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AAMVA Comments on Advanced Impaired Driving Prevention Technology [Docket No. NHTSA-2022-0079; RIN 2127-AM50]

The American Association of Motor Vehicle Administrators (AAMVA) welcomes the opportunity to comment on advanced impaired driving prevention technology. As public safety professionals that represent those who administer and enforce traffic safety laws, we encourage the transportation community to leverage every tool to reduce the senseless alcohol-impaired driving traffic deaths. AAMVA supports the public safety commitments of NHTSA and shares the perspective that these deaths were preventable.

For more than a decade, AAMVA has leant its support to the Driver Alcohol Detection System for Safety (DADSS) as passive alcohol detection technology that detects the presence of a legally intoxicated driver and prevents the car from moving. With the pace of technology and the growing cause for concern regarding impaired driving, it is AAMVA's hope that the United States Department of Transportation continues to make both financial and policy commitments to ending the impaired driving epidemic.

AAMVA offers the following comments related to questions posed by the agency:

Questions on Technologies That Passively Monitor the Performance of a Driver to Accurately Detect Whether That Driver May Be Impaired

1.1. NHTSA requests feedback on the two technology scan findings. Are there technologies, or technology capabilities or limitations not captured in these reports? If so, what are they?

AAMVA is less aware of the current status of technology applications that would satisfy the conditions of the BIL and is more focused on the application of the technology as a safety benefit. AAMVA defers comment on the status of technology to the solution providers and the safety technology evaluators.

1.2. NHTSA is concerned that behaviors consistent with drunk driving, like repeated potential lane departure and erratic speeding/braking, would be masked by an engaged SAE Level 2 driving automation systems. Would there be enough information from other sensors (e.g., camera-based DMS, hands-on-wheel detection) to detect driver impairment and driver impairment type when SAE Level 1 or 2 driving automation systems are active? (187)

AAMVA defers to the developers of ADAS systems that correct errant or improper driver controls regarding the integration of their sensor array and data collection models.

1.3 NHTSA is concerned about the limitations of vehicle sensor-based impairment detection systems to operate fully when certain sensors are impeded. External circumstances may include common roadway conditions such as darkness, heavy weather, roads with poor markings, or unpaved roads. Circumstances within the vehicle may include driver accessories, such as infrared light-blocking sunglasses, masks, or hats that may obscure the view of the driver to a DMS camera. If one or more sensors are impeded by such conditions, is there enough information

from other sensors to detect driver impairment? Does this vary by impairment type? What are the operational limitations of such systems?

> AAMVA defers to each technology solution provider to weigh in on redundancy efforts. AAMVA notes that each solution may have different considerations on both limitations and opportunities depending on how the suite of technologies is applied.

1.4. NHTSA is seeking input on how a test procedure for driver impairment detection systems could be developed and executed in a FMVSS. For example, does the test need to be conducted in a moving vehicle to capture lane drift or weaving? If so, what are potential testing approaches or procedures? Are humans required for camera based DMS assessment? Are there particular accessories (e.g., sunglass types, facial coverings) that would be required for testing? Is it feasible to conduct testing in darkness? What type of accuracy could be attained? How might this vary based on intended impairment type detection?

> AAMVA endorses a testing model that takes as many considerations into account as possible and does so with the understanding that testing in advance of mass application can alleviate any unintentional oversight under a variety of conditions. The interaction of technology under various circumstances is essential in understanding the capabilities of the technology. While the ultimate evaluation of the technology should lie with NHTSA, the testing under various conditions aspects of each individual technology could be demonstrated by submitted data, or attestation to solution testing under predefined conditions in order to qualify as a sufficient device.

1.5. What kind of performance requirement should NHTSA consider to mitigate defeat strategies (e.g., taping over the camera-based DMS or removing/replacing rear-view mirrors that contain driver monitoring equipment)?

> Solution providers are best positioned to submit comment on the mitigation of defeat strategies. As with testing opportunities, these are likely to be particular to the solution.

1.6. What metrics and thresholds (e.g., eye gaze, lane departure violations, speed, blind spot warning triggers, lane position variability, speed variability), or combination thereof, are most effective at measuring driver impairment? These would include time-based parameters from the start of the ignition cycle and those used for continuous monitoring. How feasible is it to implement these metrics in passenger vehicles? Should these vary by impairment type? Might these measures conflict across impairment types? Should NHTSA require impairment detection systems be able to collect specific metrics? Why or why not?

> AAMVA has not conducted independent research into metrics of driver impairment and its physical manifestations. AAMVA would defer to the medical community and safety professionals that have conducted correlations between these physical impairments and driving behaviors.

1.7. NHTSA seeks comment on whether it should be necessary for an impairment detection system to determine what kind of impairment a driver has (e.g., drowsy, distracted, drunk) if the driver triggers certain metrics that indicate the driver is impaired by at least one of those impairments? For example, incapacitation, drowsiness, and distraction could be captured by camera-based monitoring systems, but they may also detect some alcohol-impaired drivers.

> If a technology can make that determination with a high degree of accuracy, it can be a helpful recorded metric in determining the type of impairment. AAMVA defers to NHTSA and the technology community on whether it should be a requirement of satisfaction of the rule.

1.8. Are there characteristics that would separate sober impairments from alcohol-induced impairments (e.g., horizontal gaze nystagmus or myokymia)? If so, what are they? Are there other non-alcohol induced conditions in which some of these characteristics might appear? If so, please provide examples.

> AAMVA would defer to its law enforcement and DRE experts on what has been considered as part of the field sobriety testing methodology. AAMVA would also defer to the medical community on common

indicators that may be useful in alcohol induced impairment detection differentiation. Ultimately, the detection of impairment before operating a vehicle should be the standard, with differentiation of type of impairment serving as secondary.

1.9. NHTSA seeks comment about whether certain conditions listed in the previous question (e.g., myokymia) might result in false positives [(188)] in certain situations (*e.g.,* stress) or with certain populations (*e.g.,* older drivers).

AAMVA defers to medical experts and those applying detection technologies and those who have independently evaluated those technologies.

1.10. What precision and accuracy should driver monitoring technology be required to meet for the purposes of detecting alcohol impairment? Under what conditions should these technologies be demonstrated to work? Are there driver characteristics, environmental conditions, or other factors that might limit the usefulness or applicability of certain technologies under certain conditions? Should there be a maximum time allowed for a system to develop a determination of impairment, after the indicators of impairment are detected?

AAMVA defers to NHTSA on the establishment of an appropriate accuracy threshold for the technology to be considered sufficient. AAMVA is also unaware of which limiting conditions may be applicable to the device technology, so is unable to provide substantive comment on precise conditions under which the technology should be demonstrated to work. However, it would be optimal that the technology be capable of working under the majority of expected operating conditions. AAMVA is unsure of how NHTSA intends the question regarding a "maximum time" allowed for a system to develop a determination of impairment. If this refers to the maximum time between sample, detection, or non-presence of impairment data and provision of an impairment determination, AAMVA would assume that the more important criteria are the establishment of a minimum time of return on determinations of impairment. Being able to quickly detect and prevent the vehicle from functioning with an impaired driver behind the wheel seems to be the more important data point. AAMVA would defer on maximum time on detection and impairment determination but would support technologies that are able to make the most accurate impairment determinations in the shortest amount of time.

1.11. Under what conditions should a vehicle allow a driver to turn off driver impairment monitoring, if at all? If allowed, should a system be reset to "on" upon the next ignition cycle?

As a mandated technology or function the ability to impede or obstruct the impairment monitoring functions of the vehicle should be minimal. If absolutely necessary due to a technology failure or need for the technology to be repaired, there should be a highly visible telltale that would indicate to any observer that the technology has been disabled. AAMVA would support the technology being reset to "on" upon each ignition cycle.

1.12. NHTSA is interested in data, studies, or information pertaining to the effectiveness of various sensors or algorithms in correctly detecting driver impairment (collectively, and individual impairments). NHTSA is seeking comment on which metrics, thresholds, sensors, and algorithms employed by existing DMS technology that could be used in an alcohol impairment detection system could be sufficiently robust to meet the requirement that an FMVSS be objective.

AAMVA defers comment on this to solution providers.

1.13. Are there other innovative technologies, such as impaired-voice recognition, [(189)] that could be used to detect driver impairment at start-up? If so, how might these function passively without inconveniencing unimpaired drivers? How mature and accurate are these technologies?

AAMVA defers comment on this to solution providers.

1.14. What level of sensitivity and specificity is necessary to ensure the DMS technology does not unduly burden unimpaired drivers or prevent unimpaired drivers from driving? Are there any DMS available on the market capable of detecting alcohol impairment with the level of sensitivity and specificity necessary to ensure this?

AAMVA defers comment on market readiness and detection specificity to solution providers.

1.15. How can developers of DMS technology ensure that people with disabilities are not disproportionately impacted? Specifically, how can the technology accurately account for facial/body differences, chronic health conditions, and adaptive driving technologies?

AAMVA defers comment on system differentiation capabilities to solution providers.

1.16. How repeatable and reliable must these systems be? Is there societal acceptance of some potential false positives that could inconvenience sober drivers knowing that it would capture drunk drivers? If so, what countermeasure might best facilitate this? In considering a possible performance standard, what false positive rate would place too great a burden on unimpaired drivers?

Some of the discussion regarding false positives may depend on what is meant by a false positive. If the issue lies in the device detecting impairment to a different degree than the .08 impairment level – meaning the driver is impaired, but potentially not to the level of .08 impairment, than an acceptable level of tolerance between detection and the level of impairment is acceptable. If the difference in the false positive is between a vehicle operating interruption and someone who has not consumed any alcohol, or is not impaired in any way, the level of acceptable false positives is substantially lower.

1.17. What can be done to mitigate physical destruction or misuse concerns? If mitigations exist, how might these mitigations impact the effectiveness of DMS monitoring driver impairment?

As with device failures, at the least, any signs of tampering of the systems or devices should be indicated by a highly visible telltale so that both law enforcement and any potential unknowing passengers may be alerted to the absence of the active DMS for both rideshare and taxi purposes.

1.18. NHTSA seeks to ensure fairness and equity in its programs and regulations. As NHTSA considers technologies that can passively detect impairment, some of which monitor facial features through camera-based systems or voice recognition, how can NHTSA, in the context of an FMVSS, best ensure these systems meet the needs of vehicle users of all genders, races and ethnicities, and those with disabilities?

AAMVA defers comment on this to solution providers.

Questions on Technologies Aimed at Passively and Accurately Detecting Whether the BAC of a Driver of a Motor Vehicle Is Equal to or Greater Than .08 g/dL.

2.1. In a follow-up to NHTSA's technology scans, NHTSA seeks any new information on technologies that can passively and accurately detect whether the BAC of a motor vehicle driver is equal to or greater than .08 g/dL.

AAMVA defers comment on this to solution providers.

2.2. Although the legal thresholds for DUI/DWI laws focus on BAC/BrAC, BAC/BrAC are typically not used in isolation by law enforcement to determine impairment. BrAC/BAC may provide additional evidence of impairment after an officer has observed driving behavior, the appearance of the driver (e.g., face flushed, speech slurred, odor of alcoholic beverages on breath), the behavior of the driver, and any statements the driver has made about alcohol or drug use. Additionally, an officer may have administered the Standard Field Sobriety Test. Considering this, should regulatory options use BAC/BrAC in isolation to determine whether drivers are above the legal limit? If so, why?

For purposes of the vehicle detection systems, NHTSA should consider the BAC/BrAC independently. While law enforcement is able to criminally cite an operator for impaired driving by application of the Standard Field Sobriety Test or evidence of impairment, the technology contemplated by the rule should not be dependent on law enforcement intervention. The notion that law enforcement could be present for each

device detection or can be used in conjunction with each sample is not tenable. The regulation should focus on the ability of the device to detect and make informed determinations on level of impairment independently. The ability of the technology to prevent any instance of impaired driving and the criminal citation of operators who are actively and illegally operating a vehicle while impaired are separate circumstances and should be treated separately.

2.3. Are commenters concerned about using the legal limit (.08 g/dL) when there are indications that some individuals exhibit intoxication that would impact driving at lower or higher levels, depending on a number of factors discussed in the introduction? Why or why not? Might drivers with a BAC greater than 0 g/dL but less than .08 g/dL interpret the fact that their vehicle allows them to drive as an indication that it is safe for them to drive after drinking? If so, are there ways to mitigate this possible unintended consequence?

While AAMVA recognizes and understands that the legal limit may or may not be universally applicable to all tolerance, weight levels, etc. the .08 legal limit has been deliberated and largely recognized as an applicable level of impairment. While any level of impairment is a potential for consideration in the effort to drive towards zero roadway deaths, reconsidering what has been widely recognized as the impairment standard would inappropriately delay and shift the discussion away from preventing impaired driving and instead reopen discussion on what is "acceptable impairment." In the safety community, no impairment is considered acceptable for operating a vehicle. The focus should remain on application of impairment determinations rather than revisiting what constitutes impairment.

2.4. Given the quantifiable positive impacts on highway safety that Utah has experienced since lowering its BAC thresholds to .05 g/dL, should NHTSA consider setting a threshold lower than .08 g/dL?

AAMVA refers to its comments above. While we defer to NHTSA on making the appropriate determination, moving the needle on impaired driving interruptions globally should take precedence over revisiting the appropriate level of impairment.

2.5. Is a BrAC detection that correlates to a BAC of .08 g/dL or above sufficiently accurate?

It is a starting point. While AAMVA defers to NHTSA on sufficiency, we again urge action on some level and further note that the .08, while not universal, may relate more globally to state legal limits.

2.6. Would a standard that allows or requires systems that approximate BAC using BrAC (at any concentration) meet the Safety Act's requirement that standards be objective? Would the technology detect BAC?

AAMVA defers to NHTSA on whether the application on sampling be considered objective or whether the technology can make accurate assumption on BrAC approximating BAC.

2.7. NHTSA is seeking input on how a .08 g/dL BAC detection test procedure could be developed and executed in a FMVSS. For example, are dosed humans required or would a test device to simulate human dosing be required? What type of accuracy could be attained? Would static test procedures accurately simulate dynamic performance? In a BrAC evaluation, how would variance in vehicle cabin volume be accounted for?

Development of device standards may be subject to the technology being utilized. AAMVA would defer how each technology solution expects to meet an undefined standard to those that are developing the technology. However, the vehicle standard may wish to contemplate the correlation of the device's operation with accuracy thresholds under a preponderance of expected situations, including cabin volume fluctuations.

2.8. What precision/accuracy should BAC detection technology be required to meet? Should any precision/accuracy requirement be fixed at a final rule stage, or should it become progressively more stringent over time with a phase-in?

AAMVA defers to NHTSA on how precision or accuracy standards should be applied.

2.9. For a BAC-based sensor, NHTSA seeks comment on when during a vehicle's start-up sequence an impairment detection measurement should occur. For example, should an initial measurement of BAC/BrAC be required upon vehicle start-up, or before the vehicle is put into drive, and why? What is a reasonable amount of time for that reading to occur?

> The attempt at vehicle startup would seem to be a reasonable time to both detect and sample for BAC/BrAC measurements. Depending on the outcome of that analysis, the ability to put the vehicle in drive should be interrupted so as to prevent impaired driving. For each attempt, it would seem that would be an appropriate time to take measurement. AAMVA defers to NHTSA and solution providers on what a reasonable amount of time for that reading to occur would be, but it should take into account any attempts to thwart or cheat the system.

2.10. NHTSA recognizes that ongoing detection would be necessary to identify if a driver reaches an impairment threshold only after commencing a trip, particularly if drinking during a drive. NHTSA seeks comment on whether BAC/BrAC measurements should be required on an ongoing basis once driving has commenced, and, if so, with what frequency, and why. Further, would a differentiation of the concentration threshold between initial and ongoing detection be recommended and why?

> If the technology is available and active, it would seem a disservice to not allow the technology to function after commencing a trip. The differentiation in concentration threshold between initial and ongoing detection may not be as significant to safety as detection of reaching an impairment level. AAMVA defers to NHTSA and solution providers on the appropriate sequencing of measurements, but changes in detection levels may indicate the need for frequency.

2.11. NHTSA requests comments on operational difficulties in using touch-based sensing (e.g., consumer acceptance in colder climates when gloves may interfere) or in using breath-based sensing (e.g., mouthwash, vaping, alcohol-drenched clothing, or other false positive indicators).

> All solutions will have limitations in some regard, but depending on availability and application of the technology, something is certainly better than nothing.

2.12. What can be done to mitigate physical destruction and misuse? Examples may include having a sober passenger press the touch sensor or breathe toward the breath sensor. If mitigations exist, how might these mitigations impact the effectiveness of alcohol detection systems?

> Consideration, as noted above, in the frequency and direction of the technology after initial measurement. Indication of tampering or misuse via telltale.

2.13. Are there cybersecurity threats related to impairment detection systems? If so, what are they? Are there potential vulnerabilities that might allow outside actors to interfere with vehicles' impairment detection systems or gain unauthorized access to system data? How can cybersecurity threats be mitigated? Are there impairment detection methods or technologies that are less vulnerable than others?

> AAMVA would assume the cybersecurity threats may be dependent on the communication of each individual solution and how the vehicle interacts with larger systems. Given the threat level may be technology dependent, AAMVA defers comment to solution providers.

2.14. What temporal considerations should NHTSA include in any performance standards it develops (i.e., should NHTSA specify the amount of time a system needs to make a first detection upon startup before it will enable driving)? What amount of time is reasonable?

> See answer to question 2.9 above.

Questions on Technologies Aimed at a Combination of Driver Impairment and BAC Detection

3.1. In light of the technology development needs to both passively and accurately detect .08 g/dL BAC and passively monitor the performance of a driver of a motor vehicle to accurately identify whether that driver may be impaired, are there interim strategies NHTSA should pursue?

> The provisions of BIL are dependent on the readiness of the technology, however NHTSA can continue its focused efforts on impaired driving. AAMVA continues to emphasize that in terms of impaired driving prevention, the states are often well positioned to understand what best works for their individual jurisdictions. Providing continued dedicated federal funding towards impaired driving prevention and allowing for state flexibility in meeting performance requirements under the triennial state submitted highway safety plan is always welcome.

3.2. If an alcohol impairment detection system utilizes both BAC detection and DMS components, which DMS metrics best complement a BAC system to ensure accuracy, precision, and reliability?

> AAMVA defers comment to medical professionals and technology solution providers.

3.3. One possible benefit of a hybrid approach is that a camera system could help prevent intentional defeat of BAC/BrAC sensors. For example, when a driver presses a touch sensor to measure BAC, a camera using machine vision could verify that it is the driver and not a passenger who touches the sensor. Could the camera provide additional benefits against defeating the system?

> The example provided is a good one, as is obstruction of one system over another and obligatory recording activity at the time of vehicle ignition or engagement of the detection operating systems. Redundancy and complementation of the technologies seems sensible, but the pairing of the technologies is dependent on which solutions are provided.

3.4. NHTSA is considering a phased approach to addressing alcohol impairment. The agency is concerned about false positives. Effectively, this approach could have a first phase that aims to address alcohol-impaired drivers with a BAC of .15 g/dL or higher, where an alcohol sensor could have better accuracy in detecting alcohol-impairment, in combination with a camera-based DMS and/or other vehicle technologies. By improving the BAC detection accuracy, it may gain more consumer acceptance by lowering the false positive rate (i.e., the chance that someone with a BAC below .08 g/dL is incorrectly identified as alcohol- impaired by a vehicle system). This would also target the drivers with the highest levels of impairment. With time and accuracy improvement, a second phase could be pursued to achieve the .08 g/dL BAC accuracy needed to comply with BIL. NHTSA therefore seeks comment on the viability of this regulatory approach. Is a BAC of .15 g/dL the right limit to phase in?

> The phased approach may assist with public acceptance of the technology but would not appropriately serve the interests of safety. As the standard becomes more stringent and potentially more accurate, the public may see it as less acceptable as the restrictions become more frequent. AAMVA continues to contend that the appropriate level of impairment for any operator of a motor vehicle is zero. We understand and recognize the established legal limit of impairment but feel that a sliding scale on the "acceptability of impairment" is a dangerous exercise and should not be the dictating factor of this rulemaking.

3.4. An option could also be a system with primary and secondary indicators within a driver impairment algorithm. For example, a system could incorporate a zero or low (.02 g/dL) tolerance BAC detection technology to initially sense whether alcohol is present in the vehicle. This would serve to "wake up" a driver impairment algorithm. Since this could be hand sanitizer or alcohol on a person's clothing, a second confirmation of driver impairment from a driver monitoring system would be needed. Driver performance measures, such as eye gaze, lane weaving, etc. would be the primary indicators of impairment and utilize evidence of alcohol as a supplementary indicator for alcohol impairment. Given this approach, would such a system allow a vehicle to better distinguish between alcohol impairment and other forms of impairment that have similar indicators (i.e., the percentage of eyelid closure can be an indicator of both drowsy and drunk driving)? NHTSA notes that it has not identified any passive, production-

ready, alcohol-impaired driver detection technology capable of accurate detection at .02 g/dL and seeks comment on the status of such technology.

Questions on Prohibiting Driving at the Start of the Trip

4.1. How would an alcohol-impaired person react to their vehicle not starting, and how can/should this be considered? Would some individuals decide to walk to their destination in the road, increasing their risk of being hit by another vehicle? Would they get a sober person to start their vehicle and then take over the driving task themselves? Are there countermeasures to discourage this practice by shutting down the vehicle for a period of time after two failed attempts? NHTSA seeks comment on potential research designs to develop better information in this area.

> Knowing how impaired individuals will react under any situation is difficult if not impossible. One thing is known, and that is that the most dangerous place an impaired driver can be is behind the wheel of a car where the danger to themselves and others is exponentially higher.

4.2. What are the pros/cons of an ignition interlock as opposed to a transmission interlock prevention method for internal combustion engine vehicles? Is one superior to the other? Should both be acceptable compliance options if considered for an FMVSS? How would this differ for electric vehicles and what issues specific to electric vehicles should NHTSA consider?

> AAMVA defers to NHTSA on the comparison of transmission interlock prevention versus ignition interlock. However, AAMVA has long been a proponent of ignition interlock as a prevention method given it interrupts any operation of the vehicle. AAMVA does not have good data on how these technologies intersect with electric vehicles, but given they lack a drive train but have software components dictating the direction of drive (or the ability to start the vehicle generally) AAMVA believes that they could be applicable to both vehicle classes. Even though electric vehicles largely do not rely on transmission-based technology, the direct current to the drive train could be interrupted.

4.3. NHTSA seeks comment on any adverse consequences of an impaired driver being unable to drive his/her vehicle. For example, this could result in an alcohol-impaired person being stranded late at night for hours and susceptible to being a victim of crime or environmental conditions (e.g., weather). Or an alcohol-impaired camper may need to use his/her vehicle to escape from a rapidly approaching wildfire or environmental conditions (weather). How often would such incidences expect to occur (assuming full fleet implementation)? Are there logical strategies for mitigating the negative effects? What if the vehicle owner wishes to drive their vehicle on private land (i.e., not on public roads)?

> Consideration of safety external to the vehicle is always important. The prevalence of cell phones would hopefully mitigate some of the issues associated with deterring impaired drivers from operating their vehicle. The prevalence of ridesharing, making logistic arrangements that alleviate some of these pressures is available independent of the vehicle. The availability of communication is largely universal, even if decision making is degraded through impairment.

4.4. Given the previous examples, should there be an override feature for emergencies? Should the maximum speed of the vehicle be limited during override? How could an override feature be preserved for extreme situations and not used routinely when alcohol-impaired?

> AAMVA would not endorse an override feature. Just as cars break down currently due to non-impaired situations, operators may have to handle circumstances that are beyond the norm of control. Options exist for additional assistance that are not vehicle dependent, but service dependent.

4.5. If a system detects alcohol impairment prior to the start of a trip and an interlock is activated, should retest(s) be allowed, at what elapsed time interval(s), and why? NHTSA especially seeks comment on test/data analysis methods for determining an optimal retest interval strategy. Finally, should data be recorded on the vehicle if retesting is permitted?

Retests are an important consideration given the vehicle may even have different operators operating a vehicle upon detection of impairment. AAMVA defers to NHTSA on the appropriateness of the frequency of testing intervals and the ability to retest. Ensuring there is no "switching" between operators and passengers may be a crucial factor and may influence NHTSA's determinations on the necessity to record tests.

Questions on Vehicle Warnings Once Impairment Is Detected

5.1. NHTSA is aware of many vehicle manufacturers using visual/auditory warnings (e.g., a coffee cup icon) and encouraging drivers to take a break from the driving task. There are also visual/auditory/haptic warnings to identify distracted driving or hands off the steering wheel while Level 2 driving automation systems are engaged. NHTSA is interested in any studies to support the effectiveness of these warnings, including designing against defeat strategies. NHTSA also seeks comment and studies on whether similar warnings may be effective for alcohol-impaired or incapacitated drivers or would additional interventions be needed. The system attributes that enhance a system's effectiveness are of particular interest to NHTSA. Are there any unintended consequences from these warnings? If so, what are they?

AAMVA defers to OEMs on comment as they likely have tested the effectiveness of these indicators and potential interventions.

5.2. NHTSA's research suggested that indicators of alcohol impairment are often also potential indicators of other conditions, such as drowsiness. Hence, the preventative measures of each condition may need to be addressed differently. For example, distracted drivers can quickly return their attention to the driving task, and drowsy drivers can recover with adequate rest as an intervention, but drunk drivers may need a much longer recovery time as alcohol metabolizes. [(196)] NHTSA therefore requests research and information on what warning strategy would effectively encourage both drivers that are alcohol-impaired and drivers that have a different impairment to improve their performance in the driving task (e.g., by resting, getting a caffeinated beverage)? Or is there research to support that a warning would only be effective for a distracted driver or a drowsy driver, but may aggravate an alcohol-impaired driver? Are there other adverse consequences from using warnings to address multiple types of impairment? If so, what are they?

AAMVA defers comment on those who have performed dedicated research into the differences in types of impairment.

5.3. NHTSA seeks comment on how manufacturers balance multiple alerts in response to different impairment detections. Given the many forms of impairment, if systems are developed that can distinguish effectively between alcohol impairment and other forms, is it practicable to employ a variety of different responses? Will multiple warnings (auditory, visual, or haptic) or other interventions for different forms of impairment only serve to confuse drunk drivers and lessen effectiveness for responses to drunk driving?

AAMVA defers comment on how manufacturers handle multiple warnings and consumer testing models.

5.4. NHTSA seeks comment on how warnings, especially multiple warnings, may impact drivers with an auditory or sensory processing disability. Would multiple warnings distract some drivers?

Again, AAMVA defers comment to the manufacturers on this, though the purpose of the warning systems is to both call attention to the impairment condition (both by the operator and potentially to others including passengers and external observers) and encourage the operator to seek remedy. Much as seat belt indicators can be highly visible, that does not necessarily mean that they are a distraction in any way beyond pestering the operator to take action to remedy the situation.

5.5. NHTSA seeks comment on how systems react if the drowsy driver (or other inattentive or impaired driver) does not respond to warnings? What types of warning escalation strategies (timing, perceived urgency, and frequency) are used in industry and are they consistent among manufacturers?

AAMVA defers comment to industry on consistency.

Questions on Vehicle Interventions Once Detected (On-Road)

6.1. What types of vehicle interventions are in use today for SAE Level 2 driving automation systems when the system detects the driver is incapacitated? What prevents their use in being coupled with driver impairment or BAC detection technology? What is the feasibility of using these interventions without engaging Level 2 driving automation?

AAMVA defers to manufacturers on availability of options for ADAS or automation systems triggered by BAC detection technology.

6.2. Stopping in the middle of the road could introduce new motor vehicle safety problems, including potential collisions with stopped vehicles and impaired drivers walking in the roadway. What strategies can be used to prevent these risks? How are risks different if the vehicle stops on the shoulder of the road? What preventative measures could be implemented for vehicles approaching the stopped vehicle? What are the risks to occupants involved in those scenarios?

AAMVA largely defers but cannot support a safety system that results in a vehicle or roadway conditions being unsafe. The vehicle should not just stop when in operation, potentially making the roadway less safe, and making those sharing the roadway less safe. The system should be detecting issues initially before vehicle movement occurs rather than interruption of the vehicle while underway.

6.3. What is the minimum sensor and hardware technology that would be needed to pull over to a slower lane or a shoulder and the cost?

AAMVA defers comment to manufacturers on cost analysis.

Questions on Other Approaches to Reduce Impaired Driving

7.1. As vehicle technologies continue to develop with potential to reduce impaired driving, what steps or approaches should NHTSA consider now, including potential partnerships with States or other entities?

See AAMVA" s response to question 3.1. As data continues to drive safety, NHTSA considerations on how best to manage the data in these systems and improve (and fund) approximations of impaired driving records in "real time" remain a huge consideration. AAMVA welcomes continued conversations with NHTSA on how to facilitate data transfers between states more fluidly and expeditiously.

7.2. Which best practices have States found most effective in reducing impaired driving? Have States found approaches such as sharing information about drunk driving convictions to be helpful in reducing impaired driving?

See both the above and AAMVA response to section 3.1. State members have benefitted from a variety of NHTSA grant funding sources to combat impaired driving. As referenced elsewhere, the ability for state to apply for awards and retain the flexibility to apply those awards to standing programs is essential in continuity of programs. AAMVA continues to emphasize the importance of flexibility in grant awards as each jurisdiction is uniquely distinct.

Questions About Privacy and Security Considerations

8.1. NHTSA understands that personal privacy considerations are critical to the design of any system that monitors driver behavior or condition. Such considerations are also one component of consumer acceptance of systems

described in this advance notice of proposed rulemaking. NHTSA seeks comment on privacy considerations related to use and potential storage of data by alcohol and impairment detection systems and how best to preserve driver and passenger personal privacy. Are there strategies or requirements (e.g., prohibitions on camera-based DMS from recording certain types of imagery) to protect privacy?

> AAMVA defers on the practical limitations of recorded content by nature of what it depicts to those more knowledgeable. In terms of privacy, however, AAMVA does note that NHTSA should consider the importance of differentiation between data associated with crash investigations or data subject to statutory obligation from that which is publicly available. The preservation of data for a sufficient period to assist in crash investigation is an essential.

8.2. Given the potential for different privacy impacts associated with different types of systems and information used in those systems, how should NHTSA weigh the different potential privacy impacts? For example, how should accuracy be weighed against privacy? Do certain metrics result in less privacy impact than others while providing the same or more accuracy? If so, how?

> FMCSA may have experience related to how driver records are managed with respect to hours of service, medical certification, and a host of other driver-dependent personally identifiable information. AAMVA would direct NHTSA to those past considerations as well as what is vitally essential information related to operational public safety. AAMVA and its members have also been subject to the Driver's Privacy Protection Act (DPPA) which describes how federal law influences the availability of personal data associated with driver records.

8.3. What performance-based security controls should NHTSA consider including in its potential performance requirements for advanced impaired driving technology? Are there any industry or voluntary standards specific to these technologies that NHTSA should consider? If not, which standards do commenters believe would be most appropriate for these systems to comply with and why?

> AAMVA defers to industry on performance-based security controls and voluntary standards.

8.4. Are there any additional security vulnerabilities that these systems would present that do not already exist in modern vehicles (e.g., passenger vehicles that are equipped with various technologies such as automatic emergency braking, lane keeping support, and others)? If so, what needs to be done to mitigate those potential vulnerabilities?

> AAMVA defers to manufacturers about security vulnerabilities associated with integration of these technologies with ADAS systems.

8.5. What suggestions do commenters have regarding how the agency should go about educating the public about security and privacy aspects of advanced impairment and drunk driving detection technology?

> AAMVA defers to industry, but given the privacy controls are dependent on solutions, it would make sense that the privacy considerations be presented alongside a description of how the technologies work in vehicle descriptions and operating manuals. The rollout of these technologies also represents a tremendous safety benefit, so manufacturers adhering to their inclusion should be recognized as contributing to a broader safety environment.

Question About Consumer Acceptance

9.1. NHTSA requests comment on legitimate consumer acceptance issues related to advanced drunk and impaired driving technologies and suggestions for how the agency might be able to craft future proposed performance requirements to remedy any consumer acceptance issues.

> As referenced above, the technology should be described as a huge contribution towards ending impaired driving and protecting the lives of all road users. By committing to this as a solution, we are actively working to end impaired driving. That message alone should drive consumer acceptance.

General Questions

10.1. NHTSA seeks comment on any reliability or durability considerations for alcohol impairment detection technology that may impact functionality over its useful life.

AAMVA defers comment to individual solution providers.

10.2. NHTSA requests any information regarding the final installed costs, including maintenance costs, of impairment detection systems.

AAMVA defers comment to individual solution providers.

10.3. Should NHTSA propose a standardized telltale [(215)] or indicator [(216)] (or set of telltales) indicating that impairment has been detected (and/or that vehicle systems have been limited in response)? Are there standardized industry telltales or indicators already developed for this sort of system that NHTSA should consider?

While AAMVA defers comment to individual solution providers, we do recognize and advocate for a standardized telltale. When operators can interpret what the telltale is conveying across vehicle systems and models it would have a more profound impact on becoming globally recognizable and assist with operator response. Just as the universal symbol for "power" on devices has become universally recognized, a standardized telltale for impairment detection would help not only operators, but also passengers widely recognize what the telltale is indicating.

10.4. NHTSA broadly seeks comment on how to best ensure that manufacturers have the flexibility to develop more effective impairment detection technology while preserving a minimum level of accuracy and reliability.

10.5. Should NHTSA consider establishing a requirement that allows a vehicle's BAC detection threshold to be adjusted downward based on the BAC thresholds of local jurisdictions or fleet owners? Note, this technology would not be intended or designed to replace a state's enforcement of its own statutes.

Given the rulemaking's prior mention of variance of BAC threshold between jurisdictions, an ability to adjust the threshold down (from .08 to .05) to the local jurisdiction is sensible. It would also provide a reasonable solution for any changes to state statute that have not yet occurred or unforeseen legislative considerations that are yet to happen.

10.6. Earlier in this document, NHTSA noted that progress in reducing drunk driving resulting from many behavioral safety campaigns has plateaued. Should NHTSA devote more of its behavioral safety resources towards those programs and efforts that address underlying contributors to alcohol use disorder, including drunk driving, like mental health conditions? Are there effective behavioral safety campaigns or tactics NHTSA is not using?

While AAMVA defers to NHTSA on the appropriateness on dedication of resources in relation to their overall behavioral safety campaign portfolio, we remain committed to supporting any additional efforts NHTSA can and will make to combat impaired driving. NHTSA may want to consider what statistical data supports their current investment model towards impaired driving. AAMVA cites that impaired driving fatalities that disproportionately impact other road users make it a high priority for address, as does the violence and frequency of the crime. AAMVA stands ready to assist NHTSA in both this endeavor and any other potential solutions to combat the impaired driving epidemic.

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