liberties, and impacts on equitable access to service. These issues should be evaluated in the review of Passenger Safety Plans, development of permit conditions, and evaluation of pilot results.

Climate

In the Global Warming Solution Act of 2006 (SB 375), California adopted the goal of reducing greenhouse gas (GHG) emissions from all sectors to 40% below 1990 levels by 2030. The subsequent Sustainable Communities and Climate Protection Act of 2008 required each of California's 18 regional Metropolitan Planning Organizations (MPOs) to include a new element in their long-range regional transportation plans – a Sustainable Communities Strategy (SCS). MPOs are required to identify strategies to reduce greenhouse gas emissions from driving. In its November, 2018 progress report on implementation of these directives, the California Air Resources Board concluded that California is not on track to meet greenhouse gas reductions expected under SB 375.¹⁶ In particular, emissions from statewide passenger vehicle miles traveled per capita are increasing, not decreasing.¹⁷ The portion of commuters driving alone to work rather than carpooling, taking transit, walking or cycling stayed the same or rose in almost every region.¹⁸

¹⁶ [2018 Progress Report: California's Sustainable Communities and Climate Protection Act](#), California Air Resources Board, November, 2018.

¹⁷ *Id.*, p. 4.

¹⁸ *Id.*, pp. 6-7

The GHG impacts of driving automation are unknown. Some scholars note that AVs have the potential to reduce GHG if deployed in shared use scenarios.¹⁹ But as noted in the CARB Progress Report, “academic research using various approaches are converging on the finding that, deployed without the appropriate policy framework ahead of their arrival, AVs are likely to significantly increase driving—particularly if they are personally owned.”²⁰ A Commission Policy and Planning Division report titled *Electrifying the Ride-Sourcing Sector in California* reached the same conclusion.²¹ Among eight key challenge and opportunity areas, CARB calls for pilot testing innovative ideas to speed the adoption of clean, innovative transportation solutions. In particular, CARB calls for promoting pilot projects “that bring together innovators, technical experts, community members, and decision-making partners to find creative solutions for accelerating a change in travel choices away from single-occupancy vehicles while improving accessibility and access to opportunity, particularly for low-income communities.” CARB also notes that new mobility options will only reduce driving if the right supporting policies are put in place and calls for greater alignment between state, regional and local plans.²² We will comment on a broad range of strategies for pursuing these opportunities in our responses to Question 2 through 8.

As to the immediate question at hand, encouraging shared rides in place of single occupancy vehicle trips is a key strategy to advance progress toward California climate goals. After taking additional measures to reduce personal safety risks as recommended above, *Commission regulations should reflect strong incentives for permittees to test shared service in driverless AVs*. We believe the best way for the Commission to lay the foundation for maximizing shared rides in the ultimate deployment of driverless passenger service is to encourage permittees to test such incentives during

¹⁹ Greenblatt et al., “Autonomous taxis could greatly reduce greenhouse-gas emissions of US light-duty vehicles”, *Nature Climate Change*, Volume 5, September 2015.

²⁰ 2018 Progress Report; California’s Sustainable Communities and Climate Protection Act, p.83 and sources cited therein.

²¹ CPUC Planning and Policy Division, *Electrifying the Ride-Sourcing Sector in California, Assessing the Opportunity*, April 2018, p.22.
[https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work/PPD_Work_Products_\(2014_forward\)/Electrifying%20the%20Ride%20Sourcing%20Sector.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Divisions/Policy_and_Planning/PPD_Work/PPD_Work_Products_(2014_forward)/Electrifying%20the%20Ride%20Sourcing%20Sector.pdf)

²² CARB 2018 Progress Report, p. 13.

pilot testing. We thus urge the Commission to reverse the existing prohibition on testing shared rides in pilot AV driverless service.

1.1.2: Compensation

Question 1.1.2 calls specifically for comment on potential changes to the D.18-05-043 requirements to authorize fare collection for drivered AV passenger service only, or for drivered and driverless AV passenger service. With respect to compensation, the Decision states:

The Commission also frequently imposes restrictions when it establishes pilot programs. By prohibiting fares during the pilot period, the public will have an opportunity to avail themselves of AVs on a pilot basis but will not pay fares as they would in a permanent program. This is an element that differentiates the pilot from any final program we accept. The free rides will identify the pilot program as different from ordinary transportation and, therefore, will encourage the public to be more mindful of their experiences and provide critical feedback to the Commission and the permit-holders.²³

California DMV regulations also prohibit companies testing automated driving from charging fares because, as the DMV stated, *“The department believes that members of the public that volunteer to participate in the testing of autonomous technology should not be charged a fee to participate in that testing to ensure that the testing is motivated by safety and not motivated by an interest in making money.”²⁴*

AV passenger service providers asserted at the October 2019 workshop that these prohibitions on charging fares have limited their participation in the Commission’s passenger service pilot programs. In previous comments, the SFMTA and TA agreed with the Commission and the California DMV that fare collection should be prohibited during the pilot phase. We believe testing transportation services under a pilot program should focus on how services meet safety and other public goals, what limitations or requirements may be necessary to improve goal alignment, and identification of negative effects that may require regulatory response. Testing under a pilot program should not be primarily focused on generating revenue to the permittee. Nonetheless, in

²³ Decision 18-05-043, page 20.

²⁴ [Adopted Regulations; Final Statement of Reasons for Testing Autonomous Vehicles by Manufacturers](#), California Office of Administrative Law, February 26, 2018, page 35.

oral remarks given at the CPUC Workshop on October 22, 2019, SFMTA stated that we would consider modifying our position on compensation. At this time, the SFMTA and TA find it premature to change this position. We welcome further discussion with the industry and the Commission about the conditions under which we would support compensation.

We note that while the Commission’s stated desire in Decision D.18-05-043 is to receive public feedback, the Commission has not established a method to systematically and directly collect feedback either from passengers of permitted AV passenger service or other road users who may be affected by AV passenger service delivered under one or both pilot programs. Further, the Commission has not required permittees to collect or submit passenger or other feedback. In publicly available reports, existing permittees have not voluntarily submitted any pilot customer feedback. To accomplish this, the SFMTA and TA recommend that the Commission establish a mechanism to receive feedback on the pilot program directly from the public or by retaining third party researchers to solicit and analyze such feedback on the Commission’s behalf. The results of such research should be made available to the public so that all stakeholders have an opportunity to consider and make recommendations about resulting policy implications.

1.1.2: Submission of Trip Data

Question 1.1.2 also requests comment on “requiring pilot participants to submit detailed data regarding their operations, such as the specific locations at which trips begin and end.” As discussed above, Commission regulations governing AV passenger service under pilot permits should be driven first by goals identifying key public interests. Data collection should be driven by an effort to answer:

- 1) whether and to what extent AV passenger service serves or is consistent with those goals;
- 2) what additional requirements could improve delivery of AV passenger service to make it consistent with those goals; and
- 3) whether and to what extent AV passenger service causes any other intended or unintended negative effects that call for state or local regulatory response.

We appreciate that Decision 18-05-043 calls for certain service-related data to be made public for posting on the Commission website, and we fully support the Decision’s commitment to transparency about AV passenger service delivery. However, as a general matter, because

transportation services are fundamentally *about moving people from one location to another* and because the efficiency and effectiveness of transportation services and networks are profoundly influenced by *the time at which volumes of people seek to move from one location to another*, transportation data that omits trip location and omits information about the time of travel is profoundly limited in its ability to inform analysis of most transportation goals. We appreciate that traveler privacy is also of critical importance, and in connection with our responses to Questions 2 through 8, we will make recommendations about how Commission AV passenger service data reporting requirements can fulfill the analytical purposes required by potential transportation goals as well as the need to appropriately protect traveler privacy.

1.2: Information to Support Regulatory Changes

Question 1.2 calls for comment on what information the Commission should use “to inform changes in the requirements governing AV testing established by D. 18-05-043.” In general, the Commission should use all sources of information available to inform changes to the requirements governing AV testing including quarterly pilot data, regulatory frameworks and AV activities outside of California and academic studies. As to activities outside California, we recommend looking to cities in the United States and abroad that have established pilot programs to test AVs that have limited testing to certain geographic areas or are conducting testing in partnership with a local jurisdiction. Specific examples in the United States include Boston, which is taking a graduated approach to AV testing and constrains the time, place and manner of AV testing. Once a company reaches certain milestones, the city allows companies to increase their scope of testing to different areas of the city, times of day and weather. The Land Transport Authority (LTA) in Singapore is also expanding AV pilots gradually in small-scale, incremental manner with small areas. The LTA will allow the expansion of trials under the condition that AVs pass safety tests administered jointly by the LTA and traffic police.

In addition to looking at these sources, the Commission should use the responses to the questions in Questions 2 through 8 to guide regulatory changes. While there is great desire by companies to modify the program to allow for the collection of compensation, since automated driving technology is very much in the development phase, the public interest is best served if the

Commission takes the time necessary to build a stronger foundation for the pilot program so that, over time, Commission regulations have the effect of maximizing public benefits and minimizing the negative effects of AV passenger service.

Dated: January 21, 2020

Respectfully submitted,

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