

November 5, 2018

Mr. Finch Fulton
Deputy Assistant Secretary for Transportation Policy
United States Department of Transportation
1200 New Jersey Avenue SE
Washington, DC 20590

Re: Scope of the Study on the Impact of Automated Vehicle Technologies on Workforce
(Docket ID: DOT-OST-2018-0150)

Dear Deputy Assistant Secretary Fulton:

The American Association of State Highway and Transportation Officials (AASHTO) is pleased to provide comments on the U.S. Department of Transportation's "Scope of the Study on the Impact of Automated Vehicle Technologies on Workforce" Notice of Request for Comments (Docket Number DOT-OST-2018-0150), issued on October 3, 2018. AASHTO is a nonprofit, nonpartisan association representing the state transportation departments (state DOTs) in the 50 states, the District of Columbia, and Puerto Rico. We represent all five transportation modes: air, highways, public transportation, rail, and water. Our primary goal is to foster the development, operation, and maintenance of an integrated national transportation system. Our members work closely with US Department of Transportation (USDOT) agencies to operate, maintain, and improve the nation's transportation system.

The Notice of Request for Comments poses three questions. Each of the questions are addressed in turn.

1. Is the Statement of Work (SOW) in line with public interest?

Yes. This Statement of Work is in line with the public's interest, and in line with agencies whom AASHTO represents. Indeed, as many of the state DOTs use the themes of safety, mobility, reliability, workforce, and economic opportunity in their missions, visions and goals, the subject of this SOW is absolutely applicable.

The states are facing more and more issues with employee recruiting and retention, especially with commercial driver's license (CDL) drivers and equipment operators. Part of the challenge stems from the states' ability to provide competitive compensation and benefits. This is exacerbated by increased demand for these workers because of expansion of industries needing similar skill sets.

One way to fight this situation is to get ahead of the coming demand for advanced driver assist systems (ADAS) and highly automated vehicles (HAV) employment and anticipate what collateral jobs it will create. Studies like this must determine and communicate the knowledge, skills, training, and equipment that will be required to turn the transition into an advantage.

2. Should the SOW be expanded or reduced to include or exclude any topic(s)?

AASHTO is concerned with the effects of ADAS and HAV on the workforce. The following narrative discusses some of the more poignant ideas and suggests they be included or emphasized in the scope of the study.

Presently, state DOT duties include mechanical and electronic maintenance of equipment and vehicles. However, there is a current trend that equipment and fleets can only be maintained by the manufacturer or the manufacturer's representatives. With more technologically advanced vehicles, is it more likely that these vehicles will have to be serviced by contractors and manufacturers and not by agency staff? Will these vehicles become more and more disposable like the current trend in electronic products? Will the maintenance of this equipment be taken over by IT personnel? Will activities like snow plowing be performed with ADAS and HAV in the same manner as it is today? The coming of ADAS and HAV may mean that there will be much less work for the traditional maintenance technician or mechanic.

The states are also concerned with questions of reliability and efficiency of the vehicles and the supporting systems. It will be difficult to plan for an effective workforce without knowing the full potential, and risks, for using ADAS and HAV and the breadth of the required infrastructure.

If this vehicular revolution takes place while our maintenance (i.e., vehicular and road maintenance) technicians are still employed, and they become obsolete, new assignments and positions must be made for them. In general, these employees are less educated, aging and possessing skill sets not compatible with other DOT work needs. There would have to be a detailed plan for cross-training. There might be concerns about union involvement with job transfers or possibly unemployment. Currently, many state DOTs are already recognizing the need to reduce workforce complements in other areas and obsolescence of a class of employees will intensify the situation.

However, there may be a need for operators remote-controlling ADAS and HAVs in difficult situations such as virtually operating equipment in dangerous conditions or in tricky traffic conditions. Does this mean that these virtual-operators will need CDLs to control these vehicles and what kinds of requirements and training programs will be needed? There is already discussion beginning on registration of these vehicles and regulations governing their operation.

If the vehicles become fully digital, will there be a need for port-of-entry weigh-stations if the vehicles can transmit data directly? Can it be made such that a vehicle becomes locked and cannot operate when overloaded? Removal of traditional ports-of-entry would have a large impact on inspectors and their facilities.

Because of an increasing shift from analog to digital, there will be a greater need for a well-educated science, technology, engineering and mathematics (STEM) personnel. Specifically, we foresee massive amounts of data becoming available as well as being used in the operation of ADAS and HAV. The data will be generated by the vehicles themselves, and in digitizing human factors, behaviors, and roadway usage. In short, data will become available for every possible function and activity the vehicle does. More accurate data for current statistics will be collected as well, such as accurate vehicle miles traveled, actual fuel consumption, actual loading, turning movements (currently manually collected), and near misses, etc. The greater volume of data generation and demand will require a greater need for data scientists in collecting, processing, and implementing the information, and the corresponding computer equipment to do so.

No matter how familiar we think we are with our current modes of transportation, the study should include the current transportation systems. The findings will be the greatest predictor of future ADAS and HAV needs.

The role of traffic engineering may change as we incorporate human operators amongst ADAS and HAV in varying degrees until there are no more human operators. The major component of traffic engineering is based on human behavior. Removing the “human” from the equation may change the profession drastically. But like many other impacts, this ultimate scenario depends on the timing of the full and ubiquitous deployment of HAVs. In the interim, there will be a long period of mixed traffic—HAVs with human-driven vehicles—that may require more sophistication in traffic engineering to manage this mixed traffic.

The study should include what new avenues of transportation will be offered to mobility challenged citizens. This new freedom may require additional infrastructure and a greater demand on the transportation system.

Passengers using ADAS and HAV may be paying less attention to the roadway and operation of the vehicle to focus on other business. ADAS and HAV may provide an “office on wheels” where commuters will be required to work while in transit. Workers might claim work time while riding. This will impact actual work schedules, Fair Labor Standards Act, worker’s compensation and exactly what employers can reasonably expect during this commute time.

The advent of ADAS and HAV will likely change the status of outdoor advertising. There may be less impromptu shopping and unplanned detours if the vehicle is on autopilot compared to the traditional driver paying attention to advertising signs. Possibly, advertising will move to electronic signals, controlled by geofencing directly to mobile devices or to the vehicle directly. On the other hand, ADAS and HAV vehicles may be able to respond more quickly and make more impromptu movements as they communicate with other vehicles.

Another question to ask is how ADAS and HAV will affect emergency personnel. Emergency room visits should decrease and along with all the related business related to roadway emergencies. In many cases, law enforcement officers depend on erratic driving to identify potential suspects. Without erratic driving, this will change the dynamics of both detection and transport.

It should be expected that roadway freight ADAS and HAV would cause pavements to deteriorate more quickly. Both close platooning and the narrowing of wheelpath-wander would cause higher loading in the wheelpaths. If platooning allows for decreased follow distances, multiple vehicles will act as one. Both of these factors will change the dynamics of pavement loading even if the weights and number of vehicles stay the same. This increased loading will result in deeper rutting, fatigue cracking and other stress related issues. Exacerbating the issue would be the temptation to narrow roadways since there will be less need for width due to reduced wander and no need for shy distances (i.e., digitally controlled vehicles will not need a shy distance); state DOTs may see it as an advantage save on high priced real-estate. There will be an additional demand of workers associated with all aspects of this maintenance and repair work.

3. Are there specific literature or studies that have been conducted on this subject that DOT and the Department of Labor should review before initiating this comprehensive analysis?

There are several additional references we suggest be reviewed for this scope of this work. They are as follows:

- Testimony to US House Subcommittee on Highways and Transit, Hearing on “Innovation in Surface Transportation”, September 5, 2018
 - Link to DriveOhio written testimony: [https://transportation.house.gov/uploadedfiles/2018-09-05 - barna_testimony.pdf](https://transportation.house.gov/uploadedfiles/2018-09-05_-_barna_testimony.pdf)
 - Link to video of hearing: <https://transportation.house.gov/calendar/eventsingle.aspx?EventID=402749>
- Securing America’s Future Energy (SAFE) Report: “America’s Workforce and the Self-Driving Future”, June 2018
 - Policy report: https://avworkforce.secureenergy.org/wp-content/uploads/2018/06/Americas-Workforce-and-the-Self-Driving-Future_Realizing-Productivity-Gains-and-Spurring-Economic-Growth.pdf
 - Economist report: “Preparing U.S. Workers and Employers for an Autonomous Vehicle Future”: <https://avworkforce.secureenergy.org/wp-content/uploads/2018/06/Groshen-et-al-Report-June-2018-1.pdf>
 - Additional resources: <https://avworkforce.secureenergy.org/>
- American Center for Mobility Reports: (1) “Preparing the Workforce for Automated Vehicles” and (2) “Truck Platooning State of the Industry 2018”, August 2018
 - Link to reports: <https://ouravfuture.org/wp-content/uploads/2018/08/MSU-TTI-Preparing-Workforce-for-AVs-and-Truck-Platooning-Reports-.pdf>
- CGPS Center for Global Policy Solutions: “Stick Shift: Autonomous Vehicles, Jobs, and the Future of Work”
 - www.globalpolicysolutions.org/report/stick-shift-autonomous-vehicles-driving-jobs-and-the-future-of-work/

We appreciate the opportunity to provide these comments and look forward to working with USDOT on the development of the scope of this work and its outcomes. If you would like to discuss the issues raised in this letter, please contact Matthew Hardy, Ph.D., AASHTO's Program Director for Planning and Performance Management at (202) 624-3625 or mhardy@ashto.org.

Sincerely,

A handwritten signature in black ink, appearing to read "Bud Wright". The signature is fluid and cursive, with the first name "Bud" and last name "Wright" clearly distinguishable.

Bud Wright
Executive Director
American Association of State Highway and Transportation Officials