April 27, 2020

Ms. Marlene Dortch
Secretary, Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: Reply Comments for ET Docket No. 19-138, FCC 19-129 "Use of the 5.850-5.925 GHz Band"

Dear Ms. Dortch:

The American Association of State Highway and Transportation Officials (AASHTO) is pleased to provide reply comments on the Federal Communication Commission's (FCC) "Use of the 5.850-5.929 GHz Band" (ET Docket No. 19-138, FCC Docket No. 19-129), issued on February 6, 2020. Representing all 50 states, the District of Columbia, and Puerto Rico, AASHTO serves as a liaison between state Departments of Transportation and the federal government.

AASHTO and its members have been at the forefront of the development and deployment of connected and automated vehicles that have tremendous potential in significantly improving the safety of our surface transportation system as well as the mobility and accessibility for people. Paramount to the state DOTs is both eliminating the nearly 37,000 fatal vehicle crashes which occur on our roadways each year as well as the safe deployment of connected and automated vehicles. Without the full 5.9 GHz spectrum available to use for connected vehicle technologies it will be significantly more difficult to eliminate these fatal vehicle crashes.

AASHTO continues to believe that reallocation of this spectrum will result in unnecessary deaths that otherwise would have been prevented through connected and automated vehicles. In reviewing the more than 250 comments received by the FCC during the 30-day window, AASHTO would like to highlight three critical points for your consideration:

- **Overwhelming Opposition**—A broad cross-section of transportation safety experts and stakeholders has clearly objected to anything less than the current 75 MHz of bandwidth. The only support for the proposed reallocation was from those seeking to profit from free access to the spectrum to provide Wi-Fi services.
- **Interference is Clearly a Problem**—This was demonstrated not only by additional research released from US Department of Transportation (USDOT), but confirmed by Ford Motor Company who did their own testing, and did so using LTE-CV2X, the technology you have supported in the NPRM.
- **Negotiated Rulemaking**—USDOT's suggestion of a negotiated rulemaking process holds promise and we strongly endorse it. Please ensure you include stakeholders at the table who are experts in transportation safety.

Overwhelming Opposition[1]

More than 85% of comments submitted objected to the proposed reallocation. Submittals universally highlighted safety as a top priority, many of them noting that if a proper cost/benefit analysis had been performed, the potential value of V2X far exceeds any economic value that a relatively small amount of additional Wi-Fi could provide.

Comments in opposition to reallocating the spectrum were also largely technology neutral: a small proportion specified that they favored DSRC or C-V2X - but the vast majority were either technology neutral, did not mention DSRC or C-V2X in their comment, or encouraged the FCC to provide some bandwidth for both.

Those representing the infrastructure owners/operators, the traveling public, and safety-oriented stakeholders were well represented in opposition to the NPRM. They include:

- National Transportation Safety Board plus key transportation associations such as AAA, AASHTO, Association of Metropolitan Planning Organizations, American Public Transportation Association, American Public Works Association, American Road and Transportation Builders Association, American Society of Civil Engineers, International Bridge Tunnel and Turnpike Association, Institute of Transportation Engineers, ITS America, National Association of City Transportation Officials, Society of Automotive Engineers, and National Safety Council.
- Twenty state DOT's specifically submitted comments: Arkansas, California, Colorado, Connecticut, Georgia, Idaho, Kentucky, Maryland, Michigan, Minnesota, Montana, North Dakota, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Washington, and Wyoming.
- County DOTs weighing in against the NPRM included Gwinnett (GA), Macomb (MI), Maricopa (AZ), Orange (CA), and St. Louis (MO) as well as the North Central Texas Council of Governments and the San Diego Association of Governments. Submissions also came from the cities of Arlington (TX), Columbus (OH), Eugene (OR), Fremont (CA), Frisco (TX), Medford (OR), and New York (NY). The Tampa Hillsborough Expressway Authority, Contra Costa Transportation Authority, and Central Ohio Transit Authority also submitted comments.

The automotive and trucking sectors were also universally opposed to the NPRM:

- The Alliance for Automotive Innovation, Automotive Safety Council, Motor & Equipment Manufacturers Association, DSRC Auto Safety Coalition, and 5G Automotive Association.
- Individual automakers also chose to comment, including BMW, Fiat Chrysler, Ford, General Motors, Honda, Hyundai, Jaguar/Land Rover, Nissan, Toyota, Volkswagen, and Volvo. Automotive suppliers Bosch, Continental, and Denso presented comments as well.
- There were submissions from the trucking industry, including the American Trucking Associations, the Truck and Engine Manufacturers Association, Volvo Group, and UPS, as well as the Commercial Vehicle Safety Alliance.

[1] A more detailed assessment is available here: http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP23-10-V2XCommunicationsMarch2020Update.pdf

Additional opposition included:

- National Sheriffs' Association, International Association of Fire Fighters, National School Transportation Association, various bicycling and walking advocacy organizations, Securing America's Future Energy, OmniAir, and the Vision Zero Network.
- Various academics, consultants, and vendors also provided comments against the NPRM.

All of this opposition is in addition to the more than 80 comments from individual amateur HAM radio operators and their representative associations, who likewise opposed the NPRM.

Interference is Clearly a Problem

As early as 2010 the notion of possible spectrum sharing came to light. FCC NPRM 16-68, issued in June 2016, was the first to formally identify the need for testing whether spectrum sharing would be feasible, due to the potential for interference.

In January 2020, USDOT released the Draft Report on USDOT DSRC-U-NII-3 Sharing & Spectrum Interference Testing. This report was intended to serve as both a baseline for the existing wireless environment, and as a pre-cursor to the Phase II U-NII-4 testing prescribed in NPRM 16-68, evaluating co-channel radio performance. In the process of conducting this testing, adjacent channel interference was observed and recorded.

The USDOT found that "this represents a consequential impact to safety given that DSRC was designed to provide situational awareness in a safety zone defined by a 300-meter radius around a vehicle. Co-channel sharing with Wi-Fi or any unlicensed radio service with similar power and duty cycle as Wi-Fi will not be possible without a robust and reliable sharing mechanism that defers to the high priority safety messages. Similarly, a reallocation of channels would need to provide guard bands to protect both radio services from adjacent channel interference from the other."

The Crash Avoidance Metrics Partnership LLC (CAMP), in cooperation with the National Highway Traffic Safety Administration, conducted a series of cross-channel interference tests as part of the V2V Communications Research Project. Test results showed the potential for cross-channel interference that would impact DSRC up to 500 meters or more, but specifically in the 200m - 300m range. The results further demonstrated that the closer spectral occupancy was to the Wi-Fi spectral mask requirements, the greater the cross-channel interference impact was.

And in their comments submitted to the FCC as part of this docket, the Ford Motor Company detailed their efforts to conduct a series of field and lab tests to assess the ability of unlicensed and ITS stations to coexist in the 5.9GHz band as per FCC NPRM. From these tests, Ford concluded that there is a great outage span whenever a Wi-Fi transmitter is present. This again reinforces that out-of-channel Wi-Fi interference can significantly decrease the warning distance margin in a driver alert application, especially at intersections. Additional test results demonstrated that C-V2X operation in channel 180 is even more vulnerable to interference from the U-NII-4 operation in adjacent channels.

Furthermore, AASHTO is concerned that the FCC will use the issuance of temporary 5.9 GHz spectrum access for wireless internet service providers in rural areas as part of the COVID-19 pandemic as a backdoor assessment that interference within the 5.9 GHz band is not a problem. AASHTO wants to make clear that we understand the need to provide additional high speed internet capacity to the rural areas during these challenging times. It needs to be clear that these waivers are temporary and should not be used to draw any conclusion about interference in the band.

Negotiated Rulemaking

In their March 13, 2020, submittal, the National Telecommunications and Information Administration (NTIA) respectfully requested the FCC consider additional input from the US DOT. Among many important points transmitted with that submission was the suggestion that the Commission and USDOT work together collaboratively to revisit the issues and come up with a solution that is workable for all interested parties.

> "One well-established means of facilitating such an approach would be through a negotiated rulemaking, which provides Federal agencies with a structured but supple process for bringing all stakeholders to the table in instances like this one, where there are deeply held disagreements on fundamental underlying issues that could be better resolved through a robust dialogue rather than a written public comment period. FCC could partner with USDOT safety experts to work with stakeholders from the telecommunications and automotive industries; States and local authorities; transportation safety advocates; other relevant public interest entities; and interested Federal agencies in a collaborative endeavor to share resources and identify solutions. As part of this process, FCC and USDOT could work to promote agreement among V2X stakeholders on the appropriate "cooperative" technology or blend of technologies, including DSRC, cellular, and/or other forms. The result of this endeavor would be the development of an improved proposal that would be more widely embraced, leading to a durable, comprehensive solution for the 5.9 GHz band."

As a means of last resort, if the FCC wants to continue with the reallocation of the 5.9 GHz band, AASHTO finds merit in the FCC engaging with the industry in a negotiated rulemaking process. AASHTO welcomes the opportunity to be counted among the V2X stakeholders in search of a cooperative blend of appropriate technologies and addressing key issues such as interference and existing deployments. However, given the overwhelming opposition to the NPRM by those who are transportation safety experts, AASHTO believes that. First and foremost, FCC should abandon their attempt to reallocatd the 5.9 GHz band.

The FCC has commented, and other industry groups as well, that the 5.9 GHz spectrum is not being used to its fullest extent and there is no commitment by the transportation industry to fully utilize. Recently, the Alliance for Automotive Innovation announced their commitment to the full build-out of connected vehicle technologies using the entire 75 MHz of the 5.9 GHz band. AASHTO fully supports the Auto Innovators' pledge to deploy five million connected vehicle radios in passenger vehicles and on the infrastructure within five years and will work with them to make this pledge a reality. This build-out of connected vehicle technologies reflects a watershed moment for roadway safety: a unified industry is making substantial resources

commitment to V2X. The commitment should dispel any notion that the transportation industry will not deploy connected vehicle technologies or that the full 75 MHz of the 5.9 GHz band will not be used. The build-out commitment made by the Auto Innovators is a leap forward in realizing the FCC and USDOT's joint vision for V2X, and will significantly advance U.S. global leadership in connected and autonomous vehicles.

AASHTO appreciates the opportunity to provide these comments on the flawed and misguided changes proposed in the notice published by the FCC. As does nearly all of the transportation industry, AASHTO continues to oppose the proposal by FCC to reallocate use of the 5.9 GHz spectrum. We are optimistic about the pledge by the Alliance for Automotive Innovation to install five million connected vehicle radios in passenger vehicles over the next five years and look forward to working with them on a complementary infrastructure component. We believe public health interests that will be advanced through safety improvements supported by this band simply cannot be usurped in furtherance of for-profit motives.

To conclude, as President of AASHTO, I have called for a renewed national commitment to improve safety. Unfortunately, the proposed FCC action will set our country back in pursuit of eliminating fatalities on America's transportation network.

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.

Sincerely,

Patrick K. McKenna
President, American Association of State Highway and Transportation Officials
Director, Missouri Department of Transportation