



December 10, 2018

Heidi King  
Deputy Administrator  
National Highway Traffic Safety Administration  
1200 New Jersey Ave SE  
West Building  
Washington, DC 20590- 0001

Re: Docket No. NHTSA-2018-0092

Dear Administrator King:

Local Motors is pleased to respond to the National Highway Traffic Safety Administration's ("NHTSA") October Request for Comments by providing our thoughts on the ANPRM and perspectives on pilot project efforts along with expansion of Part 591 to Domestic Manufacturers. We have certainly appreciated U.S. DOT and NHTSA's willingness over the last three years to engage and listen to a vast variety of stakeholders on the topic of Autonomous Vehicles (AVs): we all want U.S. based manufacturers to flourish in this space. NHTSA has the authority, responsibility and opportunity to take a step in that direction. The bold steps needed to lead and change mindsets within the federal government, industry and with consumers will require strong leadership and collaboration with industry and the public to ensure the safe deployment of AVs. Together, we can begin to create a visionary framework and immediate approach to continue to lead the world in transportation and mobility innovation and solutions.

The need for a level playing field - where all vehicle manufacturers have the same ability to put non-compliant vehicles on public roads for the purposes of research, development, and testing should be addressed immediately. The issue is discussed under the following section in the request for comments:

#### EXEMPTIONS FROM PROHIBITIONS CONCERNING NON-COMPLIANT VEHICLES UNDER SECTION 30114

Next, under section [30114](#), the "Secretary of Transportation may exempt a motor vehicle or item of motor vehicle equipment from section 30112(a) of this title, on terms the Secretary decides are necessary, for research, investigations, demonstrations, training, competitive racing events, show, or display." NHTSA has historically focused these types of exemptions on the noncompliant vehicles made outside the U.S. However, NHTSA is examining whether the language of section 30114 gives NHTSA the discretion to create a level playing field by expanding the



coverage of exemption under that section to any vehicle, regardless of whether it is domestic or foreign, that meets the criteria of that section, particularly vehicles with high and full driving automation that do not meet existing standards and whose manufacturers are or seek to become engaged in research and demonstrations involving those vehicles. If so, NHTSA would be able to establish the terms with which a participant would need to comply in order to receive and continue to enjoy the benefits of an exemption. Such terms could include a wide variety of matters, including participation in a pilot program.

We strongly encourage and support NHTSA's suggestion to expressly extend the same exemption benefits enjoyed by non-US based importers to American manufacturers. We submit that the DOT Secretary, and therefore NHTSA, already have the authority under Section 30114 to extend the Part 591 exemptions to domestic manufacturers, either by interpretation or by regulation. We would encourage NHTSA to act on exemption requests of a narrow and limited nature pursuant to their existing authority to level the playing field for domestic manufacturers and to further the statutory goals of "research, investigations, demonstrations [and] training" with respect to AV technology."

Since the launch of Local Motors' Olli, in 2016, our message has been focused and consistent: AV deployments should start with small, controlled deployments (pilots) in low speed environments. This approach can not only create a path to large scale AV adaption, but also support development of appropriate legislation and regulation.

### **Low-speed vehicles and environments can pave the way**

As we look toward the future of AVs and Automated Driving Systems (ADS), we believe low-speed self-driving vehicles are poised to provide the most meaningful and safe applications within transportation at this time. Further, it is our belief that if NHTSA focuses on low speed environments, from testing, to pilots and, ultimately, to commercial deployment, it would provide a clear path to universal AV and ADS system adoption.

The United States Department of Transportation Intelligent Transportation System Joint Program Office (US DOT ITS JPO) in conjunction with the VOLPE Center for Transportation recently published a report titled: [State of the Practice: Low Speed Automated Shuttles](#), One of the key findings from this report is that there is substantial interest in low-speed automated shuttles, such as Olli.

"A variety of stakeholders have expressed interest in deploying vehicles, and many are moving forward with pilots (primarily on private roads due the current barriers in the existing regulatory framework). Several pilots are currently operating these vehicles, and, as deployers gain experience with them, they are exploring offering new or expanded services and operating in more complex environments."



Another observation from the key findings is that

“Evaluation is challenging for new deployers, but it is necessary to advance the state of the practice.”

Appropriate use cases for low-speed automated shuttles are still somewhat unclear and that’s why Local Motors is working with communities across the country and world to launch Olli Fleet Location Challenges to determine the most relevant use cases for piloting now to begin to understand the most promising use cases to improve mobility and transportation in the future. We are working with the communities who are interested in the Olli Fleet Location Challenge and deploying low-speed automated shuttles to have well-defined goals for the pilots, so that we can begin to identify performance metrics of interest and to collect appropriate baseline data for comparison.

According to Volpe:

"Low-speed automated shuttle pilots face barriers, but those barriers can be mitigated. For many people, early-stage low-speed automated shuttle deployments will be their first time encountering automated driving technologies. This first exposure is important, because it may influence broader public acceptance of vehicle automation. Low-speed automated shuttle technology has developed faster than other kinds of automated transit, but this industry is still in an early phase. The market is small, and many companies in this space have little experience designing and validating systems and producing vehicles, compared to traditional automakers. Low-speed automated shuttles may not be suitable for all environments and services. When barriers can be anticipated, they can be mitigated. Deployers designing projects and pilots should fully understand technical capabilities and operating environment requirements. They should consider their own goals and develop evaluation metrics. Considering those elements upfront may help deployers match capabilities to requirements, plan for uncertainties, and ensure that data collection supports decision making. There’s much more to learn about low-speed automated shuttles. There are many research areas left to explore, including infrastructure-based sensors, localization, accessibility, and remote intervention. Understanding low-speed automated vehicle shuttle innovations can lead to successful projects in the future, ensure that public funds are used efficiently, improve awareness and consideration of universal design and accessibility, and inform U.S. DOT engagement."

We agree, with Volpe, that AVs and ADS are not fully ready for deployment in all environments, and that’s why we are working with communities to provide the necessary capability in low-speed, controlled and limited ODD environments to pave the way for large scale adoption of this technology. Therefore, we encourage NHTSA and US DOT to focus their current rulemaking efforts to enable pilots for AVs in low-speed environments with limited and controlled ODDs, which minimizes overall risk, while still providing the necessary data and analytics that will build trust and confidence necessary to have the public at large fully embrace these vital modes of transportation quickly.



## **Short term vehicle demonstrations and pilot programs lend purpose to evidence and performance based Rulemaking and Testing**

According to NHTSA:

“A pilot program can provide relief and promote research on AVs and ADS. NHTSA’s authority covers all relevant aspects of ADS design, including vehicles with high and full driving automation. NHTSA, therefore, has an affirmative duty to establish the measures necessary to ensure the safe design and operation of these types of vehicles. However, to do so in a way that actually achieves those safety goals and does not unnecessarily impede innovation requires significant research on these cutting-edge issues.

Due to the complexity of real-world driving, this research cannot simply be done in laboratories or other highly controlled testing environments and, instead, part of it must be done on public roads with real driving conditions. To help ensure that this testing is being done safely and with an eye towards developing the data necessary to support such future standards as may be needed, NHTSA is considering establishing a pilot program for vehicles with high and full driving automation for entities wishing to engage in the testing or, in some cases, deployment of vehicles with high and full driving automation that would require some type of an exemption from NHTSA’s existing standards. The Agency believes that such a program could aid developers of vehicles with high and full driving automation in testing and deploying their vehicles across the country in a wide variety of scenarios, e.g., different climates, weather patterns, topographical features, road systems, population and traffic densities, etc.”

We agree, especially because Local Motors’ approach to vehicle commercialization and deployment is unique among vehicle manufacturers. We work with a community of engineers, manufacturers, suppliers, partners and consumers to commercialize vehicles rapidly and continuously to make improvements in real time. Often, we develop a minimal viable product that we test in the market to better measure and understand demand and use cases. Specifically, for Olli, in September of 2018 we launched the first two Olli Fleet Location Challenges in Greater Phoenix and Greater Sacramento. The first challenge is open to entries from these areas. Two winners of this challenge will each receive a pod of Ollis sized to their proposed use case and location. Entries will be evaluated by a panel of esteemed judges, including Sandra Watson, CEO and President of Arizona Commerce Authority and Congresswoman Doris Matsui of California’s 6th District, which encompasses Sacramento, before Ollis are deployed to a series of selected locations. The Olli Fleet Location Challenge will launch many pilot projects around the country and the world and is the natural evolution of our commercialization strategy that we launched three years ago. Over those last three years, we have built on the 2016 AV 1.0 policy and guidance of testing and deployment, specifically:



- Olli vehicle testing primarily for technical and system development and validation has been ongoing since 2016 in our facilities in Knoxville, TN and Chandler, AZ as well as Robotic Research facilities in Maryland
- Public demonstrations of the vehicle to collect data and allow public interaction with the self-driving system have taken place in 2017 and 2018 (small sample):
  - Berlin Germany at EUREF Campus where over 800 rides were given over a six month period
  - IMTS in Chicago
  - ITS World Congress in Copenhagen
  - IBTTA in Baltimore
  - Adelaide, Australia
- Public pilot programs to test specific uses cases and applications
  - Phoenix Olli Fleet Challenge Winner to be announced December 12
  - Sacramento Olli Fleet Challenge Winner to be announced December 12
  - Greater Washington Olli Fleet Challenge to be launched December 12
- Demonstrated self-driving systems to customers or consumers has been available to customers and consumers since 2016 at our Global Educational and Demonstration facility in National Harbor, MD
  - Starting January 1, selected customers will be able to experience Olli operating on limited routes in the Harbor
- Commercial operation of vehicle and system use in day-to-day commercial operation are planned for 2020

This approach enables the rapid integration of the latest technology as AVs are rolled out into commercial and consumer markets. It also enables lessons learned and failures to be incorporated into vehicle improvements and upgrades. Hence, this phased approach, especially during potential pilot projects, and direct interaction with customers and consumers turns unknowns into knowns in an open innovation environment. This theory of constant improvement with stakeholders was originally put to work in the Toyota Way and is now being adapted to modern digital methods.

We encourage NHTSA and US DOT to work and collaborate with us (and others who are willing and able to take part in similar pilot projects) to share data and information openly and develop real-world applications and solutions that will make transit more readily available to all. Specifically, this open innovation and data sharing approach should help enable more evidence based rulemaking and testing for AVs rather than the more traditional design based rulemaking and testing employed in current FMVSS. In our new digital world, with technology changing so rapidly, vehicle types will be created, developed and produced in a matter of months, not a matter of years. Advances in robotics and artificial intelligence will create use cases that have no previous known design and may be impossible to test given our limited knowledge of today.



Olli Pilot Deployments will be collecting raw data of vehicle operations from both the vehicle control unit as well as the autonomous control system. Directional data and sensor data will be used to research incidents in operation that pertain to the main reporting criteria. We will be reporting on the following:

- Route hazards
- Near misses
- Collision incidents
- Injuries
- Disengagement of the autonomous system

The future of rulemaking and vehicle testing is evidence and performance based. Our controlled Olli demos and pilots in low speed environments will build data and use case libraries to better inform performance requirements, outline edge cases and rare occurrences, and capture crucial information about near misses which in turn will provide better insight for rulemaking and testing.

### **Creating a level playing field for all stakeholders**

Local Motors is unique among vehicle makers since we consider ourselves the world's first digital OEM and due to our open, co-creative, approach to design, development, manufacturing and upgrade of vehicles. In this open spirit, we look forward to collaborating with both NHTSA and other industry stakeholders to further the adoption of AVs by the general public to create safer, smarter and more sustainable public roads for all.

However, certain American technology companies, such as Local Motors, are greatly disadvantaged relative to non-US based manufacturers (and to some extent established domestic OEMs who have certain beneficial research and development provisions for non-compliant vehicles under the FAST ACT) by the current regulatory environment and we don't experience a level playing field. NHTSA's review and public comment process of 49 CFR 555 is cumbersome and time consuming and is simply inappropriate for the current pace of technological development. Non-US based manufacturers can avoid these challenges by using the more rapid procedures in 49 CFR 591.

NHTSA's request for public comments dated March 2, 2018 on Part 591 process improvements, provides several questions asked of applicants applying for temporary importation of vehicles equipped with automated driving systems. Local Motors requests the same exemption benefits enjoyed by non-US based importers and is willing to provide answers to the questions asked of non-US based importers for a temporary exemption for research, evaluation and demonstrations. We submit that the DOT Secretary, and therefore NHTSA, already have the authority under Section 30114 to extend the Part 591 exemptions to domestic manufacturers, either by interpretation or by regulation. We would encourage NHTSA to act on exemption requests of a narrow and limited





nature pursuant to their existing authority to level the playing field for domestic manufacturers and to further the statutory goals of “research, investigations, demonstrations [and] training” with respect to AV technology.

### **Temporary allowance of Nonconforming Vehicles**

By extending exemptions under section 30114, Local Motors and NHTSA will be providing the opportunity for the public, NHTSA and the manufacturer to see Olli operate in more “normal, everyday” scenarios that prove the safety and value of the Olli and its embedded technology. Education of the general public is a key aspect of extending the exemptions to American manufacturers. Engaging in research, investigations, demonstrations and training are all parts of providing that education and increasing the public's confidence in AVs and automated driving systems, US manufacturers, and NHTSA. Without the exemption in place, we face significant barriers to fully research relevant uses cases. For example, in many current private road use cases being demonstrated in our current pilots, there are instances where a pilot route intersects with a public road. Due to current regulation, we technically cannot operate on public roads and are unable to complete the trip.

NHTSA acknowledges the need for research in order to generate real world data on AVs and ADS. Local Motors believes that low-speed automated shuttles provide a low risk opportunity to gather data on ADS, rider behavior and use cases. One of the key observation from the previously mentioned US DOT Intelligent Transportation Systems Joint Program Office and Volpe Report:

“Several low-speed automated shuttle pilots are currently operating in the United States and more than a dozen additional pilots have identified funding and are in various stages of planning. In addition to operating and planned projects, more than 20 pilots and demonstrations have been completed. Many more have been publicly proposed. Currently operating pilots include testing on closed courses, operation in parking lots, service on dedicated lanes or pedestrian pathways, and service on private or public roads. Most domestic pilots to this point have been conducted in relatively simple, closed environments, though in recent months, a few have begun operating in mixed traffic. Many pilots plan to add complexity to shuttle operation in the future, including operating at intersections, at higher speeds, and in areas with more traffic. In addition, many deployment communities are considering how to better integrate pilots into existing transportation systems and how to use low-speed automated shuttles to better address transportation needs.”

Local Motors is willing to provide reports on usage rates, crashes, near misses and collisions, monthly to NHTSA for the duration of a temporary exemption or pilot period as part of our Olli Fleet Location Challenge deployments. The data gathered by Local Motors and participating communities will be of far more interest if the data includes public road use data. Local Motors is willing to



engage and collaborate with other government agencies that may benefit from our research and data such as the Federal Transit Administration's research program on Automated Transit Buses.

It is early in the creation of an AV marketplace, but federal legislators and regulators must take a more aggressive and creative approach to policy frameworks and can look at certain countries in Europe and Asia who are taking the old rules and throwing them out of the window to create an immediate path to test, pilot and further develop this technology while showing restraint not to create burdensome regulation without fully understanding the use cases and application of the technology. Most importantly, for the marketplace that is being created, is the need, immediately, for a level playing field - where all vehicle manufacturers have the same ability to put non-compliant vehicles on public roads for the purposes of research, development, and testing. And not too far behind, is the need for legislation and regulation based on real world experience via pilots and deployments, that fundamentally changes the overall regulatory framework and brings it into this century while developing a new approach to more rapidly assess and develop new vehicle classifications.

We appreciate the engagement we have had with you and your staff and we look forward to continuing our pilot project efforts via Olli Fleet Challenges across the country and to a level playing field for domestic manufactures such as Local Motors.

Sincerely,

A handwritten signature in black ink, appearing to read "Matthew Rivett", written over a light blue horizontal line.

Matthew Rivett

EVP, Local Motors by LMI