

SYNOPSIS OF ESSAY[‡]

AUTONOMOUS VEHICLE REGULATION DOES TESLA'S FULL SELF-DRIVING BETA RELEASE COMPLY WITH LAW?

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This essay argues that Tesla's Full Self-Driving (FSD) Beta Release qualifies for classification as a Level 3 or 4 capable technology in the Society of Automotive Engineer's (SAE) classification scheme for levels of vehicle autonomy. Classification as an SAE Level 3 or 4 technology conflicts with Tesla's own self-characterization of this technology as merely Level 2. Under California laws and regulations governing testing and deployment of autonomous vehicles, classification as an SAE Level 3, 4 or 5 technology would subject Tesla vehicles to stricter regulatory oversight. Tesla's self-classification avoids this supervision. Significantly, if classified as Level 3 or 4, Tesla's practice of using a select group of its customers as "beta testers" on public highways for its FSD feature would not comply with law. Given the reality of the FSD Beta Release's capabilities, state departments of transportation around the United States ought to classify it as an SAE Level 3 or 4 technology, with applicable regulatory and operational guidance applied accordingly. Tesla and the California DMV should work together to qualify the Tesla beta testers in accordance with California law and regulations.

KEY WORDS: automotive safety, autonomous vehicles, California DMV, California regulation, Level 2, Level 3, Level 4, J3016, SAE, SAE J3016, self-driving cars, Tesla

[‡] This essay is an expanded version of academic commentary by the authors published in JURIST on Sept. 27, 2021 as: *Do Tesla FSD Beta Releases Violate Public Road Testing Regulations?*, <https://www.jurist.org/2021/09/william-widen-philip-koopman-autonomous-vehicles>.

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AUTONOMOUS VEHICLE REGULATION

DOES TESLA'S FULL SELF-DRIVING BETA RELEASE COMPLY WITH LAW?

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I. INTRODUCTION

Chair Jennifer Homendy of the U.S. National Transportation Safety Board (NTSB) recently expressed safety concerns about Tesla's "Full Self-Driving" (FSD) feature.¹ This comes at a time in which the NTSB has announced an investigation into another Tesla crash² and the U.S. National Highway Traffic Safety Administration (NHTSA) is investigating Tesla collisions with emergency vehicles that have resulted in 17 injuries and one death.³

Tesla's FSD so-called "beta test" program raises significant safety concerns due to the use of untrained Tesla customers as test drivers and the wide distribution of videos showing dangerous vehicle behavior during those testing operations.⁴ This beta testing will expand with the new "beta request button" announced by Elon Musk on Twitter.⁵

We address the question of whether this beta testing complies with law in states such as California which regulate testing and de-

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¹ Rebecca Elliott, *Tesla's Upgrade Plan Rankles Safety Agency*, WALL ST. J., Sept. 20, 2021, at A1 (noting Homendy's concern about how Tesla software is tested on public roadways), available online as "Elon Musk's Push to Expand Tesla's Driver Assistance to Cities Rankles a Top Safety Authority", <https://www.wsj.com/articles/elon-musks-push-to-expand-teslas-driver-assistance-to-cities-rankles-a-top-safety-authority-11632043803>

² NTSB, (@NTSB_Newsroom), TWITTER (Sept. 17, 2021, 3:16 PM), https://twitter.com/NTSB_Newsroom/status/1438960100027338753.

³ NHTSA, Office of Defects Investigation (ODI) Resume, PE 21-020, Aug. 8, 2021, available at <https://static.nhtsa.gov/odi/inv/2021/INOA-PE21020-1893.PDF>.

⁴ See, e.g., Frenchie, *FSD Beta v10.0 First Drive & Impressions | Dog, Stops, Peds Xing | 2021.24.15 FSD Beta 10*, YOUTUBE (Sept. 11, 2021), <https://www.youtube.com/watch?v=Fmj5MkyUD08&t=405s>.

⁵ Elon Musk (@elonmusk), TWITTER (Sept. 17, 2021, 1:11 AM), <https://twitter.com/elonmusk/status/1438747500010168322?s=20>.

ployment of autonomous vehicles (AVs). We conclude that the Tesla FSD beta feature qualifies as a Level 3 or 4 technology per the Society of Automotive Engineers (SAE) rating system for autonomous vehicle capabilities.⁶ FSD beta vehicles thus should be subject to the same regulatory and policy regimes that apply to testing of other autonomous vehicle technology. This conclusion differs from the usual public narratives⁷ which concentrate on dangerous limitations of current AutoPilot capabilities rather than the key issue of FSD beta design intent.

II. IMPORTANCE OF THE SAE LEVEL

One argument for legal compliance by Tesla's FSD beta vehicles relies on classification of the FSD beta features as SAE Level 2. On this reasoning, AVs must, by definition, qualify as SAE Level 3, 4 or 5; and, only AVs (as so defined) are subject to these laws. Thus, by maintaining an SAE Level 2 classification, Tesla hopes that FSD beta avoids meaningful regulation. When convenient, Tesla promotes the view that its vehicles' features, including FSD beta, only qualify for SAE Level 2 classification.

In correspondence, Tesla has suggested this classification to the California Department of Motor Vehicles (DMV) for its self-driving technologies.⁸ Publicly available testing videos for FSD beta vehicles suggest,⁹ however, that these beta test drivers operate their vehicles *as if* to validate SAE Level 4 features, often revealing dramatically risky situations created by use of the vehicles in this

⁶ SAE, TAXONOMY AND DEFINITIONS FOR TERMS RELATED TO DRIVING AUTOMATION SYSTEMS FOR ON-ROAD MOTOR VEHICLES, J3016_202104 (April 30, 2021) [hereinafter *J3016:2021*], https://www.sae.org/standards/content/j3016_202104/.

⁷ See, e.g., Brian Cooley, *Are Teslas really self-driving? No, here's an autonomous car explainer*, ROAD|SHOW, BY CNET (Sept. 19, 2021, 4:00 PM PT) (stating “[p]oint blank, Tesla cars are not self-driving. . . [t]hey are not autonomous in any way, shape or form. . . [n]ot by the SAE Scale of Autonomy's standard”), <https://www.cnet.com/roadshow/news/tesla-self-driving-autonomous-car-explainer/>. We have located one article which suggests that Tesla's technology resembles Level 3 capability. See Nicholas Calabria, *The Friday Night “Who Is Driving?” Debate Will Soon Come to an End: How Autonomous Vehicles Are Changing Our Lives and Societal Norms*, 35 *TOURO L. REV.* 1087, 1103 (2020) (noting that “Level 3 will be vastly similar to Tesla's current autopilot function”).

⁸ See PLAINSITE, *California DMV Tesla Robo-Taxi / FSD E-Mails* (March 5, 2021) (posting a response to a public records request), <https://www.plainsite.org/documents/242a2g/california-dmv-tesla-robotaxi--fsd-emails/>.

⁹ See, e.g., Jake Lingeman, *Tesla's ‘Full-Self Driving’ Update 10 Is Still Pretty Scary*, CARBUZZ (Sept. 14, 2021), <https://carbuzz.com/news/teslas-full-self-driving-update-10-is-still-pretty-scary>.

manner. Lawmakers and regulators should focus on this reality and recognize that FSD beta testing constitutes SAE Level 4 testing on public roads. Because of this reality, FSD beta testers should be subject to the same regulatory oversight as all other Level 4 testers to ensure the safety of road users and bystanders.

Moreover, seen in its true light, the sale of FSD beta vehicles may constitute an unlawful deployment of AVs without applicable safety standard compliance in California and, perhaps, some other jurisdictions. (An alternate argument could be made that FSD beta testing is effectively SAE Level 3 operation since that involves a subset of Level 4 capabilities, but the net effect is the same.)

A great many aspects of regulation depend on SAE level. Only “autonomous vehicles” are subject to specific statutory requirements on the operation and deployment of autonomy features in California.¹⁰ A vehicle does not qualify as an “autonomous vehicle” merely because it has driver assistance features, such as collision avoidance systems.¹¹ The California DMV regulations specifically reference the SAE taxonomy for driving automation systems, limiting the scope of the term ‘autonomous vehicle’ to Levels 3, 4 and 5.¹²

III. WHY FSD BETA VEHICLES ARE SAE LEVEL 4

A. A Comparison of Tesla Statements with J3016:2021.

A comparison of Tesla’s own public statements with SAE standards document *J3016:2021* establishing the criteria for assigning a level to an automated vehicle demonstrates that FSD beta testing constitutes SAE Level 4 testing on public roads. Consider first Tesla’s description of its Full Self Driving Capability:¹³

All new Tesla cars have the hardware needed in the future for full self-driving in almost all circumstances. The system is designed to be able to conduct short and long distance trips with no action required by the person in the driver’s seat.

The future use of these features without supervision is dependent on achieving reliability far in excess of hu-

¹⁰ See CAL. VEH. CODE § 38750 (West 2017).

¹¹ See CAL. VEH. CODE § 38750 (a)(2)(B).

¹² BARCLAYS OFFICIAL CAL. CODE REGS. tit. 13, arts. 3.7 & 3.8 (West) [hereinafter CAL. CODE REGS.]. The California regulation incorporates the 2016 version of the SAE taxonomy by reference. By its terms, *J3016:2021* supersedes prior versions of the taxonomy, which has remained essentially the same across versions, with levels of autonomy capability from Level 0 to Level 5.

¹³ TESLA, *Full Self-Driving Capability*, <https://www.tesla.com/autopilot> (last visited Sept. 26, 2021).

man drivers as demonstrated by billions of miles of experience, as well as regulatory approval, which may take longer in some jurisdictions. As these self-driving capabilities are introduced, your car will be continuously upgraded through over-the-air software updates.

SAE *J3016:2021* defines Level 4 capability as follows:

The *sustained* and *ODD*-specific performance by an *ADS* of the entire *DDT* and *DDT fallback* without any expectation that a *user* will need to intervene.¹⁴ (emphasis in original)

The level of a *driving automation system feature* corresponds to the *feature's* production design intent.¹⁵ (emphasis in original)

As shown by the following table, Tesla's description of its FSD capability matches the SAE *J3016:2021* requirements for Level 4. An explanation of SAE *J3016:2021* terms follows the table.

<u>SAE J3016 Requirement</u>	<u>Tesla Description</u>
“sustained”	“conduct short and long distance trips”
“ODD-specific performance”	“almost all circumstances”
“by an ADS”	“All new Tesla cars have the hardware needed” and “software updates”
“the entire DDT”	“conduct short and long distance trips with no action required by the person in the driver’s seat”
“DDT Fallback”	“conduct short and long distance trips with no action required by the person in the driver’s seat”
“without any expectation that a user will need to intervene”	“no action required by the person in the driver’s seat”
“design intent”	“The system is designed to be able to conduct”

The requirement that performance must be “sustained” is distinguished from momentary intervention during potentially hazardous situations, such as electronic stability control and automated emergency braking, and certain types of driver assistance systems, such as lane keeping assistance, because these features do not perform part or all of the Dynamic Driving Task (DDT) on a sustained basis.

¹⁴ *J3016:2021*, at Table 1, 26.

¹⁵ *J3016:2021*, at Section 8.2, 31.

“ODD” stands for ‘Operational Design Domain’ which is the environment and other circumstances in which a Level 4 vehicle is intended to operate. By way of contrast, a Level 5 vehicle is designed to operate in all circumstances.

“ADS” stands for ‘Automated Driving System’. An ADS performs the automated driving task, comprising both computer hardware and software. By way of contrast, a driver assistance feature, such as cruise control, does not drive the vehicle but merely assists the driver. Tesla’s description of its FSD capability initially omits a reference to software, perhaps in an attempt to distinguish its product from Level 4. However, hardware alone does not comprise an ADS and the later reference to “software updates” confirms the presence of initial software and an intent to continuously upgrade FSD capabilities.

“DDT” stands for ‘Dynamic Driving Task’. The DDT includes steering and speed control, but not destination selection. To perform this task, the ADS which supports the DDT must, among other things, monitor the driving environment by object and event detection, recognition and response formulation.

“DDT Fallback” stands for the process of bringing a vehicle to a safe state (e.g. stopping on the shoulder of a road) following a failure of some aspect of the ADS, as well as the occurrence of other conditions reasonably expected for some trips (e.g. a broken axle). In a Level 4 vehicle, the DDT Fallback is handled by the vehicle, not a human driver. Even if Tesla’s eventual deployment contemplates that users are expected to handle DDT Fallback, at most that merely reduces the FSD beta vehicle to Level 3—a level which is still subject to regulation as an AV.

Based on this analysis, Tesla’s own description of the FSD intended design capability clearly describes an SAE Level 4 feature. Tesla ought not avoid regulation by the label it self-assigns to its vehicles.

B. Irrelevance of the Presence of a Human Driver to SAE Level.

The presence of a human driver does not prevent an FSD beta vehicle from classification as Level 4, as the current version of J3016 makes clear in Section 8.2 (a point emphasized by one of the authors elsewhere as “Myth 10” about using the SAE Levels to classify vehicle automation):¹⁶

The level of a driving automation system feature corresponds to the feature’s production design intent. This ap-

¹⁶ Philip Koopman, *SAE J3016 User Guide* (updated Sept. 4, 2021), available at <https://users.ece.cmu.edu/~koopman/j3016/#myth10> (last visited Sept. 24, 2021).

plies regardless of whether the vehicle on which it is equipped is a production vehicle already deployed in commerce, or a test vehicle that has yet to be deployed. As such, it is incorrect to classify a Level 4 design-intended ADS feature equipped on a test vehicle as Level 2 simply because on-road testing requires a test driver to supervise the feature while engaged, and to intervene if necessary to maintain operation.

The SAE *J3016:2021* Section 8.2 criteria for assigning SAE Level 4 hinge on design intent. If the manufacturer's design intent is Level 4, then it is a Level 4 vehicle even if there is a test driver to supervise while the feature is engaged and intervene when necessary. Significantly, a vehicle can qualify as Level 4 even if it fails to be a particularly competent or safe instantiation of Level 4 technology. That, we suggest, is the reality of the current situation and why regulatory oversight of FSD beta is critical.

The Tesla description of the FSD feature makes it quite clear that Tesla has Level 4 design intent, stating: "The system is designed to be able to conduct short and long distance trips with no action required by the person in the driver's seat." In contrast, at Level 2 the driver is required to "complete the OEDR subtask" portion of the DDT, which involves Object and Event Detection and Response.¹⁷ The whole point of FSD, as generally represented by Tesla marketing materials and public messaging, is that the driver no longer has to drive (i.e., the FSD feature actually fully self-drives), which necessarily removes the OEDR subtask burden from the human driver.

C. Tesla's Acknowledgment that Some of its Customers Beta Test.

As to whether the person in the driver's seat qualifies as a "test driver," Tesla itself is calling such drivers FSD "beta testers." Tesla even recently announced it will be accepting electronic applications for more testers via a beta test request button, and will be giving access selectively, making such further distribution an expansion of a test program rather than a general public release.

While Tesla hopes to reassure the public by saying that only good drivers will receive permission to test FSD beta, this only reinforces the notion that FSD beta is a selectively released pre-production test system, and not a road-ready full production feature. In other words, Tesla is having selected but untrained civilian drivers do on-road testing of their "beta" SAE Level 4 FSD feature. This combination of vehicle plus test driver arrangement is behaving dangerously on public roads.

¹⁷ *J3016:2021*, at Table 1, 26.

When the FSD beta vehicle is properly recognized as a Level 4 capable vehicle, testing becomes a problem under the California statutes and regulations because this beta testing does not comply with law, as outlined in the next section.

IV. ANALYSIS OF THE STATUTE AND REGULATIONS

The California vehicle code has two sections dealing with autonomous vehicles: § 38750 and § 38755. Section 38755 deals with a special exception for Contra Costa county, and is not relevant to our analysis.

Under § 38750 (a)(2)(A): “Autonomous vehicle” means any vehicle equipped with autonomous technology that has been integrated into that vehicle. Under §38750 (a)(1): “Autonomous technology” means technology that has the capability to drive a vehicle without the active physical control or monitoring by a human operator. A Tesla vehicle with FSD beta satisfies these definitions because it has the capability to drive without the active physical control or monitoring by a human operator. The various videos posted online by Tesla FSD beta users confirm this conclusion (as well as various statements made by Tesla for marketing).

The fact that Tesla’s owner’s manual stipulates that the human driver must monitor driving at all times does not change this. The law is about “capability” and not about the instructions in a manual. The exception in § 38750 (a)(2)(B) to the definition of “autonomous vehicle” does not change this conclusion. It provides:

(B) An autonomous vehicle does not include a vehicle that is equipped with one or more collision avoidance systems, including, but not limited to, electronic blind spot assistance, automated emergency braking systems, park assist, adaptive cruise control, lane keep assist, lane departure warning, traffic jam and queuing assist, or other similar systems that enhance safety or provide driver assistance, *but are not capable, collectively or singularly, of driving the vehicle without the active control or monitoring of a human operator.* (emphasis supplied)

The exception appears simply to make clear that traditional driver assistance systems do not render a vehicle “autonomous” because they do not drive, but merely assist. Again, the key is capability, and FSD beta has this capability.

So, by statute, the Tesla FSD beta is an “autonomous vehicle” other things being equal. The California DMV regulations, however, contain a further clarification for an “autonomous test vehicle” (emphasis supplied):

(2) For the purposes of this article, an “autonomous test vehicle” is equipped with technology that makes it capable of operation that meets the definition of Levels 3, 4, or 5 of the SAE International’s *Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, standard J3016 (SEP2016)*, which is hereby incorporated by reference.¹⁸

Thus, if Tesla FSD beta is merely Level 2, it is not an autonomous test vehicle and, despite the statutory definition, would appear to not be an autonomous vehicle subject to regulation. But the picture changes when FSD beta vehicles are properly recognized as Level 3 or 4 because its “beta testing” program no longer complies with law.

A statutory autonomous vehicle may be operated on public roads in California for “testing purposes” by a driver possessing the proper class of license if three conditions are met per § 38750 (b):

(1) The autonomous vehicle is being operated on roads in this state solely by employees, contractors, or *other persons designated by the manufacturer* of the autonomous technology. (emphasis supplied)

(2) The driver shall be seated in the driver’s seat, monitoring the safe operation of the autonomous vehicle, and capable of taking over immediate manual control of the autonomous vehicle in the event of an autonomous technology failure or other emergency.

(3) Prior to the start of testing in this state, the manufacturer performing the testing shall obtain an instrument of insurance, surety bond, or proof of self-insurance in the amount of five million dollars (\$5,000,000), and shall provide evidence of the insurance, surety bond, or self-insurance to the department in the form and manner required by the department pursuant to the regulations adopted pursuant to subdivision (d).

Tesla has satisfied subsection (3) by virtue of having obtained a license in California to test with a driver.¹⁹ Tesla will argue that it satisfies subsection (2) by virtue of certain of Tesla’s statements, including in owner’s manual instructions to its FSD beta customers to stay alert and ready to take over at all times. As a matter of statute Tesla will argue that it has “designated” its customers to do the testing because of its selective roll-out of FSD beta and its

¹⁸ CAL. CODE REGS. tit. 13, art. 3.7 § 227.02. *Accord* CAL. CODE REGS. tit. 13, art. 3.8 § 228.02 (b) (stating that the definition of “autonomous vehicle” meets SAE Levels 3, 4, or 5).

¹⁹ CAL. DEPT. OF MOTOR VEH., *Autonomous Vehicle Testing Permit Holders*, <https://www.dmv.ca.gov/portal/vehicle-industry-services/autonomous-vehicles/autonomous-vehicle-testing-permit-holders/> (last visited Sept. 24, 2021).

qualifications which allow only a limited number of its customers to participate in the “beta testing.”

The issue here is whether or not Tesla’s FSD beta customers might qualify as “designees.” The regulations define ‘designee’ as follows:

(e) “Designee” means the natural person *identified by the manufacturer to the department* as an autonomous vehicle test driver authorized by the manufacturer to drive or operate *the manufacturer’s autonomous test vehicles* on public roads. (emphasis supplied)²⁰

There are two issues here. Has Tesla sufficiently identified its FSD beta customers to the DMV as “autonomous vehicle test drivers” and are they operating the “manufacturer’s autonomous test vehicles.” We are not aware of Tesla making any such designation of test drivers to the DMV (unless Tesla’s general public remarks qualify). But more importantly, the FSD beta customers are operating their own vehicles, and not those of the manufacturer. The regulatory scheme contemplated, on the one hand, testing with a manufacturer’s vehicles and, on the other hand, deployment to the members of the public. The regulatory scheme looks the way it does because it never occurred to the legislature or the DMV that any manufacturer would be so bold (or reckless) as to use its own customers as test drivers.

If Tesla’s FSD beta customers do not qualify as designees, then they can not be involved in “testing” as defined in the regulations. “Testing” is defined in the regulations as follows:

(o) “Testing” means the operation of an autonomous vehicle on public roads by employees, contractors, or designees of a manufacturer for the purpose of assessing, demonstrating, and validating the autonomous technology’s capabilities.²¹

Within the scope of § 38750, if a vehicle is not being operated for testing purposes, the autonomous vehicle shall not be operated on public roads until the manufacturer submits an application to the DMV, and the DMV approves it. We are not aware of any such application or approval.

Such an application must contain a number of certifications specified in § 38750(c). Moreover, autonomous vehicle test drivers must have certain qualifications by regulation, including three years of licensure, not more than one violation point count, not having been at fault in any accident resulting in injury or death, no convictions in the prior 10 years for driving under the influence of

²⁰ CAL. CODE REGS. tit. 13, art. 3.7 § 227.02 (e).

²¹ CAL. CODE REGS. tit. 13, art. 3.7 § 227.02 (o).

alcohol or drugs, and completion of the manufacturer’s autonomous vehicle test driver program.²²

All of these requirements, and more, make policy sense to protect the public as a pre-condition to allowing testing of AVs on public highways but it appears that, in using its FSD beta customers to “test” vehicles, Tesla is complying with none of them.

In addition, if the FSD beta customers are not designees, then Tesla also violates regulations on deployment of autonomous vehicles per the following definition:

(c) “Deployment” means the operation of an autonomous vehicle on public roads by members of the public who are not employees, contractors, or designees of a manufacturer or for purposes of sale, lease, providing transportation services or transporting property for a fee, or otherwise making commercially available outside of a testing program.²³

Pursuant to regulation, an autonomous vehicle shall not be deployed on any public road in California until the manufacturer has submitted, and the DMV approved, an Application for a Permit to Deploy Autonomous Vehicles on Public Streets, form OL 321 (Rev. 7/2020).²⁴ As a detail, per regulations, any registration card and certificate of ownership for an autonomous vehicle must indicate that the vehicle is autonomous.²⁵

V. TESLA’S COMMUNICATIONS WITH THE DMV

Our conclusion does not change based on representations that Tesla made to California regulators at the DMV to the effect that its vehicles are SAE Level 2, a classification presumably made to avoid regulatory oversight and permitting processes required of more highly automated vehicles, including Level 4 vehicles.

An analysis of released e-mails between Tesla and the California DMV reveals that Tesla left itself room to maneuver by careful word choice.²⁶

- Tesla promises “we won’t deploy any autonomous vehicle feature without a deployment permit.”²⁷ However, Tesla

²² CAL. CODE REGS. tit. 13, art. 3.7 § 227.34.

²³ CAL. CODE REGS. tit. 13, art. 3.8 § 228.02 (c).

²⁴ CAL. CODE REGS. tit. 13, art. 3.8 § 228.06 (a) (governing post-testing deployment).

²⁵ CAL. CODE REGS. tit. 13, art. 3.8 § 228.26.

²⁶ See *supra* PLAINSITE, note 8.

²⁷ Email from Al Prescott, Tesla, to Brian G. Soublet, Cal. DMV (Dec. 20, 2019 11:17 AM)(available at PLAINSITE, see note 8).

might not consider a “test” program to be a “deployment” so this statement does not necessarily apply to FSD beta.

- FSD is a distinct feature from AutoPilot (AP). AP is included standard in all newer Tesla vehicles, whereas FSD requires an additional fee. Statements regarding AP being Level 2 do not necessarily bear on FSD. (SAE *J3016:2021* states that a Level is associated with a feature, not the entire vehicle. AP can be at Level 2 while FSD is at Level 4.)
- The Tesla letter of November 20, 2020,²⁸ limits its discussion to current capabilities, and not design intent, whereas design intent is the crux of SAE levels. (It is worth noting that the letter refers to “the small handful of non-employee drivers in the pilot.”²⁹ This number is now reported to be about 2000 beta testers,³⁰ with potentially many more coming soon.³¹)
- The closest Tesla comes to an SAE Level statement is: “continues to firmly root the vehicle in SAE Level 2 capability”.³² That is not a statement that the technology is Level 2. It says Tesla’s path to Level 4 starts at Level 2. That simply reflects the reality of incremental product improvements.
- The Tesla letter of Dec. 14, 2020³³ refers to a “final release” and release “to the general public” being SAE Level 2, rather than characterizing the level of *current beta releases* to selected testers. Indeed, Tesla might never issue a “final release”, instead keeping FSD in beta indefinitely, offering the feature to essentially all “qualified” Tesla owners, thus technically avoiding a “deployment.”

A complete analysis of the disclosed documents posted at PLAINSITE is beyond the scope of this essay. However, we were unable to find any unambiguous statement made by Tesla in the DMV communications that the FSD beta program is actually at SAE Level 2, as opposed to the characterization of the anticipated

²⁸ Letter from Eric C. Williams, Assoc. Gen. Counsel, Reg., Tesla, to Miguel Acosta, Chief, Autonomous Vehicles Branch, Cal. DMV (Nov. 20, 2020) (available at PLAINSITE, see note 8).

²⁹ *Id.* at 3.

³⁰ Elon Musk (@elonmusk), Twitter (Sept. 17, 2021, 8:43 PM), <https://twitter.com/elonmusk/status/1439042334155497474>.

³¹ *See supra* note 5.

³² *See supra* PLAINSITE, note 8, and Tesla letter of Nov. 20, 2020, *supra* note 28.

³³ *See* Letter from Eric C. Williams, Assoc. Gen. Counsel, Reg., Tesla, to Miguel Acosta, Chief, Autonomous Vehicles Branch, Cal. DMV (Dec. 14, 2020) (available at PLAINSITE, see note 8).

“final release”. (In any event, any such statement about FSD beta, if made, would be incorrect on our analysis.)

IV. CONCLUSIONS

Tesla has painted itself into a regulatory corner. If Tesla denies its intent that its FSD beta feature satisfies SAE Level 4 capability, Tesla’s pervasive statements and messaging strategy to customers purchasing FSD—that the vehicle is, in fact, “Full Self-Driving”—are misleading. Tesla simply must have the intent to develop and perfect Level 4 technology (and be in the process of honoring its promises to its customers by actually testing Level 4 features). In order to produce truly safe Level 4 technology for release to the general public, common practice would first test Level 4 technology that is less capable. Indeed, Level 4 performance will improve over time. For regulatory purposes, given the applicable statutory definitions, it simply will not suffice to deny actual design intent to build either a Level 3 or Level 4 vehicle because those definitions turn, in the first instance, on capability—which the FSD beta vehicle possesses at Level 4 and Tesla must test prior to a full public deployment.

The only thing that saves Tesla from the California scheme of regulatory oversight is the willingness of the California regulators to continue to take Tesla’s classification of its FSD technology as Level 2 at face value.³⁴ But as shown above, there is every reason to reject such a classification by carefully parsing the language of *J3016:2021*, together with the statutory and regulatory definitions. Tesla’s insistence of Level 2 classification for its FSD beta could have consequences in dimensions other than public road testing safety (for example, an analysis of breach of contract actions by consumers). However, consideration of consequences other than safety are beyond the scope of this essay.

Automated vehicle technology holds great promise for safety and mobility. In Tesla’s case, its positive commitment to fully electric vehicles has additional and important environmental benefits. Yet, as our technology companies innovate, we should not place

³⁴ See Hyunjoo Jin, *San Francisco raises Tesla 'self-driving' safety concerns as public test nears*, REUTERS (Sept. 23, 2021 5:57 PM CDT) (noting that California’s state regulator recently said: “Based on information Tesla has provided the DMV, the feature does not make the vehicle an autonomous vehicle per California regulations.”), <https://www.reuters.com/business/autos-transportation/san-francisco-raises-tesla-self-driving-safety-concerns-public-test-nears-2021-09-23/#:~:text=SAN%20FRANCISCO%2C%20Sept%202023%20%28Reuters%29%20-%20San%20Francisco,software%20that%20works%20on%20city%20streets%20and%20highways.>

the public at unreasonable risk, as “unreasonable risk” is determined by the proper authorities tasked with protecting the public by making an independent risk assessment.³⁵

Given the reality of Tesla’s FSD beta testing program, the California DMV would be justified in sending Tesla a letter to show cause why the DMV ought not seek an injunction against operation of FSD beta vehicles in California based on the above analysis. There are valid reasons why the San Francisco transport authorities,³⁶ and others, are concerned by the FSD beta testing program.

For the reasons outlined above, we urge state departments of transportation around the United States to consider classifying the Full Self-Driving beta releases as an SAE Level 4 feature, with applicable regulatory and operational guidance applied accordingly.

The irony of the situation in California is that, if Tesla and the DMV worked cooperatively, some mutually satisfactory structure might be agreed in which a subset of Tesla’s FSD beta customers might assist product development as properly vetted test drivers. However, the Level 4 features on the FSD beta capable vehicles not operated by qualified customers would need to be disabled until the FSD feature is qualified properly for deployment as determined by the DMV.

Testing potentially dangerous products on public highways cannot, as a matter of policy, properly be addressed by an exercise in labeling sophisticated technology as merely Level 2, and looking the other way. Public safety requires more. Tesla and the DMV should work together to qualify the Tesla beta testers in accordance with California law and regulations.

³⁵ Indeed, a recent commentary suggests that “[i]t might be time for the regulators to act.” Al Root, *Tesla Is Bringing Self-Driving No Matter What. Regulators Need to Adapt.*, BARRON’S (Sept. 24, 2021, 1:37 PM ET)(noting that Tesla is one of the most aggressive AV companies when it comes to testing and marketing self driving features), <https://www.barrons.com/articles/tesla-stock-self-driving-regulation-51632504996>.

³⁶ *Id.*