

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Promoting Investment in the 3550-3700 MHz Band;)	GN Docket No. 17-258
)	
Petitions for Rulemaking Regarding the Citizens Broadband Radio Service)	RM-11788 (Terminated)
)	RM-11789 (Terminated)
)	

REPLY COMMENTS OF ACT | THE APP ASSOCIATION

ACT | The App Association (App Association) respectfully submits its views in response to the Federal Communications Commission’s (Commission’s or FCC’s) Notice of Proposed Rulemaking (NPRM) in the above-captioned proceeding.¹ Below, the App Association discusses the benefits that the 3550-3700 MHz (3.5 GHz) band offers to the growth of the “fifth-generation” (5G) ecosystem in the United States. The 5G ecosystem enables countless consumers and enterprises to enjoy the software applications (apps) that the App Association’s members create.

The App Association represents more than 5,000 small- and medium-sized app development companies and technology firms across the United States. The world has adopted mobile technology faster than any other innovation in human history, and the dynamic app ecosystem leverages these technologies to power the global digital economy, augment consumer interactions and experiences, and introduce unprecedented efficiencies in the enterprise context.

¹ See generally, *In the Matter of Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Notice of Proposed Rulemaking and Order Terminating Petitions (Rel. Oct. 24, 2017).

The hyper-competitive app ecosystem is the driving force behind the rise of smartphones, tablets, and a growing number of internet-enabled devices. As detailed in our annual *State of the App Economy* report,² the \$143 billion app ecosystem is led by U.S. companies and has added 110,000 new developer jobs to the American workforce over the past two years. Moreover, 83 percent of the top U.S. app companies are located outside of Silicon Valley, and many are headquartered in rural areas. Our members provide the touchpoint to the mobile revolution, which continues to create new efficiencies across sectors, from finance to healthcare to manufacturing.

To better support the potential of the app ecosystem and the future of the mobile revolution, the App Association urges the Commission to reduce barriers to broadband infrastructure and support efficient, innovative ways to utilize wireless spectrum through licensed or unlicensed agreements. The growth of the app economy depends upon reliable high-speed wireless broadband connectivity. The failure to support necessary broadband infrastructure or provide spectrum management oversight will harm both the U.S. economy and consumers. Telecom operators have proposed a \$275 billion investment³ into 5G networks and small cell deployments, which are expected to create 3 million new jobs and boost annual U.S. gross domestic product by \$500 billion. The App Association applauds the Commission's efforts to remove as many regulatory barriers as possible to advance 5G deployment,⁴ and we believe the Commission must play a central role in the deployment of a robust internet infrastructure. The

² ACT | The App Association, *State of the App Economy, Fifth Edition* (Apr. 2017), available at <http://actonline.org/2017/04/20/state-of-the-app-economy-report-outlines-growth-dynamism-of-the-app-ecosystem/>.

³ Accenture, *Smart Cities: How 5G Can Help Municipalities Become Vibrant Smart Cities* (Jan. 2017), available at https://newsroom.accenture.com/content/1101/files/Accenture_5G-Municipalities-Become-Smart-Cities.pdf.

⁴ E.g., *In the Matter of Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*, WT Docket No. 17-79, Notice of Proposed Rulemaking (2017) available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-344160A1.pdf.

Commission's work to speed up the build-out of broadband infrastructure will also be integral to closing the digital divide; the App Association remains committed to assisting the Commission in this respect.

I. The 3.5 GHz Band Will Play a Critical Role in the Growth of the App Economy and the Success of 5G Networks

While there is no universal definition for a 5G mobile network, the term broadly encompasses the future of interoperable mobile networks being driven through technical standards bodies today. 5G networks are expected to utilize a wide range of spectrum bands, both licensed and unlicensed, through new and innovative spectrum efficiencies and sharing arrangements. Standard bodies such as the Third Generation Partnership Project (3GPP) and the IEEE continue to develop the requirements for 5G technologies.⁵

Similar to 5G, the internet of things (IoT) will encompass everyday products that use the internet to communicate data collected through sensors. By 2021, machine-to-machine devices are expected to represent more than half of connected devices.⁶ IoT is expected to enable improved efficiencies in processes, products, and services across every sector, from agriculture

⁵ See 3GPP, *The Mobile Broadband Standard, Tentative 3GPP Timeline for 5G* (Mar. 17, 2015) available at http://www.3gpp.org/news-events/3gpp-news/1674-timeline_5g; see also IEEE Standards Association, *Internet of Things*, at <http://standards.ieee.org/innovate/iot/>.

⁶ Stephanie Condon, *Report: IoT to Dominate Connected Device Landscape by 2021*, (June 8, 2017, 12:00 AM) available at http://www.zdnet.com/article/report-iot-devices-to-dominate-connected-device-landscape-by-2021/?mkt_tok=eyJpIjoiWkrBek5USmhNV1ZpTXpreiIsInQiOiJpOFV0Y214VHdGdmU5K2UrSmdhSXA0dUJCXC9laEFsMUpYUmx0ZkxHUEZkM2RURzdFOTFRmYxbDRTR1REaVpldWtvMTFLeGFDTDJJaYUx0TnlRWjV6Y3JBc09kQ25vejczazBaRzVOd01JS1dndjB6dnYzY1pjMDBuNVdiUDVPQVEifQ%3D%3D.

to retail to healthcare and beyond. Already, the rise of IoT is demonstrating efficiencies unheard of even a few years ago.⁷

The 3.5 GHz band is particularly useful for wireless broadband connectivity because it can greatly augment the reach of wireless broadband services with little-to-no interference with adjacent bands.⁸ Some stakeholder groups have noted that this particular band will have extraordinary influence in the implementation of smart cities.⁹ In November 2017, Cascade Investment—an investment firm controlled by Microsoft co-founder Bill Gates—announced plans to build a “smart city” in Arizona.¹⁰ The complex plans to serve 182,000 citizens by giving them high-speed networks that employ the most advanced technology, cloud-based autonomous vehicles, and autonomous logistics hubs.¹¹ Regardless of the decision on this proceeding, we urge the Commission to be mindful of the variety of IoT stakeholders, including mobile carriers, manufacturers, and network providers, poised to make significant investments in the 3.5 GHz band to make 5G a reality. We encourage the Commission to create a licensing regime that spurs even more investment from market participants.

Many companies are already experimenting with the 3.5 GHz band and conducting pilots to show the ability of 5G to decrease latency in point-to-point connectivity. For example, SK

⁷ E.g., Department of Commerce Internet Policy Task Force and Digital Leadership Team, *Fostering the Advancement of the Internet of Things* (Jan. 2017), available at https://www.ntia.doc.gov/files/ntia/publications/iot_green_paper_01122017.pdf.

⁸ Comments of Verizon, GN Docket No. 17-258; GN Docket 12-354 (Dec. 28, 2017).

⁹ Kara Romagnino, *CTIA Proposes Targeted, Common-Sense Reforms to Incentivize Wireless Investment in Key 5G Spectrum Band*, Press Release (Jun. 19, 2017) available at <https://www.ctia.org/industry-data/blog-details/blog-posts/ctia-proposes-reforms-key-5g-spectrum-band>.

¹⁰ Thuy Ong, *Bill Gates Is Investing \$80 Million to Build a Smart City in Arizona*, The Verge (Nov. 14, 2017, 8:47 AM) available at <https://www.theverge.com/2017/11/14/16648290/bill-gates-smart-city-arizona>.

¹¹ See ACT | The App Association, *Smart Cities: Connecting Your Community Through Technology*, blog (Dec. 18, 2017) available at <http://actonline.org/2017/12/18/smart-cities-connecting-your-community-through-technology/>; see also, Monique Madan, *Bill Gates Just Bought a Huge Chunk of Land to Build his own Smart City*, Financial Review (Nov. 17, 2017, 9:04 AM) available at <http://www.afr.com/real-estate/bill-gates-just-bought-a-huge-chunk-of-land-to-build-his-own-smart-city-20171116-gzn6do>.

Telecom and Samsung Electronics recently announced the successful launch of a 5G end-to-end connection in South Korea using the 3.5 GHz band based on 5G New Radio (NR) technology.¹² The results from the pilot yielded speeds that exceeded 1 Gbps with very low latency (1.2 milliseconds), which is one fourth the time of traditional 4G LTE networks.¹³ The connectivity efficiencies offered through cutting-edge approaches like NR offer an unparalleled opportunity for app developers across IoT contexts. These efficiencies can be applied in a variety of ways, like within the middleware for autonomous vehicles and remote patient monitoring in healthcare settings, because these applications will require ultra-low latency to increase both accuracy and public safety.

Telecommunications carriers are also capitalizing on the opportunity to experiment with 5G interoperability on the 3.5 GHz band. Notably, several major U.S. service providers, including AT&T and Verizon, are conducting trials. In March 2017, the Commission granted AT&T's request for a license to conduct a test on the 3.5 GHz band, and the carrier has since been experimenting on the network.¹⁴ Verizon has gone a step further and announced its intent to begin construction on small cell towers using the 3.5 GHz spectrum in early 2018.¹⁵ We hope whichever licensing scheme the Commission chooses fosters innovation and investment by stakeholders similar to the examples listed above.

¹² Samsung, *Complete 5G End-to-End Network Trial Based on 3.5 GHz 5G New Radio (NR) Technologies*, Press Release (Jun. 28, 2017) available at <https://news.samsung.com/global/sk-telecom-and-samsung-complete-5g-end-to-end-network-trial-based-on-3-5ghz-5g-new-radio-nr-technologies>.

¹³ *See id.*

¹⁴ Zacks Equity Research, *United States Cellular to Test 3.5 GHz Wireless Broadband*, Nasdaq (May 31, 2017) available at <http://www.nasdaq.com/article/united-states-cellular-to-test-35-ghz-wireless-broadband-cm797136>.

¹⁵ Shannon Liao, *AT&T and Verizon are going to build cell towers together*, The Verge (Nov. 13, 2017) available at <https://www.theverge.com/2017/11/13/16643678/att-verizon-cell-towers-tillman-infrastructure>.

II. The Commission Must Facilitate a Regulatory Environment that Supports Stakeholder Investment in Infrastructure to Promote the 5G Ecosystem

In the instant NPRM, the Commission considers whether to augment the territorial and temporal scope of Priority Access Licenses (PALs) within the Consumer Broadband Radio Service bands.¹⁶ Although the App Association does not take a particular position on the Commission's proposed revisions to the 2015 Order¹⁷, we urge the FCC to find a licensing framework that is economic-based and encourages investment by stakeholders interested in supporting the next generation of infrastructure. This proceeding will play an important role in the overall growth and development of 5G, and we hope the Commission will strike a key balance that encourages a diverse array of stakeholders to contribute to innovative solutions that use the 3.5 GHz band.

The Commission must facilitate a regulatory environment that instills confidence in stakeholders to invest in infrastructure and support the technologies that leverage the 3.5 GHz band.¹⁸ To allow the 5G ecosystem to reach maturity, the Commission must engage in a sensible, light-touch regulatory approach with a strong emphasis on economic analysis, particularly when it comes to codified requirements for PALs and for General Authorized Access (GAA) users. The App Association is encouraged by the Chairman's efforts to place cost-benefit analyses at the forefront of the Commission's decision-making process and the creation of the "Office of

¹⁶ See generally, *In the Matter of Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Notice of Proposed Rulemaking and Order Terminating Petitions (Rel. Oct. 24, 2017).

¹⁷ *In the Matter of Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 31 FCC Rcd. 3959 (2015).

¹⁸ Sue Marek, *Why the 3.5 GHz CBRS Band Could be a Breakthrough for 5G*, SDX Central (Mar. 10, 2017, 11:00 AM) available at <https://www.sdxcentral.com/articles/news/3-5-ghz-cbrs-band-breakthrough-5g/2017/03/>.

Economics and Data.”¹⁹ In his April 2017 remarks at the Hudson Institute, the Chairman described how the FCC has in recent years lapsed in implementing an old bipartisan policy tradition: implementing a cost-benefit analysis when promulgating rules with the effect of law.²⁰ We are glad the Commission is changing course on this issue and hope leadership across the political dais can work together to reach bipartisan solutions that spur the deployment of next generation broadband infrastructure.

The Commission has identified numerous barriers to wireless infrastructure deployment, and we appreciate its thoughtful proposals, including those in the current proceeding, to address these barriers. Given the incredible potential for 5G networks to radically improve American lives, the App Association supports the Commission’s dedication to building 5G networks while closing the digital divide. We applaud the establishment of the Chairman’s “Gigabit Opportunity Zone” program, which would “bring broadband and digital opportunity to our nation’s most economically challenged areas.”²¹ We urge the Commission to continue this work to ensure that the necessary infrastructure is in place to facilitate more innovative mobile broadband solutions and set a strong example for markets globally. The App Association remains committed to assisting the Commission in bringing the power and utility of the app economy and the future IoT innovations to every American.

¹⁹ Remarks of FCC Chairman Ajit Pai at the Hudson Institute, *The Importance of Economic Analysis at the FCC* (Apr. 5, 2017) available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0405/DOC-344248A1.pdf.

²⁰ *See id.*

²¹ FCC Chairman Ajit Pai, Digital Empowerment Agenda, available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-341210A2.pdf.

III. Conclusion

In conclusion, the App Association applauds the Commission's action in this proceeding, which is the necessary first step to supporting the 5G ecosystem and unlocking opportunities for countless small businesses and tech innovators.

Respectfully submitted,



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