



**San Francisco
County Transportation
Authority**

1455 Market Street, 22ND Floor, San Francisco, California 94103

415-522-4800

info@sfcta.org

www.sfcta.org

June 9, 2025

Steve Gordon
Director California Department of Motor Vehicles
Office of Public Affairs
2415 First Avenue
Sacramento, CA 95818

SUBJECT: San Francisco County Transportation Authority Feedback on Proposed Regulations for the Testing and Deployment of Autonomous Vehicles (AVs) on California's Public Roads

Dear Director Gordon:

The San Francisco County Transportation Authority (SFCTA) respectfully submits the following comments on the Department of Motor Vehicles' (DMV) Proposed Regulations for the Testing and Deployment of Autonomous Vehicles (AVs) on California's Public Roads, issued on April 25, 2025. We commend the DMV for its continued leadership in advancing the AV industry while prioritizing public safety and regulatory accountability. However, we believe the current draft regulations require meaningful revisions to fully achieve these goals. The comments that follow highlight key areas of concern and opportunity, grounded in our technical expertise and informed by our direct experience with AV operations in San Francisco. We welcome the opportunity to continue working with DMV staff and other stakeholders on these important issues, and encourage the Department to facilitate further collaborative dialogue to refine the regulatory framework before its implementation.

1. Performance Standards and Monitoring

The draft regulations empower the DMV to refuse a permit application or suspend, revoke, or restrict a permit "upon the department's determination that the operation of the manufacturer's autonomous vehicles on public roads in California poses an unreasonable risk of accident, death, injury, or exacerbating injury." However, the regulations do not identify any quantitative performance metrics to calculate the risk of accident, death, injury, or exacerbating injury, nor performance standards for what constitutes an unreasonable risk. SFCTA urges the DMV to bolster its self-certification framework with a performance-based model that proactively monitors and evaluates real-world AV operations through clearly defined risk thresholds and enforceable safety standards.

The National Highway Transportation Safety Administration (NHTSA) monitors safety performance of motor vehicle traffic on US roadways using incident rates, or the number of incidents divided by vehicle miles traveled (VMT), for collisions, injuries, and fatalities. Waymo has similarly adopted the use of crash rates for its own safety assessment. The DMV should follow this industry consensus in its regulation of AV technology. The regulations should specify specific performance metrics, and specify comprehensive data reporting requirements that allow their calculation. These metrics should include, at a minimum:

- collision rates
- injury rates
- fatality rates



- vehicle immobilization rates
- disengagement rates

The proposed regulations require manufacturers to submit a safety assessment consisting of a small set of data. However, as currently specified, these requirements are inadequate and would not make it possible to derive basic rate-based safety performance metrics like those described above. Examples of the inadequate requirements and necessary refinements follow:

First, the regulations only require "the number of collisions occurring within the 12 months preceding the Deployment Permit Application on public roads that resulted in damage to property of any person in excess of one thousand dollars (\$1,000), or bodily injury or death" (emphasis added), but do not require any data on extent or severity of property damage, bodily injury, or death, either in aggregate or disaggregate for each collision. The regulations only require collision-level detail for "a full description of the cause of each collision and measures taken to remediate the cause of each collision where applicable." A total number of collisions alone does not constitute an assessment of safety.

Second, the data does not allow the calculation of a collision rate, let alone an injury or fatality rate, because the data reporting periods for collisions and VMT are different. The number of collisions is reported for the preceding 12 months, while VMT is reported as a single total, for all operations under the preceding permit, unbounded by any time frame. The same misalignment of reporting periods exists in the requirements for braking events, disengagements, and vehicle immobilizations. The solution is to consolidate data reporting requirements to support, at a minimum, the standardized performance metrics described above, and require that they are reported monthly so they can be evaluated at the time of a permit application, amendment, or modification.

Finally, the thresholds of 50,000 miles to advance from Drivered Testing to Driverless Testing, and from Driverless Testing to Deployment, and 25,000 miles for a permit amendment or modification, do not offer even the barest assurance of public safety, and must be increased. The San Francisco - Oakland Bay Bridge carries more than 50,000 vehicle miles on a single day during a 3-hour morning peak period. A manufacturer with a fleet of 100 vehicles each driving 25 miles a day would reach 50,000 miles in 20 days, meaning they could advance from Drivered Testing to full Deployment without a driver in less than 2 months. Cruise's pedestrian collision and dragging incident illustrated clearly that significant safety defects may exist within an autonomous driving system even after testing millions of miles. The regulations should require, at a bare minimum, at least 1 million miles driven under a permit before advancing.

2. Data reporting & transparency

Comprehensive data reporting is necessary in order to support objective assessments of AV performance claims and ongoing performance monitoring. Transparent data reporting is necessary to ensure that the public has confidence in AV safety and in the oversight of the AV industry. The SFCTA strongly supports the department's proposal to expand data reporting to include events that have demonstrably affected the safety of the public in San Francisco, including vehicle immobilizations and braking events. However, these expanded data reporting requirements do not go far enough.



As previously noted, in order to assess safety, it is necessary to evaluate the rates of events, not just the number. When calculating rate of events, the number of events (eg. collisions) must be compared to the total amount of exposure to such events. The primary measure of exposure in assessing automobile safety (regardless of whether the vehicle is driven by a human or an automated system) is vehicle miles traveled (VMT).

While the proposed regulations appear to require monthly reports of the VMT each autonomous vehicle *tested* in autonomous mode, the proposed regulations do not appear to require any reporting of VMT under deployment permits. This is a major existing regulatory gap that should be closed to facilitate effective oversight of commercial AV services. Given the low thresholds to get a deployment permit, it is not until after deployment that events will occur with sufficient frequency to assess safety. VMT reporting must be a condition of award of deployment permits. Furthermore, this VMT must be reported in a disaggregate format such as by geography, roadway facility type, and time of day, in order to calculate meaningful collision, injury, fatality, vehicle immobilization and disengagement rates, which vary by driving context. Assembly Bill 3061 (Haney), while ultimately vetoed due to concerns about the implementation timeline, provides a model the DMV could build on in its regulations.

Data reporting also must be consistent across both testing and deployment permits. It will not be possible to assess safety when, for example, testing permits require reporting of disengagements and braking events, but deployment permits do not. Similarly, it will not be possible to assess safety when deployment permits require reporting of Safety Defects and Dynamic Driving Task Performance Relevant System Failures, while testing permits do not. In addition, the specific reporting requirements should be revised with further input from stakeholders. For example, disengagement reporting should also include stopping on light rail tracks, not only stopping on heavy rail tracks.

All data reported to the department should be made available to the public, regardless of whether this data is explicitly required by these proposed regulations to be reported, or if the data is provided in response to a request for information by the department. Furthermore, all references to redaction or non-reporting of data to protect Confidential Business Information (CBI) should only be permitted subject to a transparent process through which such claims of confidentiality can be objectively evaluated relative to the public's interests, and through which the public and interested parties can protest these claims. Claims of confidentiality have been abused in California to prevent the public from understanding the impacts of ridehail and other technologies and services, despite years of regulatory procedures and orders to unshield data reports.

3. Phased Permitting

The proposed draft regulations make a much needed improvement by requiring testing with a driver to precede testing or deployment without a driver. But the pathways a manufacturer might take through the permits, depending on their particular business model, vehicle types, and system constraints, are not clear.

The proposed draft regulations identify several variations of permitted activities, intended uses, and vehicle types, and operational design domain constraints. A manufacturer may be conducting testing or deployment, may be providing commercial services like transporting goods or passengers, may be using light duty or heavy duty vehicles, and these vehicles may require a driver physically present, or may be operable without a driver physically present. The proposed regulatory



text attempts to capture this complexity with only three permit types: Drivered Testing Permit, Driverless Testing Permit, and Deployment.

As written, this leads to confusion about what activities are permitted or restricted according to the manufacturer's specific implementation. Two separate and distinct testing permits, Drivered Testing Permit and Driverless Testing Permit flow into a single Deployment Permit. The draft regulation language suggests that a Deployment Permit may be conditioned to require a driver, or to permit the absence of a driver, but it is not clear why a Deployment Permit would be granted to a vehicle that requires the presence of a human driver. Nor is it clear what the implications of the drivered/driverless subdivisions are for a manufacturer intending to move from testing to deployment. Would a manufacturer be able to move from a Drivered Testing Permit to a Deployment Permit that allows operations without a driver physically located in the driver's seat? The regulations as written are framed around vehicle design (whether a vehicle requires a physically present driver, whether a vehicle is capable of operating without a physically present driver), but a single vehicle that at first requires a driver may later be equipped with new software making it capable of operating without a driver.

Adding to the confusion, the terms that differentiate the intended uses and vehicle types are not clearly defined. For example, the draft regulation defines "autonomous heavy-duty commercial motor vehicles" as "a motor vehicle required to be registered under the Vehicle Code, has a gross vehicle weight rating of 10,001 pounds or more, is equipped with an automated driving system, and primarily used or maintained to transport property". This suggests that "commercial" means "primarily used or maintained to transport property". However, the term "commercial motor vehicle" (absent the term "heavy duty") is also used to prohibit the permitting for testing or deployment of "commercial motor vehicles used to transport passengers...", while the regulations also refer to "autonomous vehicles designed for passenger service". It is not clear how the terms "heavy duty", "commercial", and "passenger services" interact or whether they are being used consistently. The California Vehicle Code provides a definition for "commercial vehicles", which is broadly inclusive of a wide range of commercial activity including for-hire passenger transportation. The DMV should adopt the CVC definition consistently and apply it consistently in its regulations, and provide clear definitions for other relevant terms.

The permitting phases and progression between them offer little assurance of public safety. With this sole exception of "autonomous heavy-duty commercial motor vehicles", a manufacturer's self-identified ODD alone bounds where, when, in what weather conditions, on what facilities types, and what speeds their autonomous vehicles may operate. To move from testing to deployment a manufacturer must only "have tested a minimum of 50,000 autonomous miles on public roads throughout the intended operational design domain", while not being required to meet any performance standard. A plain reading of this language would allow a manufacturer to claim the whole of California as their ODD, drive the length of California north to south and back 30 times, submit required paperwork, and be eligible for a deployment permit.

The regulations should set meaningful bounds within original testing and deployment permits on the geographic size, geographic types (urban, suburban, rural), roadway types, times of day, weather conditions, and size of fleets that a manufacturer may operate in, which can be incrementally expanded through later phases only after sufficient testing and demonstration of performance through standardized performance metrics that are produced through standardized and publicly available reports.



The draft regulations should explicitly and clearly identify the permitting structure, including permit subtypes, and their associated permissions and restrictions, the testing and deployment permits. For example:

- permitting phase
 - original drivered testing
 - modified drivered testing
 - original driverless testing
 - modified driverless testing
 - original deployment
 - amended deployment
- permit intended-use subtypes
 - passenger transportation for hire
 - for sale to the public for individual use
 - transportation of non-hazardous goods
 - transportation of hazardous goods
- permit vehicle type/class subtypes
 - heavy-duty goods movement
 - heavy-duty passenger transportation
 - light-duty

4. Safety Case

The SFCTA supports the requirement to submit a safety case as part of any initial permit application—whether for Drivered Testing, Driverless Testing, or a Deployment Permit—as well as for any subsequent renewal or modification applications. SFCTA also welcomes the requirement to submit an updated safety case if the manufacturer has made any material modifications to the original. However, the regulations lack key elements needed to ensure that the safety case submission effectively provides assurances to the public that safety is being rigorously protected. Such elements include:

- A clear, precise definition of what constitutes an “unreasonable risk of accident, death, injury, or exacerbated injury” in the context of AV operations in California is essential. This definition should undergo public review and gain broad consensus before final regulations are adopted. This definition could be framed in relation to the observed risk—or probability—of accident, death, injury, or exacerbated injury posed by the manufacturer’s autonomous vehicles vis-a-vis an unimpaired, attentive human driver licensed to operate the specific vehicle type in question, under comparable conditions and within the same operational design domain (ODD).
- Clear performance standards that manufacturers must meet are crucial. In addition to defining what constitutes “unreasonable risk”, the DMV must establish measurable performance standards that uphold that definition in relation to the specific data elements it requires reporting on—including crashes, hard braking events, vehicle immobilizations (particularly those impacting first responder operations), disengagements, incidents of noncompliance, and Dynamic Driving Task Performance Relevant System Failures. In turn, manufacturers’ Safety Cases should demonstrate how such standards will be met in real-world operations.
- The process by which the DMV will review submitted safety cases should be specified more clearly. Safety cases are extensive, highly technical documents—often hundreds of pages



long—and include substantial supporting data. They require significant engineering effort to develop and maintain. Accordingly, a thorough and credible review will also demand considerable time, expertise, and resources. It is unclear whether the DMV currently has the capacity to conduct such reviews, particularly given the limited funding implied by existing application fees (see comment 6 below). To ensure a rigorous and consistent evaluation process, the DMV should consider leveraging established industry standards—such as UL 4600—to assess whether a safety case is complete and provides sufficient assurance of safety. The DMV should also consider appointing an independent third party and/or peer review by qualified researchers and professionals, selected by the Department and at the expense of the manufacturer, to review safety cases against those standards, rather than taking on this highly demanding task internally.

- There must be a more clearly defined description of what constitutes a “material modification” to a safety case that would trigger the requirement for resubmission and review by the DMV. Safety cases are inherently living documents—they evolve over time as manufacturers identify, implement, and integrate lessons learned from operational experience and system improvements. While manufacturers may reasonably judge that certain updates do not rise to the level of a “material modification,” and thus choose not to resubmit their safety case, the authority to determine whether resubmission is required should ultimately rest with the DMV—not the manufacturer. It is also advisable for the DMV to require periodic resubmission of safety cases, even in the absence of declared material changes. This ensures that the cumulative impact of multiple minor modifications—each of which may seem insignificant in isolation—does not result in an unreviewed divergence from the originally approved safety case. An annual resubmission requirement, at minimum, could serve as a reasonable mechanism to capture and assess such incremental changes over time.

5. Permit Restrictions

The SFCTA supports the new regulations clarifying the DMV’s authority to impose operational restrictions on manufacturers—such as reductions in daily fleet size, narrowing of the operational design domain, limiting hours of operation, or requiring in-vehicle support personnel under certain conditions. To ensure this clarification delivers on its intended goals, SFCTA offers the following key recommendations.

The regulations should clarify when the DMV is authorized to issue such enforcement measures. In both the testing and deployment articles, the regulations state: “The department may assess incremental enforcement measures, including operational restrictions, against a manufacturer where the department determines that the circumstances of the incident do not require a full suspension or revocation of a Testing Permit to address or mitigate the precipitating issue” (emphasis added). The use of the singular term “incident” could be interpreted narrowly to mean that such enforcement actions are only authorized in response to a single, discrete event. However, a broader interpretation—where “incident” encompasses a pattern or series of events that may individually seem minor but cumulatively raise significant safety performance concerns—is more consistent with the proactive oversight needed in AV regulation. The SFCTA recommends that the DMV revise the regulatory language to explicitly support this broader interpretation, ensuring the Department has clear authority to act on cumulative performance concerns—not only singular incidents—when public safety is at stake. Consider, for example, the following edit to the regulatory language: “The department may assess incremental enforcement measures, including operational restrictions, against a manufacturer where the department determines that the circumstances of the



incident or pattern of incidents do not require a full suspension or revocation of a Testing Permit to address or mitigate the precipitating issue.”

The DMV should provide greater clarity on what constitutes a triggering event for enforcement actions and how the DMV will determine the appropriate level of operational restrictions. One important foundation for this is the adoption of a clear, agreed-upon definition of unreasonable risk, formally enshrined in regulation (as discussed in #4 above). If the circumstances of an incident or incidents—regardless of actual outcomes—demonstrate that a manufacturer’s actions (or inaction) exposed the public to an unreasonable risk, the DMV should be required to intervene. The severity of any operational restrictions should be proportionate to the level of risk posed by the incident(s). Additionally, this underscores the importance of publicly established performance standards for metrics such as collision rates, fatality rates, injury rates, vehicle immobilizations, disengagements, and notices of noncompliance. If a manufacturer exceeds any of these standards, as detected through required monthly reports, the DMV should be obligated to initiate enforcement actions accordingly.

In a similar vein, the DMV should clearly specify in the regulations how notices of noncompliance will be used in incremental enforcement measures and to assess fines and penalties. This framework could, for example, mirror the point-based system that applies to human drivers. Accumulating points beyond specified thresholds would trigger consequences such as permit restrictions, suspension, or revocation.

6. Regulatory Fees

The draft regulations, and the department’s Initial Statement of Reasons document, explicitly and implicitly identify a large number and broad range of departmental responsibilities and tasks associated with autonomous vehicle regulation and enforcement, primarily focused around review of permit applications and Safety Cases, and issuing of permitting decisions. The detailed responsibilities and tasks almost certainly require the attention of multiple persons on a full time basis. The tasks identified by the department and in the regulations include:

- Determining whether testing on public roads poses a hazard
- Evaluating ODDs at time application, and performing robust reviews of applications
- Monitoring operations (though monitoring appears to only involve requesting reports)
- Performing in-depth reviews of incidents
- Determining whether a vehicle meets different SAE automation levels
- Tracking potential safety risks
- Tracking progress on ADS development
- Reviewing monthly reports for all reporting entities
- Determining how fleets should be sized
- Providing notifications to parties
- Reviewing applications and forms
- Tracking modifications to permits
- Requesting supplemental information
- Responding to information requests

The permitting fees, by contrast, are too low and would not cover the barest obligation to review a Safety Case. The draft regulations set an annual fee for a testing permit at \$3,600, and a one-time



deployment fee at \$3,275. The fee to amend or modify a permit is \$70. At a loaded rate of \$250 per hour, the annual testing permit fee would cover less than 2 days of staff time. The annual testing application fees for 30 manufacturers would generate approximately \$100,000 annually, far less than the annual costs of one single full time employee.

The operations allowed under a permit are bound only by the limitations a manufacturer imposes on itself when identifying its ODD, and could include anything up to the entire state of California at all times and in all conditions, from dense urban areas packed with pedestrians to suburbs with high-speed arterials to snowed-in mountains. The regulations should ground regulatory fees in an estimate of costs associated with DMV staff engaging in adequate review and ongoing performance monitoring to ensure that there is no unreasonable risk to public safety. The department should increase and scale the proposed fee schedule to a level that is aligned with the significant work required to ensure public safety, including requiring deployment fees to be renewed annually. Law enforcement, first responders, and public officials already incur costs associated with managing, mitigating, or adapting to AV operations on public streets. As described in the "standardization of protocols" section, public officials and first responders would incur additional burden resulting from the proposed regulation. Operational and training costs of law enforcement and first responders should also be reimbursable with costs borne by permittees.

6. Remote Operations

The SFCTA supported the DMV's August 2024 draft proposal requiring that remote assistance personnel and remote drivers be licensed and physically present in California. It is therefore concerning that these requirements are no longer included in the current version of the draft regulations.

Requiring a California driver's license and in-state physical presence for remote operators would strongly support the policy goals of the DMV's AV program. For instance, holding a California license ensures that remote personnel are knowledgeable about the state's unique traffic laws and driving norms. This is especially important given that approximately one-third of countries around the world require driving on the left side of the road—opposite to California. Moreover, California enforces traffic laws that are more restrictive than those in many other U.S. states, including stricter prohibitions on texting while driving, lane discipline (e.g., left-lane usage), and U-turns. Remote assistance personnel operating from other jurisdictions may not be sufficiently familiar with these requirements, posing risks to safety and compliance.

Requiring physical presence in California also provides economic and legal advantages. It supports local job creation and avoids potential jurisdictional complications during crash investigations where the actions of remote personnel may be implicated. Finally, ensuring operators are physically located in California helps guarantee that remote driving relies on communication infrastructure that meets California's reliability standards, which may not be matched in other states or countries.

The draft regulations appropriately require manufacturers to describe, as part of their Safety Case submittal, the communications infrastructure in place to support real-time data exchange between the AV and remote personnel. This includes reporting average and maximum latency in those data exchanges, as well as any testing conducted to ensure robust remote operations under such conditions. However, the DMV must go further in two key respects. First, the regulations should establish a clear and enforceable standard for acceptable communication latency. This would provide clarity to manufacturers and assurance to the public about the minimum communications



quality required to operate in California. Without such a standard, it is unclear what constitutes sufficient performance in safety-critical scenarios. Second, while the Safety Case outlines a manufacturer's intended capabilities and practices, it does not reflect ongoing operational realities. The DMV should therefore require monthly reporting on remote operations, including data on average and maximum communication latency, average and peak ratios of remote personnel to active vehicles, number of interventions, and other relevant performance metrics. This would enable the DMV to monitor whether the communications systems used in remote support are consistently meeting the expectations and safety assurances outlined in the Safety Case.

Lastly, the draft regulations impose drive-time limits only on remote drivers and remote assistants supporting autonomous heavy-duty commercial motor vehicle operations. However, such restrictions should apply to all types of AV operations. As a point of reference, the draft regulations already draw on the requirements established in Title 49 of the Code of Federal Regulations, Part 395, for limiting hours of service for commercial drivers. Notably, Part 395 also includes drive-time limits for passenger-carrying vehicles (see below). Extending similar requirements to remote operators across all AV vehicle types would enhance safety, reduce fatigue-related risks, and align the regulations with established federal standards.

§ 395.5 Maximum driving time for passenger-carrying vehicles.

Subject to the exceptions and exemptions in § 395.1:

(a) No motor carrier shall permit or require any driver used by it to drive a passenger-carrying commercial motor vehicle, nor shall any such driver drive a passenger-carrying commercial motor vehicle:

(1) More than 10 hours following 8 consecutive hours off duty; or

(2) For any period after having been on duty 15 hours following 8 consecutive hours off duty.

(b) No motor carrier shall permit or require a driver of a passenger-carrying commercial motor vehicle to drive, nor shall any driver drive a passenger-carrying commercial motor vehicle, regardless of the number of motor carriers using the driver's services, for any period after—

(1) Having been on duty 60 hours in any 7 consecutive days if the employing motor carrier does not operate commercial motor vehicles every day of the week; or

(2) Having been on duty 70 hours in any period of 8 consecutive days if the employing motor carrier operates commercial motor vehicles every day of the week.

- Title 49, Code of Federal Regulations, Part 395

7. Standardization of Protocols

The proposed draft regulations require First Responder Interaction Plans and training provided to first responders. These are important and necessary components, but the lack of standardization creates a burden on first responders that is impractical to implement and creates hazards to their safety and the safety of the public. For example, each vehicle type that a first responder might encounter could have different "instructions for how to safely approach the autonomous vehicle... safely disconnecting or otherwise disabling the electrical power... unique hazards... instructions for coordinating with remote operations support personnel and safety considerations for first responders needing to tow the autonomous vehicle from the roadway." (Article 3.7, page 36).



Additionally, this information is conveyed to first responders via "regular training". There are currently more than 30 permitted manufacturers testing and operating under DMV permits, and no bound to how many there might be in the future. The DMV should adopt clear standards for these safety-critical system components and procedures. Under the proposed regulations as written, a first responder might need to attend as many as 30 or more training sessions depending on the manufacturers operating within a jurisdiction to be able to safely interact with the autonomous vehicles they might encounter on the road. They would need to attend these training sessions not just once, but on an ongoing basis. Not only is this a burden on first responders' valuable time, it is also a risk to their safety. It is not reasonable to expect a first responder to be able to learn and remember 30 or more different protocols for safely approaching a vehicle, or the protocols for safely disabling their electrical systems, or the numerous other unique hazards that might exist.

The need for standardization extends to other domains, too. The regulations allow manufacturers to define their own protocols for receiving geofencing instructions, placing the burden on public officials to conform to numerous protocols of different manufacturers.

The autonomous vehicle industry stands to benefit from operating their businesses on public roads, while first responders and public officials must adapt to these new entrants and integrate them within their existing duties. Where coordination is needed between public officials, first responders, or other parties, the regulations should require industry to adopt standardized protocols, rather than requiring public officials and first responders to adapt to each and every new AV company.

8. Private Ownership / Leasing / Operating of AVs

While much of the focus of attention on the regulation of the deployment of autonomous vehicles in California has been in the context of providing passenger services to the public, a potentially significantly larger market for autonomous vehicles and autonomous driving systems is through private ownership or leasing of vehicles. The proposed regulations do not sufficiently contemplate how the requirements identified by the department would apply in practice in the private vehicle ownership or leasing context, especially with regard to manufacturers' on-going post-deployment permit award obligations. For example:

The proposed regulations state that manufacturers authorized to operate autonomous vehicles, or providing an automated driving system service, when made aware of collisions and immobilizations, shall report these events to the department. Will private owners or lessees have the option to not report these events? If this reporting is optional, how will the department's ongoing monitoring and evaluation of autonomous vehicles performance be possible?

The proposed regulations require that an end user certify that they understand "any and all" of the capabilities and restrictions of the automated driving system features. How could an end user make such a certification when recent experience suggests that manufacturers themselves may not know all of the capabilities and restrictions of the automated driving system, especially given the very limited testing that is required to qualify for a deployment permit. A deployment permit could, in theory, be acquired with fewer than 100,000 miles of automated driving and less than \$8,000 in fees.

How will changes and updates to the automated driving system or operational design domain be communicated to vehicle owners? The regulations state that the manufacturer shall not allow the



automated driving system to operate on public roads until all updates are enabled, but also state that the process for updating may involve requiring an end-user to physically bring a vehicle to a service center for updates. What occurs if registered owners or lessees are unable to implement these updates?

Will owners/lessees be able to operate the vehicle outside of its operational design domain? What will be the consequence of such operation?

Will remote drivers or remote assistants be available to provide assistance to private owners or lessees if the automated driving system is disengaged and there are no onboard human driving controls?

What will be the consequence for vehicle owners or lessees if a manufacturer's deployment permit is revoked, suspended or restricted?

Deployment permits require that autonomous vehicles be equipped with an autonomous technology data recorder that captures and stores autonomous technology sensor data, and that the data must be captured and stored and preserved for three years after the date of any collision. How will this requirement be fulfilled in a private vehicle ownership/leasing context?

When a peace officer observes an alleged violation of the department's proposed regulations, or an alleged violation of local traffic ordinance by a privately owned or leased vehicle, how will the officer determine whether the infraction occurred under the autonomous vehicle driving mode or when under the control of the owner or lessee, and what are the implications of this determination?

The department should fully and explicitly contemplate how to regulate privately owned or leased autonomous vehicles equipped with autonomous driving systems, if necessary through a separate rulemaking procedure. The sale or lease of advanced autonomous vehicles to individual members of the public should be prohibited until regulations for those use cases is fully developed.

Conclusion

The SFCTA appreciates the opportunity to provide feedback on the Draft Regulations and looks forward to continued engagement with the Department as future drafts are developed or other opportunities for comment and collaboration arise. Please do not hesitate to contact us with any questions regarding these comments or if we can be of assistance in any other capacity.

Sincerely,

Jean Paul Velez
Principal Transportation Planner, Technology Policy
415-593-1668
jean.paul.velez@sfcta.org