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Docket Management Facility
U.S. Department of Transportation
1200 New Jersey Avenue SE
West Building Ground Floor, Room W12-140
Washington, DC 20590-0001

Submitted via www.regulations.gov

**Comments of Consumer Reports to the
U.S. Department of Transportation on the
Request for Comments: V2X Communications
Docket No. DOT-OST-2018-0210-0001**

The independent, non-profit member organization Consumer Reports¹ welcomes the opportunity to comment on the U.S. Department of Transportation (DOT) request for comments regarding vehicle-to-everything or “V2X” communications, the collective name to refer to vehicle-to-vehicle, vehicle-to-infrastructure, and vehicle-to-pedestrian communications technologies that allow different participants in and parts of the transportation system to share important safety-related information through wireless transmissions. While improvements to crash protection for vehicle occupants are far from exhausted, the continued development and adoption of crash prevention technologies, including V2X communications, will play a major role in countering deaths and injuries on our roads.

Consumer Reports has followed the research and testing of crash prevention technologies based on V2X communications, and on the basis of our observations and analysis, we consider the technology to have the potential to significantly reduce the number and severity of motor vehicle crashes. This potential comes from addressing crashes that cannot be mitigated by current in-vehicle camera- and sensor-based technologies, but also from augmenting sensor-based systems as an additional part of sensor fusion. Overall, because these systems involve the use of radio signals and can transmit safety-related data without a direct line of sight, they have significant potential to improve traffic safety in a manner complementary to other crash avoidance technologies, including by giving drivers and vehicle software an early warning of yet-unseen crash hazards posed by other vehicles, weather, or road conditions. We continue to support the establishment of mandatory safety standards governing the use of wireless

¹ Founded in 1936, Consumer Reports uses its dozens of labs, auto test center, and survey research center to rate thousands of products and services annually. CR works together with its more than 6 million members for a fairer, safer, and healthier world, and reaches nearly 20 million people each month across our print and digital media properties.

communications for crash prevention purposes, provided that they reasonably account for potential future developments and that manufacturers and suppliers meet baseline, enforceable standards to protect consumer privacy and data security.

DOT's request for comments addresses recent developments in V2X technologies, and how these developments impact both V2X in general and the Department's role in encouraging its integration. As part of a series of questions, the Department asks whether focusing on Dedicated Short-Range Communications (DSRC) technology and DSRC-based systems as the primary means of V2V communications—as envisioned by the National Highway Traffic Safety Administration's (NHTSA) notice of proposed rulemaking of January 12, 2017²—still makes sense. DOT also asks about how to ensure that alternatives to DSRC, if supported by the evidence, would be interoperable with each other and DSRC.

While not all of DOT's questions are addressed here—particularly those requiring precise V2X technical expertise and test results reflecting the functioning of various technologies—these comments continue to stress certain key principles. We provide these comments first, before turning to a handful of points regarding questions 7, 8, and 9 in DOT's notice.

DOT Should Heed Several Key Principles As V2X Communications Technologies Emerge

First, as V2X is rolled out, everyone on the road should be able to benefit from interoperable wireless safety communications among cars, trucks, pedestrians, and infrastructure. New cars should be required to be able to send and receive safety messages in a mutually intelligible manner so that safety benefits reach all consumers, not just those who can afford to buy expensive add-ons. If it is to maximize crash prevention benefits, DOT will need to ensure this interoperability and the broadest possible application of V2V and other V2X standards—and the best way to accomplish this will be through mandatory standards. In 2017, the crash population identified by NHTSA as potentially addressable by V2V communications alone was significant, including 3.4 million light-vehicle to light-vehicle crashes every year, or 62% of the total, involving an estimated 7,000 fatalities and 1.8 million injuries annually.³ By contrast, “if-equipped” mandates applying only to the operation of V2X systems optionally included by manufacturers in new vehicles would be likely to inhibit potential safety benefits by leading to greater uncertainty in development, delayed deployment, and ultimately an insufficient fraction of the vehicle fleet being equipped with V2X capability.

Second, as various technologies are being developed, there still should be dedicated and adequate spectrum available exclusively for vehicle safety purposes. Non-safety commercial use of this dedicated safety spectrum should be prohibited, including because it would be anti-competitive and run counter to public ownership principles and the efficiency and flexibility of the spectrum. At the same time, while maintaining dedicated spectrum, any DOT standards should be flexible and allow the Federal Communications Commission (FCC) to make future decisions regarding spectrum that would align with the public interest.

² 82 Fed. Reg. 3854-4019 (Jan. 12, 2017).

³ *Id.*

Third, as V2X moves forward, DOT must recognize that consumers deserve to know what their car is transmitting, and who has access to this information. Ultimately, consumers should be able to trust that companies are legally obligated to protect the privacy and security of V2X communications as the technology is deployed. DOT should follow through on efforts to protect privacy and security in any required V2X systems, and—more broadly, in coordination with the Federal Trade Commission (FTC)—should require all vehicle and equipment manufacturers to meet baseline, enforceable standards for privacy and security, as this is the most appropriate and straightforward way to address consumers’ concerns on these subjects. At a minimum, manufacturers should be required to adhere to the Fair Information Practice Principles (FIPPs), but DOT also should work closely with Congress and other federal agencies to ensure consumers have meaningful transparency, choice, control, and security for their personal data that is associated with a motor vehicle. Alternative approaches that would rely primarily on opt-out provisions would undermine important safety technology.

Finally, the Department should set implementation time frames for V2X standards that recognize the urgency of bringing lifesaving technology to consumers’ vehicles. DOT should set relevant performance standards and test methods within the next 18 months, building on its past work in this area, and require the technology to be standard on all new vehicles no later than 2025. Since it possesses the necessary data showing the benefit to safety of these systems, there is no reason to wait until an arbitrary time after a final rule is issued before protecting the public.

In addition to the foregoing principles, please see below for more specific comments in direct response to the final three questions in DOT’s *Federal Register* notice:

Regarding Cybersecurity and Privacy, as Raised in Question 7:

- No matter which V2X system is used or how the systems interoperate, the communications should be resistant to intentional interferences like: meaconing, jamming, and spoofing. In addition, anonymous authentication should be one part of ensuring privacy protections for consumers. Any signature or identifier that is included in messages from connected vehicles needs to be automatically changed periodically in order to prevent passive tracking of vehicles and their communications.
- More generally, the V2X systems should collect, store, and share only the information necessary to ensure that the communications are authentic and have not been spoofed or otherwise changed by a third party. By collecting only the necessary information, infrastructure and other autonomous car systems will also be less of a “honeypot” for future hacks.

Regarding How Communications Technologies Could Be Leveraged to Support Current and Emerging Automated Vehicle Applications, as Raised in Question 8:

- Communications technologies can provide drivers real-time warning to prepare for hazardous driving scenarios, as opposed to the intervention of such systems as a last

resort. In addition to their role in forming the foundation of certain safety systems, these technologies also could support camera- or sensor-based active safety applications by aiding their operation or not requiring their intervention as often. While safety advances such as automatic emergency braking (AEB) can reduce crash severity at the last minute, communications technologies could help ensure deceleration in anticipation of difficult conditions, such as congested roadway areas. This consequently would limit the need for or increase the effectiveness of AEB systems by helping them to begin operating from slower speeds than they otherwise would need to operate. Conceivably, communications technologies also could send signals to active safety systems like AEB to help increase their effectiveness by “preparing” them to operate.

- Also, Consumer Reports has explored at length the importance of and the benefits from appropriate use of driver assist systems, such as combinations of lane keeping assist and adaptive cruise control systems. Communications technologies could help limit the operation of such systems to areas where they are appropriate, and perhaps more importantly, could help limit or prevent operation of such systems where added driver attention is needed as a result of weather, roadway, or other special conditions. This essentially would provide the car 'real time' limitations for driver-assist system operation, in a sense providing real-time mapping (similar to how GM Super Cruise currently operates using stored data). This application for communications technologies could help improve the benefits of driver-assist systems while limiting the risks of abuse.
- Finally, by adding another stream of safety data, including the ability to effectively see around objects and corners, V2X systems will play a critical role in increasing the safety of automated vehicles, including self-driving cars.

Regarding the Use of Deployments to Determine Which Technologies Are Most Appropriate and How to Achieve Interoperability, as Raised in Question 9:

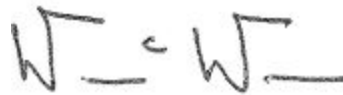
- Where multiple communications technologies may yield safety benefits, DOT should initiate trials to help collect data that would yield answers to this question. The more data shared with DOT and the public, the likelier it is that DOT and stakeholders will reach an informed understanding around uses and interoperability. That said, such trials should not be used as a reason to further delay implementation of this critical safety technology.
- Emerging technologies (such as the EnLighten app integrated into new BMWs and a standalone app for both iOS and Android) use historical Signal Phase and Timing (SPaT) data from various Departments of Transportation to display traffic light information to drivers. This type of data is potentially harmful if it provides inaccurate or outdated information. The logical solution is to have direct, real-time communications information ensuring that timely and correct data gets to the vehicle or driver. Our experience specifically with the EnLighten application has raised concerns over the potential for misuse and overreliance.

- Interoperability is imperative to ensure all consumers will benefit from the safety applications of V2X communications technologies. Interoperability of proprietary manufacturer-specific software may be prone to potentially catastrophic communication errors. To ensure all consumers are receiving timely, accurate information—without the need for software, language, or encryption translation—the government should maintain oversight of dedicated and adequate spectrum available exclusively for vehicle safety.

Conclusion

Thank you for your consideration of our comments. We look forward to continuing to work with the Department and all stakeholders to bring about safer roads for consumers, including through the realization of safety benefits on the basis of V2X communications.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'W. Wallace', with a stylized flourish at the end.

William Wallace
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Consumer Reports