March 20, 2017

The Honorable Marsha Blackburn
Chairman
Subcommittee on Communications and Technology
House Committee on Energy and Commerce

The Honorable Michael Doyle
Ranking Member
Subcommittee on Communications and Technology
House Committee on Energy and Commerce

Re: Broadband: Deploying America's 21st Century Infrastructure

Dear Chairman Blackburn and Ranking Member Doyle:

The Satellite Industry Association (SIA)[1] commends the House Subcommittee on Communications and Technology of the Committee on Energy and Commerce for holding an important hearing to address broadband and its deployment as America's 21st century infrastructure. The Satellite Industry Association is a U.S.-based trade association representing the leading satellite operators, manufacturers, launch providers, and ground equipment suppliers who serve commercial, civil, and military markets. Since its creation almost twenty years ago, SIA has been the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business.

Today, the satellite industry directly supports over 213,000 American jobs, many of which reside in the home states of several of this Subcommittee's members. This number includes tens of thousands of well-paying manufacturing jobs as well as construction, design and

[1] SIA Executive Members include: The Boeing Company; AT&T Services, Inc.; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; SSL; and ViaSat, Inc. SIA Associate Members include: ABS US Corp.; Artel, LLC; Blue Origin: DigitalGlobe Inc.; DRS Technologies, Inc.; Eutelsat America Corp.; Global Eagle Entertainment; Glowlink Communications Technology, Inc.; Hughes; Inmarsat, Inc.; Kymeta Corporation; L-3 Electron Technologies, Inc.; O3b Limited; Panasonic Avionics Corporation; Planet; Semper Fortis Solutions; Spire Global Inc.; TeleCommunication Systems, Inc.; Telesat Canada; TrustComm, Inc.; Ultisat, Inc.; and XTAR, LLC.

operational jobs, among others[2]. The satellite industry is continuing to add additional highly skilled jobs in design and manufacturing, including new plants to construct fleets of non-geostationary orbit broadband satellites and the development of commercial launch complexes that will help carry this important communications infrastructure to orbit. Indirectly, the satellite industry supports hundreds of thousands more jobs, connecting small and large U.S. businesses with customers everywhere in the world.

The satellite industry's 2015 estimated revenue was $89 billion. This figure of course does not reflect revenues from businesses made possible by our services, services which, like satellites themselves, are not always apparent. But satellites remain a pillar of the U.S. telecommunications infrastructure, enabling the American economy in ways consumers might not be aware, such as supporting smartphone app transactions, to use just one example.

We receive many qualitative benefits from satellites because of their ubiquitous coverage, which enables competitive and cost-effective broadband service even in rural and remote areas. Advances in information technology and communications continue to spur economic growth in the United States, but they also highlight a growing disparity between the haves and have-nots. Satellite broadband, a high-quality and cost-effective solution for broadband services, is playing an increasingly important part in spurring broadband delivery and competition and addressing the digital divide across the United States, including in the most rural and remote areas of the country where it remains uneconomical for terrestrial services to deploy. These services are available directly to the consumer, covering all 50 states and delivering broadband offerings up to 25 megabits per second (Mbps), and higher in the future, comparable to terrestrial services. Satellite broadband is also used by business and government enterprises, for both fixed and mobile purposes, using a range of spectral bands to deliver assured access to broadband communications. Further, satellites are providing critical backhaul Internet connectivity to local Internet Service Providers and community institutions in remote locations.

Because of high-quality satellite broadband services, approximately two million customers nationwide are enjoying speeds that meet and exceed the FCC's definition of broadband service at reasonable rates, no matter where they are located. This includes the 14% of consumers that currently are not served by terrestrial broadband. Commercial satellite operators, that have already invested billions of dollars in the construction and deployment

[2] In 2015, there were 72,041 jobs associated with consumer, fixed, mobile, and Earth observation satellite services; 17,951 jobs associated with satellite manufacturing; 48,010 jobs associated with the launch industry, and 75,668 jobs associated with ground equipment manufacturing, installment, and services. The total number of satellite-focused jobs in the U.S. was 213,670. Data retrieved from the Bureau of Labor Statistics, 4th Quarter 2015.

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of high throughput satellites, offer service to those consumers today. SIA agrees with the Subcommittee that, in order to serve the last unserved households, it is important to understand where broadband is available today. Accordingly, SIA supports continued funding to keep up to date the National Broadband Map.

With the addition of multiple high throughput, high speed broadband satellites this year, the Satellite Industry anticipates the prevalence of broadband services by satellite to increase rapidly and the number of satellite broadband customers across the United States to continue to grow substantially. Further, given that most of these satellites and their ground equipment will be built in the United States, and many of these satellites will be launched from the United States, we will see the creation of additional U.S. domestic design and manufacturing jobs, as well as construction jobs to build the supporting terrestrial infrastructure. To this end, since it takes years for a satellite network to be designed and constructed, these high-skilled jobs are often in place for many years and provide global leadership in state-of-the-art technology innovations. These jobs are in addition to the employees located in the United States that operate and maintain these networks on a day-to-day basis.

We continue to see the benefits of satellites in providing communications on-the-move, making broadband service available wherever we take our mobile devices. Aeronautical and maritime high throughput communications are largely facilitated by satellite broadband connectivity to aircraft and ships. The sector is growing to keep pace with demand for broadband connectivity for avionics, ships' operations, and Internet access for passengers on-board airlines and cruise vessels. American companies design and manufacture antennas that serve both fixed and mobile satellite broadband applications, representing another layer of U.S.-based, high-skilled employment and critical infrastructure development.

It is also extremely important to note the critical nature of the service that broadband satellites provide, and the necessary use of radio frequency spectrum. In addition, satellite broadband also supports critical safety and national security missions. Satellite capabilities enable our military's ability to project power in the air, on land, and at sea both unilaterally and in cooperation with allies. Satellite broadband communications, both commercial and military, provide agile connectivity and efficient mission control capability to our forces and operations in the continental U.S., Hawaii, and U.S. territories and possessions, as well as in forward deployed locations, including for remotely piloted aircraft or (RPA), other advanced weapons systems like the F-35, and U.S. Navy warships. Capacity demand for the bands supporting these needs routinely outpaces supply and continues to grow rapidly.

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All of these satellite capabilities depend upon radio frequency spectrum availability and heavily factor into the Department of Defense's decisions concerning future force structure and concepts of operation. From individual special operations teams to large scale theater-level air, land and sea operations, none of these would exist as we know them today without the command and control support and delivery of data that satellites provide. In short, it is hard to overstate how integral satellites are to our nation's ability to defend our interests in a conflict-filled world.

In addition, satellites play a critical role when our national terrestrial communications infrastructure is unavailable because of a national disaster, electrical outage or, worse yet, terrorist attack. Unlike their terrestrial counterparts, satellite networks are not susceptible to damage from such disasters because the primary repeaters are onboard the spacecraft and not part of the ground infrastructure. Hand-held terminals, portable Very Small Aperture Terminal (VSAT) antennas, and temporary fixed installations can all be introduced into a post-disaster environment to provide support to relief efforts and enhance recovery efforts. For example, in some portions of New York City, satellite broadband provided the only connectivity for months after Superstorm Sandy while the terrestrial infrastructure was rebuilt. This is why the Department of Homeland Security has designated commercial satellite systems as critical infrastructure.

Indeed, emergency preparedness networks are increasingly including satellite networks as part of their system design in order to ensure sufficient resiliency and cost-effectiveness. Public Safety Answering Points (PSAPs) have begun incorporating satellite back-up into their next generation 911 systems to cost-effectively mitigate potential network outage risks caused by any ground-based or environmental disruptions. And the First Responder Network Authority (FirstNet) is likely to rely in part upon satellite communications in order to meet the geographic coverage needs of its nationwide public safety broadband network.

The satellite industry is today investing tens of billions of dollars to innovate and increase broadband connectivity in the United States and across the globe. Specifically, even as demand for spectrum has increased, the satellite industry has developed ways to use this limited natural resource more efficiently. High throughput satellites, for example, rely on frequency re-use and spot beam technology to produce increased output factors upward of 20 times that of traditional satellites, meeting FCC benchmark broadband speeds. The industry has seen similar increases in the capacity of its systems. The first broadband satellite began service in 2008 with a capacity of 10 gigabits per second (Gbps) and today they have capacity of 220 Gbps, and constantly increasing. Many in the industry are investing in and designing terabit capacity geostationary satellites that will provide orders

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of magnitude capacity increases and resulting consumer broadband benefits, remaining competitive with terrestrial offerings.

In another highly-anticipated advancement in the industry, hundreds of new high throughput (non-geostationary) satellites will soon join existing operators in Low-Earth and Medium-Earth orbits to provide additional high speed broadband at low latency levels. Existing high throughput satellites already support the delivery of 3G and 4G services, as well as enable global machine-to-machine communications. Future satellite fleets will be a part of a system architecture that delivers new 5G, IoT, and intelligent, connected transportation services to consumers.

One final, general note on innovation: the satellite industry also helps drive our exploration of frontiers in science and space, ensuring American technological leadership continues in these increasingly competitive areas.

Of course, all of the breakthroughs we've seen because of satellite broadband technologies should not be taken for granted. They depend upon government policies that are technology neutral, whether that is in regard to access to spectrum, funding, or addressing deployment barriers. Together we have an opportunity to address the digital divide, meet the growing needs of U.S. consumers, ensure our country's safety and national security, and do so in a manner that utilizes spectrum most efficiently.

We would welcome the opportunity to answer any questions or provide you with any additional information you may deem necessary.

Sincerely,
/s/
Tom Stroup
President
Satellite Industry Association

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