

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

In the Matter of	)	
	)	
Establishing a 5G Fund for Rural America	)	GN Docket No. 20-32
	)	
To: The Commission	)	
	)	

**COMMENTS OF AST&SCIENCE LLC**

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**COMMENTS OF AST&SCIENCE LLC**

AST&Science LLC (“AST”), by its attorneys and pursuant to Sections 1.415 and 1.419 of the rules and regulations of the Federal Communications Commission (the “FCC” or “Commission”),<sup>1</sup> hereby submits its initial comments in response to the *Notice of Proposed Rulemaking and Order* (“NPRM”)<sup>2</sup> in the above-captioned proceeding in which the Commission seeks input on the procedures to be used to support universal service through the 5G Fund for Rural America (the “5G Fund”).<sup>3</sup> The following is respectfully shown:

**I. INTRODUCTION AND SUMMARY**

In an era often marked with disagreements on communications policy, there is unanimous agreement that the country must take action to close the “digital divide.”<sup>4</sup> Chairman Pai has noted that “since my first day as Chairman of the FCC, my number one priority has been closing

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<sup>1</sup> 47 C.F.R. §§ 1.415 and 1.419.

<sup>2</sup> *In the Matter of Establishing a 5G Fund for Rural America*, Notice of Proposed Rulemaking and Order, 35 FCC Rcd 3994 (2020) (“NPRM”).

<sup>3</sup> These comments are timely filed within 30 days of the publication of the notice seeking comments in the *Federal Register*. See *Establishing a 5G Fund for Rural America*, 85 Fed. Reg. 101, 31616 (May 20, 2020).

<sup>4</sup> The “digital divide” refers to the gap between demographics and regions that have access to cutting-edge communications services and those that do not or have restricted access. See *FCC Initiatives*, FCC, <https://www.fcc.gov/about-fcc/fcc-initiatives> (last visited June 25, 2020).

the digital divide and bringing the benefits of the Internet age to all Americans.”<sup>5</sup> Commissioner O’Rielly has remained “steadfast in [his] commitment to bringing access to those Americans currently without any broadband option at all and looks forward to further actions by the Commission on this front.”<sup>6</sup> Commissioner Carr has commended the Commission for being “committed to closing the digital divide and ensuring that everyone has access to the opportunities that broadband enables.”<sup>7</sup> Commissioner Rosenworcel resoundingly supports universal service because “we need more powerful networks that connect us all [and] a plan for broadband for all.”<sup>8</sup> And, Commissioner Starks notes that “[o]ur top priority should be connecting all Americans to high-quality, affordable broadband.”<sup>9</sup>

The next step to address this critical need is for the Commission to take effective action to foster the extension of 5G mobile wireless broadband service on a cost-efficient basis to all unserved and underserved areas in the country. Despite longstanding efforts to promote universal service, not enough progress has been made. The Commission has fostered broadband

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<sup>5</sup> See *Bridging The Digital Divide for All Americans*, FCC, <https://www.fcc.gov/about-fcc/fcc-initiatives/bridging-digital-divide-all-americans> (last visited June 25, 2020). See also *Notice of Filing Requirements and Other Procedures for Auction 904*, AU Docket No. 20-24, WC Docket No. 19-126, WC Docket No. 10-90, Public Notice, FCC 20-77, Statement of Chairman Pai at p. 115 (rel. June 11, 2020) (“*Auction 904 Final Public Notice*”) (“In my three-plus years as Chairman of the FCC, closing the digital divide—the gap between Americans with access to broadband and those without it—has consistently been my top priority.”).

<sup>6</sup> See *In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, Report, 34 FCC Rcd 3857, 4126 (2019).

<sup>7</sup> See *In the Matter of Connect America Fund Universal Service Reform – Mobility Fund*, Order on Reconsideration, 33 FCC Rcd 2540, 2569 (2018).

<sup>8</sup> See *Auction 904 Final Public Notice*, Statement of Comm’r Rosenworcel at p. 119.

<sup>9</sup> Press Release, FCC, Statement by Comm’r Starks on Sec. 230 Exec. Order (May 28, 2020) available at <https://docs.fcc.gov/public/attachments/DOC-364610A1.pdf>.

deployment through numerous universal service fund (“USF”) programs,<sup>10</sup> and by securing buildout commitments in the course of approving major merger transactions.<sup>11</sup> Nonetheless, the Commission has noted that “even with these significant deployment commitments, some rural areas will remain where there is insufficient incentive for mobile wireless carriers to invest in 5G-capable networks, and those communities could be excluded from the technological and economic benefits of 5G for years to come.”<sup>12</sup>

Universal service is hampered by an immutable economic reality: deploying advanced broadband technology is expensive. The result is that networks are rolled out on an incremental basis. Carriers first deploy networks to the most populous areas, and then expand over time to adjoining suburban areas. Service is extended to rural and hard to serve areas only if a financial case can be made. USF support has been offered to make service to remote and high cost areas economically feasible. But a stark truth remains: the traditional approach to USF support has left too many areas without the advanced services that are necessary for people and businesses to survive and thrive in the 21<sup>st</sup> century. Absent bold and creative action by the Commission, some communities will be left behind indefinitely.

The challenge for the Commission is to incentivize providers to come up with innovative ways to overcome the barriers to broadband deployment in the areas that are the very hardest to serve; either because of impediments to the deployment of terrestrial infrastructure, or because of the sparse population that makes service uneconomic. The Commission has noted that its number one strategic goal is to “develop a regulatory environment to encourage the private sector to build, maintain, and upgrade next-generation networks so that the benefits of advanced

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<sup>10</sup> See *NPRM*, 35 FCC Rcd at 3997-4000.

<sup>11</sup> See *id.* at 3995 n.3.

<sup>12</sup> *Id.* at 3995.

communications services are available to all Americans,” and that “[w]here the business case for infrastructure investment doesn’t exist, employ effective and efficient means to facilitate deployment and access to affordable broadband in all areas of the country.”<sup>13</sup> To that end, the Commission should look to newer, transformational technologies that hold the promise of providing coverage to unserved and underserved areas using inventive, cost-efficient means of deployment.

Rather than pushing aside cutting-edge technologies, to succeed the Commission must promote pioneering approaches that break the existing mold. One essential step is for the Commission to allow mobile-satellite companies that can provide 5G-NR broadband service to standard smartphones and off-the-shelf user devices to participate meaningfully in closing the digital divide by partnering with terrestrial broadband providers in the 5G Fund reverse auction. The Commission should invite providers to demonstrate, on a case-by-case basis at the short-form application stage, the capability of these transformational, mobile-satellite-based technologies to meet the technical and performance standards for the 5G Fund. This approach is consistent with the Commission’s longstanding and wise policies of implementing regulatory policies in a technologically-neutral fashion and in a manner that avoids picking “winners and losers.”<sup>14</sup> In AST’s case, this recommended approach would enable AST to more quickly implement its business plan of formulating cooperative arrangements with one or more wireless carriers to extend high quality 5G services to areas that are extremely unlikely to be covered by traditional terrestrial technologies, including the most challenging areas to attract 5G service providers due to terrain and lack of financial justification. The mobile-satellite-based enhancement would allow essential service to be provided where a financial case cannot be

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<sup>13</sup> See *About the FCC*, FCC, <https://www.fcc.gov/about/overview> (last visited June 25, 2020).

<sup>14</sup> See discussion, *infra* at p. 19.

made, even with 5G Fund support, to deploy expensive terrestrial cell sites and backhaul facilities. This will alter the economic equation that has left behind these hardest to serve areas.

People in rural areas have been left unserved by the current incremental approach for too long. The time has come for the Commission to take imaginative action. Without prior bold actions by the Commission, we would not have seen the development of today's vibrant cable television,<sup>15</sup> DBS<sup>16</sup> and wireless businesses.<sup>17</sup> The Commission has not only the authority, but a statutory directive, to strive to deliver advanced telecommunications services on a universal basis.<sup>18</sup> The changes proposed by AST to the 5G Fund auction procedures – which are outlined

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<sup>15</sup> In 1977, the Commission allowed cable operators to use 4.5 meter receive-only earth stations, which cut costs and made pay-cable affordable. The Commission sought to “provide the opportunity to potential licensees to develop innovative and well engineered facilities and services that can demonstrate in practice the unique potential of domestic satellite communications to better serve the public interest in efficient and economical telecommunications.” *See In the Matters of Am. Broad. Cos., Inc. Petition for Rulemaking to Consider Pub. Policy Questions Relating to the Establishment of A Basic Overall Design for the Dev. of Domestic Comm'ns Satellite Servs. Cmty. Antenna Television Ass'n Petition for Rulemaking or for Declaratory Ruling to Permit the Authorization of Receive-Only Small Earth Station Antennas*, Declaratory Ruling and Order, 62 F.C.C.2d 901, 921 (1977).

<sup>16</sup> In 1982, the Commission adopted a “flexible regulatory approach” for Direct Broadcast Satellite (“DBS”) service to allow DBS providers to operate either as broadcasters, common carriers, or both, and declined to impose ownership restrictions or access requirements during an interim experimental period. During the experimental period, the Commission also sought to encourage “technological innovations that might be used in conjunction with DBS,” such as HDTV systems. *See In the Matter of Inquiry into the Development of Regulatory Policy in Regard to Direct Broadcast Satellites for the Period Following the 1983 Regional Administrative Radio Conference*, Report and Order, 90 F.C.C.2d 676, 707 and 717 (1982).

<sup>17</sup> In 1995, the Commission opened the millimeter wave frequency bands above 40 GHz for commercial use. The Commission found that this would “encourage the development and use of new technology in commercial products and services” including wireless computer-to-computer communications and development of vehicle radar systems used with Intelligent Transportation Systems. *In the Matter of Amendment of Parts 2, 15, & 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, First Report and Order and Second Notice of Proposed Rulemaking, 11 FCC Rcd 4481, 4483 (1995).

<sup>18</sup> *See* discussion, *infra* at p. 12.

in detail below – will satisfy this mandate and help make the dream of nationwide broadband coverage a reality.

## **II. AST IS AN INTERESTED PARTY**

### **A. Background**

AST, with the support of its global partners who are described below, is building the first and only mobile-satellite-based 5G wireless broadband network able to provide high quality broadband mobile service to standard, unmodified off-the-shelf smartphones and 5G-enabled devices. Called SpaceMobile, this ultra-powerful network will be able to provide connectivity at 5G speeds nearly everywhere on the planet. The AST technology will enable 5G mobile wireless broadband coverage in the most difficult to serve areas without the need for building physical infrastructure. AST, working cooperatively with operators of terrestrial networks, will enable mobile subscribers to roam automatically and seamlessly from land networks to a space network for the first time ever. With specific reference to the 5G Fund, AST plans to target its SpaceMobile service to the most difficult to serve areas – remote regions with sparse populations, areas with rugged terrain and those exhibiting other factors that make them extremely difficult and/or uneconomic to serve. The end-user experience will be comparable to that from a full-terrestrial 5G service.

### **B. AST Global Partners**

A number of well-known companies with which AST is forming strategic relationships for the delivery of SpaceMobile service have invested in AST:



- Vodafone Group Plc (“Vodafone”).<sup>19</sup> In addition to making a significant financial investment in AST, Vodafone has agreed to a strategic partnership with AST and will contribute technical, operational and regulatory expertise in support of the global deployment of SpaceMobile.
- Rakuten, Inc. (“Rakuten”)<sup>20</sup> also has made a significant financial investment in AST and will be assisting AST in the design of certain technical components of the SpaceMobile System.
- American Tower Corporation (“American Tower”).<sup>21</sup> In addition to having made a significant financial investment in AST, American Tower will be housing AST satellite gateways in the U.S.

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<sup>19</sup> Vodafone is a leading international telecommunications company providing voice, messaging, and data services across fixed and mobile networks throughout the world, has a market cap of approximately \$40 billion derived from 625 million mobile customers, 27 million fixed broadband customers, 22 million TV customers as well as cloud and security, unified communications, and internet of things (“IoT”) services. *See About, VODAFONE*, <https://www.vodafone.com/about> (last visited June 25, 2020). *See also* Press Release, Vodafone, FY20 Preliminary Results (May 12, 2020) available at <https://investors.vodafone.com/static-files/4e32c6fe-6335-49e1-904f-6808e7d42bed>.

<sup>20</sup> Rakuten, which has a market cap of approximately \$13 billion, is a global leader in Internet and e-commerce services offering fintech, digital content and communications services (including 5G services). *See Rakuten Mobile Ramping Up Efforts to Launch 5G Next Month*, COMMSUPDATE (May 11, 2020), [https://www.commsupdate.com/articles/2020/05/11/rakuten-mobile-ramping-up-efforts-to-launch-5g-next-month/?utm\\_source=CommsUpdate&utm\\_campaign=89cf1a2721-CommsUpdate+11+May+2020&utm\\_medium=email&utm\\_term=0\\_0688983330-89cf1a2721-11621485](https://www.commsupdate.com/articles/2020/05/11/rakuten-mobile-ramping-up-efforts-to-launch-5g-next-month/?utm_source=CommsUpdate&utm_campaign=89cf1a2721-CommsUpdate+11+May+2020&utm_medium=email&utm_term=0_0688983330-89cf1a2721-11621485).

<sup>21</sup> American Tower is a global leader in the tower business as the owner, operator and developer of multitenant communications real estate. American Tower has a market cap of approximately \$115 billion based upon a portfolio of approximately 180,000 communications sites, including nearly 41,000 properties in the United States and approximately 139,000 properties internationally. *See* Secs. and Exch. Comm’n, Ann. Rep. (Form 10-K), American Tower Corp. (Dec. 31, 2019) available at <https://www.sec.gov/ix?doc=/Archives/edgar/data/1053507/000105350720000028/amt1231201910k.htm>.

- The Cisneros Group (“Cisneros”)<sup>22</sup> was an early stage investor in AST based on its interest in the innovative satellite-based mobile technology, and remains actively involved in the strategic development AST.
- Samsung NEXT LLC (“Samsung NEXT”)<sup>23</sup> is the investment arm of Samsung Electronics Co., Ltd., (“Samsung”). Samsung NEXT – whose mission is to discover and to develop groundbreaking frontier technologies – is an investor in AST.

This impressive group of investors in, and strategic partners of, AST is a testament to the groundbreaking nature of the SpaceMobile technology.

### **C. AST Technology**

AST has designed and patented a modular low earth orbiting (“LEO”) low-latency satellite system to provide the described SpaceMobile service. AST’s founder and Chief Executive Officer, Abel Avellan, has over 25 years of success in the space industry.<sup>24</sup> He has assembled a top team of satellite technology experts,<sup>25</sup> scientists,<sup>26</sup> and engineers<sup>27</sup> that have

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<sup>22</sup> Cisneros is a multi-billion dollar diversified privately held company with interests, past and present, in more than 30 companies that have provided, among other things, media and interactive communication services to tens of millions of customers in over 100 countries. *See Our History*, CISENEROS, <https://www.cisneros.com/> (last visited June 25, 2020).

<sup>23</sup> Samsung NEXT, formerly known as Samsung Strategy and Innovation Center, is a wholly-owned subsidiary of Samsung. *See Approach*, SAMSUNG NEXT, <https://samsungnext.com/approach/> (last visited June 25, 2020). Samsung has a market cap of approximately \$225 billion based upon its standing as a world leader in the provision of consumer electronics, information technology and mobile communications services. *See About Us*, SAMSUNG, <https://www.samsung.com/us/aboutsamsung/home/> (last visited June 25, 2020).

<sup>24</sup> Mr. Avellan is the co-inventor of 22 U.S. patents. His companies have been honored with multiple industry awards, including the World Teleport Association's Satellite Teleport Executive of the Year (2017) and Fastest Growing Satellite Company several years in a row, as well as Euroconsult's Satellite Transaction of the Year (2015). *Our Team*, AST&SCIENCE LLC, <https://ast-science.com/team/abel-avellan/> (last visited June 25, 2020).

<sup>25</sup> AST’s Chief Technology Officer, Dr. Huiwen Yao, brings over 30 years of experience in the development and management of communications satellites systems. Previously, he was the Senior Director of Commercial Payload/RF Engineering in the Space Systems Group of

designed an entirely new service and deployment method that will transform the mobile-satellite industry.<sup>28</sup>

AST is a U.S.-based company which is controlled by U.S. citizens and has no foreign government ownership or control. AST's proprietary system has been developed at AST's research and development facility in Maryland. AST's satellites will be constructed and launched from AST's corporate headquarters and manufacturing plant in Midland, Texas, which is one of the largest high-volume "NewSpace" manufacturing facilities in the United States.<sup>29</sup>

The SpaceMobile system is an ultra-powerful, space-based broadband network that will connect directly to off-the-shelf wireless handsets and standard user terminals everywhere. The network will afford customers a cost-effective, high data-rate communications service available

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Northrop Grumman Innovation Systems (previously Orbital ATK). Dr. Yao is the author of more than 55 technical papers and a book chapter in the fields of communications systems, antennas, microwave/RF components and EM simulations/CAD. *Our Team*, AST&SCIENCE LLC, <https://ast-science.com/team/huiwen-yao/> (last visited June 25, 2020).

<sup>26</sup> Dr. Raymond Sedwick is the Chief Scientist, Space and Formation Flight at AST. His expertise includes in-space power generation and propulsion, formation flight technologies and novel space architectures. *Our Team*, AST&SCIENCE LLC, <https://ast-science.com/team/raymond-sedwick/> (last visited June 25, 2020). Sriram Jayasimha is the Chief Scientist, Commercial Applications for AST. He is an expert in digital-signal-processing applications, including mobility, satellite communications, modem, VLSI and instrumentation signal processing. *Our Team*, AST&SCIENCE LLC, <https://ast-science.com/team/sriram-jayasimha/> (last visited June 25, 2020).

<sup>27</sup> Ken Bocam, Vice President, Systems Engineering of AST has over 30 years of experience in aerospace engineering and small satellite development. *Our Team*, AST&SCIENCE LLC, <https://ast-science.com/team/ken-bocam/> (last visited June 25, 2020).

<sup>28</sup> Other mobile-satellite systems – current and planned – require costly and often network-specific satellite phones, terminals or antennas. Wireless subscribers will connect to SpaceMobile with their current off-the-shelf mobile phone or IoT device.

<sup>29</sup> Chairman Pai often has noted the public interest benefits of reducing the reliance of the U.S. on foreign manufacturers of telecommunications equipment. *See, e.g., Auction of Priority Access Licenses for the 3550-3650 MHz Band*, Public Notice, 35 FCC Rcd 2140, 2213 (2020); *In the Matter of Unlicensed Use of the 6 GHz Band*, Report and Order, 35 FCC Rcd 3852, 3986 (2020); *NPRM*, 35 FCC Rcd at 4107; Press Release, FCC, Chairman Pai Circulates Draft Order to Approve Ligado's Application to Facilitate 5G and Internet of Things Services (Apr. 16, 2020) available at <https://docs.fcc.gov/public/attachments/DOC-363765A1.pdf>.

on a wide-scale throughout the United States. Partnering with one or more domestic terrestrial wireless network operators will enable AST to extend service into geographic areas where it currently is cost-prohibitive to provide wired or terrestrial wireless broadband service due to population density, topography, or land-use issues. Importantly, this arrangement will allow carriers to augment and extend their coverage by using their own spectrum resources without having to build towers or other infrastructure where doing so is not economically-justified or not feasible due to other environmental challenges. In short, AST is interested in using its technology to partner with established carriers to expand their terrestrial existing networks to areas that they would not normally be able to reach – even with USF support.

AST has made significant strides to bring the SpaceMobile service to the market. The AST system will consist of 214 low earth orbiting satellites operating in sixteen orbital planes at an approximate altitude of 700 kilometers. This system will operate under filings made by Papua New Guinea with the International Telecommunications Union (“ITU”). Papua New Guinea has issued AST a license to operate its satellite system.<sup>30</sup> Having completed its initial successful trials under an experimental license authorization granted by the FCC,<sup>31</sup> AST now has filed with the FCC an FCC Form 312 application seeking authorization for access to the U.S. market for SpaceMobile, and an accompanying Petition for Declaratory Ruling.<sup>32</sup> These filings, which are incorporated here by reference, set forth in detail descriptions of (1) the network architecture; (2) the space segment of the system; (3) the ground segment of the system, (4) the gateway

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<sup>30</sup> A copy of this Radiocommunications Apparatus License is included as an attachment to the market access application. *See infra* at n.32.

<sup>31</sup> *See* AST&Science LLC, ELS File No. 0884-EX-CN-2018, Call Sign WJ2XZZ (granted May 6, 2019). Testing was done using a small sat, Blue Walker 1. AST next plans to launch Blue Walker 3 for additional testing.

<sup>32</sup> *See* AST&Science LLC, IBFS File No. SAT-PDR-20200413-00034, Call Sign S3065 (filed Apr. 13, 2020).

frequency bands, (5) the channelization and spectrum use and (6) other associated detailed technical information.

#### **D. The Objective of AST in this Proceeding**

The *NPRM* properly recognizes the critical need for 5G wireless services in unserved and underserved rural areas that are suffering as a result of the digital divide. AST strongly supports the Commission’s decision “to retarget universal service funding for mobile broadband and voice in the high cost program to support the deployment of 5G services by establishing the 5G Fund.”<sup>33</sup> Changes in the Commission’s proposal need to be made, though, to promote innovative technologies that can extend 5G coverage promptly to the hardest to serve areas promptly and on a cost-efficient basis. Otherwise, the Commission will have missed its opportunity to take advantage of the latest technologies that can serve territories that have remained stranded under the Commission’s historical approach. Making the changes proposed by AST will serve to future-proof the Commission’s efforts to comprehensively reform the universal service program.

Specifically, the Commission needs to: (1) avoid over-reliance on traditional technology,<sup>34</sup> which to date has failed to meet fully the statutory objective of the universal service fund program which is to provide consumers in *all* rural, insular and high cost areas advanced telecommunications services reasonably comparable to those services provided in

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<sup>33</sup> *NPRM*, 35 FCC Rcd at 4000.

<sup>34</sup> AST uses the term “traditional technology” to refer to an existing technology as distinguished from a new technology. While the proliferation of 5G services is at an early stage, terrestrial 5G technology must be considered an existing technology. Perhaps there is no better indicator of this than the recent *Call to Action* memorandum by the accredited association Alliance for Telecommunications Industry Solutions (“ATIS”) urging policymakers that it is time to start focusing on 6G. *Promoting U.S. Leadership on the Path to 6G*, ALLIANCE FOR TELECOMMUNICATIONS INDUSTRY SOLUTIONS, <https://sites.atis.org/wp-content/uploads/2020/05/Promoting-US-Leadership-on-Path-to-6G.pdf> (last visited June 23, 2020).

urban areas, and at comparable rates; and, (2) permit *qualified*<sup>35</sup> mobile-satellite services that support direct 5G-NR connectivity to standard, commercially-available wireless devices to compete for 5G Funds because a mobile-satellite solution that allows consumers and vendors to use existing wireless devices holds the greatest promise of delivering affordable, high quality wireless broadband service to those unserved areas that simply will not support a terrestrial-based service, even with assistance from the 5G Fund.

### **III. THE CHANGES PROPOSED BY AST MEET IMPORTANT PUBLIC INTEREST OBJECTIVES**

The changes proposed by AST to the 5G Fund auction are consistent with the Commission’s statutory obligations and past precedent. Section 157 of the Communications Act of 1934, as amended (the “Act”), provides that “[i]t shall be the policy of the United States to encourage the provision of new technologies and services to the public.”<sup>36</sup> Similarly, Section 706 of the Act obligates the Commission “to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.”<sup>37</sup> The applicability of these obligations to the Commission’s statutory mandate to promote universal service is clear from the language of Section 245(b)(3) of the Act which expressly obligates the Commission to strive to deliver “advanced telecommunications services” on a universal basis.

This Commission, led by Chairman Pai, has taken a series of notable actions to promote innovation and advanced technological development. For example, the agency recently

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<sup>35</sup> By “qualified,” AST means services that can demonstrate the technological capability to deliver 5G services that comply at a minimum with 5G-NR technology as defined by 3GPP Release 15 (or its successor); and (b) meet minimum baseline performance requirements for data speed, data latency and data allowance as proposed by the Commission. *See NPRM*, 35 FCC Rcd at 4001.

<sup>36</sup> 47 U.S.C. § 157.

<sup>37</sup> 47 U.S.C. § 706.

repurposed the 3.5 GHz band for the stated purpose of encouraging innovation in the band.<sup>38</sup>

The Chairman’s supporting statement emphasized how the Commission was making “necessary mid-course corrections” to repurpose the 3.5 GHz band for commercial use to keep pace with technological developments in the wireless sector related to 5G.<sup>39</sup> Similarly, on April 23, 2020, the Commission adopted new rules permitting unlicensed devices to operate in the 6 GHz band.<sup>40</sup>

Chairman Pai’s accompanying statement emphasized how the new rules strengthened the Commission’s ability to accommodate a dramatic increase in Wi-Fi demand to support innovators and advance next-generation wireless technologies, including 5G.<sup>41</sup> Chairman Pai’s statement in support of the 5G Fund *NPRM* highlights the importance of relying upon advanced 5G technology rather than “predecessor technologies” to bring needed services to rural America.<sup>42</sup> Recent legislative activity indicates that Congress also recognizes the critical need to accelerate the deployment of advanced communication services to remote areas in a

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<sup>38</sup> *Auction of Priority Access Licenses for the 3550-3650 MHz Band*, Public Notice, 35 FCC Rcd 2140 (2020).

<sup>39</sup> *Id.*, Statement of Chairman Pai at 2213.

<sup>40</sup> *In the Matter of Unlicensed Use of the 6 GHz Band and Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Report and Order, 35 FCC Rcd 3852, 3853 (2020).

<sup>41</sup> Press Release, FCC, Chairman Pai Proposes New Rules for the 6 GHz Band, Unleashing 1,200 Megahertz for Unlicensed Use (Apr. 1, 2020) *available at* <https://docs.fcc.gov/public/attachments/DOC-363451A1.pdf>.

<sup>42</sup> *NPRM*, 35 FCC Rcd at 4107, Statement of Chairman Pai.

technologically neutral fashion.<sup>43</sup> And, major broadband service providers have joined the call for dramatic USF reform in order to meet the challenges presented by the digital divide.<sup>44</sup>

This Commission has properly recognized in the past the important role that low earth orbiting satellites will play in bringing service to rural and remote areas. In a recent speech at the Space Policy Summit of the U.S. Chamber of Commerce, Chairman Pai discussed how satellite-based mobile services, and particularly LEO systems, can bring service to the hardest to reach areas.<sup>45</sup> Similarly, during a speech this year at the Hawaii International Conference on Science Systems, Chairman Pai addressed the importance of innovative space-based broadband technologies to serve remote and rural areas.<sup>46</sup>

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<sup>43</sup> See, e.g., The Rural Connectivity Advancement Program (CAP) Act of 2020, S., 116th Congress (2020) available at <https://www.thune.senate.gov/public/cache/files/16fd6e4d-deef-4470-be57-7e404087a647/30D1621EB21D451E743163E045A80114.oll20568.pdf> (Bill introduced by Senator Thune to provide funds to accelerate the deployment of advanced communications services and communications infrastructure in rural America).

<sup>44</sup> For example, AT&T backs broadband reform and has indicated that it will lobby Congress to revamp the U.S.'s broadband policies. AT&T's Ed Gillespie said in a recent blog post that "The COVID-19 crisis laid bare critical shortcomings in our approach to universal service". . . Congress could consider "significant broadband infrastructure funding" to create connectivity, much in the same way that highway funding helped create the U.S. transportation system. Ed Gillespie, *Broadband Connectivity During the Age of COVID-19*, AT&T PUBLIC POLICY (June 22, 2020, 7:00 AM), <https://www.attpublicpolicy.com/fcc/broadband-connectivityduring-the-age-of-covid-19/>.

<sup>45</sup> Ajit Pai, Chairman, FCC, Remarks at the "Launch: The Space Economy" Summit (Dec. 3, 2019). Commissioner Starks likewise acknowledged in his separate statement in IB Docket No. 18-313 (Mitigation of Orbital Debris in the New Space Age) the importance of "accelerating the growth of the latest generation of satellite broadband." *In the Matter of Mitigation of Orbital Debris in the New Space Age*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 4156, 4292 (2020).

<sup>46</sup> Chairman Pai discussed SpaceX's progress in launching LEO satellites as well as the Commission's recent licensing of Swarm Technologies, a small company focused on providing non-geostationary mobile-satellite service. Ajit Pai, Chairman, FCC, Remarks at the Hawaii International Conference on Science Systems (Jan. 10, 2020) available at <https://docs.fcc.gov/public/attachments/DOC-361862A1.pdf>.



In sum, the Commission has both a statutory mandate and important public interest justifications to make sure that qualified mobile-satellite technologies are allowed to participate in solving the problems of unserved and underserved areas in the United States.

#### **IV. PROPOSED CHANGES TO THE 5G FUND PROPOSAL**

The FCC should consider a number of clarifications and changes to the 5G Fund auction proposal in order to avoid stranding mobile-satellite service providers in general, and AST in particular, at the starting gate for the 5G Fund auction.

##### **A. The Terrestrial Service Requirement**

The text of the *NPRM* proposes to require 5G Fund support recipients “to provide mobile, *terrestrial* voice and data services that comply, at a minimum, with 5G-NR technology as defined by 3GPP Release 15.”<sup>47</sup> The proposed rules governing the auction process and administration of the 5G Fund repeatedly refer to each fund recipient as a “mobile competitive eligible telecommunications carrier,” which is defined in the rules to be a telecommunications carrier “that provides a *terrestrial-based service* meeting the definition of “commercial mobile radio service” in § 51.5 of this chapter.<sup>48</sup> This terrestrial service requirement needs to be either clarified or modified in order to assure that mobile-satellite service providers that support direct 5G-NR connectivity to existing wireless devices are eligible to compete for funds in the 5G Fund auction. Notably, asking the Commission to modify this eligibility restriction is consistent with its stated goal “to encourage participation in a 5G Fund auction by the widest possible range of entities...”<sup>49</sup> The only limitation should be that applicants be able to provide mobile wireless

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<sup>47</sup> *NPRM*, 35 FCC Rcd at 4022 (emphasis added).

<sup>48</sup> *Id.* at 4020 (emphasis added).

<sup>49</sup> *Id.* at 4038.

service that meets the applicable public interest obligations and performance requirements for the 5G Fund.

The Commission could address this “terrestrial service” issue in one of two ways. Without changing any of the other rules, the Commission could clarify that any network that delivers service to standard, unmodified, off-the-shelf wireless handsets on frequencies allocated for broadband public land mobile service qualifies as a “terrestrial” service for the purpose of the 5G Fund auction. Alternately, the Commission could replace the word “terrestrial” with the phrase “terrestrial or mobile-satellite-based” in rules pertaining to the 5G Fund auction.

Expanding eligibility to include mobile-satellite service providers would be consistent with precedent. As far back as 1995, the Commission recognized the potential of LEO systems to bring service to remote areas by granting a “pioneer’s preference” to Volunteers in Technical Assistance (“VITA”) to construct, launch, and operate a non-geostationary mobile-satellite system to provide service to underdeveloped countries. The preference was granted based upon proof of the service concept demonstrated when the Commission granted VITA authority to construct, launch and operate its “Little LEO” service on an experimental basis.<sup>50</sup>

Notably, mobile-satellite based services already are receiving legacy high-cost subsidy support from universal service funds.<sup>51</sup> Dial Tone Services, LP (“DTS”) is a Texas-based company providing both fixed and mobile telephone service using LEO satellite and Geosynchronous satellite (GEO) technologies. DTS receives support because it provides service in isolated areas, principally to ranchers, farmers, and oil and gas companies.<sup>52</sup> Similarly, in

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<sup>50</sup> See *In the Matter of the Application of Volunteers in Technical Assistance*, 11 FCC Rcd 1358, 1358 (1995). See also *NPRM*, 35 FCC Rcd at 3996.

<sup>51</sup> *NPRM*, 35 FCC Rcd at 4018 n.108.

<sup>52</sup> See DIAL TONE SERVICES, <https://www.dialtonetexas.com/> (last visited June 25, 2020).

2019 the Commission designated Viasat Carrier Services, Inc. (“Viasat”) as an ETC in eligible high-cost areas within Alabama, California, Florida, and West Virginia, finding that Viasat met the eligibility requirements to receive universal service support, as set forth in section 214(e)(6) of the Communications Act, and related Commission rules.<sup>53</sup>

This AST-proposed modification to make mobile-satellite service providers eligible to receive 5G Funds also would continue the positive trend reflected in the Commission’s recent *Public Notice* that established final filing requirements and procedures for the upcoming FCC Auction 904 for Rural Digital Opportunity Funds (“RDOF”).<sup>54</sup> While the *Auction 904 Comment Public Notice* significantly limited satellite service providers from participating meaningfully in the competition for RDOF funds, the *Auction 904 Final Public Notice* wisely changed course. Specifically, the *Auction 904 Comment Public Notice* proposed to ban an applicant that intended to use “any form of satellite technology, whether geostationary, high earth orbit, medium earth orbit, or low earth orbit, to select the Gigabit performance tier or to select low latency in the auction.”<sup>55</sup> In the *Auction 904 Final Public Notice*, the Commission partially removed this ban and decided to give an applicant proposing to use low earth orbit satellite technology the opportunity to demonstrate in its short-form application that it is reasonably capable of offering service meeting the low latency requirements.

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<sup>53</sup> *In the Matter of Telecommunications Carriers Eligible for Universal Service Support, Connect America Fund*, Order, 34 FCC Rcd 8137, 8137 (2019).

<sup>54</sup> See generally *Auction 904 Final Public Notice*. See also *Comment Sought on Competitive Bidding Procedures and Certain Requirements for the Rural Digital Opportunity Fund Auction (Auction 904)*, AU Docket No. 20-34, WC Docket No. 19-126, WC Docket No. 10-90, Public Notice (rel. Mar. 2, 2020) (“*Auction 904 Comment Public Notice*”).

<sup>55</sup> *Auction 904 Comment Public Notice*, ¶ 98 (emphasis added).

The separate statements of Commissioner O’Rielly<sup>56</sup> -- who was the driving force behind this change -- and Commissioner Starks -- who strongly supported the change -- both properly recognize that satellite technology is evolving at an extremely rapid pace and that next-generation satellite broadband holds tremendous technological promise. Indeed, Commissioners O’Rielly and Starks indicate that the Commission did not go far enough in the *Auction 904 Final Public Notice*. Commissioner O’Rielly notes that “a technology neutral policy across the board” would have been “more effective in promoting innovation.”<sup>57</sup> Likewise, Commissioner Starks thought the Commission should have gone further in allowing satellite companies to participate and “to evaluate those applications on their own merits” rather than prohibiting them to compete for certain performance tiers and latency combinations based upon “predictive judgments.”<sup>58</sup>

AST strongly agrees that the Commission should not establish 5G Fund auction procedures that limit eligibility based upon current perceptions of technological capabilities. Rather, the FCC should build upon the prudent trend signaled in the *Auction 904 Final Public Notice*, and take a technology-neutral approach that allows mobile-satellite carriers and their potential partners to demonstrate during the short-form application process that they are able to participate and meet the Commission’s stringent performance and other requirements. This approach is particularly important here because the timing of the 5G Fund auction is uncertain and technological advances are occurring at an accelerating rate. As a consequence, the determination as to the ability of a particular applicant to meet the established technical and

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<sup>56</sup> See *Auction 904 Final Public Notice*, at pp. 117, 121, Statements of Comm’rs O’Rielly and Starks.

<sup>57</sup> See *id.* at p. 117, Statement of Comm’r O’Rielly.

<sup>58</sup> See *id.* at p. 121, Statement of Comm’r Stark.

service requirements is best made when the auction is about to start rather than being prejudged now.

Reviewing applications on a case-by-case basis is what the Commission did in the Connect America Fund (“CAF”) Phase II auction and will do, to a certain extent, in the RDOF auction. Making the changes recommended by AST will result in a 5G Fund auction that encourages innovation and deployment of robust service by giving providers the flexibility to use any broadband technology to meet the FCC’s buildout and performance standards for fixed service, and in particular technologies that may have the ability to cover the most challenging and least financially attractive areas to cover.<sup>59</sup>

Allowing applicants to rely upon developing technologies also is consistent with the Commission’s wise and oft-stated policy of adopting policies that are technologically and competitively neutral rather than policies that skew the results in favor of particular categories of participants and thereby result in the Commission picking winners and losers in the marketplace.<sup>60</sup> Excluding a particular technology that meets all other requirements for the deployment of mobile service would actually undermine the Commission’s goal of eliminating the digital divide.

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<sup>59</sup> Press Release, FCC, Connect America Fund Auction to Expand Broadband to Over 700,000 Rural Homes and Businesses (Aug. 28, 2018) *available at* <https://docs.fcc.gov/public/attachments/DOC-353840A1.pdf>.

<sup>60</sup> *See, e.g.*, Ajit Pai, Chairman, Federal Comm’n, Remarks at the Am. Cable Ass’n Annual Summit (Mar. 21, 2018) (“The FCC shouldn’t be in the business of picking winners and losers.”). *See also*, *In the Matter of Rural Digital Opportunity Fund*, Report and Order, 35 FCC Rcd 686, 702 ¶ 31 (2020) (noting the Commission’s “consistent . . . policy of technological neutrality for voice and broadband services.”). Notably, the recently proposed Rural Connectivity Advancement Program legislation specifically requires a “technology neutral” approach. *See supra* n.43.

## **B. Designating a Small Pool of Funds to Deploy Innovative Technologies in the Hardest to Serve Areas**

The best way for the Commission to meet its obligation to encourage the use of advanced technologies to deliver universal service to the most difficult to serve areas is to earmark a small portion (10% to 15%) of the 5G Fund for *qualified applicants* who commit to use innovative, non-traditional systems to serve *areas that are highly unlikely to receive service* even with the benefit of support. Eligibility for support from these earmarked funds should be limited to applicants whose service allows end users to use standard, commercially-available, off-the shelf smartphones and customer premises equipment (CPE). This is essential because of the core USF fund requirement that end-users in rural, hard-to-serve areas receive services comparable to those available in urban areas. Mobile handset costs will only be comparable if customers can buy standard, readily available, mass-produced units for which the price is dictated by competitive market forces.

Again, by “qualified applicants,” AST means applicants who can demonstrate the technological capability to deliver 5G services that comply at a minimum with 5G-NR technology as defined by 3GPP Release 15 (or its successor); and (b) meet minimum baseline performance requirements for data speed, data latency and data allowance as proposed by the Commission for 5G Fund recipients. By “areas that are highly unlikely to receive service,” AST means those eligible service areas that ultimately are designated by the Commission as being entitled to the highest adjustment factors because they are the most costly and least profitable to serve due to terrain or other factors.

Designating a small portion of the 5G Fund for providers offering innovative ways to serve the most hard to reach areas will fill the deepest gaps in the digital divide. Earmarking some funds for innovative proposals in the areas most likely to be left unserved not only is in

keeping with the FCC obligation to promote advanced technologies, but also is consistent with a long line of Commission actions in which it has allocated or set aside funds to promote particular services that were deemed necessary in the public interest. For example, with specific reference to the 5G Fund, the *NPRM* already proposes to target at least \$1 billion for Phase II of the 5G Fund to support the deployment of technologically innovative networks to facilitate precision agriculture.<sup>61</sup> The Commission also has separately set aside funds for service in Alaska, where high-cost support is provided via the Alaska Mobile Plan, and in Puerto Rico and the Virgin Islands where the Commission already is making funds available via the PR-USVI Fund.<sup>62</sup>

Service to Tribal lands is also an area where the Commission has made beneficial use of earmarks and set-asides to promote desired outcomes. In the 2.5 GHz band the Commission set aside up to 117.5 MHz of spectrum in certain areas with the establishment of the Rural Tribal Priority Window.<sup>63</sup> And, up to \$680 million of the 5G Fund has been designated by the Commission in the *NPRM* to support networks serving Tribal lands.<sup>64</sup> These examples all support the same underlying principle: it serves the public interest for the Commission to use earmarks and set asides to promote important public interest objectives. The AST proposal meets such an objective because cutting edge services that hold the promise of bringing advanced 5G wireless technologies to remote areas will be promoted.

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<sup>61</sup> *NPRM*, 35 FCC Rcd at 4010.

<sup>62</sup> *Id.* at 4009. See also *In the Matter of Connect America Fund, Universal Service Reform – Mobility Fund, Connect America Fund – Alaska Plan*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 10139 (2016); *In the Matter of The Uniendo a Puerto Rico Fund and the Connect USVI Fund*, Report and Order and Order on Reconsideration, 34 FCC Rcd 9109, 9163 (2019).

<sup>63</sup> *Rural Tribal Spectrum Opportunities*, FCC, <https://www.fcc.gov/rural-tribal-spectrum-opportunities> (last updated Nov. 1, 2019).

<sup>64</sup> *NPRM*, 35 FCC Rcd at 4011-14.

To qualify to bid for the portion of the 5G Fund earmarked innovative technologies, AST proposes that the applicant demonstrate in its short form application that (1) it is proposing to deploy *a new technology or service* capable of providing service to off-the-shelf CPE in areas eligible for 5G Funds; and (2) the innovation is technically feasible and able to meet the established 5G performance requirements as shown by the results of an experiment or trial. These showings, coupled with financial qualification requirements, would enable the Commission to promote cutting edge technologies without undue risk. In this fashion, the Commission will have heeded the caution of Chairman Pai that the 5G Fund will require “‘t’s to be crossed—not fingers,” so as not to become a “technology incubator.”<sup>65</sup>

## **V. COMMENTS OF AST ON QUESTIONS POSED IN THE NPRM**

AST offers the following comments on important questions raised by the Commission in the *NPRM*.

### **A. The Purpose of the 5G Fund**

The Commission proposes to retarget universal service funding for mobile broadband and voice in the high-cost program by replacing Mobility Fund Phase II with the 5G Fund, and seeks comment on this proposal.<sup>66</sup> The Commission clearly is correct that continuing to support the provision of 4G services in unserved and underserved areas no longer serves the public interest. As earlier noted, the statutory universal service mandate contemplates that consumers in rural, insular and high cost areas should have access to *advanced* services reasonably comparable to those in urban areas.<sup>67</sup> While the proliferation of 5G services is by no means as extensive as it needs to be, the pace of deployment -- and the commitments of T-Mobile and others to build out

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<sup>65</sup> See *Auction 904 Final Public Notice*, Statement of Chairman Pai at p. 115.

<sup>66</sup> *NPRM*, 35 FCC Rcd at 4000.

<sup>67</sup> See discussion, *supra* at pp. 11-12.



additional areas in the foreseeable future -- means that 5G is becoming the new marketplace reality. Providing support to build 4G networks today would prove to be a temporary measure and the cost of upgrading networks in hard to serve areas from 4G to 5G at a future date would be substantial if not prohibitive. Supporting the deployment of 5G networks now will better insure that rural America can secure the economic and technological benefits that come from wireless innovation.

### **B. Timing**

The *NPRM* sets forth two options with respect to the timing of the 5G Fund auction: Option A – Funding 5G in Rural America in 2021; and, Option B – Collecting new data to update the broadband coverage maps before funding 5G in rural America in 2023 or later.<sup>68</sup> The timing question arises in large part because of concerns over the accuracy of the mobile broadband coverage data submitted by carriers for the one-time collection of 4G LTE coverage data in the Mobility Fund Phase II proceeding.<sup>69</sup> While the Commission has an open rulemaking proceeding to address the mapping issue and develop more accurate and granular data, that process will take time and additional funding that is not yet allocated.

In the view of AST, time is of the essence and the FCC should commence the reverse auction sooner rather than later. Significantly, the Commission expressly recognizes that “parties have raised concerns that these [broadband coverage] data tend to *overstate* the extent of coverage” and that “no parties have asserted the data understate the extent of coverage.”<sup>70</sup> This

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<sup>68</sup> *NPRM*, 35 FCC Rcd at 4002-08.

<sup>69</sup> *Id.* at 4007-08. While AST supports the commencement of Phase I of the 5G Fund auction sooner rather than later, it does consider it to be important for the broadband mapping undertaking to be fully funded by Congress so that future Commission decisionmaking can be based upon reliable coverage data.

<sup>70</sup> *Id.* at 4006 (emphasis added).

means that areas showing as unserved on those overstated maps are unquestionably in need of service *now*.<sup>71</sup> At the very least, these areas should be immediately eligible for 5G Fund support. This will satisfy the worthy Commission objective of prioritizing service to areas that historically have lacked adequate mobile service.<sup>72</sup>

Accelerating the 5G Fund auction is particularly important because the COVID-19 pandemic has highlighted the critical importance of reliable broadband services to mitigate the economic toll exacted by stay at home orders.<sup>73</sup> Reliance upon broadband services has increased, and will continue to increase, as the country adjusts to a “new normal.” The goal of universal service will not be fulfilled if rural and other hard-to-serve areas are left behind in these challenging times in which the entire country is adjusting to the aftermath of this national crisis.

In light of the foregoing, AST strongly supports Option A and urges the Commission to strive to commence Phase I of the 5G Fund auction as soon as practicable. However, valuable lessons can be learned from the conduct of the RDOF Auction 904 which is scheduled to commence in October 2020. In total, the short form application process, the auction itself, the processing and granting of long form applications and conducting a post-auction assessment is likely to take the Commission to the latter half of 2021. In addition, AST agrees with commenters such as the Competitive Carriers Association which has advocated that the

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<sup>71</sup> *Auction 904 Final Public Notice*, Statement of Comm’r O’Rielly at p. 117.

<sup>72</sup> *NPRM*, 35 FCC Rcd at 4006. Areas that lack both 4G and 5G service should be considered “unserved” for purposes of the 5G Fund and be given priority since, 3G service is not adequate to meet the demands for broadband service in current marketplace conditions.

<sup>73</sup> *See, e.g., Hearing on the FCC’s Fiscal Year 2021 Budget Request Before the Subcomm. on Fin. Servs. & Gen. Gov’t Comm. on Appropriations*, 116th Congress (2020) (statement of Geoffrey Starks, Comm’r, Federal Commc’ns Comm’n) (“[Due to the pandemic], Americans are going to need broadband in their homes—to help them telework to keep the economy strong; to help them understand medical information, and potentially connect with medical care via telemedicine; and to help our youngest learners continue to grow.”).

Commission accelerate its timetable for developing more accurate broadband maps and data so that the 5G Fund auction will not have to be postponed to 2023 or beyond.

With these considerations in mind, AST recommends that the Commission use its best efforts to commence the 5G Fund auction in 2022. Hopefully, by this time the Commission will have been able to refine its broadband data so that Phase I (or Phase I-A if the Commission accepts the Phase I-A and I-B recommendation of AST discussed on page 27 below) of the 5G Fund auction can be well-targeted.<sup>74</sup>

### **C. Term of Support**

The Commission proposes a term of support of 10 years for each phase of the 5G Fund, with monthly support disbursements.<sup>75</sup> AST understands the desire of the Commission to provide long term support, but is concerned that the 10 year term of support in the *NPRM* will result in hardship for fund recipients. The capital costs associated with the construction of a 5G system in the areas eligible for 5G funds will be heavily front-loaded. As a consequence, a 10 year support term with equal periodic payments is likely to prove inadequate to enable some qualified providers, particularly smaller companies, to participate.

Consequently, the term of support should be reduced so that successful bidders in the reverse auction can secure a higher percentage of the available funds in the early years of operation when their start-up costs are being incurred.<sup>76</sup> In addition, rather than receiving fixed

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<sup>74</sup> The Commission may also have a better understanding of the precise rural areas where T-Mobile is committed to provide 5G service pursuant to its build-out commitment which will help the Commission define the eligible areas for 5G Fund support. *See NPRM*, 35 FCC Rcd at 4039-40.

<sup>75</sup> *Id.* at 4008-09.

<sup>76</sup> For example, adopting a 5-year funding term would which corresponds to the 5-year buildout requirement for the grantee to serve 80% of the total square kilometers in the service area could make sense.

periodic payments throughout the support term, winning bidders should be able to draw down additional funds to the extent that they demonstrate actual out-of-pocket expenses to launch service in the target area in excess of the support received *as long as the expenditures are consistent with the project description* that was submitted and approved as part of the long form application. Notably, the Commission previously has managed programs in which payments to participants are based upon demonstrated out-of-pocket costs.<sup>77</sup> This would also encourage providers to accelerate their deployment timelines to provide necessary mobile broadband services faster.

#### **D. Budget**

The Commission proposes a total budget of up to \$9 billion for the 5G Fund, which would be awarded in two separate phases, with the first phase targeting support to eligible rural areas and the second phase focusing on harder to serve and higher cost areas, such as farms and ranches, specifically targeting deployments that would facilitate precision agriculture.<sup>78</sup> Ultimately, \$9 billion is likely to prove insufficient to bring 5G service to all rural areas that lack 4G or 5G service.<sup>79</sup> But, this represents a good start and AST supports the Commission proposal to set a \$9 billion budget at this time.

The Commission proposes to make the lion's share of the \$9 billion budget available in Phase I of the auction (\$8 billion).<sup>80</sup> AST generally supports the approach of making a

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<sup>77</sup> See, e.g., *In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567, 6815-16 ¶ 607 (2014), *aff'd* by *Nat'l Ass'n of Broadcasters v. FCC*, 789 F.3d 165 (D.C. Cir. 2015) (establishing a reimbursement process for out-of-pocket costs incurred by broadcasters having to change frequencies as a result of the Broadcast Incentive Auction).

<sup>78</sup> *NPRM*, 35 FCC Rcd at 4009.

<sup>79</sup> See Ed Gillespie Blog Post, *supra* n. 44.

<sup>80</sup> *NPRM*, 35 FCC Rcd at 4009.

substantial portion of the \$9 billion fund available in Phase I because the immediate need for 5G services in hard to serve areas is so great. However, whether \$8 billion is the right number will depend upon the manner in which the Commission resolves the timing issue. If the Commission decides to move forward before the updated broadband data and maps are available, the prudent course would be to distribute the \$8 billion in two tranches: Phase I-A and Phase I-B. AST recommends that \$5 billion be allocated to Phase I-A which should proceed as soon as possible, and \$3 billion be allocated to Phase I-B which would commence as soon as practicable after the improved broadband maps are available.

#### **E. Support for Tribal Lands**

The Commission has a long record of taking steps to meet critical unsatisfied needs for broadband service in Tribal Lands. With the help of the Commission's Native Nations Communications Task Force,<sup>81</sup> the Commission has taken a series of worthwhile actions to promote broadband deployment in Tribal Lands. For example, the Commission has used Tribal Lands Bidding Credits both to create service opportunities for, and to improve services to, Native Americans.<sup>82</sup> There is, though, more work to be done.<sup>83</sup> Consequently, AST supports the Commission proposal to establish a Tribal reserve of \$680 million.

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<sup>81</sup> *Native Nations Communications Task Force*, FCC, <https://www.fcc.gov/consumer-governmental-affairs/about-bureau/office-native-affairs-and-policy/native-nations> (last updated May 14, 2020).

<sup>82</sup> *See, e.g., In the Matter of Transforming the 2.5 GHz Band*, Report and Order, 34 FCC Rcd 5446 (2019) (Commission decision in 2019 allowing for more efficient and effective use of 2.5 GHz spectrum and increasing flexibility for existing EBS licensees and providing new opportunities for rural Tribal Nations).

<sup>83</sup> *See NPRM*, 35 FCC Rcd at 4011 and n.78.

## **F. Auction Procedures**

The Commission proposes to use a multi-round, descending clock auction for the 5G Fund auction patterned after the framework adopted for the RDOF and used in the CAF Phase II auction.<sup>84</sup> AST generally endorses this approach because the Commission has an excellent track record in designing and conducting successful reverse auctions to allocate support funds. In the remaining sections, AST comments on several of the specific questions the Commission asks with specific reference to the circumstances surrounding this particular proposed auction.

### **1. Adjustment Factors**

AST strongly supports the Commission proposal to incorporate an adjustment factor into the 5G Fund auction design in order to increase support to areas that are more costly and less profitable to serve.<sup>85</sup> In particular, use of terrain as an adjustment factor will serve the public interest because mountainous areas with greater variations in slope consistently have proved in the past to be among the most costly to serve. The challenges of terrain are particularly daunting given the smaller cell configurations and backhaul requirements associated with many 5G system architectures. AST is reviewing the adjustment factor values being developed by the Office of Economics and Analysis and the Wireline Competition Bureau and will respond if it has particular comments.<sup>86</sup> As noted above<sup>87</sup>, the adjustment factors also should be used to define those areas where funds may be earmarked for innovative technologies.

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<sup>84</sup> *Id.* at 4014.

<sup>85</sup> *Id.* at 4015-16.

<sup>86</sup> *Office of Economics and Analytics and Wireline Competition Bureau Seek Comment on Adjustment Factor Values for the 5G Fund*, GN Docket No. 20-32, Public Notice, DA 20-594 (rel. June 5, 2020).

<sup>87</sup> *See* discussion, *supra* at p. 20.

## **2. Performance Requirements**

The Commission proposes that 5G Fund support recipients be required to provide mobile voice and data services that comply with certain specified performance requirements.<sup>88</sup> AST agrees that 5G Fund support should be limited to areas that do not enjoy 4G or 5G service at present, and that fund recipients should (a) be obligated to provide mobile voice and data services that comply at a minimum with 5G-NR technology as defined by 3GPP Release 15 (or its successor); and (b) meet minimum baseline performance requirements for data speed, data latency and data allowance. As noted above, however, the requirement that these standards be met by use of a “terrestrial” system should be altered.<sup>89</sup>

## **3. Coverage Milestones**

The public interest obligations of 5G Fund recipients should include coverage milestones, and the milestones proposed by the Commission (40% - end of Year 3; 60% - end of year 4; 80% - end of year 5) are reasonable.<sup>90</sup> AST also supports the Commission proposal to create incentives for 5G Fund recipients to serve 20% of their area by the end of year 2. In addition to reducing the value of the letter of credit for fund recipients that meet this early service milestone as proposed by the Commission, such candidates should be eligible to draw down additional 5G Funds earlier since their early construction will have accelerated their capital spending.<sup>91</sup>

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<sup>88</sup> *NPRM*, 35 FCC Rcd at 4022.

<sup>89</sup> *See* discussion, *supra* at p.15.

<sup>90</sup> *NPRM*, 35 FCC Rcd at 4026.

<sup>91</sup> *See* discussion *supra* at p. 25 recommending that 5G Fund recipients be eligible to accelerate their draws based upon demonstrated out-of-pocket expenses incurred in keeping with the approved business plan.

#### 4. Latency

The Commission proposes to require 5G Fund recipients to meet a low latency standard of 100 milliseconds or less per round.<sup>92</sup> While the Commission has in the past considered applying higher latency requirements to accommodate satellite services, that is not necessary to accommodate AST as its LEO constellation will meet the proposed standard.<sup>93</sup>

There has been debate in the past over the capability of LEO satellite systems to reliably meet low latency standards in this range.<sup>94</sup> The proper approach to this issue is the one taken in the *Auction 904 Final Public Notice*. There, the Commission set a well-defined latency standard for RDOF recipients, adequate short-form and long-form application requirements to enable the Commission to evaluate the ability of an applicant to meet the applicable standard, and sufficient reporting and other requirements to ascertain compliance and remedies to address any event of default. This will allow the Commission to evaluate applicants on a case-by-case basis in relation to the service requirements and to avoid prejudgment in an area where the technology is rapidly evolving. Otherwise the Commission will have violated the sound regulatory principle that its regulations should be technologically neutral.<sup>95</sup>

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<sup>92</sup> *NPRM*, 35 FCC Rcd at 4028.

<sup>93</sup> The recent decision of the Commission to allow satellite providers using LEO systems to be eligible to apply for low latency tiers in Auction 904 was based in no small part on filings by SpaceX that referenced the ability of LEO satellites to achieve a latency of 100 milliseconds or less per round trip. See Letter from David Goldman, Dir. of Satellite Policy, SpaceX, to Marlene H. Dortch, Secretary, FCC, in Docket Nos. AU Docket No. 20-34, WC Docket No. 19-126, WC Docket No. 10-90 (June 1, 2020).

<sup>94</sup> See *Auction 904 Final Public Notice*, ¶109.

<sup>95</sup> See, e.g., *In The Matter Of Promoting Telehealth In Rural America*, Report and Order, 34 FCC Rcd 7335, 7381 ¶ 97 (2019) (“Treating both [satellite and terrestrial] services equally when functionally similar also furthers the principle of technological neutrality ...”).



## 5. Other Service Requirements

AST generally supports the other proposed service requirements that the Commission proposes:

- *Reasonably Comparable Rates* - The core objective of the universal service program is to enable end-users in rural areas to have the benefit of services comparable to those in urban areas. So, the Commission's proposal to require support recipients to provide at least one broadband service plan in the support area that includes a data allowance comparable to average U.S. subscriber usage makes sense.<sup>96</sup> Similarly, end-users in the support area should be offered rates reasonably comparable to the rates that are available in urban areas for similar services. The requirement for reasonably comparable rates also must extend to CPE because the affordability of the service could be illusory if end users cannot purchase commercially available smartphones at competitive process.
- *Reporting Requirements* - The Commission should adopt reporting requirements consistent with those adopted in the CAF Phase II and Rural Digital Opportunity Fund,<sup>97</sup> and specific 5G Fund reporting requirements sufficient to satisfy the Commission that all performance requirements are being met. The proposals with regard to annual reports and interim and final milestone reports are consistent with the Commission's obligation to assure that fund recipients are meeting their public interest obligations.<sup>98</sup> And, obligating grantees to submit milestone maps and supporting data will allow USAC to evaluate and verify compliance with the coverage performance requirements.<sup>99</sup>

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<sup>96</sup> *NPRM*, 35 FCC Rcd at 4029.

<sup>97</sup> *Id.* at 4030.

<sup>98</sup> *Id.*

<sup>99</sup> *Id.* at 4032-35.

## 6. Eligibility Requirements

Eligibility requirements generally consistent with those adopted for prior reverse auctions for support funds are appropriate.

### *a. ETC Designations*

If the Commission decides to require 5G Fund recipients to secure an ETC designation,<sup>100</sup> it will be important for the Commission to allow 5G Fund auction participants to secure the requisite ETC designation *after* being announced as the winning bidder, and to accord some flexibility in the timetable for receiving the ETC designation as long as good faith efforts are being made on a timely basis.<sup>101</sup> Otherwise, new entrants will be at a severe disadvantage. This is particularly important for a mobile-satellite service provider such as AST. Because the SpaceMobile system will be capable of providing service in virtually any eligible area, AST will have considerable flexibility regarding the locations it proposes to serve with the benefit of 5G Funds. Under these circumstances, it would make no sense for the Commission to require AST to apply for and secure an ETC prior to the 5G Fund auction in every area where it would be interested in providing service.

AST also urges the Commission to consider the points raised by Commissioner O’Rielly in his recent blog post pointing out the costs and other burdens imposed by the ETC requirement

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<sup>100</sup> AST noted with interest the recent Statement of Commissioner O’Rielly questioning whether the ETC designation process has outlived its usefulness. *See* Michael O’Rielly, Comm’n’r, *Removing Unnecessary Barriers and Maximizing Competition in USF Auctions*, FCC BLOG (June 18, 2020, 3:40 pm) <https://www.fcc.gov/news-events/blog/2020/06/18/removing-unnecessary-barriers-and-maximizing-competition-usf-auctions>.

<sup>101</sup> *See NPRM*, 35 FCC Rcd at 4036-38.

and referencing recently proposed legislation that would eliminate or modify this requirement.<sup>102</sup> The Commission should support changes of this nature.

***b. Spectrum Access***

Access to spectrum capable of providing the intended 5G service is a critical element of the 5G Fund proposal, and the Commission should require applicants to demonstrate that each applicant has access to spectrum in an area sufficient to satisfy the performance requirement.<sup>103</sup> Applicants could secure this access in many ways (acquisition of spectrum - including possible partitioning or disaggregation; spectrum lease; network sharing agreement, etc.). Depending on the access mechanism that is proposed, the process and timeline for securing any necessary FCC approvals for this access will vary. And, in some cases, implementing the access arrangement may be contingent upon the applicant succeeding as a bidder in the 5G Fund auction. The Commission should, therefore, clarify that an applicant which has a binding contract to gain access to the requisite spectrum at the time of the auction meets this eligibility requirement.

A contractual right to access the spectrum should be sufficient even if the approval of the FCC is necessary to consummate the contract as long as there is no apparent regulatory disability that would prevent the applicant from securing the requisite consent. As is the case with the post-grant securing of the requisite ETC designation, the winning applicant should be required to file the requisite request for FCC approval promptly (e.g., within 30 days) and to prosecute the application diligently. As long as the applicant meets these criteria, it should not be required to demonstrate the receipt of all necessary FCC approvals in advance of the auction.

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<sup>102</sup> Michael O'Reilly Blog Post, *supra* n. 100.

<sup>103</sup> *NPRM*, 35 FCC Rcd at 4038.

*c. Technical and Financial Qualifications*

The Commission proposes to adopt two separate pathways for applicants to demonstrate technical and financial qualifications: (1) one for applicants that have been providing mobile wireless service for at least three years (the “Three Year Requirement”); and, (2) another for applicants that have been providing mobile wireless service for fewer than three years.<sup>104</sup> This approach is generally sound. However, it is not clear how this approach to technical and financial qualifications would be applied by the Commission to a cooperative venture between two entities, one of which meets the Three Year requirement and one of which does not. This is a critical issue because, as indicated above, AST – which is a new entrant – intends to provide its space-based service in conjunction with a service provider which meets the Three Year Requirement.

The *NPRM* acknowledged the risk that the Three Year Requirement could potentially preclude interested bidders from participating in the 5G Fund auction and invited commenters to propose alternative requirements for demonstrating technical and financial requirements. AST is not proposing an alternative but, rather, is seeking a clarification. In the case of a cooperative venture with more than one applicant, the applicants should be deemed to have the requisite technical and financial qualifications if at least one “party to the application” meets the Three Year Requirement. Notably, the phrase “party to the application” is a term of art that already is defined in the Section 1.2002(b) of the Commission’s Rules.<sup>105</sup>

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<sup>104</sup> *Id.* at 4046-48.

<sup>105</sup> *See* 47 C.F.R § 1.2002(b) which provides: “A party to the application, as used in paragraph (a) of this section shall include: (1) If the applicant is an individual, that individual; (2) If the applicant is a corporation or unincorporated association, all officers, directors, or persons holding 5% or more of the outstanding stock or shares (voting and/or non-voting) of the applicant; and (3) If the applicant is a partnership, all non-limited partners and any limited partners holding a 5% or more interest in the partnership.”

Clarifying the technical and financial qualification requirements in this manner will encourage cooperative arrangements and thereby improve the prospects of a successful auction. Notably, the Commission's proposed auction rules contain robust disclosure requirements regarding the nature and extent of all agreements, arrangements or understandings related to each 5G Fund application. Specifically, the proposed rules require an applicant to certify that it has provided a description of, and identify each party to, any partnerships, joint ventures, consortia or other agreements, arrangements or understandings of any kind relating to the applicant's participation in the competitive bidding and the support being sought.<sup>106</sup>

## VI. CONCLUSION

Making the changes proposed by AST will result in a reform of the universal service program in a manner most likely to meet the substantial unsatisfied demand of end-users in many unserved and underserved areas for state-of-the-art 5G wireless broadband services.

Respectfully submitted,

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<sup>106</sup> *NPRM*, 35 FCC Rcd at 4042 (proposing to revise Sections 1.21001(b)(3) and 1.21001(b)(4) with respect to agreement disclosures).