

January 11, 2019

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

SUBJECT: FCC Office of Engineering and Technology (OET) and Wireless Telecommunications Bureau (WTB) Request for Comment on 5GAA's Petition for Waiver to Allow Deployment of Cellular Vehicle-To-Everything (C-V2X) Technology In The 5.9 GHz band (DA/FCC No.: DA-18-1231); [GN Docket No.: 18-357]

Dear Ms. Dortch:

The American Association of State Highway and Transportation Officials (AASHTO) hereby submits comments on the Federal Communications Commission's ("FCC's") Public Notice titled "Office of Engineering and Technology and Wireless Telecommunications Bureau Request for Comment on 5GAA's Petition for Waiver to Allow Deployment of Cellular Vehicle-To-Everything (C-V2X) Technology In The 5.9 GHz band", DA-18-1231, GN Docket No. 18-357, dated December 6, 2018 ("Public Notice"). With the Public Notice, the FCC's Office of Engineering and Technology ("OET") and Wireless Telecommunications Bureau (WTB) invited comments on the Fifth Generation Automotive Association's (5GAA) petition for waiver to deploy Cellular Vehicle-to-Everything (C-V2X) technology in the 5,850–5,925 MHz frequency band ("5.9 GHz band").

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. Further, AASHTO is recognized by the FCC as one of four Frequency Coordinators (Coordinator) certified to administer specifically the radio spectrum assigned to Highway Maintenance; and, to recommend frequencies for licensing by local government and other entities authorized under the provisions of Title 47, United States Code Section 90.20.

AASHTO acknowledges 5GAA's commitment to promoting C-V2X technology through the subject petition for waiver to operate in the 5.9 GHz band. In response, AASHTO offers the following comments:

1. The waiver request proposes the FCC grant a blanket waiver to allow for deployment of C-V2X technology in the 5.905–5.925 GHz range of the 5.9 GHz. This space is currently set aside for the operation of two Dedicated Short-Range Communication (DSRC) Service Channels (SCH): 182 and 184, each 10 MHz wide. To grant a waiver, at least one of the

following criteria must be decided: (i) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that a grant of the requested waiver would be in the public interest; or (ii) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. However, this is not a unique situation since C-V2X deployments are allowed under the FCC's experimental licensing system. Granting 5GAA's blanket waiver would likely open the door for additional waivers to follow suit and eviscerate the rules set forth in Sections 90.375, 90.377, 90.379, 95.3159, 95.3163, 95.3167, 95.3189, and others perceived as barriers for the deployment of C-V2X. The FCC must follow the formal rulemaking process if it seeks to change these rules.

2. AASHTO is neither for nor against DSRC or C-V2X as a technology. Our member transportation agencies have a fiduciary responsibility to the taxpayers to ensure we follow a public process for planning and executing projects that efficiently and effectively utilize public funds to provide sustainable transportation solutions. Hence, the rulemaking process is critical in our ability to know which technologies have been approved and adopted so that we can plan, program, and execute projects. To allow a change to a standing rule through a petition as opposed to a formal rulemaking process is disruptive and impedes our ability to provide sustainable transportation solutions. We are appreciative of the 5GAA's efforts to develop new and improved technologies, but we strongly believe that the adoption process should include testing and evaluation of the technology by independent sources (rather than accepting a 5GAA report on performance) as well as the formal rulemaking process where many critical issues, such as the economic impact, interoperability, and future technology pathways can be publicly considered. The 5GAA admits the need for additional bandwidth in the future and they don't offer a pathway for future technology upgrades that will allow our investment in the infrastructure to meet the life expectancy.
3. Based on the FCC's current band plan, Channel 182 is designated for low-power, short-range communications broadcasting safety, security, mobility and non-priority application messages, primarily from infrastructure-to-vehicles (I2V). Channel 184 is designated for "High Power Public Safety" use and intersection collision avoidance applications, broadcasting safety critical messages such as emergency vehicle signal preemption. Both channels are currently being utilized in numerous DSRC-based Roadside Equipment (RSE) deployments across the nation, implementing connected-vehicle (CV) applications that provide safety and mobility benefits, and this waiver may be to the detriment of other licensees. Specifically, AASHTO members such as the Wyoming Department of Transportation (WYDOT)¹, Utah Department of Transportation (UDOT), Michigan Department of Transportation (MDOT), Georgia Department of Transportation (GDOT), California Department of Transportation (Caltrans), Florida Department of Transportation (FDOT)¹, Nevada Department of Transportation (NDOT), Arizona Department of Transportation (ADOT), and Virginia Department of Transportation (VDOT), to name a few, have active deployments utilizing Channels 182 and/or 184². Further, WYDOT, Colorado Department of Transportation (CDOT) and Maine Department of Transportation

¹ USDOT Designated CV Pilot Deployment Location Owner/Stakeholder

² [FCC Universal Licensing System \(ULS\) Database](#), retrieved on December 21, 2018.

(MaineDOT) were each recently awarded funding through USDOT’s Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant Program for transportation infrastructure improvements which, among others, included deployment of DSRC units³. At a state level, both MDOT and GDOT have committed to large-scale deployment of DSRC-based devices as part of their long-term Intelligent Transportation System (ITS) infrastructure. Arizona DOT (ADOT) was awarded an Advanced Transportation and Congestion Management Technologies Deployment Program (ATCMTD) grants that include significant deployment of DSRC, and finally, 26 states, in response to AASHTO’s Signal Phase and Timing (SPaT) Challenge and in an effort to improve transportation safety, have committed significant resources to deploying DSRC-enabled equipment at more than 200 traffic signals, with more than 2,100 additional signals programmed for installation in the near future. Many of these deployments utilize all seven channels in the 5.9 GHz band, including Channels 182 and 184, a fact reinforced in the USDOT’s recent “*Preparing for the Future of Transportation: Automated Vehicles 3.0 (AV 3.0)*” guidance document⁴. Based on this information, AASHTO requests clarification from 5GAA on how the waiver request, as it is currently crafted, would not have a significant impact on existing DSRC operations in the band, and how it intends to mitigate the impact.

4. The waiver request, while it doesn’t reference fully operational systems already in place, at least acknowledges that “*5GAA is aware of pilots involving DSRC Roadside Units which use all or a portion of the 5.905-5.925 frequencies for support*” and that “*5GAA will engage in discussions with the parties involved with these pilots to ensure that any operations using any portion of 5905-5925 MHz can either transition to lower DSRC channels or use C-V2X technology*” [footnote 74, pg. 28]. However, AASHTO contends that the operational impacts from the loss of these channels and the burden to state DOTs from a potential retrofit or replacement of existing DSRC-based equipment resulting from a grant of this waiver request, are likely to be significant. Therefore, AASHTO seeks a more detailed description on how 5GAA intends to engage with state DOTs in transitioning current and planned DSRC-based operations in Channels 182 and 184 to lower channels, or operate via C-V2X. Specifically, AASHTO requests a clarification on whether the transition would occur before or after the grant of the waiver. The use of experimental licenses, together with local agreements defining the geographical region where the experimental deployment will occur to ensure minimal, or no, impact to existing DSRC deployments, seems to be a more logical approach at this stage of the new technology development.
5. A grant of this waiver request creates scenarios where DSRC and C-V2X are likely operating in adjacent channels [DSRC in Channels 172 thru 180, C-V2X in Channels 182 and 184]. 5GAA’s request indicates that “*because C-V2X and DSRC operations will occur on different channels, each technology will be protected from interference from the other*” (pg. 28). AASHTO requests more detailed analysis to support this assertion, related to adjacent-channel interference effects of operating DSRC and C-V2X technologies, with proposals for interference mitigation (including a potential guard band). AASHTO members have recent

³ <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/327856/build-fact-sheets-121118-355pm-update.pdf>

⁴ Page 14 - <https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf>

experience with a similar scenario arising from FCC's decision to allow cellular communications belonging to Sprint-Nextel to operate in the 800 MHz Public-Safety spectrum resulting in harmful interference to safety critical communications. AASHTO therefore wishes to confirm that DSRC and C-V2X communications can co-exist in adjacent channels without compromising the integrity of each other's operations.

6. 5GAA makes it clear that its request "*should not be misconstrued as an indication that C-V2X requires only 20 MHz of spectrum*" and subsequently, "*5GAA thus plans to file a complementary petition for rulemaking in the near future requesting that the Commission initiate a proceeding to modify its 5.9 GHz band ITS rules to provide stakeholders the flexibility to take the evolutionary leap forward in connected vehicle technologies enabled by 5G*" (pg. 5). AASHTO seeks clarification on what modifications and changes are going to be requested by 5GAA to existing rules, and its plan to engage with state DOTs who have currently deployed or are planning to deploy DSRC-based equipment at a significant expense, and do not want the investment in this life-saving technology to be rendered obsolete due to an unanticipated change in rules surrounding the 5.9 GHz band. The 5GAA should clearly define how C-V2X in the 5.9GHz spectrum and the emergence of 5G at higher frequencies, are integrated and how they provide the claimed benefits over a DSRC and 5G combination.
7. The 5.9 GHz band is currently the subject of comprehensive testing to evaluate the impacts of sharing with Unlicensed National Information Infrastructure (U-NII or Unlicensed) devices⁵. A grant of 5GAA's waiver request would likely invalidate the FCC's Phase I test results. Further, AASHTO members have grave concerns about a potential scenario wherein the band is open to allow simultaneous operation of DSRC, C-V2X AND U-NII devices, which could compromise the integrity and utility of the band to safety and mobility ITS applications. Therefore, AASHTO requests clarification from 5GAA on how it plans to address this potential scenario.
8. The waiver request highlights the performance benefits of C-V2X based on tests conducted at four (4) locations in the US: Fowlerville, MI, Denver, CO, San Diego, CA and Columbia, MD. Before an assertion of better performance is used to justify gaining spectrum, AASHTO members maintain that rigorous field testing involving additional scenarios and use cases needs to be performed involving both DSRC and C-V2X operations.

AASHTO has consistently maintained that DSRC is the only viable and mature technology available to support CV applications at this time. AASHTO members do recognize that future technologies may become available to support a CV environment that are similar or perhaps technically better than DSRC, and the industry must stay flexible to adopt these technologies as appropriate. We must also consider the economic impacts, life cycle costs, and when the technology will be ready for wide scale deployment. The waiver request indicates that Colorado DOT, an AASHTO member, is already partnered with 5GAA members Ford, Qualcomm and Panasonic in testing a production-grade C-V2X deployment (footnote 73, pg. 28). AASHTO sees this as a welcome development in the testing of C-V2X deployments. However, as stated above, AASHTO observes that 5GAA's waiver request does not address multiple issues that will have

⁵ ET Docket No. 13-49

significant impact to current and planned DSRC-based equipment deployed by its members, and respectfully submits that the FCC withhold granting approval until these issues are resolved.

If you have any questions, please contact Mr. Venkat Nallamothe, Program Manager for AASHTO's Frequency Coordination Program, at vnallamothe@aahto.org or 202-624-5497.

Sincerely,

A handwritten signature in black ink, appearing to read "Carlos M. Braceras". The signature is fluid and cursive, with the first name "Carlos" and last name "Braceras" clearly distinguishable.

Carlos M. Braceras

President, American Association of State Highway and Transportation Officials
Executive Director, Utah Department of Transportation