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NTIA Report Identifies Mid-Band Spectrum Repurposing Opportunities

by

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I. Introduction and Summary

Recently the Department of Commerce published the August 2019 Annual Report on the Status of Spectrum Repurposing (NTIA Report).[1] The NTIA Report indicates that it is part of "a broader effort to maintain the U.S. position as a global leader" in 5G and space applications.[2] NTIA expects that the Report will help form the basis of a national spectrum strategy, mandated by a Presidential Memorandum dated October 2018, and now expected to be announced this fall. The NTIA Report outlines a number of bands being considered for reallocation to flexible mobile use, including 5G. In several respects discussed below, the NTIA Report should provide a basis for speeding the repurposing and deployment of valuable, much-needed mid-band spectrum. The Trump Administration should actively support these initiatives, which ought to be an important component of the Administration's economic program, with a sense of some urgency.

[1] U.S. Department of Commerce, Annual Report on the Status of Spectrum Repurposing (Aug. 2019), *available at* https://www.ntia.doc.gov/files/ntia/publications/spectrum_repurposing_report_august_2019.pdf.
[2] *Id.*, at 2.

At least on the surface, there is widespread agreement within the Trump Administration, Congress, and the Federal Communications Commission regarding the importance to the United States of maintaining its leadership in next-generation wireless communications. This agreement specifically includes the importance of the U.S. maintaining leadership, as the FCC put it in its July 2018 *C-Band NPRM*, of "fifth-generation (5G) wireless, Internet of Things (IoT), and other advanced spectrum-based services."[3] And there is a consensus, that having already made significant strides under the leadership of FCC Chairman Ajit Pai and his colleagues in allocating low- and high-band spectrum, further efforts are necessary to allocate additional mid-band spectrum for 5G use. Therefore, it should not be surprising that the NTIA Report focuses extensively on repurposing efforts in mid-band spectrum, generally including spectrum above 1 GHz and below 6 GHz. Indeed, this is welcome.

The NTIA Report provides valuable information as a "snapshot in time" of the current status of spectrum repurposing. In addressing the status of the following mid-band spectrum bands the Report also increases somewhat the transparency regarding actions taken by government and private stakeholders with respect to the specific spectrum bands:

- L Band – Specific segments of L-Band Spectrum are the subject of Ligado's license modifications to provide terrestrial mobile services using its existing L-Band satellite spectrum. The NTIA Report states, under "Next Steps," that: "The FCC will issue a determination on the applicant's pending modification applications. Thus, the ball is in the FCC's court to render a decision on Ligado's license applications. For some time now, Free State Foundation scholars have urged the Commission in various comments and *Perspectives* to promptly reach a decision on Ligado's modified applications to allow use of L-Band spectrum for terrestrial mobile use.

- 1675-1680 MHz – As required by the Spectrum Pipeline Act, NTIA is currently studying how the reallocation of the 1675-1680 MHz band for flexible mobile use could be implemented while protecting meteorological use of the band. The FCC adopted an NPRM soliciting comments to determine whether the band should be allocated for flexible mobile use, including sharing with existing meteorological users. In response to the NPRM, Free State Foundation scholars submitted reply comments in July 2019 recommending the Commission adopt its proposal for the 1675-1680 MHz band in order to expand the availability of spectrum resources needed for deploying 5G and other next-generation broadband services. The reply comments also rebutted arguments that the Commission delay its proposal and that it grant new rights or adopt new data transmission technology mandates specially benefitting unlicensed, non-federal users of the 1675-1680 MHz spectrum.

- *2.5 GHz* – The FCC adopted a Report & Order to modify the spectrum allocation at the 2496 to 2690 MHz (2.5 GHz) band, which was previously assigned for educational use, with spectrum leasing rights for private use of up to 95 percent of the capacity. The new allocation is for flexible mobile use, but no auction date has yet been set.

[3] *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order & Notice of Proposed Rulemaking, GN Docket No. 18-122, FCC 18-91, 2 (rel. Jul. 13, 2018) (*C-Band NPRM*).

- *3.1-3.5 GHz* – The MOBILE NOW Act requires NTIA by March 2020 to submit to Congress a report on the feasibility of sharing spectrum between federal spectrum users and commercial licensed and unlicensed users. NTIA has indicated that 3.45 to 3.55 GHz is the most likely spectrum to be sharable between commercial and federal government users.

- *3.5 GHz* – The FCC has adopted rules to make available for mobile use 150 MHz of spectrum in the 3550-3700 MHz band. Up to 70 MHz of the band is designated as priority access spectrum, which is the most useful for commercial carriers. The FCC Chairman has now proposed that an auction be conducted on June 30, 2020.

- *3.7 to 4.2 GHz* – By September 23, 2020, the MOBILE NOW Act requires the FCC to report to Congress on the feasibility of reallocating and/or sharing a portion of what is known as C-Band spectrum. The C-band currently is allocated to Fixed Satellite Service (FSS) on a co-primary basis with fixed service. It seems likely that a significant portion of the band will be reallocated for terrestrial mobile use, either through a market-based mechanism or a public auction. In a *Perspectives from FSF Scholars* published in July 2019, we supported the adoption of some form of free market-oriented approach that allows incumbent Fixed Satellite Service (FSS) operators, subject to appropriate Commission oversight, to clear part or all of the C-Band spectrum using negotiated secondary market transactions that would, in effect, result in the flexible use of the spectrum by terrestrial mobile service providers. We contended that, all things considered, the trade-offs involved in such a free market-oriented approach likely will enhance overall consumer welfare and reduce overall societal costs by maximizing the efficient use of this valuable mid-band spectrum more quickly than could be achieved by employing the traditional rulemaking and other procedures associated with the conduct of a Commission-run auction.

- *5.9 GHz* – The FCC is considering reallocating some or all of the 5850 to 5925 GHz band (5.9 GHz) for possible sharing with the existing Dedicated Short Range Communications (DSRC) Service. DSRC use of these frequencies is extremely low, particularly for a band that was allocated over 20 years ago. The FCC and the Department of Transportation (DOT) are jointly testing to determine whether unlicensed use can coexist with DSRC in a shared spectrum environment. The government needs to act in a way that, finally, will put this spectrum to use for the benefit of the American people. With today's technological advances that enhance efficient wireless use – advances that now are far beyond those that existed at the time of the original DSRC allocation – it is possible to employ these newer wireless technologies for enhancing automobile safety, while also freeing up spectrum for unlicensed wireless uses.

The NTIA Report is an important piece of the background puzzle that should inform the Trump Administration's national spectrum strategy for moving ahead in the coming months. The Report identifies a number of valuable and promising spectrum bands that could be used for 5G and related unlicensed uses. Actions regarding these bands should be promptly pursued.

II. National Spectrum Strategy

The NTIA Report is another report in a series of preliminary government reports that is intended to form the foundation of a national spectrum strategy that was mandated by a Presidential Memorandum requiring such formation. Because of the tangible economic and consumer welfare benefits of U.S. leadership in 5G, President Donald Trump[4] recognizes the value of a secure, private-sector-driven 5G network. The Administration, therefore, has made development of a 5G network a national priority. In particular, in October 2018, President Trump issued a Presidential Memorandum[5] asking NTIA, in consultation with other government institutions and the FCC, to develop a long-term national spectrum strategy.

According to the Presidential Memorandum, the strategy should include legislative, regulatory, or other policy recommendations to "increase spectrum access for all users, including on a shared basis, through transparency of spectrum use and improved cooperation and collaboration between Federal and non-Federal spectrum stakeholders."

Two other federal government reports should help inform the Office of Science and Technology Policy (OSTP) work on developing a national spectrum strategy. The first report,[6] compiled by the IDA Science and Technology Policy Institute, is a technical guide to emerging 5G wireless technology and its impact on spectrum demand. The second report,[7] led by the National Science and Technology Council's Wireless Spectrum Research and Development Interagency Working Group, evaluates the need for research and development of future mobile and broadband communications over both the near- and long-term. These forward-looking documents help focus federal government and private sector attention on future 5G technological advancements.

The Presidential Memorandum set a deadline for announcing the national spectrum strategy on July 22, and it is therefore past due. Assistant Commerce Department Secretary Karen Dunn Kelley recently indicated that the strategy is expected to be revealed "later this fall."[8] The national spectrum strategy should serve to advance allocation of sufficient spectrum to promote important investment and innovation, such as in 5G and related technologies, while protecting the legitimate spectrum needs of government.

III. Mid-Band Spectrum Under Consideration

[4] Remarks by President Trump on United States 5G Deployment (Apr. 12, 2019), *available at* https://www.whitehouse.gov/briefings-statements/remarks-president-trump-united-states-5g-deployment/.

[5] Presidential Memorandum on Developing a Sustainable Spectrum Strategy for America's Future (issued Oct. 25, 2018), *available at* https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/.

[6] IDA Science and Technology Policy Institute, Emerging Technologies and Their Expected Impact on Non-Federal Spectrum Demand (May 2019), *available at* https://www.whitehouse.gov/wp-content/uploads/2019/05/Emerging-Technologies-and-Impact-on-Non-Federal-Spectrum-Demand-Report-May-2019.pdf.

[7] National Science and Technology Council's Wireless Spectrum Research and Development Interagency Working Group, Research and Development Priorities for American Leadership in Wireless Communications (May 2019), *available at* https://www.whitehouse.gov/wp-content/uploads/2019/05/Research-and-Development-Priorities-for-American-Leadership-in-Wireless-Communications-Report-May-2019.pdf.

[8] Remarks of Karen Dunn Kelley, Deputy Secretary, Department of Commerce, NTIA Spectrum Symposium, National Press Club, Transcript at 2 (Sep. 10, 2019), *available at* https://www.ntia.gov/other-publication/2019/09102019-spectrum-policy-symposium-webcast-archive.

The NTIA Report provides valuable information as a snapshot in time of the current status of spectrum repurposing. The Report also increases the transparency of actions taken by government and private stakeholders with respect to specific spectrum bands. We summarize some of those descriptions here related to mid-band spectrum.

A. L Band Spectrum

The NTIA Report identifies specific L-Band spectrum that is the subject of Ligado's license modification applications to provide terrestrial mobile services using its existing satellite spectrum. These frequencies are currently allocated to base stations in the 1526-1536 MHz portion of the Mobile Satellite Service (MSS) downlink band, user equipment in the 1627.5-1637.5 MHz, and 1646.5-1656.5 MHz portions of the MSS uplink band.[9] Ligado's license modifications were designed to conform to agreements that Ligado had made with the largest commercial Global Positioning System (GPS) manufacturers to reduce the potential for interference in adjacent bands used for GPS transmissions. The federal government performed tests to determine whether advanced GPS systems would receive interference from the adjacent L Band terrestrial operations. In April 2018, the Positioning, Navigation & Timing (PNT) Executive Committee determined that it had enough information as a result of the tests to make a decision on the question, but it has made no recommendation,[10] and the PNT Advisory Board, despite responsive changes made by Ligado, still may not be satisfied.

The NTIA Report states, under "Next Steps," that: "The FCC will issue a determination on the applicant's pending modification applications. Thus, the ball is in the FCC's court to render a decision on Ligado's license applications. For some time now, Free State Foundation scholars have urged in various comments and *Perspectives* the Commission to promptly reach a decision on Ligado's modified applications to allow use of L-Band spectrum for terrestrial mobile use. Most recently, on September 6, 2019, Free State Foundation Director of Policy Studies Seth Cooper urged the FCC to act on Ligado's modified applications.[11] And both Commissioners Michael O'Rielly and Jessica Rosenworcel have urged the FCC to address these long pending license modifications, presumably on the basis that the government should respond to requests for action within a reasonable timeframe.

B. 1675-1680 MHz

The NTIA Report notes that, as required by the Spectrum Pipeline Act, it is currently studying how the reallocation of the 1675-1680 MHz band for flexible mobile use could be implemented while protecting meteorological use of the band.[12] The study results are expected in March 2020. The band currently is allocated to both federal and non-federal users of radiosonde and meteorological space-to-earth services. The federal government repeatedly has proposed to

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[9] Report, at 14.
[10] Report, at 15-16. The PNT Executive Committee is a presidential-mandated committee, jointly headed by the Departments of Transportation and Defense, and includes a number of agencies that rely on GPS systems and equipment operating in the adjacent band.
[11] Seth L. Cooper, "After NTIA's Report, the FCC Should Act on Ligado's Proposal" (Sept. 6, 2019), *available at* https://freestatefoundation.blogspot.com/2019/09/after-ntias-report-fcc-should-decide-on.html.
[12] Report, at 16-17.

reallocate this spectrum for shared use with federal weather satellites. Some services are scheduled to be moved to other spectrum, but the timing of such a move is still uncertain.

The NTIA Report notes that in May 2019, the FCC initiated a proceeding[13] proposing to allow terrestrial broadband use of the 1675-1680 MHz band, subject to protection of current users. Commissioner Brendan Carr, referencing adjacent L-band spectrum, said this: "The 5 MHz before us is a small sliver of spectrum, to be sure. But if it's combined with adjacent and nearby channels, we could have a 40 MHz block that offers high-throughput at great distance. Those are excellent characteristics for next-gen mobile broadband."[14] There continue to be non-federal weather-related earth station users that raise interference concerns, but these issues are slated to be addressed in the FCC proceeding.

In response to the NPRM, Free State Foundation scholars submitted reply comments in July 2019 recommending the Commission adopt its proposal for the 1675-1680 MHz band in order to expand the availability of spectrum resources needed for deploying 5G and other next-generation broadband services.[15] The reply comments also rebutted arguments that the Commission delay its proposal and that it grant new rights or adopt new data transmission technology mandates specially benefitting unlicensed, non-federal users of the 1675-1680 MHz spectrum.

C. 2.5 GHz

The NTIA Report indicates that in June 2019? the FCC released a draft proposal to modify the spectrum allocation at 2496 to 2690 MHz (2.5 GHz) band, which was previously assigned for educational use, with spectrum leasing rights for private use of up to 95 percent of the capacity.[16]

The FCC did in fact adopt a Report & Order[17] that made substantial modifications to the current rules applicable to the 2.5 GHz band, and announced it would open up fallow spectrum pursuant to a new auction to be conducted in the future. Subject to grandfathering existing licensees and spectrum lease holders, the FCC established that it would award new licenses in one 49.5, one 50.5, and one 16.5 MHz block on the basis of counties, with a special priority filing window for tribal entities proposing service on Tribal lands.

D. 3.1 to 3.5 GHz

The NTIA Report states the MOBILE NOW Act requires NTIA by March 2020 to submit to Congress a report on the feasibility of sharing spectrum between federal spectrum users and commercial licensed and unlicensed users.[18] NTIA had previously made a "high level assessment" of the band and determined that the top 100 MHz, 3450 to 3550 MHz, exhibited the most promising opportunity for shared use. NTIA required the Department of Defense (DoD) to

[13] *Allocation and Service Rules for the 1675–1680 MHz Band*, WT Docket No. 19-116, Notice of Proposed Rulemaking, FCC 19-43 (rel. May 13, 2019) (1675-1680 MHz NPRM).
[14] Statement of Commissioner Brendan Carr, 1675-1680 MHz NPRM.
[15] Reply Comments of Free State Foundation, WT Docket No. 19-116 (Jul. 22, 2019).
[16] Report, at 19.
[17] *Transforming the 2.5 GHz Band*, WT Docket No. 18-120, Report & Order, FCC 19-62 (rel. Jul. 11, 2019).
[18] Report, at 20.

conduct a feasibility study on a priority basis for two bands, including the 3.1 and 3.5 GHz band, and expects to schedule the due date for DoD's supplemental information in this band in January 2020.[19]

The 3.45 to 3.55 GHz band is consistent with the spectrum that is being considered for 5G by foreign countries. That band would make sense because, with the 3.5 GHz band already allocated, and consideration for 3.7 to 4.2 GHz already underway, a roughly contiguous band in the 3 to 4 GHz range would be available for 5G use.

E. 3.5 GHz

The NTIA Report notes that the FCC has adopted rules to make available for mobile use 150 MHz of spectrum in the 3550-3700 MHz band.[20] The band is shared with government users that are entitled to interference protection in specified exclusion zones that were developed through a collaborative process between government, private entitles, the FCC, and NTIA. Up to 70 MHz of the band is designated as priority access spectrum, which is the most useful for commercial carriers.[21] The FCC modified its rules to make certain licenses in the band more usable for 5G operations by commercial providers.

The CBRS Alliance recently announced adoption of environmental sensing capability (ESC) parameters that the FCC staff has approved. The FCC now needs to approve sharing administrators (SAS) to protect mostly government users of the band. Although we have expressed[22] skepticism about the usability of this band for 5G in the past, the FCC, along with industry users, have made strides to fix the problems we identified with the band. The FCC recently announced that it is proposing to present for full Commission approval the auction of 3.5 GHz spectrum at the September 26 FCC public meeting, with a tentative auction scheduled for June 25, 2020.[23]

F. 3.7 to 4.2 GHz

The NTIA Report notes that by September 23, 2020, the MOBILE NOW Act requires the FCC to report to Congress on the feasibility of reallocating and/or sharing a portion of what is known as C-Band spectrum.[24] The C-band currently is allocated to Fixed Satellite Service (FSS) on a co-primary basis with fixed service. The rules provide that licenses in the C-Band are non-

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[19] Diane Rinaldo, Acting Assistant Secretary of Commerce for Communications and Information, Department of Commerce (Aug. 1, 2019, *available at* https://www.ntia.doc.gov/files/ntia/publications/guidance_to_agencies_on_current_spectrum_usage_final_08-01-2019.pdf.

[20] Report, at 20-21.

[21] *Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, FCC 18-149, ¶ 3 (rel. Oct. 24, 2018).

[22] Randolph J. May & Gregory J. Vogt, "Focusing on Communications Infrastructure Development: Completing the Incomplete Obama Administration Spectrum Report Card," *Perspectives from FSF Scholars*, Vol. 11, No. 44 (Dec. 13, 2016).

[23] FCC Fact Sheet, *Competitive Bidding Procedures for Auction 105 (Priority Access Licenses for the 3550-3650 MHz Band)*, AU Docket No 19-244 (rel. Sept. 5, 2019).

[24] Report, at 21-22.

exclusive and entitle the licensee to operate throughout the 500 MHz band.[25] Only spectrum from the downlink portion of the C-Band would be reallocated.

The NTIA Report states that the FCC's *C-Band NPRM*[26] proposes as one option a market-based approach to clear some or all of the 500 MHz that comprises the 3.7 - 4.2 MHz C-Band and to make the cleared spectrum available for flexible mobile use, including 5G. Other options include a government-run incentive auction. FCC Commissioner Michael O'Rielly frequently has advocated for a market-based approach for the C-Band precisely because of the benefit of quicker reallocation of the spectrum.[27]

As contemplated by the *C-Band NPRM*, a final order in the docket would establish the rules of the road to govern the assignment approach selected. At least a significant portion of the 3.7-4.2 GHz band will almost certainly be allocated for flexible mobile use, including 5G. The question here is not whether spectrum will be allocated at some point, but rather how much and how soon. Although a number of individual commenters and organizations have proposed alternate procedures to be used, we have contended that speed to market is critical here and that some form of a private market-based approach to reallocation is most likely to enhance overall consumer welfare.[28] In our *Perspectives from FSF Scholars* published in July 2019, we supported the adoption of some form of free market-oriented approach that allows incumbent Fixed Satellite Service (FSS) operators, subject to appropriate Commission oversight, to clear part or all of the C-Band spectrum using negotiated secondary market transactions that would, in effect, result in the flexible use of the spectrum by terrestrial mobile service providers. We contended that, all things considered, the trade-offs involved in such a free market-oriented approach likely will enhance overall consumer welfare and reduce overall societal costs by maximizing the efficient use of this valuable mid-band spectrum more quickly than could be achieved by employing the traditional rulemaking and other procedures associated with the conduct of a Commission-run auction.

G. 5.9 GHz

The NTIA Report indicates that the FCC is considering reallocating some or all of the 5850 to 5925 GHz band (5.9 GHz) for possible sharing with the existing Dedicated Short Range Communications (DSRC) Service.[29] NTIA points out that the FCC is working in conjunction with DOT, which has evaluated use of DSRC for automobile safety and advanced transportation management uses.

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[25] There are a relatively small and declining number of fixed service licensees in the C-Band, which do not present the same challenges as allowing terrestrial mobile use adjacent to satellite downlink transmissions.
[26] *C-Band NPRM*.
[27] *See, e.g., C-Band NPRM*, Statement of Commissioner Michael O'Rielly.
[28] Randolph J. May and Gregory J. Vogt, "A Free Market Approach Should Be Used to Reallocate C-Band Spectrum" *Perspectives from FSF Scholars*, Vol. 14, No. 17 (Jul. 17, 2019).
[29] Report, at 22-23. Although unlicensed use (primarily Unlicensed National Infrastructure ("U-NII") devices, are not technically part of 5G networks, unlicensed devices will be complementary to 5G deployment efforts and thus also should receive attention by regulators. Unlicensed spectrum can be used for a variety of services, including support of "Internet of Things" devices and greater broadband usage.

For about six years the FCC has proposed opening up 75 MHz of spectrum in the 5.9 GHz band for shared use with unlicensed users, specifically U-NII devices. The FCC asked[30] that the record be refreshed in 2016, but an NPRM has not yet been issued to implement the sharing idea. When the DSRC band originally was allocated two decades ago, the idea was that the transportation sector needed the spectrum to improve vehicular safety and transportation management.

The FCC and DOT have announced three phases of testing to determine whether DSRC and U-NII sharing is feasible. But the FCC has only released one study,[31] and DOT is only now beginning Phase II testing, with no schedule announced for completion. Commissioners O'Rielly and Rosenworcel both have urged that a Notice of Proposed Rulemaking proposing reallocation to permit sharing should be issued without delay. FCC Chairman Pai announced in early summer 2019 the commencement of a rulemaking to consider usage in the 5.9 GHz band,[32] but apparently Secretary Elaine Chao asked him to delay that proceeding pending further discussions. In the recent NTIA Spectrum Symposium, Karen Van Dyke, Director, Office of PNT and Spectrum Management, DOT, refused to answer questions concerning this proposed rulemaking, only indicating that two further phases of testing are being conducted.[33]

The DSRC allocation in the 5.9 GHz band is a historical anomaly because it was made when the FCC dedicated specific spectrum to specific types of uses. The modern trend has been to eliminate the inflexibility in these bands as a result of the Commission's then-rigid approach and reallocate them to flexible use, a methodology that promotes innovation and efficient use of spectrum. Many point out that virtually no use has been made of the band in 20 years.[34] Although DOT points to research and development activities that use DSRC spectrum,[35] the only concrete proposal to be seriously pursued at the FCC, cellular V2X (C2VX), which would be located in the upper 10 MHz of the band, requires rule changes.[36]

To date, automotive safety vehicle-to-vehicle solutions have largely been implemented with radar and cameras, different technologies that themselves do not require DSRC spectrum.[37] The

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[30] Public Notice, *The Commission Seeks to Update and Refresh the Record in the "Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band" Proceeding*, 31 FCC Rcd. 6130 (2016).
[31] Public Notice, *Office of Engineering and Technology Requests Comment on Phase I Testing of Prototype U-Nii-4 Devices*, 33 FCC Rcd. 10766 (Off. Eng. & Tech., 2018).
[32] Remarks of FCC Chairman Ajit Pai, Presented at the WI-FI World Congress 2019 Tysons Corner, Virginia (May 14, 2019), *available at* https://docs.fcc.gov/public/attachments/DOC-357456A1.pdf.
[33] NTIA Spectrum Symposium, Transcript at 24.
[34] Remarks of Michael O'Rielly, Federal Communications Commission, "The Road to Gigabit Wi-Fi: Can We Share the 5.9 GHz 'Car Band'?" presented at New America's Open Technology Institute (Jan. 12, 2016), *available at* https://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0112/DOC-337254A1.pdf; Letter from Rick Chessen, NCTA, to Marlene Dortch, Federal Communications Commission, ET Docket No. 13-49, 3-4 (Oct. 16, 2018).
[35] NTIA Spectrum Symposium, Transcript at 24. A recent DOT workshop focused on standard-setting activities and preparations for testing DSRC, but provided little detail on actual deployment and use of the spectrum after 20 years, except for a handful of road side unit deployments used for testing. *See* https://www.transportation.gov/content/traffic-safety-and-59-ghz-band-0.
[36] 5G Automotive Association, Petition for Waiver to Allow Deployment of Intelligent Transportation System Cellular Vehicle to Everything (C-V2X) Technology, GN Docket No. 18-357 (filed Nov. 21, 2018).
[37] DOT states that DSRC will be "complementary to" "but not a precondition" to radars and cameras in the future, U.S. Department of Transportation, Automated Vehicles 3.0, Preparing for the Future of Transportation, 13 (2018),

government would be wise to open up the band to highest and best use. In this regard, the FCC Commissioners observe that the original DSRC vision failed, but that now a more efficient use can be made, even if the FCC ultimately decides to retain the DSRC allocation for some portion of the band.

IV. Conclusion

The NTIA Report is an important piece of the background puzzle that should inform the White House's national spectrum strategy going forward. The Report identifies a number of valuable and promising spectrum bands that could be used for 5G and related unlicensed uses. The rule changes which would allow repurposing of these bands and which would facilitate their highest and best use should be promptly pursued. The traditional, often-glacial, speed of government in the Analog Age is not sufficient in the Digital Age when new network deployments and modern innovations, such as those that will accompany 5G deployment, are at stake. President Trump should keep a close eye on the implementation of the national spectrum strategy that will result in the promotion of overall consumer welfare. Certainly, repurposing mid-band spectrum for flexible mobile use should be a key component of the spectrum strategy. This will benefit consumers, while enhancing the social and economic well-being of the entire nation.

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Further Reading

Randolph J. May & Gregory J. Vogt, "A Free Market Approach Should Be Used to Reallocate C-Band Spectrum," *Perspectives from FSF Scholars*, Vol. 14, No. 17 (July 17, 2019).

Gregory J. Vogt, "A Tale of Two Administrations - Prying Valuable 5G Spectrum from Government Hands," *Perspectives from FSF Scholars*, Vol. 14, No. 15 (June 21, 2019).

Gregory J. Vogt, "The Race for Global 5G Leadership: Where Are We Now?" *Perspectives from FSF Scholars*, Vol. 14, No. 7 (March 5, 2019).

Gregory J. Vogt, "STREAMLINE 5G Processes to Match the Speed of Business," *FSF Blog*, (July 9, 2018).

Gregory J. Vogt, "RAY BAUM Would be Proud," *FSF Blog* (March 23, 2018).

Gregory J. Vogt, "Now Is the Time for MOBILE NOW," *Perspectives from FSF Scholars*, Vol. 12, No. 15 (April 28, 2017).

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available at https://www.transportation.gov/sites/dot.gov/files/docs/policy-initiatives/automated-vehicles/320711/preparing-future-transportation-automated-vehicle-30.pdf. This position is consistent with the current DOT view that autonomous vehicle policy should be technology neutral and not the subject of specific government mandates, presumably including use of DSRC.

Randolph J. May & Gregory J. Vogt, "Focusing on Communications Infrastructure Development," *Perspectives from FSF Scholars*, Vol. 11, No. 44 (December 13, 2016).