



February 25, 2019

Secretary Elaine Chao  
U.S. Department of Transportation  
1200 New Jersey Ave. SE  
Washington, DC 20590

Submitted electronically via [www.regulations.gov](http://www.regulations.gov)

**RE: *Request for Comment DOT-OST-2018-0210, V2X Communications***

Dear Secretary Chao:

The Center for Auto Safety (“the Center”) appreciates the opportunity to comment on the Department of Transportation’s (DOT) recent request for comments on Vehicle-to-Everything (V2X) communications. The Center, founded in 1970, is an independent, member supported, non-profit consumer advocacy organization dedicated to improving vehicle safety, quality, and fuel economy. On behalf of our members, and all drivers, passengers, and pedestrians nationwide, the Center continues to support an exclusive non-commercialized, dedicated safety bandwidth that will allow vehicles to communicate with other vehicles, pedestrians, and infrastructure in a manner that has the potential to drastically reduce fatalities and injuries on American roads as soon as it is deployed.

That the DOT has chosen to only issue a request for comments on V2X communications is disappointing and represents yet another delay in a rulemaking process that should have already provided a mandatory deadline for automakers to install this life-saving technology. As fleet penetration is critical to realizing the safety benefits of V2X communications, continued rulemaking delays now threaten the original timeline of required compliance by 2021 for Vehicle-to-Vehicle (V2V) communications.<sup>1</sup> Since the Direct Short Range Communication (DSRC) raison d’etre is saving lives, NHTSA’s aversion to action on V2X deployment and gratuitous delays in DSRC adoption will cause avoidable injury and death to motorists, pedestrians, and other vulnerable road users.

NHTSA has been in the process of developing standards for V2V communications for over a decade,<sup>2</sup> and has been joined by Toyota and General Motors,

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<sup>1</sup> 82 Fed. Reg. 3854, Jan. 12, 2017

<sup>2</sup>Vehicle Safety Communications Project Task 3 Final Report, March 2005, DOT HS 809 859, <https://www.nhtsa.gov/DOT/NHTSA/NRD/Multimedia/PDFs/Crash%20Avoidance/2005/CAMP3scr.pdf>,

among others, who plan to install this technology in vehicles beginning in 2021. NHTSA's rulemaking, announced in 2014 and formally proposed in 2017, would institute FMVSS 150, mandating phasing in of V2V technology by 2021, which encourages early fleet penetration and maximizes the future safety benefit of V2X technology. As the agency noted in the 2017 Notice of Proposed Rulemaking: "Without a mandate to require and standardize V2V communications, the agency believes that manufacturers will not be able to move forward in an efficient way and that a critical mass of equipped vehicles would take many years to develop, if ever."<sup>3</sup>

Unfortunately, the current leadership at DOT is now bowing to pressure by the telecommunications industry and their allies at certain auto manufacturers who want to commercialize the safety spectrum and use "5G" technology that is untested, unavailable, and unproven as a uniform means of V2X communications. Furthermore, there are enormous privacy and accessibility issues presented by 5G technology that are not present in DSRC. Even if 5G is eventually proven as an effective technology to accomplish the goals of V2X approval of 5G technology, instead of the already viable and available DSRC, carries with it the risk that consumers will more slowly adopt what will be intrusive and potentially costlier V2X.

As for the request for comments, it represents yet another in a series of DOT comment requests that is heavy on questions but light on suggestions of mandates to improve the safety of consumers. This departure from the Department's previous approach to V2X leaves little doubt that the current DOT's intention is to hand over control of a system that should be singularly concerned with safety to profiteers in the telecommunications and auto industry.

Our responses to the DOT's questions are as follows:

- Please provide information on what existing or future technologies could be used for V2X communications, including, but not limited to, DSRC, LTE C-V2X and 5G New Radio. What are the advantages and disadvantages of each technology? What is the timeframe for deployment of technologies not yet in production? Please provide data supporting your position.
  - a. V2X communications using DSRC<sup>4</sup> is a two-way short-to-medium range wireless technology that provides nearly instantaneous network connectivity and message transmission. The primary message authentication approach proposed is a Public Key Infrastructure (PKI) that provides public-key encryption and digital signature services. This approach is designed to ensure a trustworthy network environment and address the fundamentals of security: authentication, confidentiality, integrity, non-repudiation and access control. The system is designed to protect user identity and thereby promote usage.

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Standards: WAVE/DSRC/802.11p, Spring 2008, <http://cvt-project.ir/Admin/Files/eventAttachments/109.pdf>.

<sup>3</sup> 82 FR 3854, Jan. 12, 2017.

<sup>4</sup> FMVSS No. 150 Vehicle-To-Vehicle Communication Technology For Light Vehicles, [https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/v2v\\_pria\\_12-12-16\\_clean.pdf](https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/v2v_pria_12-12-16_clean.pdf)

- b. Any alternative communications approach, e.g. 5G, that can carry the basic safety message at compatible rates and ranges for technical compatibility must also provide equivalent user identity protection and anonymity to provide equal consumer protection. It would be unacceptable if vehicle operational information including location and/or unique association with a specific user (as would be an intrinsic part of an IP-based communication protocol such as 802.11g or 802.11p) were collected for the purpose of monetizing a particular user by a commercial network provider. Compromising user identity could lead to compromised cybersecurity, potentially lethal abuse, and public resistance to V2X use.
  - c. Delaying V2X deployment in favor of alternative communication options unnecessarily costs lives. V2X communications deployment should proceed apace using the already proven DSRC technology to avoid further avoidable collisions and execrable loss of life. Alternative technologies should only be allowed if proven to provide seamless integration and equivalent protection of user privacy prior to deployment as is intrinsic to DSRC design.
- Of the V2X communications technologies previously discussed, at present only DSRC is permitted to be used in the 5.9 GHz spectrum band for transportation applications. If that allocation were to be changed to allow any communication technology for transportation applications, could DSRC and other technologies (*e.g.*, C-V2X, 5G or any future technology) operate in the same spectrum band or even the same channel without interference? Why or why not? If there are any technical challenges to achieving this goal, what are they and how can they be overcome?
    - a. Technical discussion of reallocation of dedicated DSRC bandwidth should be deferred until widespread DSRC deployment and considerable experience have proved that any portion of that bandwidth can be reallocated without compromising DSRC capability in all traffic scenarios.
    - b. Pilot DSRC projects to date have not included many scenarios that could provide severe challenges, e.g., a very dense city traffic environment in bad weather with numerous accidents. Available bandwidth for DSRC should be preserved unless and until years of widespread use confirm the existence of unneeded channels in the 5.9 GHz band.
    - c. The basic safety message is defined in the Federal Motor Vehicle Safety Standards: V2V Communications.<sup>5</sup> Neither the proposed rule nor FMVSS No. 150 defines content or frequency of Vehicle-to-Infrastructure (V2I) or Vehicle-to-Pedestrian (V2P) communications. Discussions of relinquishing allocated V2X bandwidth for other purposes is premature pending comprehensive definition and verification of all V2X requirements and impacts.
    - d. DSRC spectrum allocation is defined in 47 USC 90.371. Spectrum allocation was completed by the FCC on December 17, 2003.<sup>6</sup> The research leading to

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<sup>5</sup> Federal Motor Vehicle Safety Standards: V2V Communications Proposed Rule  
<https://www.regulations.gov/document?D=NHTSA-2016-0126-0009>

<sup>6</sup> <https://www.fcc.gov/wireless/bureau-divisions/mobility-division/dedicated-short-range-communications-dsrc-service>

this frequency allocation included on-board units and roadside DSRC units but did not include bandwidth use for other purposes. V2P is a novel use not anticipated at the time of DSRC frequency allocation.<sup>7</sup> Additional research is required to define V2P and modern V2I implementations and bandwidth requirements and verify DSRC integrity in realistic operational environments. Applicable research and confirmation of DSRC integrity must precede any discussion of other bandwidth uses. Fifteen years have passed and nearly half a million deaths occurred while NHTSA continues to dither on life-saving issuance of DSRC implementation rules at the behest of the telecommunications and automotive industries.

- Even if they are interoperable across different technologies and generations of the same technology, would there be advantages if a single communications protocol were to be used for V2V safety communications? What about other V2X safety applications, such as those involving V2I and V2P communications?
  - a. There are potential advantages in a default single communications protocol if it is uniquely associated with no-cost access to DSRC technology, but absent V2I and V2P requirements supportable conclusions cannot be reached.
  - b. NHTSA should develop and publish V2I and V2P requirements so that meaningful comparisons can be made.
  - c. Alternative protocols that use commercial communications carriers may not include comparable costs or privacy protections. It is important that the public not bear the cost burden of developing, testing, and qualifying alternative commercial protocols. It is also important that any alternative technology offer the same or better cybersecurity and privacy features as DSRC before it is introduced.
  
- How would the development of alternative communication technologies affect other V2I and V2P communications, such as those supporting mobility or environmental applications? Do these applications have the same or different interoperability issues as V2V safety communications? Do different V2X applications (*e.g.*, platooning) have different communication needs, particularly latency?
  - a. NHTSA should develop and publish V2I and V2P requirements so that meaningful comparisons can be made, because absent such requirements, supportable conclusions about V2I and V2P cannot be reached.
  - b. Development of alternative communication technologies for any purpose that complement or supplement DSRC communications, might provide safety benefits but must not be allowed to degrade DSRC efficacy which is already a large advancement over current safety technologies. Even if potential additional benefits of alternative communication technologies are identified DSRC implementation should not be delayed. A hypothetical ‘better’ alternative should not be the enemy of a demonstrated ‘good’ DSRC that

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<sup>7</sup> <https://www.apta.com/mc/its/previous/2012a/presentations/Presentations/DSRC-and-Connected-Communications-in-the-5.8-5.9-GHz-Band-Wei-Bin-Zhang.pdf>

- offers immediate proven life-saving benefits, identity protection, and economy.
- c. Platooning of self-driving commercial vehicles is not a compelling reason for modification of V2X plans, since the business case for platooning is weak at best.<sup>8</sup> Even if a compelling business case eventually emerges, there is potential for expansion of the basic safety message within the DSRC framework to accommodate those (or other emergent) use cases or special needs. The potential future requirements for such applications provide another compelling argument for reserving allocated spectrum for DSRC reappraisal after time and experience confirm its utility in the form envisioned in proposed rule-making.<sup>9</sup>
  - d. It is our expectation that initial V2V deployment will include the basic safety message defined in the Federal Motor Vehicle Safety Standards: V2V Communications Proposed Rule. Needed adaptations for commercial platooning should be defined and funded by the potential commercial users, and must not degrade any aspect of V2V performance.
- Do different communication technologies present different issues concerning physical security (*i.e.*, how to integrate alternative communication technologies into vehicle systems), message security (*i.e.*, SCMS design or other approaches), or other issues such as cybersecurity or privacy? Would these concerns be affected if multiple but still interoperable communication technologies are used rather than one?
    - a. Any alternative communications approach, e.g. 5G, that can carry the basic safety message at compatible rates and ranges for technical compatibility must also provide equivalent economy, efficacy, user identity protection, and anonymity. It would be unacceptable if vehicle operational information including location and/or unique association with a specific user (as would be an intrinsic part of an IP-based communication protocol such as 802.11g or 802.11p) were collected and potentially monetized or associated with a particular user by a commercial network provider. Compromising cybersecurity or user identity could lead to potentially lethal abuse and public resistance to V2X use.

## Conclusion

The Center believes that public safety would benefit most from NHTSA mandating DSRC in light vehicles at the earliest achievable date. Additional delays due to consideration of alternative communication technologies and/or relinquishing allocated bandwidth for commercial use will unnecessarily cost lives with no guaranteed offsetting benefits. Requirements for V2X data privacy, cybersecurity, basic safety message broadcast, receipt, and processing have all been demonstrated for DSRC technology, and have not been demonstrated in alternative technologies. NHTSA should issue the V2V communications rule FMVSS 150, confirm requirements for V2I and V2P

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<sup>8</sup> <https://www.supplychaindive.com/news/Daimler-platooning-automated-truck-CES/545524/>

<sup>9</sup> FMVSS No. 150 Vehicle-To-Vehicle Communication Technology For Light Vehicles, at: [https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/v2v\\_pria\\_12-12-16\\_clean.pdf](https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/v2v_pria_12-12-16_clean.pdf).

communications, and reassess DSRC bandwidth needs only after widespread penetration of DSRC technology into the nation's vehicle fleet, infrastructure, and other road users. NHTSA should under no circumstances recommend relinquishing Congressionally-required FCC-allocated DSRC V2X communications bandwidth at this time.

The potential benefits of successful advanced safety technology in transportation should not be frittered away because mega-corporations are arguing over the best way to add to their bottom line. Yet, once again, the auto and technology industries are proving that absent a government mandate, the potential of a feature such as DSRC will remain in the garage instead of being deployed on the road in the interest of the public good.

Sincerely,

A handwritten signature in black ink, appearing to read "Jason Levine". The signature is fluid and cursive, with a large loop at the beginning and a long tail.

Jason Levine  
Executive Director