

Comment from C. N. Forrester

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As a commercial driver, and having held a CDL for 35 years, I am concerned about any allowance of any vehicles with automated driving systems, which do not permit human intervention, on highways simultaneously with human drivers. While this bill seems directed toward crash avoidance systems, it does not address other systems. Systems that do not allow human intervention are a primary concern. Firstly, we know that the systems used in automated systems are complex and depend on the interaction of multiple sensors with advanced computer systems. We also know that these systems require regular maintenance, are prone to failure and can be expensive to maintain and repair. The tendency in industry is for vehicles to be maintained at lowest level that allows them to be driven on the road; but not at an optimum level of performance. Reducing maintenance costs is always a concern. Most commercial drivers have driven vehicles that were not in optimum condition and have experienced malfunctions and breakdowns on the highway. We cannot reasonably expect these vehicles to be constructed or maintained in the same manner that an autonomous spacecraft taking itself to an object in the solar system would be, as this would be cost prohibitive. When protecting human drivers, one would expect at least that level of testing, construction and maintenance. In recent airline examples we have seen an automated crash avoidance system cause two airline crashes when the 737MAX MCAS system worked as it was designed and the human pilots had no training on the system and did not know how to turn it off. We have evidence that these automated systems can and do react in an undesired manner when humans do not and/or cannot override the system. Removing barriers to entry could unnecessarily put human drivers at risk. In addition, the AI used in automated driving systems can become confused by human drivers who make moves that are unpredictable and inconsistent with its machine learning programming; and also can become confused by weather conditions creating hazardous or unsafe situations. In reference to liability, should one of these vehicles cause a crash on the highway, who would be at fault--the maker of the vehicle, the maker of the software, the owner of the transport company? How would this matter be handled by the insurance companies and how would the injured parties, whether the state or another driver be compensated for those damages? If a human driver intentionally commits reckless acts on the highway, and those acts subsequently cause the death of another driver, then the human driver may be charged with manslaughter. Should a vehicle with an automated driving system malfunction and cause the same death; who would be held responsible? What is the plan for these systems to be tested? In the case of a human driver, we know that the person must have passed both written and skills tests and they must pass regular fitness for duty tests. The vehicle itself, and its systems must be checked before it is driven on the highway and periodically while it is driven. In the case of automated driving systems, what provision will be made to ensure that they systems are fully functional prior to entering the roadway for each trip? How will this be verified? Self-testing is not always accurate. For example, a tire may have deterioration on a side wall, making it unfit for use, but tire pressure monitors indicate the tire is fine and report no issues. Such systems can lead to driver complacency, as we have seen with several crashes involving automated systems on passenger cars. Companies testing the vehicles and lobbying to allow wide entry are likely not operating them in the same manner that a regular transport company would. The transport company's motivation is moving freight and making a profit. The manufacturer's motivation is selling their

product. Independent verification and inspection would be a must for any automated systems added to vehicles. Having manufacturer's certify does not equal independent verification. It would seem that rather than removing barriers to entry of these types of systems, the focus should be on very strict regulation of these systems and requiring that drivers be fully trained on automated systems and also be able to override automated systems when there is a malfunction. The development of new technology should not include putting drivers at risk on highways by simply removing barriers for that technology to be implemented. Cyber-security is definitely an issue and could become a threat to national security, as well as immediately putting other drivers at risk. We have seen that virtually no automated system is immune from the threat of hacking. Further, fully-automated driving systems, designed to operate without a human driver would appear to need even more regulation and should not be permitted to occupy lanes that human drivers utilize on highways.