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RPTR BRYANT

EDTR ZAMORA

LAUNCHING INTO THE STATE OF THE

SATELLITE MARKETPLACE

THURSDAY, FEBRUARY 2, 2023

House of Representatives,

Subcommittee on Communications

and Technology,

Committee on Energy and Commerce,

Washington, D.C.

The subcommittee met, pursuant to notice, at 9:30 a.m., in Room 2123, Rayburn House Office Building, Hon. Bob Latta [chairman of the subcommittee] presiding.

Present: Representatives Latta, Bilirakis, Walberg, Carter, Dunn, Curtis, Joyce, Weber, Allen, Balderson, Fulcher, Pfluger, Harshbarger, Cammack, Obernolte, Rodgers (ex officio), Matsui, Eshoo, Clarke, Cardenas, Dingell, Veasey, Kuster, Kelly, Soto, Fletcher, and Pallone (ex officio).

Also Present: Representative Johnson.

Staff Present: Sarah Burke, Deputy Staff Director; Michael Cameron,

Professional Staff Member, CPC; Nate Hodson, Staff Director; Tara Hupman, Chief Counsel; Noah Jackson, Clerk, C&T; Peter Kielty, General Counsel; Emily King, Member Services Director; Giulia Leganski, Professional Staff Member, C&T; John Lin, Senior Counsel, C&T; Kate O'Connor, Chief Counsel, C&T; Michael Taggart, Policy Director; Evan Viau, Professional Staff Member, C&T; Jennifer Epperson, Minority Chief Counsel, Communications and Technology; Waverly Gordon, Minority Deputy Staff Director and General Counsel; Tiffany Guarascio, Minority Staff Director; Perry Hamilton, Minority Member Services and Outreach Manager; Dan Miller, Minority Professional Staff Member; Joe Orlando, Minority Senior Policy Analyst; Greg Pugh, Minority Staff Assistant; Michael Scurato, Minority FCC Detailee; and Johanna Thomas, Minority Counsel.

Mr. Latta. Well, good morning. I would like to welcome you all to the Energy and Commerce Communication and Technology Subcommittee, and appreciate you all being here and look forward to a good hearing today.

Before I begin, first of all, I would like to congratulate our ranking member, the gentlelady from California. And I look forward to working with you this year, and I know it is going to be a good relationship. And I just think that we can get a lot done this Congress and, as I said, I am looking forward to a lot of good things.

But as I said, again, good morning to the 118th Congress, and it is a privilege, again, to have you all here as our witnesses. It has been over a decade since the subcommittee held a hearing dedicated to understanding the satellite communications marketplace and the FCC's role in licensing commercial satellite communication systems. Since then, how satellite technology is used has changed drastically.

Our esteemed panel before us has experience across the full range of satellite communication technologies. Satellite technology offers a variety of services, spanning high-speed broadband and video delivery to data services that enable precision agriculture and global financial transactions. Today's hearing is the first step this committee is taking as we take a close look at these novel issues.

In recent years, satellite communication capabilities have dramatically advanced and satellite operators have identified new ways to serve customers with greater speed and reliability. Many satellite operators currently operate or are seeking to operate different types of satellite constellations. Some satellite systems operate in geostationary orbit, while others operate closer to Earth in nongeostationary orbit. Satellite operations are also global in nature, which adds an additional layer of complexity

when developing and operating systems. Because satellite systems rely on radio spectrum to operate, the use of this spectrum raises complex challenges that U.S. and international regulators must address.

In the last few months, satellite operators and cellular carriers have announced partnerships to stretch connectivity further into rural and remote areas. International standard bodies are also making progress in identifying technical specifications for greater integration of 5G with satellite communications technologies. These are significant developments that may provide new or enhanced opportunities to connect unserved Americans.

We must also ensure continued American leadership in advanced communication services. In order to do that, our regulations must foster an environment of innovation and certainty. As countries like China seek to dominate the technology of the future, we must make the United States an attractive place to invest in cutting-edge developments that align with American values and guarantee the availability of trusted satellite communications.

The FCC plays an important role in licensing new or enhanced satellite communication systems, and it is important we understand the current licensing and regulatory process and the impact these rules have on our international competitiveness.

Again, thank you to our witnesses for sharing your expertise today and, again, I look forward to today's discussion.

And at this time, the chair recognizes the gentlelady, the subcommittee ranking member from California, for 5 minutes for an opening statement.

[The prepared statement of Mr. Latta follows:]

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******** COMMITTEE INSERT ********

Ms. Matsui. Thank you very much, Mr. Chairman. And it is a privilege for me to be sitting on this dais with you, and I look forward to working with you on these issues that will impact all of America.

It is an exciting day, and it is no exaggeration to say that our subcommittee has more bearing on the United States technological leadership in the 21st century than any other. From expanding affordable broadband access to developing the next generation of communications network, we have a unique opportunity to promote innovation and equity in technology. I am excited to get to work, continuing the subcommittee's strong tradition of bipartisanship.

Today's hearing on the satellite marketplace is a perfect example of that cooperation in action. This hearing is both important and timely. As Chairwoman Rosenworcel has said, the number of applications for satellites before the FCC has never been higher.

For the United States to remain the pacesetter in satellite communication, the number of applications for satellites before the FCC has never been higher. For the United States to remain the pacesetter in satellite communication, we need to modernize satellite governance to keep up with innovation. Thankfully, both Congress and the FCC are focusing on modernizing satellite regulations to ensure that they are prepared for the next generation of innovation.

Chairwoman McMorris Rodgers and Ranking Member Pallone's SAT Streamlining Act will introduce important updates to the FCC's satellite laws. For too long, the licensing process at the FCC has fallen short of what the market needs, and this bill will help.

Ranking Member Pallone and Chairwoman Rodgers also teamed up on the Secure Space Act. As an original cosponsor of the rip and replace bill, I am glad to see additional bipartisan engagement on a vital national security issue. In the same way our rip and replace bill would remove vulnerable network air from companies like Huawei and ZTE, the Secure Space Act would extend these protections to the satellite ecosystem.

And since we are on the topic, I would like to take a moment at this hearing to remind everyone that we still have urgent work to do on the rip and replace effort. The funding shortfall is real, it is urgent, and I am ready to get the job done with you.

But back to today's hearing, it is important to note just how much progress has been made by the FCC over the past few months on satellite issues. Last year, Chairwoman Rosenworcel announced a plan to form the Space Bureau to better support the needs of the growing satellite industry.

The chairwoman is also turning a critical eye toward the FCC's processes to keep them modern and effective. She recently initiated a rulemaking to request feedback on ways to reduce the timelines for satellite and earth station applications.

I am glad to see the FCC tackling these issues head-on and believe we have a meaningful opportunity to make progress. And that is why I sent a letter with my Spectrum Caucus co-chair, Congressman Guthrie, urging the FCC to take steps that will support innovation and consumer choice.

In our letter, we urge the FCC to develop additional coordination requirements for satellite operators. Good-faith coordination should include meaningful and continuous requirements to ensure the appropriate flow of technical information. And as more satellite share operations on limited spectrum, finding ways to encourage spectral efficiency will be important. Across all forms of wireless communication, we need to do

more with less, and satellites are no different.

Finally, we urge the FCC to strike an appropriate balance between protecting the investments of incumbent operators while allowing new entrants to innovate and compete. I really look forward to staying engaged with the FCC as it moves forward with this rulemaking and confident it will reinforce American leadership.

Thank you, Chairman Latta, and thank you for the witnesses. I look forward to the hearing.

[The prepared statement of Ms. Matsui follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Well, thank you very much. I appreciate your statement.

And at this time the chair will recognize the gentlelady from Washington, the chair of the full Energy and Commerce Committee, for her opening statement for 5 minutes.

The Chair. Thank you, Mr. Chairman. Congratulations on leading this committee. I know that you are dedicated and experienced on all of these issues, and look forward to your leadership on the subcommittee. And Buddy Carter for becoming the vice chair, as well as Doris Matsui, Congresswoman Matsui as the ranking leader. We look forward to working with you to make sure that we stay the leader. I know that this committee is going to be at the forefront of closing the digital divide and ensuring America leads a new era of innovation and entrepreneurship. So just congratulations to all. I also want to welcome our new members on the committee. They bring great experience and passion to these issues.

We are here today to discuss how America can keep pace with the rapidly evolving satellite communications industry. Countries like China seek to undermine us in this range of advanced communication technologies, including next-gen satellite technology. We cannot afford to let this happen.

The Chinese Communist Party will do whatever it takes to embed their authoritarianism into next-generation technologies like these. This is a country that spies on its citizens and asserts strict government control over businesses and the economy. They want to replace the United States as the economic and technological power so that they can spread their values and vision of the future.

We need to make sure these technologies are developed in an ecosystem that promotes America's values. As this technology evolves, we must reevaluate and adapt

the regulatory environment to make sure that America is winning the future, that we are beating China, and continue to push the limits of innovation to solidify American dominance.

Satellite technologies have become vital to the communications marketplace, providing services to connect millions of America's homes and businesses. To ensure United States leadership, we need to foster a regulatory environment that encourages innovation and guarantees that the reliable services they provide remain available to combat bad actors seeking to undermine our national interest.

This subcommittee is at the forefront of protecting and enhancing technological innovation in the United States. We are responsible for overseeing the Federal Communications Commission, FCC, and the National Telecommunications and Information Administration, NTIA.

In recent years, the satellite marketplace has seen a surge of investment because of a combination of lower launch cost to innovations that have made satellites more affordable, reliable, and available. Some estimates show that the space industry could triple to a $1.4 trillion market within a decade.

The FCC has received dozens of applications for new NGSO satellite systems, indicating that the industry is ready to lead in this space. American satellite operators are providing in-home broadband at faster speeds than ever before, as well as key voice and data services to these industries and the Federal Government.

Both longstanding operators and newer entrants have made or announced significant investments in next-generation systems. It has been far too long since Congress reassessed the role of satellite technology in the communications marketplace and whether or not our regulatory environment encourages investment in innovation in

the space economy or hampers it.

Today's hearing is the first step in what will be a robust effort to evaluate the state of the satellite marketplace. Many existing and proposed satellite systems raise novel questions about the use of space and spectrum that the FCC's rules do not address.

For example, large nongeostationary orbit, or NGSO, satellite systems use spectrum more intensely than other types of satellite systems. These NGSO systems are required to share spectrum, and the rules that govern sharing will be a critical ingredient to their success.

Moreover, the satellite marketplace is global. Operators from around the world need to be able to license in many different regions, including the United States. Because of the global nature of the satellite industry, we need to consider international considerations of the use of spectrum as well as the other resources that are unique to the industry. We must lead in this industry, and we must ensure that our regulations encourage this innovation rather than stifle it.

I look forward to hearing more from our witnesses. Thank you all for being here, for taking the time to share your insights, and I want to hear how this committee can be a partner to promote U.S. leadership, competition, and innovation in the satellite communications.

Thank you, and I yield back.

[The prepared statement of Chair Rodgers follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Thank you very much. The gentlelady yields back.

And at this time the chair recognizes the ranking member of the full committee, the gentleman from New Jersey, for 5 minutes.

Mr. Pallone. Thank you, Chairman Latta. And let me thank you and Ranking Member Matsui. This is the first hearing of the subcommittee and I am certainly looking forward to working together. We have a long tradition of working in a bipartisan fashion to enhance technological innovation in this country, and this hearing marks the start of another endeavor.

Today we begin exploring the next frontier of the commercial space industry. Let me say, our committee can and should play an important role in shaping how the Federal Communications Commission regulates and licenses this sector and the airwaves that satellites use.

I also want to commend Chairwoman Rosenworcel and her fellow commissioners for recognizing the changing dynamics in the satellite industry and the need for the FCC to keep up with the times.

The recent unanimous order adopting Chairwoman Rosenworcel's proposal to create a Space Bureau is an important step in the right direction and reflects the increasing importance of this industry in our communications marketplace.

In the last few years, we have seen significant advancements in the ability of satellites to provide broadband internet and other critical services to consumers throughout the country and the world. And while this is beneficial for many reasons, it is especially helpful to those living in areas where other types of technologies haven't been built yet to reach consumers due to geographic considerations and other factors.

Congress took a historic step forward last year by making a $65 billion investment in broadband connectivity as part of the Bipartisan Infrastructure Law. As a result of this new law, Americans across the Nation who have lacked connectivity will finally be connected to high-speed reliable and affordable broadband. And this will make a huge difference for communities all across the Nation that have been left behind for far too long. Satellites will also continue to play a role in competing with and enhancing the redundancy of terrestrial networks, including by expanding the coverage of mobile service.

So I actually expect the consumer use of satellites to grow in the future as wireless carriers and phone manufacturers continue to build this capability into their networks and phones.

Fortunately, with this technology, mobile consumers can rest assured that if they find themselves in an area without service, whether it is because of a lack of coverage, a result of natural disaster, or some other reason, they will continue to have the ability to reach first responders and loved ones during their time of need.

And this additional layer of protection is a welcome sign, given that the climate crisis is causing more frequent and more severe disasters. Mobile service is essential to receive emergency alerts and life-saving information. In fact, a recent article detailed the devastating consequences that local communities and individual neighborhoods face when they lack access to mobile service in times of tragedy. These examples and so many others demonstrate that a resilient communications network can be the difference between life and death when the unexpected strikes, and satellite systems will be crucial in helping consumers navigate through these challenging moments.

Now, the stakes could not be higher for the American satellite marketplace.

Other countries, including our foreign adversaries, are making aggressive moves to dominate this industry. Quite simply, failing to ensure that the United States remains a market leader in this sector risks our Nation falling behind our counterparts across the globe, including China, in producing cutting-edge consumer innovations and fortifying our public safety and national security capabilities.

It is also imperative that we protect the satellite marketplace and its relevant supply chains from threats by nontrusted actors. We can't risk having our satellite networks face the same challenges we have seen in some of our other communication networks, especially given the global nature of their operation.

And it is important that we better understand this marketplace so that we can make sure that the American public benefits from these technological advancements in a safe and secure manner. And since satellite innovation is happening as we speak, we must begin examining this industry now so that the United States can prepare for the satellite technologies of today and tomorrow.

So it is clear we have a lot to discuss this morning. That is why this hearing is important as we continue to explore the growing satellite marketplace. And I just welcome our panelists, look forward to hearing from all of you. And yield back the balance of my time, Chairman Latta.

[The prepared statement of Mr. Pallone follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Well, thank you very much. The gentleman yields back.

We have now concluded with member opening statements. The chair would like to remind members that pursuant to committee rules, all members' opening statements will be made part of the record.

Again, we would like to thank all of our witnesses for being with us today and, again, taking time to travel to D.C. to be with us and testify before the subcommittee.

Today's witnesses will each have 5 minutes to provide an opening statement, which will be followed by a round of questions from our members. Our witness panel for today's hearing will include Mr. Tom Stroup, president of the Satellite Industry Association; Ms. Julie Zoller, head of global regulatory affairs with Project Kuiper at Amazon; Ms. Jennifer Manner, senior vice president of regulatory affairs at EchoStar Corporation; Ms. Margo Deckard, co-founder and chief operating officer of Lynk Global; and Ms. Kari Bingen, director of Aerospace Security Project and senior fellow at the International Security Program at the Center for Strategic and International Studies.

And as we begin, just pull that microphone close to you as we begin and, hopefully, they got all of the technical difficulties taken care of before the committee started, but, if not, we will just switch boxes around here real quick.

But you will notice that there are the three lights there. So at 30 seconds, the yellow light will go on; and then at 5 minutes, the red light will go on. So at that point, please finish up your statement.

And, Mr. Stroup, you are recognized for 5 minutes for your opening statement. And, again, thanks for being with us.

STATEMENTS OF TOM STROUP, PRESIDENT, SATELLITE INDUSTRY ASSOCIATION; JULIE ZOLLER, HEAD OF GLOBAL REGULATORY AFFAIRS, PROJECT KUIPER AT AMAZON; JENNIFER MANNER, SENIOR VICE PRESIDENT OF REGULATORY AFFAIRS, ECHOSTAR CORPORATION; MARGO DECKARD, CO-FOUNDER AND CHIEF OPERATING OFFICER, LYNK GLOBAL, INC.; AND KARI BINGEN, DIRECTOR, AEROSPACE SECURITY PROJECT AND SENIOR FELLOW, INTERNATIONAL SECURITY PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

STATEMENT OF TOM STROUP

Mr. Stroup. Chairman Latta, Ranking Member Matsui, Chair Rodgers, and distinguished members of the subcommittee, thank you for inviting me to testify before you today. I am Tom Stroup, president of the Satellite Industry Association.

Satellites are the backbone of modern technology. We rely on them for communications, position navigation and timing, and remote sensing across the globe. In addition to the vast range of services offered by the industry today, the companies represented by SIA are poised to lead the U.S. into an interconnected and data-driven future.

We are at a time of tremendous innovation in the space industry with over 7,000 active satellites on orbit today and plans of tens of thousands more through the end of the decade. Americans have long relied upon satellites to provide direct-to-home TV, satellite radio, and distribution of programming to cable companies as well as to TV and radio broadcasters.

The satellite industry provides FCC-defined broadband service across the globe and is prepared to bring the furthest corners of America into the 21st century by serving as the most viable technology capable of bridging the digital divide into rural areas.

The industry is also working to bring the Nation into an interconnected future as a backbone for 5G, IoT, and AI technologies. Satellites today provide anytime, anywhere global connectivity to consumers, utilities, the maritime industry, airlines, and unmanned aerial vehicles.

Geospatial satellite data has not only transformed environmental monitoring but also provides essential business analytics from monitoring remote infrastructure to analyzing supply chain performance.

In addition, satellites play a critical role in preparation, response, and recovery from national disasters. Unlike terrestrial communication counterparts, satellite networks are not susceptible to damage from such catastrophes because the primary repeaters are onboard the spacecraft and not part of the ground infrastructure.

Remote sensing data and analytics can also help pinpoint where damage has occurred and what routes to the location are still accessible. Furthermore, synthetic aperture radar satellites can see through clouds and allow the mapping of damaged regions when storms are still overhead.

Satellite technology is transforming agriculture across America as well. Satellite broadband enables remote farms with livestock sensors, soil monitors, and autonomous farming equipment in rural America far beyond where terrestrial wireless and wireline can reach or make economic sense to deploy. Precision GPS technologies allow farmers to increase crop yield, and earth imaging satellites provide high-resolution imaging that allows them to determine when to plant, water, or fertilize crops.

Satellites are not only a core technology for our domestic future, but also play a crucial role for advancing our national security priorities and partnerships abroad.

Satellite communications have been a lifeline in Ukraine and earth imaging satellites have been a game-changer in providing near real-time transparency into the Russian invasion of Ukraine.

While the U.S. has long led the space sector, China trails close behind, with similar investments in space technologies that not only will be transformative in times of conflict but will also undermine international democracy.

China is investing in navigation, communications, and remote sensing systems to rival the U.S. It is critical for Congress to support continued domestic innovation and avoid regulations that put U.S. providers on an unequal playing field internationally.

The U.S. satellite industry is set to revolutionize daily life as we move into a more interconnected world where change on Earth is more visible than ever before. In order to ensure the success of the U.S. satellite industry, both domestically and globally, the industry needs these four things:

First, assured access to spectrum that enables these technologies, from communications frequencies to remote sensing data downlinks; second, technology inclusive policies allowing for innovative solutions across domains to address America's most challenging needs, including the provision of broadband services at the most affordable rates; third, adequate funding for government agencies responsible for oversight and licensing of the industry to enable them to keep up with the rapid pace of growth in the sector; and finally, a level playing field with international competitors, including the removal of satellite technologies from restrictive export control regulation when international commercial alternatives exist.

I appreciate the opportunity to appear before you today, and I am happy to answer any questions.

[The prepared statement of Mr. Stroup follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Well, thank you very much for your statement.

And, Ms. Zoller, you are recognized for 5 minutes.

STATEMENT OF JULIE ZOLLER

Ms. Zoller. Thank you, Chair Latta, Ranking Member Matsui, Chair McMorris Rodgers, Ranking Member Pallone, and members of the subcommittee. I am Julie Zoller, head of global regulatory affairs for Amazon's Project Kuiper.

Project Kuiper is our initiative to increase global broadband access through a constellation of 3,236 satellites in low Earth orbit, or LEO. Our mission is to deliver fast, affordable broadband to unserved and underserved communities in the United States and around the world.

We are proud to advance the space and satellite capabilities of the United States, and we appreciate the work by this committee, the Federal Communications Commission, and the whole of government to maintain the strong U.S. leadership in these areas.

Amazon is built around three big ideas: customer obsession, long-term thinking, and a willingness to invent. And Kuiper is an example of how we bring these principles to life. Amazon made a commitment to more than $10 billion to Project Kuiper, and we have continued to invest in the infrastructure, people, and technology to deliver on that vision.

Since day one, we have been dedicated to space safety and sustainability. These values have influenced the overall architecture of our constellation, the design of our satellites, and our operations.

It is an exciting time to be at Kuiper, and the team is making incredible progress. We have made major breakthroughs in customer terminals, which are high-performing, affordable, and smaller and lighter than legacy designs.

We will soon launch our first two prototype satellites, allowing us to prove our technology, including networking and subsystems, as we prepare for full-scale deployment.

We also announced the largest commercial procurement of launch vehicles in history to deploy our constellation. These launch agreements will support thousands of suppliers and skilled jobs across 49 States in the United States and at least 13 countries in Europe, paving the way for new production and launch infrastructure. Importantly, these agreements promote American leadership in launch services for the foreseeable future.

U.S. companies are leading the unprecedented growth in the satellite industry, and this rapid increase has strained the regulatory framework. For its part, on a bipartisan basis, the FCC is working to update its rules to promote innovation, allocate more spectrum, and provide greater clarity for spectrum sharing. Amazon applauds the FCC's response to the needs of the satellite industry.

Additionally, satellite systems are inherently international, and many of the international telecommunication rules that apply to newer LEO systems like ours favor incumbent technologies. That is why at the upcoming World Radiocommunication Conference, it is essential that the U.S. set forth priorities to ensure that the rules for LEO systems and satellites more generally support the success of this U.S.-led industry.

Satellite technology is advancing rapidly and LEO systems will benefit customers across the globe. Congress and the FCC can safeguard this progress and ensure

American leadership within this industry. Congressional attention on these matters, like today's hearing, ensures the regulatory process supports continued innovation and increases opportunities to provide satellite broadband.

Thank you again to the committee for focusing on satellite policy and understanding that it is critical to get U.S. policy right. I look forward to your questions and appreciate the opportunity to share our views.

[The prepared statement of Ms. Zoller follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Thank you.

Ms. Manner, you are recognized for 5 minutes.

STATEMENT OF JENNIFER MANNER

Ms. Manner. Thank you very much.

Chair Rodgers, Ranking Member Pallone, Chairman Latta, Ranking Member Matsui, and members of the subcommittee, thank you for inviting me to testify on behalf of EchoStar Corporation, where I am senior vice president of regulatory affairs.

I am excited to share my views on a dynamic satellite market and what needs to be done to strengthen American leadership in this global industry. One area the U.S. satellite industry excels is the provision of broadband satellite services. This service is critical to having cost-effective and timely solutions to solve the digital divide. However, there are some hurdles.

First, the uncertain timeframes associated with the FCC licensing process. America cannot lead if applications pile up at the FCC. We are hopeful that the FCC's recent hiring of more personnel and the creation of the Space Bureau will help, but we ask Congress to ensure that adequate funding be made available to ensure the FCC has the required resources. There should also be FCC guidelines to improve processing times.

Similarly, it is critical that technology inclusiveness govern broadband policies, including grant funding. Satellites provide cost-effective broadband services where it is too expensive or impossible to deploy terrestrial infrastructure. Yet some broadband

funding programs are essentially closed to satellite operators. Accordingly, in order to ensure all Americans have broadband, the government should ensure that grant programs enable the use of satellite broadband technology.

Another area that needs to be addressed is the increased need for spectrum and long-term certainty necessary to support the large CAPEX and OPEX requirements of satellite networks. Increased spectrum sharing is one solution. However, there are challenges as we enable more sharing in the fixed satellite service bands unless certain principles are adhered to.

First, there must be good-faith domestic coordination among systems. Second, there must be long-term certainty for operators for access to spectrum. If these costly systems do not have long-term spectrum access, it may be impossible for operators to obtain the funding required to support these networks, stifling U.S. innovation.

Further, any sharing solution must consider the full operating parameters of these systems, including the aggregate interference environment. If such interference environment issues are not addressed, systems could face harmful interference, degrading service to users.

It is also important that before allowing the use of terrestrial spectrum by satellite systems, there is proof that in-band and adjacent services will not suffer harmful interference. Failure to do so could result in a repeat of what we saw years ago with garage door openers interfering into military communications.

While some frequency bands can be successfully shared, this is not true for mobile satellite service bands. Exciting uses of the MSS band, such as IoT and direct-to-device services, are happening because of advances in technologies and the development of standards. MSS operators like cell phone companies that operate an exclusive

spectrum, are widely deployed and utilize omnidirectional antennas. Therefore, it is not possible for MSS operators to share spectrum with one another without suffering harmful interference.

Additionally, as demand for satellite services increase, additional spectrum must be provided. The government must prioritize this effort as well.

Of equal importance is including satellite technologies and standards developments. It has taken over a decade for satellite to be included in 3GPP standards. We are at an important juncture now as we further advance the inclusion of satellite in 5G and 6G standards at 3GPP and at the ITU. Accordingly, the U.S. Government, as a participant, it is critical that it support the U.S. satellite industry.

Finally, I would like to call attention to the upcoming 2023 World Radio Conference and other IT work. If the U.S. is going to prioritize domestically American satellite leadership, it must continue the support at the ITU. We are at the most exciting time in the satellite industry in our lifetimes. Satellite communications is poised to become a day-to-day presence. It is critical that the subcommittee takes a leadership role in this area and fosters an environment that enables the U.S. to continue to revolutionize this very important sector.

EchoStar is committed to working with Congress, the FCC, and the administration to advance policies that facilitate U.S. leadership in the satellite marketplace. By taking the lead now, the U.S. can be sure of continued leadership, not just now but also in the future.

Thank you for the opportunity to testify, and I welcome any questions.

[The prepared statement of Ms. Manner follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Again, thank you very much for your testimony.

And, Ms. Deckard, you are recognized for 5 minutes.

STATEMENT OF MARGO DECKARD

Ms. Deckard. Good morning.

Mr. Latta. You want to pull your microphone right up to you there? There you go. Thank you.

Ms. Deckard. Thank you.

Good morning, Chair McMorris Rodgers, Ranking Member Pallone, Chairman Latta, and Ranking Member Matsui, and members of the subcommittee. Thank you for the opportunity to join this important conversation.

My name is Margo Deckard, and I am a co-founder and chief operating officer of Lynk Global. I am a systems engineer and a retired first responder, and I have spent the past three decades working in the humanitarian, defense, and space sectors.

I am pleased to share Lynk's story with you, not only because our story highlights the new space revolution, but it also highlights the need for our government to support this revolution in order for America to lead.

Lynk was born from the work that I did in the 2014 Ebola pandemic crisis response in Liberia and Sierra Leone. While looking at BGAN terminals that were deployed to forward field hospitals, I noticed that most of these video sat terminals were only utilized for texting.

Think about the information that can be conveyed in a text: infection rates,

fatalities, supply requests. Think about the time saved if a team just has to grab their phone and their go bag and respond to a crisis. It is very clear that the terminal is the problem. It has to be the device already in everybody's pocket, the one they can afford.

So together with my fellow co-founders, we invented cell towers in space that connect to that device already in your pocket. We are the world's only patented, proven from orbit, and commercially licensed by the FCC satellite direct-to-phone system.

As of January 3, we have three cell towers in space, including the first 5G-enabled payload. We are testing in 18 countries on all seven continents. With $2.5 billion in contracts, we are going to begin international, intermittent commercial service in April.

Lynk partners with mobile network operators. They bring the spectrum and the customers, and we bring the infrastructure to fill in their coverage gaps, extend their coverage, or provide their network resiliency. We do this by taking the terrestrial base station and moving it onto our small satellites in low Earth orbit and solving for Doppler shift and the extended range time delay. That is our patented secret sauce.

We are a proud American company. We were invented and built in the United States. Companies like Lynk need a responsive and timely regulatory process in order to succeed and in order to keep America at the forefront. Satellite direct-to-phone is now a category, and it is a category that it is imperative for the United States to own.

Like many new space companies, Lynk is fundamentally different than old space companies. We are leaner and more agile. In fact, our first payload went from a drawing on a napkin to flying in space in 6 months.

Supporting new space companies, protecting their intellectual property and speed to market is absolutely critical for American leadership, because foreign governments will not slow down their companies. We can end digital poverty with this technology. Just

like the printing press brought knowledge to the masses, so does connectivity provide quality of life, education, participation in a global society and economy and resiliency.

I would like to share with you a personal story that really highlights the potential benefits of this technology. When I was a paramedic, I ran in a rural area near Xenia, Ohio. In 2000, my community got hit by a tornado, and my neighbor tragically was in his barn when the tornado demolished it. My neighbor's wife and I dug him out of the barn with our bare hands. And miraculously, some kid in a red pickup truck showed up and offered to take him to the nearest hospital.

Now when you get to that end of that street, you can turn right to Green Memorial Hospital or you can turn left to Miami Valley Hospital. Which way to turn? I was about to guess at a life-and-death decision. What I would have given for a satellite to fly overhead and transmit a text to first responders, Green not accepting patients, highway 35 open to the Valley, to the device that is always with me. Lynk can do that today.

Thank you so much for your time, and I look forward to the dialogue.

[The prepared statement of Ms. Deckard follows:]

******** COMMITTEE INSERT ********

Mr. Latta. And thank you very much for your testimony.

And, Ms. Bingen, you are recognized for 5 minutes.

STATEMENT OF KARI BINGEN

Ms. Bingen. All right. Thank you.

Chairman Latta, Ranking Member Matsui, Chairwoman Rodgers, and Ranking Member Pallone, subcommittee members as well, thank you for the opportunity to appear before you today. CSIS does not take policy positions, so the views here are my own.

Let me start with three main points. One, we are witnessing technology and economic trends in the satellite marketplace that make this time different than before and leave me bullish on the viability of the commercial space sector and its impact.

Two, foreign competition, especially from China, is intensifying. China is coming after our lead and they don't play by our rules.

Three, our leadership in space isn't guaranteed nor is it a lost cause. I believe there are steps the government can take can with urgency and purpose to keep that lead, including in regulatory and export policy reforms.

It is an exciting time to be in the space community. The commercial space sector is flourishing with new technology, innovative solutions, and talented entrepreneurs.

A few to highlight. The diffusion of space technology is lowering the barrier to entry. Seeing the proliferation of small satellites once the size of buses, now the size of shoeboxes that can be developed and launched for a few million dollars.

The commercialization of space capabilities that were once reserved for nation-states is enabling a wider range of uses and greater transparency. For example, commercial satellite data is being used to detect illegal fishing, to understand the impacts of Arctic icecap melt, and to monitor gas pipelines and oil storage inventories.

The convergence of space sensor data, artificial intelligence, and global networks is enabling the fusion of large datasets with analytic insights that can be delivered anywhere on the globe.

Private capital. 2021 was a record-setting year for private capital invested in the commercial space sector. This presents an opportunity for government users to leverage space services developed with private capital to help meet their mission needs.

Speed. I spent my career in national security space, and I was conditioned to expect satellites to be delivered and fielded in about 10 years or more. In contrast, there is one commercial satellite operator today that is outputting six to seven satellites per day off its production line.

While all of these trends benefit U.S. space companies, they also apply to the foreign space landscape. The global space ambitions of Beijing in particular are the most consequential to our national and economic security. Chinese President Xi Jinping has articulated a space dream to make China the foremost space power by 2045.

China's increasingly robust space capabilities include advanced navigation, communications, intelligence, missile warning, in-space logistics, and space situational awareness. It is also pursuing an arsenal of counterspace weapons that would deny our use of space assets.

We can no longer assume that we lead in all areas of space. For example, in 2021, the National Geospatial-Intelligence Agency assessed that China was the global

leader in three of nine categories of commercial space-based imagery capabilities. U.S. commercial providers maintained the lead in only three.

A particularly acute area of space competition is in commercial SATCOM, which CSIS recently examined in a study on low Earth orbit broadband networks that I commend to your reading. These constellations offer a compelling solution for bridging the digital divide, specifically for rural and underserved communities, as nearly 40 percent of the world's population and 28 percent of rural households in America remain unconnected.

China's global space objectives, including a planned LEO broadband network, have been incorporated into its digital Silk Road Initiative. However, this expanding space network comes at a price. Foreign customers of Chinese LEO broadband services should assume that their data will be sent to Beijing and that Beijing will surveil users and block internet access at will. After all, China has a national intelligence law that requires organizations and citizens to support intelligence work and to keep it secret.

So let me offer a few recommendations that can help maintain U.S. leadership in space and position U.S. companies to retain their competitive advantage. Make simple changes in regulatory licensing processes, such as establishing defined timelines and opening communication channels with companies; revisit technology export control policies, ITAR specifically, that are hindering space cooperation with our allies and partners, who we will need to successfully compete; take a leadership role in key international coordination bodies. A U.S. person is taking on leadership of the ITU after 8 years of Chinese leadership. Seek greater adoption and integration of commercial space capabilities and services to support mission needs.

Finally, the Department of Commerce in 2018 was given a responsibility to provide basic safety services to commercial space operators and the public. I would encourage

commerce to be forward-leaning in executing and resourcing these efforts within their Office of Space Commerce.

Thank you again for the time today, and I look forward to your questions.

[The prepared statement of Ms. Bingen follows:]

******** COMMITTEE INSERT ********

Mr. Latta. And, again, thank you to all of our witnesses today for your statements. We really appreciate it here on the Energy and Commerce Committee and hearing what you are saying today. We look over the horizon 5 to 10 years, because that is where you all are. And so to get the right legislation and the regulations in place, we need to hear from you. So we appreciate you being here today.

This begins our questions from our members, and I will begin the questioning and recognize myself for 5 minutes.

Mr. Stroup, in your statement, you speak of the state of the satellite industry. What do you see as some of the greatest challenges of the industry that is facing you at this time?

Mr. Stroup. Thank you for the question. I think that the four primary challenges that the industry is facing are continued access to spectrum. All of the services that we have talked about rely on spectrum. It is an increasingly shortage resource, but we cannot continue to grow without access to spectrum.

The next is a stable regulatory environment and sufficient resources for those organizations that oversee the industry. Geostationary satellites are expected to have a lifespan of 15 to 20 years. Nongeostationary constellations often cost 5 to 10 billion dollars to deploy. And so having a stable regulatory environment to ensure that the rules don't change during the lifespan of a satellite or a constellation is important.

We commend the FCC for their plans to create a Space Bureau and the increased resources that have been made available to address the tremendous number of applications that have been filed, but continued resources for the FCC and other oversight organizations is important.

Space sustainability is important. Given the tremendous increase in the number of satellites, knowledge of where they are and other objects in space is important, and we are happy to see the Office of Space Commerce funded to be able to put together a space situational awareness capability.

And then finally, something that I think that most of the speakers today have touched upon is international competition, especially as potential restrictions on U.S. companies that might not apply to our international competitors.

Mr. Latta. Thank you very much.

Ms. Manner, you have extensive experience working with the FCC to authorize the various systems and services that Hughes/EchoStar provides. What is the FCC's current role in licensing satellite systems and what information do they consider when approving a license request?

Ms. Manner. Thank you for the question, Mr. Chairman.

The Chairman. Oh, if you would turn your speaker on. Thank you.

Ms. Manner. Sorry. Thank you, Mr. Chairman, for the question.

So the FCC process -- and I am focused not on small sats, we are not a small sat provider today -- but generally is information about ITU filings, information on spectrum, technical characteristics and operational parameters, an orbital debris plan, showing compliance with the rules and waivers. But I wanted to bring up three areas that I wanted to highlight which I think do hurt American competitiveness in the FCC's application process.

The first is the limits on the number of ITU filings and the timing for ITU filings that U.S. systems can be made through the FCC. Unfortunately, today, most countries allow unfettered ITU filings or with very little limits. The FCC has very strict restrictions. This

often causes U.S. operators to go forum shopping for other nations in which to file their systems to.

Another area of concern is bonds. The FCC in the early 2000s came up with a concept to reduce speculation to impose a bond requirement on satellite systems. Unfortunately, that does hamper the ability of operators to go through the U.S. for licensing.

And the third area I would like to highlight, which is an area under consideration in an FCC rulemaking right now, is the number of unbuilt systems that one operator could have.

So I think improvements in the licensing process in these three areas would be particularly helpful as well to encourage U.S. leadership in satellite licensing and satellite systems.

Mr. Latta. Well, thank you very much.

Ms. Deckard, it is important this Congress examine its laws and conducts oversight of agency regulations to understand where the market is heading. Could you describe some of the services that Lynk offers right now or plans to offer the United States? And I have like about a minute left. So thank you.

Ms. Deckard. Thank you. So Lynk currently offers texting and emergency cell broadcast services internationally. We are licensed internationally, so we don't currently offer those services in the U.S., but we do test them here.

We are on a path to provide broadband by 2025 as we build out our constellation from the initial 10 satellites which are authorized under the small sat authorization to our full constellation, which will be about 5,000 satellites.

Mr. Latta. And what is the timeline again on that, please?

Ms. Deckard. 2025, we will be able to support broadband. And we are actually launching international service in April. So as soon as we have an M&O partner here in the U.S. and we can go back to the FCC and ask for market access, then we will be able to provide those services here in the U.S.

Mr. Latta. Well, thank you very much.

And, again, thanks to our witnesses.

And at this time, I will yield back and recognize the ranking member of the subcommittee, the gentlelady from California, for 5 minutes.

Ms. Matsui. Thank you, Mr. Chairman.

The global satellite marketplace is growing increasingly competitive. For the U.S. to remain the pacesetter in this technology, it is vital that our rules provide incentives for U.S. companies to seek licenses here. As we review the rules for U.S. licenses and requests for market access, we have a chance to reinforce U.S. leadership.

Ms. Zoller and Ms. Bingen, just a quick yes or no. Do you believe FCC rules should incentivize operators to seek a U.S. license rather than choosing a foreign government certification with lower requirements whenever appropriate? Just yes or no, Ms. Zoller and Ms. Bingen.

Ms. Zoller. Yes.

Ms. Bingen. Yes.

Ms. Matsui. Okay. To keep the satellite marketplace dynamic, we need to strike the right balance between protecting incumbent operations and creating room for new entrants to compete. To this end, I sent a letter to Chairwoman Rosenworcel, urging her to balance the goals of the new entry market with certain protections of existing operators.

Ms. Zoller, do you think it is possible to strike this balance, and what regulatory tools could be used to keep the market innovative?

Ms. Zoller. Thank you for that question. Yes, I do think it is possible to achieve that balance. One of the most important things in that regard is to have clear sharing rules for spectrum, sharing between nongeostationary systems as well as between nongeostationary and other satellite systems.

Thank you.

Ms. Matsui. Thank you. The FCC has made important progress on increasing technical coordination between system operators. I recently sent Chairwoman Rosenworcel a letter urging her to institute continuous and flexible information-sharing requirements to help achieve cooperation.

Ms. Zoller again, can you describe the role of coordination between operators and the specific type of technical information that could support satellite coexistence?

Ms. Zoller. Coordination between operators involves sharing information about their satellite network design, the constellation design, the plans for service areas, and the plans for when they are going to transmit to where.

So that kind of information sharing, so that you know the difference, especially if you are a low Earth orbiting system like Kuiper, you know when a satellite is going to transmit to a particular point on the Earth. You are able to know if there is really a potential for interference or not a potential for interference. So information sharing is important.

Ms. Matsui. Thank you very much.

My new district now includes areas with a rich tradition of agriculture stretching back generations. Like any other small business, these family farms are always looking

for ways to innovate and improve their yields.

Ms. Manner, can you describe the role of IoT in precision agriculture and how satellite service could support this technology?

Ms. Manner. Thank you very much for the question. So first off, satellite is one of a solution, one of many solutions. You have, of course, fiber, terrestrial wireless, fixed wireless. Satellite is particularly good in rural areas which are part of your district, where you can use satellites for everything from monitoring, you know, the level of moisture in the ground to working with your tractors and other farm equipment to either ensure navigation if you need broadband. You could download maps and other information. So it has a wide variety of uses. It can also connect all the devices in a farm. And when you are talking about larger farms that are a conglomerate of different farms, you can also share information among each other, which is something that we have seen been done.

Ms. Matsui. Okay. Thank you.

As a co-chair of the Spectrum Caucus, I understand the increasing demand for spectrum across all industries. As we look to the future, the satellite industry, like other wireless communication industries, will need to find ways to be more efficient with the spectrum it has to accommodate more users.

Ms. Zoller, what technologies are available today to improve spectrum efficiency, and what could be done in the future?

Ms. Zoller. Thank you for the question. LEO systems are uniquely suited for spectrum efficiency, because many satellites are visible to a given point on the Earth, and also the ability to use small beams enables LEO systems to reuse spectrum intensively.

Ms. Matsui. Okay. Thank you very much.

And I would like to thank the witnesses for being here today, and I am sure we will be speaking with you more often. Thank you.

I yield back.

Mr. Latta. The gentlelady yields back.

And at this time, the chair recognizes the gentlelady from Washington, the chair of the full committee, for 5 minutes.

The Chair. Thank you, Mr. Chairman.

The Energy and Commerce Committee has been a long leader in advancing 5G, autonomous vehicles, and other advanced technologies. In each of these areas, competitors like China have sought to undermine U.S. leadership in developing and deploying these services, like the planned 13,000-satellite StarNet constellation.

Ms. Bingen -- there you are -- what are the greatest threats to the United States in space and how should we be thinking about these national security issues in the satellite communications industry?

Ms. Bingen. Thank you for that question, Madam Chair. So I look at threats to U.S. space capabilities in two ways. One is security and one is economic.

So on the security front, our adversaries know how important space is not just to our daily lives, to our financial transactions, but to how our military fights wars. We cannot project power overseas without relying on space capabilities, navigation, communications, et cetera.

They know how valuable that is, and they are developing weapons to deny our use of that. We have actually seen it in Ukraine, so this is not a hypothetical, where Russia early in the conflict sought to target commercial communication satellites, sought to deny GPS as well.

On the economic front, we are clearly in a technology and a space race with China, and President Xi has made it very clear with top-down direction. He has prioritized aerospace as a technology area. There are massive private and public sector investments, and they have given their companies quite a bit of leeway.

So what I think is interesting here is, in the past, our government has led in this area, and now it is really the commercial sector leading the way. And where that economic and that security piece come together for me is our military has long relied on a technology advantage. As that advantage is starting to close, I am concerned about our military advantage eroding as well.

The Chair. Thank you. I appreciate that.

Ms. Zoller, the satellite industry has seen significant growth and change in the last several years. Amazon Kuiper is one example of a company that is innovative and saw an opportunity to enter the marketplace as a new operator.

Would you speak to us about your experience getting Project Kuiper licensed, and what have been some of the biggest challenges you have faced through the process?

Ms. Zoller. Thank you for the question. Our experience has been positive. We received our license to launch and operate the Kuiper constellation in July of 2020. And just in December of 2022, we received our experimental license to launch the two prototype satellites that are going up in the coming months.

The issues are really complex, but the FCC is helping with that by initiating spectrum-sharing procedures and procedures to make more spectrum available to nongeostationary satellite systems like ours.

The Chair. Thank you.

Ms. Manner, you offer many different services, from fixed satellite service that

provides in-home broadband to mobile satellite service that provides highly reliable voice or data services to utilities or the transportation sector.

Given that these services transcend national borders, can you speak to us about how these services are coordinated globally?

Ms. Manner. Thank you. It is complex. We start with having the required ITU filings, that is where everything starts, and having to coordinate our systems internationally, and then we go down to market access. And market access will include different rules for different services, and it may also result in conflicting coordination requirements.

Just yesterday we announced a new LEO system, MSS. And just looking at the three largest markets in the Americas -- the U.S., Brazil, and Canada -- we will be subject possibly to three different coordination requirements of our system. So not only do we have the ITU coordination requirements, we have those of individual countries. So one thing that would be helpful is if we had a single international regime that all countries used as opposed to a patchwork, but we still have the patchwork with the market access.

And then standards is the third portion of this. And one of the things we are very proud of was being a leader of 3GPP and then getting satellite included in the 3GPP standards, which creates global ecosystems and gives signals to countries on where to allow certain technology. So we think that helps our market access as well.

Thank you.

The Chair. I appreciate that. And thank you again, everyone, for being here, sharing your insights.

I yield back.

Mr. Latta. Well, thank you very much. The gentlelady yields back.

And at this time, the chair recognizes the gentleman from New Jersey, the ranking member of the full committee, for 5 minutes.

Mr. Pallone. Thank you, Chairman Latta.

I mentioned earlier that I am interested in how new and novel satellite technologies can bridge the connectivity gap during natural disasters like hurricanes and wildfires, as these events have a strong track record of bringing down our communications infrastructure for extended periods. And we have to consider how innovation in this area can help reduce the number and lengths of outages that our communities have to deal with at the time they are perhaps most in need of a connection to call a first responder or a loved one or to get life-saving emergency items.

So I wanted to get one question into Ms. Deckard and another to Ms. Bingen. Let me start with Ms. Deckard.

Can you describe how satellite-based services like those offered by Lynk can ensure that our ability to reach emergency services in times of disaster are not interrupted even if our traditional communications infrastructure is offline, and what has changed to make the service possible? And in your experience as a first responder, how can lives be saved by having this kind of network redundancy in place during emergencies?

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[10:30 a.m.]

Ms. Deckard. Thank you for the question.

So Lynk is a fundamental change in the way we deliver communications. First of all, by using UHF bands from space, we connect to that unmodified phone already in everyone's pocket.

Because we move the terrestrial base station onto our small satellites in orbit, we aren't subject to the same perturbations that a terrestrial cell tower is subject to in a natural disaster or a fire. We don't melt, and we don't get blown down.

So we are that instantaneous backup. As long as our cell tower in space is overhead, we provide that seamless connectivity.

In fact, during normal operations, the Lynk cell tower is the weakest signal in the sky, and then when a customer moves out of their terrestrial coverage, our signal becomes the strongest, and they seamlessly roam onto our network. That is true whether it is in normal operations or if our terrestrial partner's network goes down.

In terms of the lifesaving capabilities, I feel this is a sea change, not only for first responders, but for the communities that they serve. Communications is the most critical part in the chain of survival.

I think about the Gerrish-Chung family every day. They perished in Sierra National Forest. Jonathan, Ellen, their baby girl, and their dog died of heat exhaustion with texts queued up in their phone.

With the Lynk cell towers, that just won't happen. If you have a phone in your pocket, you will be able to initiate that chain of survival and help yourself to be rescued.

Mr. Pallone. All right. Well, thank you.

These last several years there has been an ongoing conversation in Congress and across the government about how to support American innovation, particularly in the technology sector, and also to ensure that our communications networks and technology are not used by bad actors and our foreign adversaries to do harm.

So, Ms. Bingen, in your testimony, you note that in the aerospace sector, and I quote, "Beijing's economic and industrial espionage against the U.S. continues to represent a significant threat to America's prosperity, security, and competitive advantage."

So can you describe in greater detail why satellite technology poses that threat? And do you think it is important to ensure that satellite systems that are owned and operate by bad actors and foreign adversaries are prevented from either being licensed here in the U.S. or gaining access to U.S. markets?

Ms. Bingen. Thank you, sir.

I would say that Chinese vendors -- and I would use ZTE and Huawei as examples -- they do pose a significant risk to our security. They are subject to Chinese Government controls. And China has made it very clear they are out to steal our technology and apply it to their military and to advancing their own technology sector.

Whether we are talking satellites or we are talking terrestrial communications infrastructure, if it is a Chinese system, if China built it, if they operated it, they now have the means and the access. They can build in backdoors. They have the means and access to block users' access to that network, to potentially censor content, to exfiltrate sensitive data, personal information, and bring that back to Beijing. Plus the ability, as you said, sir, to conduct espionage or possibly even sabotage.

An example of that is the African Union headquarters. Beijing funded it, their state-owned enterprises built it, and they operate the network. It was reported that, for 5 years, that data from the African Union headquarters was being siphoned off and sent back to Beijing.

So that is why I say, as a user of Chinese networks, you would have to assume that that was a possibility.

Mr. Pallone. All right. Thank you so much.

I yield back, Mr. Chairman.

Mr. Latta. Thank you very much. The gentleman yields back.

And at this time, the chair will recognize members as they came in at the gavel. And at this time, the chair will recognize the gentleman from the Second District of Florida for 5 minutes.

Mr. Dunn. Thank you very much, Mr. Chairman.

I want to thank the panelists as well for their testimony.

The United States literally must remain a global leader in innovative satellite technologies and communications. The Federal Government should play a supportive role in this by ensuring that the regulatory process does not inhibit innovation with overly burdensome regulations.

This is why I reintroduced the LAUNCHES Act with my esteemed colleague from Florida, Congressman Soto. The LAUNCHES Act streamlines the bureaucratic elements of the rocket-launching process and makes it easier for private companies to obtain the spectrum necessary for launches.

I look forward to working with Congressman Soto, the members of the committee, and the entire House on the passage of this bill this session.

Another goal that is particularly important to me is bringing rural broadband access to every square foot of the Florida Panhandle. The ability to maintain internet access during and after natural disasters is vitally important to saving lives. We witnessed that firsthand after Hurricane Michael devastated the panhandle in 2018, taking out our communications.

Satellite communications can play a really important role in that mission. So we need to ensure that the regulatory process supports the innovations happening at companies like yours and throughout the entire satellite industry.

Mr. Stroup, I am interested in hearing what the industry considers its most pressing issue right now.

Mr. Stroup. I believe the most pressing issue today, as it has been for some period of time, is access to spectrum, continued access to spectrum.

Mr. Dunn. Spectrum. Very good. Good. Underline it. That is good.

Is there a feeling of uncertainty or hesitancy when your members are working with government? Is that an inhibition to innovation?

Mr. Stroup. I am sorry. Could you repeat the question?

Mr. Dunn. When your members are working with all the different government regulators that you have to work with, I mean, do they have a feeling that they don't know exactly what it is the regulators want, and does that inhibit them?

Mr. Stroup. So certainly regulatory uncertainty is an issue. I mean, for example, a few years ago, we went through a Spectrum Frontiers proceeding where we had to start sharing spectrum with the terrestrial industry. That kind of uncertainty creates issues because they have launched satellites with certain capacity, operating on certain frequencies that are no longer restricted.

So that was one of the reasons for noting stability of regulation as an important issue for our members because it does continue to be an issue.

Mr. Dunn. I understand that. I just wanted to hear you say it because I know how important that is. We talk about spectrum a lot up here, but we don't seem to actually get to the goal line very often.

Ms. Zoller, from the perspective of the average consumer in rural America, what practical difference would a robust low Earth orbit satellite communication system that is broadly deployed, what are they going to see different on the ground?

Ms. Zoller. Thank you for that question.

Kuiper is designed specifically to meet the needs of rural and remote citizens by providing high-speed, affordable broadband access to communities that don't have the availability of traditional wired and wireless solutions.

Mr. Dunn. That just sort of describe the Second District of Florida in a lot of locations. So we would love to see that. I can't tell you how many calls we get on that.

Quick follow-up. In your testimony, you provided some comments on proposed rules and initiatives that the FCC working on. Which of those items helps you to deploy faster?

Ms. Zoller. The rules on spectrum sharing between nongeostationary systems and understanding how later licensees need to protect earlier licensees. Greater clarity on that point. Thank you.

Mr. Dunn. So I am detecting a common thread here: spectrum, spectrum, spectrum. So I hope that we can actually solve this problem for you during this very productive congressional session that we plan to have.

Chairman Latta, I yield back the remainder of my time. Thank you.

Mr. Latta. Thank you very much. The gentleman yields back the remainder of his time.

And at this time, the chairman will recognize the gentleman from Florida for 5 minutes.

Mr. Soto. Thank you, Mr. Chairman.

In Florida's Ninth Congressional District, looking from my backyard in Kissimmee, it is quite a fascinating world. We get to see rockets launch multiple times a week from Cape Canaveral in my colleague Bill Posey's district.

Cape Canaveral has become the busiest spaceport in the world, and 57 launches in 2022, and we are looking at 86 to 92 launches in 2023, according to the Space Force. A very exciting area. My constituents get on that beachline every day and drive out to work for NASA, SpaceX, ULA, Blue Origin, and many others.

And I am proud to have launched the bipartisan LAUNCHES communications act with Dr. Dunn that we just filed yesterday.

Right now, you need a license for every launch. I applaud the FCC for establishing a new rule for the 2200 to 2290 megahertz band, but it feels like it is still going a little slow compared to what we need.

Mr. Stroup, how critical is it to streamline FCC applications for launches, including satellite launches?

Mr. Stroup. Streamlining is an extremely important issue to the industry, and as a matter of fact, we had a working group meeting yesterday to talk about additional recommendations that we can make to the Commission for further streamlining.

So in terms of access to spectrum, whether it is for launch or whether it is for the operation of the satellites, it is extremely important. The Commission has taken some

steps to further streamline the process. But we are looking forward to making additional recommendations on how they can further streamline it.

Mr. Soto. Space flight, it literally is rocket science. So have you seen delays before because of not getting an application on time, combined with weather and other factors, as a result of having to do an individual license?

Mr. Stroup. My understanding from some of our members is sometimes just before launch they finally are able to get an application granted.

Again, the chairwoman noted the number of application that they have received, the backlog of applications, which I believe is one of the reasons for restructuring the FCC to be able to address some of those issues.

Mr. Soto. Thank you.

And, Ms. Zoller, we know that satellite internet is one of the keys to the future in our Nation. I know the NTIA recently had made a ruling about the reliability threshold and that we need to get up there in a hurry with these satellites.

And so achieving scale and competition is critical. We see Starlink has 3,500 satellites and counting. You all plan to start with 3,200 but are going to go beyond that too.

So how do we help make sure we have multiple companies and maintain competition so that we could get to that threshold with the 65 billion that we already have through the infrastructure law to make sure that satellite can also qualify?

Ms. Zoller. Thank you for that question.

It is important that the rules foster innovation and competition. We received our license to launch Kuiper in 2020, and we have really made incredible progress with the $10 billion investment. We have continued to invest in infrastructure. We have

employees in Washington building our satellites right now. We announced the largest launch contract deals in history in April of last year, and we will be launching our satellites in the near future.

There will be multiple winners in low Earth orbit to connect the unconnected. And I think you asked a really important question. Getting the rules set so that spectrum is available, it is reliably available, we have consistency across the globe on spectrum access because satellite systems are inherently global in nature, and that we have clear spectrum-sharing rules, because we are not up there alone.

Mr. Soto. That is very helpful, Ms. Zoller. We know we want you all to get to the level like others. The 65 billion in the infrastructure law was technology neutral, but there is some work with the NTIA. And we wish you all the best of luck in scaling up so we could have multiple different ways for our constituents, particularly in rural areas of Florida, to be able to access internet.

And I yield back.

Mr. Latta. Thank you very much. The gentleman yields back.

And at this time, the chair will recognize the gentleman from Pennsylvania for 5 minutes.

Mr. Joyce. Thank you, Chairman Latta and Ranking Member Matsui, for hosting today's hearing on the satellite marketplace and providing us with an opportunity to highlight the importance of this specific technology and its role for closing the digital divide and ensuring that all Americans have access to fast and reliable broadband.

The topography of my congressional district calls for an all-of-the-above approach for getting my constituents connected, from Gettysburg, Pennsylvania to Johnstown, Pennsylvania. Satellite technology has the ability to reach those who are and were

previously unreachable.

I am interested to learn more about how members of this subcommittee can help to bolster the satellite industry and keep the United States as a leader and an innovator in this technology. We can't afford to fall behind our adversaries as we move further into the 21st century.

My first question is for both Ms. Bingen and Mr. Stroup. Ms. Bingen first.

Who do you see as our biggest adversarial competitor when it comes to the satellite industry? And what can we be doing to ensure that the United States remains that leader, that innovator for this technology?

Ms. Bingen. Thank you, sir.

China. China, China, China.

And then I would say, in terms of U.S. leadership, our commercial space sector is phenomenal. It is incredibly innovative. We have entrepreneurs that are really pushing the envelope. They are taking risks in areas that the government wouldn't.

What I would say there is we need to be able to get them on the playing field. So the regulatory issues that some of my colleagues here have highlighted, having a more enabling regulatory environment to get them on the field, I think is really important.

The other piece here is the technology export control policies. We are at a point where these companies, these American businesses, are offering a tremendous capability in data imagery, et cetera, to our allies and partners who want to work with the U.S. The problem is, is those partners now have a choice. It is not just an American company going in there. It is a European competimate. It is China.

When our companies are hampered by long ITAR processes, ITAR processes that don't account for how quickly technology is moving, they are not as competitive

internationally. And the result of that is now the U.S. Government has to be that anchor tenant and fund them as opposed to them getting diverse revenue from other sources.

Mr. Joyce. And I thank you. I share those concerns that our biggest adversary is China.

Mr. Stroup, would you weigh on this as well, please?

Mr. Stroup. I agree with Ms. Bingen's comments. China.

And one recommendation that I would make to help ensure a strong broadband industry in the United States is the application of technology-neutral funding rules.

So, for example, Congress has made a substantial amount of funding available to bring broadband to the country. Across the country there are areas where satellite is the most cost-effective means of being able to provide that service, and ensuring that satellite companies are eligible for that funding is a way of ensuring not only that Americans get access to that service, but also the health of the industry.

Thank you.

Mr. Joyce. Ms. Deckard, you mentioned how currently you are planning to provide text services. Can you go into a bit of detail? Once those text services have been established and continue to evolve, what are the next expansions? What are the next steps that you are looking to take?

Ms. Deckard. Thank you for the question.

So we are on a path to provide broadband, and along that path, as we build out the constellation and add satellites, we add services.

So from texting and emergency cell broadcast, we move to supporting things like IP messaging, digital money, and all those things that especially our international market needs in order to thrive. And then we move to broadband in 2025 and support almost

all the traditional services that you enjoy on your phone today.

Mr. Joyce. Thank you.

My final question is for you, Ms. Zoller.

How do you anticipate that Kuiper can help get rural Americans, like those who live in my district, connected? Do you anticipate offering home broadband services?

Ms. Zoller. Thank you for that question.

Yes, we do. We anticipate serving households, businesses, schools, hospitals, government agencies, and other organizations in rural and underserved areas.

Mr. Joyce. I thank all of the witnesses for testifying here today. Your message is not lost on this subcommittee.

And I yield the remainder of my time.

Mr. Latta. Thank you very much. The gentleman yields back.

And at this time, the chair recognizes the gentleman from Texas for 5 minutes.

Mr. Veasey. Mr. Chairman, thank you very much. I think this is great that we are having this hearing today on next-generation satellites.

I want to thank all of our witnesses for being here today.

And one of my top priorities here is obviously being able to increase access to the internet and the affordability gap, which, quite frankly, impacts all of our constituents in some form or fashion.

And now, as new technology develops and promises greater capabilities, there is optimism and opportunity to capitalize on these developments to help us reach the connectivity goals that so many of us, if not all of us, want to see happen in the 21st century.

Mr. Stroup, in your testimony, you mentioned the need for technology-inclusive

policies to address America's challenges regarding connectivity. Can you explain how the satellite industry is helping identify the parts of the country that can benefit the most from a robust investment in infrastructure and advanced technologies to help close a lot of these gaps when it comes to accessibility to things like broadband?

Mr. Stroup. So we have here with me two companies that are providing broadband services, and there are several others. And a lot of the market opportunity is for those areas of the country that cannot receive any other signal.

One of the other things that I would note, in addition to providing service to those otherwise unserved areas is the ability to provide competition for every other area where there is broadband service. There are multiple companies providing broadband service, satellite broadband service today, now in competition with, whether they are fiber companies or other means of providing broadband service.

So they are looking at every one of the opportunities to take advantage of the funding. As I have noted, one of the concerns is that it is not being applied in a technology-neutral basis. So the fact that we are deploying these technologies, we have multiple companies deploying the technologies, I think is going to be one of the drivers in ensuring that the services are available.

Mr. Veasey. Thank you very much.

I was hoping that someone could provide me -- Ms. Zoller or Mr. Stroup, can you provide an example of an industry that is partnering with local organizations and schools to raise awareness about opportunities, particularly in this space?

I know that that also is something that a lot of us are concerned about as we look at these achievement gaps, we look at diversity in the workforce and people being able to deploy these.

Can you talk about that a little bit, either one of you?

Mr. Stroup. Thank you for the question.

In terms of partnering with global organizations to make them aware of opportunities, just as an example today, we are hosting, SIA is hosting a delegation from the Bahamas on how we can help provide 5G infrastructure for the country.

So that is an example of the global nature of the industry and things that we are doing to help ensure opportunities across the globe.

Mr. Veasey. Ms. Zoller?

Ms. Zoller. Thank you.

Diversity and inclusion is an extremely important goal, both from the perspective of how we are building the company, but also from the perspective of connectivity.

One of the things that is important is STEM education and an emphasis on STEM education in early elementary school so that we can build that engineering talent to work on satellites like Project Kuiper.

Mr. Veasey. Okay. Do you believe that there is a lack of interest when it comes to STEM, particularly when we talk about engineering and math, just because a lot of kids are intimidated? My son is 16 years old, and I know the one thing that his physics teacher said at the very beginning of the year is that he doesn't want kids to see this as another intimidating math course. And so he strives to really be creative in the curriculum.

Do you think that there is an issue there when it comes to interest among children when it comes to STEM and math-related subject matters?

Ms. Zoller. I can only speak from my own experience as an engineer, and having seen fewer women enter the field, I think there is an issue there. I have done tutoring

for a number of years, and my focus area in my tutoring work has always been math and science and helping kids connect to the possibilities that those careers provide and to be a real life example of that.

Mr. Veasey. Thank you very much.

Mr. Chairman, I yield back.

Mr. Latta. Thank you very much. The gentleman yields back the balance of his time.

And at this time, the chair will recognize the gentleman from Texas's 14th District for 5 minutes.

Mr. Weber. Thank you very much.

And thank you, panel, for being here.

I guess I am going to address this first one -- is it Stroup? Is that how you say your name?

Mr. Stroup. Stroup.

Mr. Weber. Stroup. That was my next guess.

How is the access to spectrum -- which was a major concern pretty much everybody voiced -- how is that protected?

Mr. Stroup. Frequency bands are allocated for specific purposes.

Mr. Weber. Right. And I realize there is a part of the spectrum that is low frequency and there is ultra high frequency. There is very high frequency. But what prevents somebody like China from using all that up?

Mr. Stroup. There is an international coordination organization that is responsible for that. Certainly there is a desire to avoid interference because ultimately, if you are interfering with one country's allocation, you are potentially going to have

distorted service, I guess would be the best example. But there is an international -- the ITU is responsible for international coordination.

Mr. Weber. So whoever wins the widest bandwidth and that allocation wins the satellite war?

Mr. Stroup. I think it would certainly provide an advantage. And there are other issues associated with success in the industry. But having access to more spectrum than a competitor would provide you an advantage.

Mr. Weber. How do we prevent that?

Mr. Stroup. I am sorry?

Mr. Weber. How do we prevent that?

Mr. Stroup. I think that the United States taking a unified position before the WRC is one of the strongest ways to --

Mr. Weber. And I don't mean to sound -- I guess, well, maybe I do -- pessimistic, but do we really expect China to play by those rules?

Mr. Stroup. Does China play by the rules? Certainly, we have seen that they do not play by the rules in many areas.

Mr. Weber. So, again, how do we protect that?

Mr. Stroup. Again, I am sorry to come back to the same answer, but ensuring that the United States has a unified position promoting the satellite industry is part of the objectives.

Mr. Weber. It is a real problem, isn't it? Would the rest of the panel agree? Making sure that China abides by those rules would be a real problem.

Does the FCC monitor that closely what China is doing in the spectrum -- or any other country for that matter? Do we know?

They do not monitor that. That is encouraging.

And I am going to move over to Lynk now, if I can, with a question for you.

When you have got phone service that go into different countries and stuff -- it looks like, from your website, you have about 100,000 customers currently?

Ms. Deckard. No. We have deals with 26 mobile network operators around the world that represent billions of --

Mr. Weber. Oh, is that right? Okay. Well, I must have not read closely enough or deeply enough.

Does the caller ID come across international around the world?

Ms. Deckard. I am sorry, sir?

Mr. Weber. When somebody calls, do they see the caller ID?

Ms. Deckard. What do you mean by caller ID? The network that they --

Mr. Weber. Well, in other words, I need to know when my wife is calling because I have got to pick up eggs.

Ms. Deckard. Yes.

Mr. Weber. So does that caller ID show up no matter what country I am in?

Ms. Deckard. Absolutely. In fact, core to the way Lynk operates, it is seamless for the user and it is seamless for our M&O partner. There is no changes to our M&O partner network. It is just like if you were in Europe and you roamed your -- your AT&T phone roamed onto an EE British network and your call came back here to the States and she received the call, it would be absolutely no difference in her experience.

Mr. Weber. And you may not want to answer this question, but do you all have any plans to be able to monitor the same kind of service out of countries like China?

Ms. Deckard. That is a delicate question.

What I would say, as a focus of this hearing, is that the day before Apple announced their SOS feature on the i14, Huawei announced they were going to use BeiDou for texting.

So as we address spectrum sharing and spectrum rules, I would share that Lynk feels that speed to market is one of the critical ways that the U.S. can maintain leadership. So not slowing down our innovative companies so they get market share so that they are the ones in the nations of Africa supplying that connectivity, and that we beat China to that market space.

Mr. Weber. Okay. The last question is for Mr. Stroup. Back to you.

Can we identify attack satellites in space, those who are capable of shooting beyond the satellites?

Mr. Stroup. I am not aware of that technology, but -- I will leave it at that. I am not aware of that technology being able to identify a satellite that would be used for that purpose.

Mr. Weber. Okay. Thank you, Mr. Chairman. I yield back.

Mr. Latta. Thank you very much. The gentleman yields back.

And at this time, the gentlelady from California's 18th District is recognized for 5 minutes.

Ms. Eshoo. Thank you, Mr. Chairman. The number of my district has changed due to redistricting, so it is now sweet 16. How is that?

Mr. Latta. I will go to my friend.

Ms. Eshoo. Yeah. Congratulations to you on becoming the chairman of this all-important subcommittee.

And from our side of the aisle, we are very, very proud of Ms. Matsui. She has

been the leader on this subcommittee for years. Many of her bills have been signed into law by more than one President relating to issues coming out of this subcommittee.

So bravo to you, Doris.

And thank you to everyone that testified today.

As I just spoke to, what we are really very proud of, especially on this side of the aisle, is the Bipartisan Infrastructure Law. It is the biggest commitment in terms of policy and dollars since the Eisenhower administration.

So if we are going to play catchup in this country on these issues, the tank has been filled. Now we have to make sure that those dollars are used very, very well.

A $65 billion investment in broadband. There have been references to that, certainly, in the exchange that Congressman Soto had with some of the witnesses. I think that this subcommittee really needs to look to NTIA and what they are doing because, while satellite was not left out of this, there has to be -- let's put it this way.

I would like to see you have a share in those funds. And anything that -- however we can assist in that, I think it is a very important role for this subcommittee, but it certainly is a responsibility of those of you in the satellite industry to help move the needle on that. I am pleased that the Commission has established a Space Bureau, but that has to have wings to it.

To Ms. Bingen, in your written testimony you mention the convergence of technologies as one of your five noteworthy trends, specifically the use of AI, artificial intelligence. We have a bipartisan AI Caucus in the House, and I am proud to be one of the co-chairs of that effort. So I am interested in learning more about how AI is being deployed across the country.

Can you expand further on it relative to the satellite industry? And maybe

specifically, how is AI helping to produce faster, more effective use of space data?

Ms. Bingen. Thank you very much for that question.

AI, it is incredible what is happening. And when I was in the Department of Defense, I had the good fortune of having an AI pathfinder under me called Project Maven. We were trying to bring in these innovative commercial companies to look at full motion video applying AI techniques.

There is so much satellite -- I will start with satellite imagery. There are so much satellite imagery data out there.

Part of the challenge up until recently is you have analysts that are sitting at screens manually marking objects from a military perspective. That is a tank. That is an aircraft. That is a car. On the civilian front, if you were trying to map humanitarian corridors, you would be doing that manually.

The beauty of AI is we now have the technology in reach that has been matured and has been deployed to people who do that --

Ms. Eshoo. I think I need to interrupt you and follow up with some more specific questions for written responses.

Ms. Bingen. Absolutely. I would be happy to.

Ms. Eshoo. And look forward to you working with the congressional AI Caucus.

To Ms. Zoller, in your exchange with Congressman Soto, what specific regulations do you think that you need, tying it to that conversation you had with him?

Ms. Zoller. Thank you for that question.

We are looking for adoption of rules that provide more spectrum for nongeostationary satellite systems and to clarify the rules for sharing spectrum.

Ms. Eshoo. I see. Okay. Thank you.

Yield back, Mr. Chairman.

Mr. Latta. Thank you very much. The gentlelady yields back.

And at this time, the chair will recognize the gentleman from Ohio's 12th District for 5 minutes.

Mr. Balderson. Thank you, Mr. Chairman.

And thank you all for being here. And this first question is for the whole panel.

Congress needs to continue to promote innovative ways to get Americans connected. I often experience myself and hear from my constituents in Ohio, especially throughout Appalachia, about a lack of reliable connectivity. This hearing is a great opportunity to learn more about the progress that satellite technologies have made toward closing the digital divide.

Without reliable connectivity, rural Americans face significant disadvantages that impact their daily lives, including work, education, and quality healthcare services.

The BEAD Program has the opportunity to provide reliable, fast, and affordable internet to my constituents. However, I am worried many of my rural constituents that cannot be reached through fiber could still be left behind.

Satellites can play a role in closing the digital divide and have the potential to increase competition in the industry, but it still seems like there are barriers to adoption in rural communities, one of the primary barriers being cost.

Can you all discuss what innovations are happening in the industry that could bring the cost of satellite broadband service down for consumers?

And, Ms. Bingen, we will start with you, and we will just go down. Thank you.

Ms. Bingen. One area we haven't talked about as much is the terminal end. We are going from large satellite dishes to -- if you were to go to Ukraine today, you

would have -- dishes that folks are lugging around are literally no bigger than the size of this paper.

Ms. Deckard here talked about you only need your phone. So you don't need to rely on cable. You don't need to rely on large towers to access those rural areas. But to your point, you have got to get the production numbers up to be able to drive down those costs.

So that would be one example.

Ms. Deckard. With respect to satellite direct to phone, as we are seeing the market unfold, we are seeing that mobile network operators in this country, in order to keep customers, like T-Mobile for example, are going to offer it at no additional cost.

Because for Lynk, we have to be able to supply connectivity for someone in the Central African Republic who makes 60 bucks a month. That is why we build cheap, small satellites, because you can't provide that cost-effective connectivity with large, expensive constellations.

So I think you will see with satellite direct to phone that that is affordable for the consumer here in the United States, and I think you will see the M&Os who want to provide that connectivity and want to keep the subscriber and not lose them to churn supply that connectivity at a cost-effective price to their consumer.

Mr. Balderson. Ms. Manner?

Ms. Manner. HughesNet today, a subsidiary of our company, provides 25/3 broadband service across the country, We are launching later this year a satellite that will provide 120 speeds to consumers throughout the United States. So that is very exciting.

In terms of costs, as Ms. Bingen noticed, the cost of devices have gone down. We are actually a U.S. manufacturer today of satellite ground equipment. And you are

seeing cheaper and cheaper devices, home units, coming on the market.

And then I do want to praise the Affordable Connectivity Act. I thought that was a wonderful piece of legislation. And we have seen in terms of an uptake in use on broadband on our system, and I know other companies in other areas, whether fiber or wireless, have seen an uptake because of that subsidy for those users who are more poor, unable to afford traditional broadband, are making important choices on how to spend their money.

So I would urge Congress and this subcommittee to consider renewing affordable care as that gets -- when that lapses.

Mr. Balderson. Thank you.

Ms. Zoller?

Ms. Zoller. Invention is part of our DNA, and the place where we see that first and foremost is in our customer terminal, a small, lightweight, affordable customer terminal, with an antenna about the size of a small pizza box.

So we are focusing on affordability to the consumer.

Mr. Stroup. I would just add that, in addition to the terminal technology and the ever-increasing capacity and speeds of the satellites, satellite broadband service today starts at 49.99, and there are multiple plans for less than $100. So I would say that it is pretty cost competitive already.

Mr. Balderson. Okay. Thank you all.

I want to try to get this last question in, Ms. Deckard, and I want you to know that we are down to 25 seconds. It was great to hear your perspective on the work being done by your company to help provide cell service.

My question for you is, what regulatory barriers, be it the licensing process or

anything else, have you run into that could prevent other startups from breaking into the industry?

Ms. Deckard. Thank you for that question.

So for startups that use streamlined processes, like the small sat authorization, which were inherently designed to be low risk -- in the small sat authorization you are only allowed 10 satellites, they have to be small, and they have a limited lifetime of 6 years -- we urge the FCC, when it is low risk, go faster. That is the only way America is going to keep its competitive edge.

Mr. Balderson. Thank you very much.

I yield back, Mr. Chairman.

Mr. Latta. Thank you very much. The gentleman yields back.

At this time the chair recognizes the gentleman from California's 29th District for 5 minutes.

Mr. Cardenas. Thank you, Chairman Latta. It has always been a joy working with you. Congratulations on your chairmanship.

And also, Ranking Member Eshoo -- I am sorry. Matsui. I was thinking I was in the health committee. Ranking Member Matsui. Looking forward to all the wonderful work that we are going to do in this committee together.

Satellites affect Americans' lives every single day -- and I think most of us Americans, if not all of us, take that for granted -- every single day, whether it comes from communication or transportation or even helping out to save lives in emergencies.

But what we have got to stop taking for granted is that satellites just don't make it up there by themselves. There is a process.

And I heard earlier today, what I am gathering, from what many of you

mentioned, is we do have a rigorous process in the United States. It just needs to be faster. But there are other processes around the world where it is a little bit less rigorous, yet at the same time it attracts perhaps maybe folks who maybe shouldn't be putting up satellites so easily.

So I just want to say that I am proud of the fact that I live in a country where we do have rigorous regulations. But it is about rightsizing it. It is about making sure that we don't overburden industries and individuals to the point where they throw up their hands and say: Forget it, I am going to go elsewhere.

So this committee has an opportunity to help in that process. We are not regulators. We are lawmakers here. Yet at the same time, together, that is what makes our system what it is, the laws that we create and the regulators that are supposed to implement those laws.

So hopefully today not only are the people of America listening to how important this issue is, but also we are sending the message to the regulators that we want them, we need them to do a better job and to be more efficient and effective at what they do to make sure that all of you are able to continue to do the wonderful work that you do every single day.

So thank you for your testimony, and I do appreciate your expertise.

My first question is to Ms. Deckard.

You had an impressive career serving the public as a first responder before co-founding Lynk. In California, we were constantly dealing with increasing severities of wildfires and storms. In your testimony, you note Lynk's mission to revolutionize emergency disaster response.

From an emergency response perspective, can you talk about how having

redundancy of networks benefits the public, especially when mobile networks are unavailable?

As an engineer myself, redundancy is something that people think is a bad thing, but when it comes to saving lives and systems, redundancy is critical.

Ms. Deckard. Absolutely, sir. Thank you for the question.

So in California, as you well know, in order to combat the wildfire situation and reduce the risk, they employed rolling blackouts which took down their cell towers. So you can't even alert your public of the proper evacuation route.

Technologies like Lynk can actually draw a polygon around a certain set of users driving north on a highway and tell them: Your evacuation route is cut, we need you to go south now. And in that way, we can avoid bottlenecks when people need to evacuate.

And it is also the coordination for the wildland firefighter. It is not only their safety when they are in the field. On average, we lose 15 wildland firefighters per year. I am hoping that this year's fire season will not be that bad, but as all the California Representatives know, you have seen Gigafires in the last few years.

So being able to support that local firefighter, who is most often a volunteer, while they do their job, while they are out on the front line and their family needs proper evacuation orders, being able to provide that for those communities is absolutely critical to emergency response, especially when we are no longer in a season. We are almost fighting fires year round.

Mr. Cardenas. Yes. Well, thank you for -- I just want to compliment you on your journey. Here you are in a very technical field, but yet you provide the practicality and the reality of how this is actually so important to us in everyday life. So

congratulations on being one of the co-founders of Lynk.

In your testimony -- I have read it -- you are very proud of the fact that you can actually connect to standard phone systems anywhere in the world where they choose to connect with you.

How would that be beneficial to the American who is not high income, the American who works every day for a living and really doesn't have enough money to buy a $1,000 dollar phone or a $1,200 phone? How is that going to help them by having you be more successful in linking them?

Ms. Deckard. Absolutely. And that is why Lynk supports 2G, 4G, and 5G. You know, 46 percent of the mobile phone users in our world still connect using 2G? We connect $5 feature phones on the Lynk system all the way up to the high-end smartphone. And that is absolutely critical because you aren't actually solving the digital divide if the person can't afford the terminal without a subsidy.

Mr. Cardenas. Thank you very much. I yield back.

Mr. Latta. The gentleman's time is expired and yields back.

And our next questioner will be the gentleman from Idaho for 5 minutes.

And if I could just mention real quick, you probably have all seen that the 11 o'clock votes are now between 12 and 12:30. So if we keep our time within 5 minutes, we might be able to make it before we all have to go to vote.

Thank you.

Mr. Fulcher. Thank you, Mr. Chairman.

A question for Ms. Bingen.

Ms. Bingen, you talked about permitting as being one of the challenges, specifically ITAR. And I want to just ask you to go a little bit deeper on that.

What is specifically the struggle there? Is it the time that it takes? Is it unreasonable demands? Talk to me about the struggles you have with permitting.

Ms. Bingen. No, absolutely.

I would touch on it in a couple of different areas and start by saying, we want our industrial base to be healthy, to be successful. It is very attractive to many of our allies and partners that want to work with us on our space capability. And those allies and partners, they have a choice between American business and other, foreign companies, including China.

I think the challenge with the ITAR process, I would like to see us go back and look at, what were the original assumptions in the context driving the way the policy exists today?

Because I would argue that the technology has evolved so much that certain satellite technologies are still controlled under ITAR, despite it being out in the commercial marketplace for others to be able to leverage. The time, the process is still very timely. It is opaque to commercial companies.

And then, back to the foreign competition, I don't think it fully accounts for the explosion of foreign competition that our U.S. businesses are up against.

Mr. Fulcher. Okay. Thank you.

That segues into another concern that you brought up that, frankly, I didn't fully understand: counterspace weapons. Talk to me about what you meant by that phrase and what the concern is.

Ms. Bingen. Absolutely. Our adversaries know how reliant we are on space. So their objective is, how do I figure out how to interfere with that or deny American or other partners that have space capabilities, how do I deny their use?

And that can be a range of -- a spectrum of different options. So everything from, I can employ something to jam your communication satellite, I can employ a cyber attack against your ground station -- which we saw happen in Ukraine to a commercial satellite operator -- to dazzling, using a laser, an optical system, to, at the higher end, a more kinetic, and launching a missile, a direct descent antisatellite missile that would hit a satellite.

Mr. Fulcher. Okay. I think I get the picture of that. So, in your opinion, what is the appropriate action there? Is it to enable the private sector to address those? Is it to fund U.S. resources to try to take that challenge on? What is the answer?

Ms. Bingen. I think it is both. The government has a role to play because they understand the threats, and they have invested in certain kinds of protection technologies and concepts. But on the commercial side, the best thing the government can do for them is to share information.

Mr. Fulcher. Got it. Okay. Thank you.

I want to shift to Mr. Stroup for just a second.

Mr. Stroup, in your list of industry needs, you had five of them. The third one was funding for oversight. Specifically, oversight for what?

Mr. Stroup. So, for example, the FCC is responsible for licensing and ensuring that interference issues are addressed. So that is what I am referring to in terms of oversight.

Mr. Fulcher. FCC. Okay. Got it.

Mr. Stroup. In addition, the space sustainability issue that I mentioned. The Department of Space Commerce at the Department of Commerce is responsible for putting in place a space situational awareness system.

Mr. Fulcher. Okay. Thank you.

Also, we have been talking about bridging the digital divide. To your earlier comments, what needs to happen there is cost, coverage, and performance. In your view, are we there with cost, coverage, and performance to bridge that?

And let me back that up by saying, I live in a State that has under two million people, one of the largest States in the country. A lot of rural space. Is the cost, coverage, and performance there today.

Mr. Stroup. So I think that the issue that we encounter -- and I also am from a rural area where it makes no sense to deploy a terrestrial-based system, a fiber system. So we are deploying a number of different satellite systems. But as I had mentioned before, the system that has been placed potentially is not going to allow satellite systems to participate in the funding.

So certainly the NTIA rules did not prohibit satellite companies from participating or looking at how it is being implemented. But ultimately, our fear is that money is going to go to overbuilding areas that already have service instead of areas like the ones that you are referencing that could benefit from being able to obtain some of the funding to provide broadband service there.

Mr. Fulcher. Thank you.

Mr. Chairman, I yield back.

Mr. Latta. Thank you very much. The gentleman yields back.

And at this time, the gentlelady from Michigan's Sixth District is recognized for 5 minutes.

Mrs. Dingell. Thank you, Mr. Chairman, and thank you for having this hearing. Thank you to Ranking Member Matsui as well and to all the witnesses because this is a

really important subject.

Innovative satellite technologies have proven crucial in expanding broadband access, emergency and disaster response, and 5G adoption. And as the committee, we have got to consider forward-looking policies that will promote these groundbreaking technologies, clarify the responsibilities of industry regulators and, quite frankly, government at all levels, and ultimately benefit Americans in their communities.

This topic is important, and I look forward to working with all my colleagues on this committee to make it a reality.

I have often said that innovation is a core strength of the United States. We have got to keep it that way, and we can't take it for granted. It takes a lot of work to keep the United States at the forefront of cutting-edge technologies. I see that firsthand in the automotive industry where I have been working tirelessly to ensure that we continue to empower our greatest minds and our strong workforce to keep us ahead of our global competitors.

In the satellite industry, the U.S. has gotten a head start. But we need to keep moving forward. And as you all know, but I think too many don't realize, our global competitors are nipping at our heals.

I know that the U.S. is currently responsible for more than 60 percent of the satellites in the orbit. But in the last few years, the combined satellite fleets of China and Russia have grown by approximately 70 percent.

Mr. Stroup and/or Ms. Bingen, given this data, what is your assessment of U.S. leadership in this market? Is counting the number of satellites sufficient, or are there other metrics we need to be considering?

Mr. Stroup, why don't you go first?

Mr. Stroup. I am sorry. Could you repeat the question?

Mrs. Dingell. Given the data, what is your assessment of U.S. leadership in this market, and is counting the number of satellites sufficient, or do we need other metrics now?

Mr. Stroup. We definitely need other metrics. So counting satellites is one example, but the amount of capacity that each of those is capable of providing is also an important metric. And so we have seen a tremendous increase in the capacity.

And so I think that whether we are looking at competition or whether it is just the capabilities of the industry, taking it beyond the numbers of satellites. So each of the satellites that are being launched to have much more capacity, higher speeds. Remote-sensing satellites have greater imaging capabilities.

So I think we need to look at the specific satellite, that capability, what it is being produced for.

Mrs. Dingell. Thank you.

Ms. Bingen, would you have anything to add quickly?

Ms. Bingen. Market share, things like where the investment dollars are coming from. The customer base, including international and commercial customers. Looking at technology and performance, speed in particular. And then also standards and best practices. Are others looking to U.S., or are they looking to China?

Mrs. Dingell. Thank you. I am going to ask you to expand on that in follow-up questions.

I also chair the Congressional 5G Caucus and understand the importance of next-generation wireless connectivity to unlock growth and digital innovation in this country.

In the last Congress, I joined my colleagues Reps. Walberg, Johnson, and Kuster to introduce the Promoting United States Wireless Leadership Act, which focused on leveraging the U.S. role in setting the international standards to maintain leadership in an increasingly competitive market.

Ms. Manner, in your testimony you mentioned the role that EchoStar played in the Third Generation Partnership Project and what that meant for the satellite industry.

Can you talk in more detail about how participation in these standard-setting bodies by U.S. companies and stakeholders helps advance U.S. economic competitiveness and national security interests?

Ms. Manner. Thank you.

Yes. We are not just talking about 3GPP. We are talking about other bodies, including the International Telecommunications Union and the U.S. Most recently, U.S. companies, our company, and some of our other satellite operator colleagues are advancing further inclusion into 5G and 6G standards there. I really do believe if the U.S. companies weren't there, we wouldn't be represented.

My concern, however, is that the U.S. Government -- especially at the ITU, which is a treaty organization -- isn't always supportive of the satellite industry. And even in our efforts to have satellite inclusion, we sometimes had some delay or slowdown because of U.S. Government intervention.

So it is one of those areas that, I am ashamed to say, I don't participate on the U.S. delegation. I participate as a sector member because we are unable to get the U.S. Government's support. And that is something we would like to see overcome as satellite becomes increasingly important for strategic needs and for economic needs, that the U.S. Government is more supportive of us.

Mrs. Dingell. I probably need to follow up on that in Q&A. And I am going to be out of time. And nobody should be surprised that I have got autonomous vehicle questions, which I know my partner behind me, that we are working on, probably does, too.

So I want to thank you all for being here today, and we all need to work together to keep our competitiveness.

Thank you, Mr. Chair, and I yield back.

Mr. Latta. The gentlelady yields back.

And at this time, the chair recognizes the gentleman from California's 23rd District for 5 minutes.

Mr. Obernolte. Thank you very much, Mr. Chairman.

And thank you to our witnesses.

I would like to continue a line of questioning that Congressman Cardenas started about the way that satellite technology can help fight wildfires in California.

It really can't be overstated how dire a situation this is. We had a relatively light wildfire season last year. The year before that was our second worst in the history of the State, overshadowed only by the year before that, which was the worst wildfire season we have ever had.

And, Ms. Deckard, I wish I shared your optimism that this season would be light. Unfortunately, when we have a wet winter, as we have had, that fuels the growth of the ladder fuels. And those dry out in the summer, and then that just makes it all the worse in the winter. So we face a real desperate situation in California.

We have some promising new tools to be able to deal with the situation. We have large aerial assets, that if they are dispatched in a timely manner, they can quickly

go to the source of ignition on a fire -- for example, a lightning strike that ignites a tree -- and put that out completely without having to rely on ground-based assets, as long as they get there on time. If the flame threat is allowed to spread, it becomes too large for aerial assets to put out, and therefore a much larger problem and the potential for spread.

So, Mr. Stroup, the one thing that we desperately need is satellite-based thermal imagery that is real-time and high resolution enough to detect something as small as a tree that is ignited by a lightning strike.

And as Ms. Bingen had pointed out earlier in the testimony, we can then pair that with AI tools that can distinguish between a campfire and a lightning strike and get those assets on the way and solve that problem before it becomes a bigger problem.

Unfortunately, up until now, the geostationary platforms that we had access to are high enough that we can't get enough resolution to be able to accomplish that. But with the advent of all of these low Earth orbit satellites now, we are much closer to the ground, we can deploy those sensing technologies. As long as we can get that information back, we can start to put these tools into motion. But we don't have a platform for that right now.

So, Mr. Stroup, what can be done to catalyze the availability of this solution to what is a really critical problem for us?

Mr. Stroup. Thank you for the question. And you are right. There are nongeostationary satellite systems that have the capability of refreshing the data much more quickly, multiple times a day. And in some examples with optical imagery, there are synthetic-aperture radars that have the ability to see through clouds, through smoke.

The question that you pointed -- the case example that you cited, in terms of

being able to detect a lightning strike, I am not sure whether that capability exists. And I look forward to checking with our members and getting back to you about that capability.

But I think the combination of those technologies will address part of what you are describing; also, the ability to be able to identify access roads in that remain accessible. And then, of course, being able to provide the communications to those people, those firefighters, who are on the ground.

Thank you.

RPTR BRYANT

EDTR ZAMORA

[11:30 a.m.]

Mr. Obernolte. Let me point out to the systems operators that are here, you know, Kuiper and EchoStar and Lynk, SpaceX, if they are listening, I know that the primary focus for low Earth orbit is communications, but imaging should also be a focus for us. And this is technology that I am convinced could be deployed relatively inexpensively, and yet the value of that data in doing things -- this is just one narrow domain. The prevention of wildfires by dispatching aerial assets. There are lots of other applications for other sensing technologies that has huge commercial value. I am sure that ways could be found to pay for it.

And with the time I have remaining, Ms. Bingen, I was very interested in the testimony from you and several of the other panelists on the way that export restrictions have hampered the ability of U.S. satellite equipment companies to compete internationally.

Can you talk a little bit more on the changes to export law that you think need to be made, and particularly highlight those that can be made and why you feel that they would not affect our national security?

Ms. Bingen. And it is a really -- I think the tough part here is to find a better balance. And I recall being in the executive branch. In interagency discussions, we would always put national security against economic interest, and it was always the national security card won.

I think the thing that we need to think about now is how do we broaden our thinking on national security. It is not just military and intelligence, but it is also our

economic security, which I think is a big part of that. We have to still be able to protect our technology from getting to China, I mean, hands down, absolutely.

But there are so many allies and partners out there that could benefit from, whether it be certain new forms of remote sensing technologies, some of the ones that you highlighted, certain satellite technology components, software, some of our commercial launch service providers, that are still kind of stuck in that traditional ITAR process that is very opaque to them and very lengthy.

So some of the same recommendations we are making on the regulatory front, I would say let's take a look at those for the ITAR processes.

Mr. Obernolte. Well, this is a conversation I am very interested in continuing.

Ms. Bingen. Thank you, sir.

Mr. Obernolte. But I see I am out of time. Thank you for the testimony.

I yield back.

Mr. Latta. The gentleman's time has expired.

And the chair recognizes the gentlelady from New Hampshire for 5 minutes.

Ms. Kuster. Thank you to our subcommittee leader, Chair Latta, and Ranking Member Matsui for holding this important hearing today. We appreciate it.

I am a new member on this subcommittee, and I am excited that our first hearing is on a subject that is of vital importance to rural communities like my State, New Hampshire -- satellites.

Satellite technology provides critical basic internet services for many rural communities. However, as we have come to learn, basic internet services are no longer enough to meet the demands of today's world.

During the COVID-19 pandemic, nearly every aspect of our lives moved to virtual

platforms. Many companies and small businesses shifted to a virtual workplace. Our children went to school online, and we attended our doctors' appointments via telehealth services.

In Congress, I am committed to doing everything I can to improve internet connectivity in rural communities. That is why I am proud to have supported the Infrastructure Investment and Jobs Act, investing $65 billion in broadband infrastructure to connect communities nationwide. And I also serve on Mr. Clyburn's Rural Broadband Task Force as well.

This investment is going to help us ensure access to high-speed, reliable, affordable broadband internet services for homes, business, schools, and hospitals. So today at this hearing, I am excited to learn more about how we can use satellite technology to help connect more Americans to the internet. For many in my district, the barrier to broadband internet services is not accessibility but affordability.

So, Mr. Stroup, if I could, currently in some communities the cost of satellite broadband service and consumer equipment may be higher than the alternatives. Can you speak to how the satellite industry and recent technological advances can help to lower costs and provide affordable, reliable broadband?

Mr. Stroup. So one of the things that is happening in some communities is installing community WiFi systems in order to share the cost of the service and the equipment. Of course, the industry is continuously trying to find ways to lower the cost and ease the installation of the equipment, but I think that this is an ideal example of how the subsidies can be applied.

And I would encourage every member here to convey that to their States as they are going through establishing the process for determining who is going to qualify for

broadband funding, because buying down the cost of the equipment is certainly a legitimate means of bringing down the cost of service, as you noted.

Thank you.

Ms. Kuster. Thank you.

In the Granite State, we take great pride in the preservation of our beautiful forests and remote regions, which are the bedrock of our tourism economy. Now, recently many of our major wireless companies have announced partnerships with satellite providers to extend service to some of the hardest to reach places, including parks, forests, and even ski areas around the country.

Ms. Deckard, could you elaborate on these capabilities and their implications on the future of wireless and satellite connectivity across the country?

Ms. Deckard. Thank you for the question. So I think the implications are the reason why we haven't seen a total buildout of terrestrial towers in the United States is because of the CAPEX and the OPEX. That is why our mobile network operator partners are looking to a satellite solution.

In addition to the fact, as you mentioned, our beautiful national parks, people do not want to go out into the national park and see a cell tower. But what they do want is connectivity, so if the park closes, which we have had happen, they want instructions for how to leave it. And when they suffer an emergency, they want to be able to call for help.

So I think, as you have seen, the mobile network operators are looking to partner with satellite companies to fill in the gaps in their coverage.

Ms. Kuster. And we have had examples. You gave the example of the family out in California. We have had accidents and deaths on Mount Washington as well, and

we are only -- you know, it is literally 2 hours from Boston, but it is very remote, in the White Mountains, and very rugged to get the rescue crews in there. And frequently they will find, you know, the cell phone, either the battery is dead or they are frantically trying to reach somebody and there is just not service.

So thank you for everything that you are doing for safety and security for people. And thank you to all of you. This has been a fascinating hearing for me.

And with 30 seconds left, I will yield back.

Mr. Latta. The chair appreciates that.

Ms. Kuster. A model new member of the committee.

Mr. Latta. The gentlelady yields back. Thank you very much.

At this time, the chair recognizes the gentleman from Georgia's 12th district for 5 minutes.

Mr. Allen. Thank you, Mr. Chairman. And I am very pleased to be on the Energy and Commerce Committee and on this Subcommittee on Communications and Technology for the 118th Congress.

This subcommittee has jurisdiction over many issues that you have heard about that we all face in our districts, primarily rural broadband, consistent cell service and others. You know, resolving these issues seems to be a little complicated.

Just to give you an example, though, of some of the great things that I am enjoying from satellite is satellite radio. You know, I spend about 36 weeks here in Congress and then the rest of the time I spend in my district, which covers 23 counties, and in a week we will put as many as 2,000 miles on the car. And without satellite radio, I don't know how I would find out exactly what is going on out there.

But the other issues are cell phone coverage and then, of course, broadband and

all these other things. And I will tell you something on the agriculture side. I grew up on a tractor, on a small farm. The last time I was on a tractor, I did not touch the wheel, and I planted peanuts 16 inches over from where they were planted the year before in a row that was perfect. It was an experience like no other.

So we are making tremendous advances, tremendous advances. And there are great stories out there. But how do we get to where we need to be? For example, the most frustrating thing in my district is trying to use my phone. I mean, we drive by a cell tower and I can't get cell service. I don't understand that.

And, you know, obviously, if it is the FCC, I don't know. Ms. Deckard, I mean, what can we do to advance, you know, the technology as far as broadband and cell phone quickly because, you know, we are running a lot of fiberoptics in my district right now, because I guess satellite is just not there. But are we going to be in a position very quickly where satellite will be there? I mean, are these competing technologies, or how can we -- how is this going to work?

Ms. Deckard. Well, thank you for the question, sir. They are not competing technologies. There is a role for every one of these ways we supply connectivity. It is really having a portfolio of options.

There are places where laying fiber is the best option and there are places where using satellite is the best option. And the great thing about satellite is it provides network resiliency for the fiber-based networks when they go down for whatever reason.

So it is not an either or. It is how we build those services and continue to support the American public and meet their communications needs, which are growing on an everyday basis as we move forward.

Mr. Allen. Well, and obviously GPS is critical, because we use that in the

construction industry. Again, our motor graders and all are self-guided and that sort of thing.

As far as the security, you know, we have talked about security. And, Mr. Stroup, what are your biggest challenges in dealing with, you know, adversaries, that sort of thing? I mean, we talked about the competition with China. Frankly, I think we have got to figure out how to get ahead there.

But from a security standpoint, obviously, what we are running into with broadband and the internet and email and all these other things, would satellite help that situation?

Mr. Stroup. So thank you for the question. And if I may add to the prior question, I think one of the ways of helping to drive adoption of the satellite connections to mobile phones is to convey to mobile carriers that, given that technology is being deployed, there is an expectation that they will utilize it to be able to provide coverage into those areas.

So the security of satellite systems is extremely important. And we created a set of cybersecurity principles probably at least 5 years ago. We are in the process of updating them. Most of the companies in the industry provide service or seek to provide service to the U.S. military. And as you can well imagine, they have requirements to be able to provide service in conjunction with the military.

So this is an ongoing process. We received warnings, SIA received warnings at the initiation of the war in Ukraine to notify our members that they may be subject to cybersecurity attacks. It wasn't necessarily anything we needed to convey because it is an issue that is top of mind of all of the carriers that provide service.

Mr. Allen. All right. Well, I am sorry, I am out of time, but one thing, I am going

to submit a question on the capital markets, as far as the capital markets and their investment. Obviously, there have been cell phone in the past -- or cell towers in the past. How do we -- what are the capital markets doing to help you get this new technology up and running?

I yield back.

Mr. Latta. I hate to interrupt, but if the gentleman would like to submit that question in writing.

Mr. Allen. Yes.

Mr. Latta. Thank you very much.

At this time, the gentlelady from Illinois' Second District is recognized for 5 minutes.

Ms. Kelly. Thank you, Mr. Chair.

As you know, the digital divide is real, and we must act to ensure all Americans have equitable access to broadband services. As you have already heard a lot on this committee, we are concerned about our rural areas.

And in Illinois, more than half of rural households don't have access to broadband internet. And nationally, 24 million people lack access to broadband services, or about 1 in 13 Americans. But in rural communities, 1 in 3 lack access. And those lacking access are more likely to be poor, more likely to have children, more likely to be people of color.

So broadband services are necessary for Americans to do their jobs and increasingly important for our youth. If we want the U.S. to remain a top global competitor, we must invest in high-speed broadband services to ensure economic progress and educational attainment. And far too many of our communities have been left out of the digital revolution.

So I look forward to hearing about how we can modernize our laws so that our Nation's schools, hospitals, small businesses, and rural farms all have access to reliable broadband infrastructure.

Mr. Stroup, in your written testimony, you mention that the satellite industry is prepared to bring the furthest corners of America into the 21st century by serving as the most viable technology capable of bridging the digital divide in rural areas as well as working to bring the Nation into an interconnected future.

Can you speak to any specifics about how your industry can assist terrestrial networks in helping close the digital divide in rural America, where so many of our communities are unserved or underserved?

Mr. Stroup. Yes. Thank you for the question. And, of course, we have been talking about broadband extensively. So the ability to provide service directly to consumers, schools, hospitals via satellite broadband is one example.

But in addition, as we have also discussed, the inclusion of satellite in 5G standards. So there are two aspects to it. One is the backhaul capability. So where it does not make sense to be able to provide backhaul of the microwave fiberoptics, whatever, the industry has the ability to provide that for mobile carriers. And, of course, we have also been talking about the direct-to-mobile connectivity, which is another part of the 3GPP standard.

So I think that the combination of those is the means by which we are able to provide the backhaul infrastructure.

Ms. Kelly. I have over 1,500, probably closer to 2,000 farms in my district, which is the backbone of the economy in Illinois. Can you speak to the agricultural applications of satellites now ensuring U.S. satellite leadership can have a positive impact

on the farms in my district?

Mr. Stroup. Absolutely. And, you know, one of the best examples was that which was cited on being able to provide or utilize GPS for the control of tractors or other farm equipment, being able to utilize sensors to be able to determine whether it is additional water, fertilizer, whatever is needed. To be able to remain in constant communication, whether it is through mobile connectivity, broadband connectivity. All of these are important.

So while we may get to the point where we no longer need to even be in the farm equipment, farmers are businesspeople. They need to be able to continue to monitor crop situations. So I think it is a combination of all of those.

Ms. Kelly. Thank you.

NASA and government generally used to be the only game in town when it came to satellite operation, but obviously this is no longer the case.

Ms. Zoller, how should we be thinking about the role of commercial satellites as more providers enter the market? And does the prospect of commercial-heavy future in this area change the way we should be thinking about the policy and regulatory environment?

Ms. Zoller. Thank you for that question. We should be thinking about the policy and regulatory environment in terms of enabling innovation and competition, taking a careful and light touch to policy and regulations so that we can continue to advance our technology over time without requiring new rules.

Ms. Kelly. Thank you.

Ms. Bingen, do you have anything to quickly add?

Ms. Bingen. I would just like to add as to your point on this used to be in the

domain of governments. What is great about commercial now is it is based on unclassified off-the-shelf technology. The data that is being collected is unclassified and sharable.

So we are now opening up this data to so many more applications than we would have traditionally done in the past. So you mentioned agriculture, environmental monitoring, humanitarian disaster relief operations, even sanctions enforcement or insurance that, had we used those government systems, they would have never gotten priority to be able to do that.

Ms. Kelly. Thank you. And I yield back.

Mr. Latta. The gentlelady yields back.

And at this time, the chair recognizes the gentleman from Texas' 11th District for 5 minutes.

Mr. Pfluger. I thank the chair. And what a great discussion. So many good points that have been made.

I come from a rural area like so many on this committee. And I think our competition, especially when we look at, you know, just connecting people, whether it is in the agriculture business or in the energy industry, like I represent. Certainly, the national security focus is really important. I want to get to that. I represent AST, an important competitor in this marketplace.

And let me get to the national security focus. I spent 20 years in the Air Force depending, as was said, on space. My question and my concern actually is the speed of relevancy and the denial of that relevancy when it comes to competition and innovation and getting the permits approved.

And so, Ms. Bingen, I will start with you. You know, when it comes to the FCC,

are they operating at the speed of relevancy? I don't want to leave this committee hearing with any, you know, nebulous ideas on it. And if not, what is the cost when it comes to dual use technology, when it comes to technology in space that can be used not just for commercial interests but also to enhance our national security?

Ms. Bingen. It is a great question, sir. I am encouraged by the steps that they are taking, but there is still I think a long way to go, and it will have to be a continuous process as the technology is evolving so quickly. Six months from design to satellite on orbit. If we can get FCC to be able to make a decision in 6 months, that is huge, right?

And so back to the point on the implications or the consequences. If we can't get these approvals in a timely way, in ways that these companies who are moving so fast have some level of predictability and planning, they are not going to be on the field competing where we know that there are competimates and that China is out there actively seeking the same customer set as our companies are.

Mr. Pfluger. Mr. Stroup, when it comes to kind of the technical risk from the answer we just heard, I mean, is it spectrum? Is it competition for spectrum? You know, where are our adversaries able to gain if we don't have that speed of relevancy, if the permitting process or the licensure or the things that are needing to be done don't happen at that speed of relevancy?

Mr. Stroup. Well, certainly our adver -- if our adversaries have access to spectrum in dealing with some of these issues more quickly, they have the ability to deploy a constellation, then, therefore, go out and to compete globally while we are still trying to go through the permitting process if we allow that to happen. So that is one of the biggest risks, in addition to the access to spectrum.

I would also note, as the chairwoman of the FCC stated, you know, the rules were

in place 15 years ago when we built and launched a handful of satellites. We have been talking about the tremendous increase in the number of satellites, the 64,000 applications. We are in a different world today and, you know, it is not unusual for regulators to try and catch up with technology. That is what we are going through.

Mr. Pfluger. I will give each of you 30 seconds for the commercial side.

Ms. Deckard, we will start with you. In your own companies, is there technology that you have now that now you are waiting on licensure, and then by the time you get it approved or by the time you are able to -- I mean, is it past that point and it has moved on?

Ms. Deckard. Fortunately, we have had, overall, a very positive experience with the FCC. I will echo Ms. Zoller's comments. The FCC licensed our payload in a record amount of time, and that was the Office of Engineering and Technology with an experimental license.

We have also taken a crawl-walk-run approach with the FCC, where we have launched five experimental payloads. So they got to know us as a company before we put in our commercial application.

I will again reiterate that when the FCC has a tool like the small sat authorization, which is meant to be streamlined and sets parameters on it to reduce the risk, we would like the FCC to be able to lean in in the processing timeline.

Mr. Pfluger. Thank you.

Ms. Manner.

Ms. Manner. So thank you. I want to bring up two other issues. One is the U.S., and I brought this up earlier in response to the chairman's question, was ITU. We are limited in the number of ITU filings we can file as U.S. operators, so many of us have

to go overseas to get our satellite networks licensed. That is a big hindrance.

But I also want to talk about speed for a second, and there is an important part that the FCC does, and it is to protect against harmful interference. So we don't want them to go so fast where we neglect to -- we do something sloppy and we put something up that hasn't been proven and tested. So there is that. This is still a technological issue.

So while I am fully in favor of faster processing, we have had applications pending for over 2 years, at times it may make sense to balance it and have some --

Mr. Pfluger. Ms. Manner, I am sorry, I am out of time. But we can submit for the record, but it sounds like speed is important, security is important, but do it here in the United States instead of offshore.

I yield back.

Mr. Latta. Thank you very much. The gentleman yields back.

The chair recognizes the gentlelady from Texas' Seventh District for 5 minutes.

Mrs. Fletcher. Thank you, Chairman Latta, and thank you, Ranking Member Matsui, for convening our first very informative hearing today. I am glad to be serving again on this subcommittee and look forward to your leadership.

As many have noted in testimony and in questions today, this growing industry has great potential to connect Americans in rural and underserved areas and to provide life-saving service during emergencies and natural disasters.

And in Texas' Seventh Congressional District that I represent and along the Texas Gulf Coast, we are, unfortunately, all too familiar with flooding and extreme rain events and hurricanes and emergency and natural disasters. In August of 2017, as many will remember, Hurricane Harvey devastated the region, disrupting many emergency call

centers and cell sites and causing life-threatening outages for our residents.

So several have spoken about the benefits of satellite telecommunications for consumers experiencing disasters and communities recovering from disasters, and I really want to focus my questions there.

And, Ms. Deckard, you spoke passionately and really powerfully, I think, in this hearing about how satellites can provide continuous service for consumers dealing with disasters and emergencies. You know, they always tell us the best way to communicate is to tell stories, and I think your story was incredibly powerful. And, you know, who can forget which way do you turn when you get to the road. I think that that illustrates the challenge in front of us.

And so what I want to ask you first is, are there sort of disaster or postdisaster conditions that satellites are uniquely suited to addressing or uniquely disadvantaged, in your experience?

Ms. Deckard. I feel that satellites are uniquely an advantage in the disaster, both pre, during, and post event. You know, one of the main features of Lynk that we are rolling out initially is emergency cell broadcast. Well, if you don't have connectivity where you live and work, you are not even getting that preparedness announcement in order to plan for the coming event.

During -- because of the RF bands that we use from space, we can transmit during very wet weather. So we, again, provide that connectivity piece when you are beginning to lose your cellular terrestrial infrastructure. And then immediately during the postevent, that instantaneous backup.

Right now, our emergency responders rely on cellular towers on wheels to be deployed postevent. And no matter how efficient they get at queuing these things up

even multiple States away to drive them in postevent, that takes time.

And it is that self-organization, which I have experienced, every first responder living and working in their own community has experienced, that self-organization right after an event, that is where you save the most lives.

Mrs. Fletcher. Well, and you really anticipated my next question, because I was going to shift to emergency responders, and I think if you could just help. Certainly, it makes sense of why this is an -- or that it is an advantage, but can you talk a little bit more detail about what it is that satellites can do to support our emergency call centers and responders in times of crisis specifically?

Ms. Deckard. Oh, absolutely. So, you know, this year alone we have had 168 tornadoes in the United States, and it is February 2. We are seeing a lot of long-track tornadoes. Satellite technology, because of their unique capabilities, I can reroute emergency phone calls to a different PSAP.

So in Kentucky, when you had that long-track tornado and it takes down a PSAP, I can draw a polygon around it, send those calls to another PSAP that is still up and operating, and begin to get immediate and appropriate resources dispatched to where they need to be.

Mrs. Fletcher. Thank you. That is an incredibly helpful illustration. And I will note for my colleagues, we experienced some of those tornadoes in Texas and in the Houston area very recently. And our community, especially in southeast Houston, is still recovering from these tornadoes, which are not usually occurring as frequently in our area.

And so I think adjusting to the different kinds of disasters we are seeing across the country is also a challenge for all of us. And so bringing all of these resources together is

incredibly important.

I only have 30 seconds left, and I know we are trying to get to votes. I have several more questions, so what I would like to do is submit my questions for the record, because I would like to hear from all of you on some of these issues.

And I just want to thank you for your time being here today. This has been an incredibly informative hearing for me and I know for my colleagues.

So thank you very much, Chairman Latta. With that, I will yield back.

Mr. Latta. Thank you very much. The gentlelady yields back.

The chair recognizes the gentlelady from Florida's Third District for 5 minutes.

Mrs. Cammack. Thank you, Mr. Chairman. I would like to congratulate you and thank you for holding this very important hearing today.

Also to our witnesses, thank you for hanging in there with us. I know we are coming to the end.

I represent a very unique district in north central Florida, Florida's fighting Third District, the Gator Nation. We have a large swathe of rural areas where truly the only internet option is dial-up. I am not even joking. And pair that with our urban clusters which we are home to, as I said, the University of Florida, the Gator Nation, where we have cutting-edge AI technology. It is remarkable. So it is two very different worlds that this district encompasses.

So the satellite marketplace is a very interesting and attractive area for us. So I am going to jump right in. I will not lie, I am extraordinarily frustrated with the FCC for a number of reasons, but I really feel like when it comes to satellite deployment and this technology, it is kind of like the mid-nineties with cell phones. They don't know really how to regulate it, how to handle it. They are trying. And I give them credit.

Ms. Deckard, you said today in answering one of my colleagues that speed to market is how we stay not dominant but competitive as well.

Under this new FCC initiative, the space innovation agenda, we are seeing an increase in which they are approving the applications. And that is a good thing. Added 38 percent more in terms of their division size to move applications.

But my question is to you, Ms. Deckard, and to you, Mr. Stroup: Is it enough? Is it enough? We throw money at problems all day long in Washington, D.C., but it doesn't really seem to work too often or very well. So what do we need to be doing in terms of the personnel that we need to bring in to process these applications, and is there a labor issue or is it we just -- we continue to throw money and wonder why it doesn't get fixed?

I will let you go, Ms. Deckard, and then to you, Mr. Stroup.

Ms. Deckard. Thank you. Well, I think we are at a point where we have seen Chairwoman Rosenworcel and the commissioners, who have also long been worried about the time it takes them to process applications, put forth a new structure with the Space Bureau.

And I know from Lynk's perspective, we are excited to see that new organization, the new organization of the International Bureau, with their focus on the ITU filings. And we are just excited to be part of the conversation moving forward to make sure that whatever they put in place really does work for both small and large companies alike.

In addition with, you know, this hearing here today, I think it is a winning combination when both the FCC and Congress realizes we have got to change the way we do business in order for America to lead.

Mrs. Cammack. Thank you.

Mr. Stroup.

Mr. Stroup. Thank you for the question. I would like to see more resources made available. Many of it is engineering-related. Some of the issues are complex. They have made steps to streamline some of the processes for small constellations, as an example. But the fact that we still have the backlog is indicative of something.

Certainly, the fact that they are in competition with industry, with other government agencies for engineering talent shows some of the challenges. But ultimately giving them the resources, and I would argue for more resources for them to be able to deal with the backlog and address some of the issues that we have been talking about today.

Mrs. Cammack. Okay. I am going to follow up with you specifically in a written question.

Ms. Zoller, you were asked a bit of time ago about regulations that you need within this space. You stated that more regulations relating to spectrum were needed. As we all know, regulations, more regulations doesn't necessarily mean better outcomes. So in that same vein, what regulations do you not need on the books?

Ms. Zoller. The regulations should provide the flexibility to operators to determine how to meet an objective. In other words, if the point is to apply a power limit to a satellite system to protect terrestrial services, let us figure out the combination of antennas and transmitters and so on to meet that. Give us the liberty to do that.

Mrs. Cammack. Okay. So a little bit more flexibility, which flexibility and regulations don't typically go hand in hand, but we will figure that out.

I am going to ask each of you to submit for the record how the farm bill, which will be coming up this year, that element of the Ag Committee and the jurisdiction under the

Ag Committee, in concert with Energy and Commerce, what we can do to advance some of the satellite technology.

But in the 13 seconds that I have remaining, I do want to say that I am so grateful for your testimony here today. Satellite communications, satellite technology is going to save lives. It is not only going to improve them, it is going to save lives. I say that as the wife of a first responder in a very rural area where this type of technology is going to be the next generation for us.

So thank you so much, and thank you again to the chairman.

Mr. Latta. Thank you very much. The gentlelady's time is expired.

I will just let you all know they have changed it again. We are probably going to be voting between 12 and 12:05 now.

So if we could keep our questioning short, we will try to get through, because I would hate to keep the panel here for votes and then have to come back just for a couple of members.

So the gentlelady from New York is recognized.

Ms. Clarke. Thank you, Mr. Chairman. And congratulations to you and our ranking member for your ascension to leadership on this very important committee.

And let me thank our panelists for bringing your expert witness to the panel today.

Let me also take a moment to recognize and congratulate my dear friend, Congresswoman Matsui, on her first hearing as ranking member of the subcommittee. Between Ranking Member Matsui and our new full committee chairwoman, it is so heartening to see the dawn of a new era of female leadership of this very historic committee.

Well, last year, Congress passed the transformational Bipartisan Infrastructure Law, which included major investments in broadband connectivity and environmental justice. While these investments represent an important and historic step forward, much work remains to close the digital divide and address the disparate impact of climate change on historically marginalized communities. Advances in technology, such as the burgeoning satellite marketplace, will play a crucial role in addressing our Nation's inequities.

On the topic of broadband deployment and access, fiber remains the best tool in our toolkit to bring high-speed connectivity to all Americans, but despite our best efforts, gaps will remain, and low Earth orbit satellites represent an intriguing option to fill those gaps.

So, Ms. Zoller, can you begin by explaining how low Earth satellites differ from other kinds of satellite technology, and how LEO constellations bring new opportunities to the satellite industry?

Ms. Zoller. Thank you for that question. It starts with the altitude. Low Earth orbit systems are below 2,000 kilometers or roughly 1,200 miles. Kuiper will be at about 370 miles above the Earth. So it takes a constellation of satellites to provide connectivity. That constellation provides resiliency. You have a lot of satellites in view of any one place on Earth.

It also provides for low latency. The round trip to the internet is fast. And the beams that are transmitted from the satellite to the Earth are small, and that means we can reuse spectrum efficiently.

Ms. Clarke. Thank you.

Mr. Stroup, more broadly, can you explain on the potential role of satellites in

helping bridge the digital divide in areas where other networks may not be able to reach, and how we can move quickly towards a more connected future? And would any of the other panelists also comment on that.

Mr. Stroup. Yes. Thank you for the question. And, you know, the fact that satellites provide a broad signal across the entire country I think is one of the key -- the key advantage.

You mentioned fiberoptics, and where there are fiberoptics it makes sense to utilize them. But there are many areas of the country that will never be reached by fiberoptic technology, and satellites currently provide coverage across the country. So we are in a position to be able to take advantage of it.

We have also talked about some of the affordability issues, and ensuring that we have access to the funding that is intended to be made available to ensure that everybody has access to broadband I think is one of the key aspects of it.

Thank you.

Ms. Manner. I would also point, building on what Mr. Stroup said, it is timely deployment. So even if you are using funding for broadband for fiber, it is going to take years for that fiber to be deployed. So satellite can also serve as an interim solution while that is being set up, so that at least people have broadband now and then can use something different in the future.

Ms. Clarke. Very well. Do either of you want to comment on that? It is not necessary. I have other questions. Okay. Let me go to it quickly.

On the topic of environmental justice, technological advances can play a crucial role in both identifying problems, threats, and providing otherwise unavailable or inaccessible data.

The question is directed to any or all of you esteemed panelists. What role can the satellite marketplace play in understanding and addressing environmental issues?

Yes.

Ms. Bingen. So if I can start with a story and then I will get to that.

Mr. Latta. I am sorry, you have 22 seconds.

Ms. Bingen. So I teach a space policy class at Georgetown, and one of my students last year was an FBI environmental crimes analyst. Why she took the course on space is because she wanted to understand how space could be used to help address that mission. So absolutely.

Particularly the space remote sensing data, you can use it for detecting illegal fishing, illegal mining, illegal foresting activities, destruction of coral mines in the South China Sea. You pair that data with the artificial intelligence we talked about earlier and then these communication networks, you can get that process data to anyone in the world.

Mr. Latta. Thank you very much. The gentlelady yields back.

Ms. Clarke. I yield back. And thank you, Mr. Chairman.

Mr. Latta. Just to let the members know, we are at 10 minutes and 49 seconds for this vote to close, so we know there are a few minutes after that.

Would there be any objection if we cut our time down about 2 minutes to ask, so we can get -- because otherwise, we are going to come back, and I just don't want to hold these witnesses.

So, Mr. Walberg, the gentleman from Michigan is -- from Michigan Five is recognized.

Mr. Walberg. Thank you, Mr. Chairman. You are great. I am proud of you. I

am glad you had this hearing today.

Ms. Manner, in your testimony, you talk about the recent work of international standards bodies like 3GPP to facilitate interoperability between satellite networks and terrestrial networks. I have led legislation to promote U.S. wireless leadership in these standards bodies because it is important that our adversaries do not write the rules of the road.

Can you please elaborate on how you see the future of the satellite marketplace as it relates to the recent developments in these standards bodies?

Ms. Manner. Yes, thank you. So I view satellite as a complementary service. And we have heard today about my colleague from Lynk's service, but satellite operators are also putting their own frequency bands into cell phones today.

And so you are going to see a more robust marketplace with lots of different solutions, but also hybrid devices today. We offer a hybrid IoT service that is both terrestrial and satellite. So you will go to the most efficient and cost-effective method.

So by having these standards enabled that include both satellite and terrestrial, it will be seamless to the user. We are working on technology that switches right now so that you would never know, as the user, whether you are using satellite or terrestrial to be seamless. So it will be a same user experience.

Mr. Walberg. Thank you. Staying on the same topic, Ms. Zoller, I understand that you have also led the U.S. at these international bodies and conferences. How do you recommend we approach this issue at an international level?

Ms. Zoller. Thank you for that question. It is absolutely essential that the U.S. Government prioritize satellite issues at the International Telecommunication Union and the World Radiocommunication Conference. It is a treaty conference that happens only

every 4 years. A lot of countries look at the outcome and adopt it into our rules. We need those outcomes to be favorable and to promote U.S. innovation and economic growth.

Mr. Walberg. Thank you.

And, Mr. Chairman, I will yield back and submit my questions.

Mr. Latta. If I could just interrupt my friend for a second, there are a couple members that do want to come back after. So if you want to finish up with your last 2 minutes and 53 seconds, you have it.

Mr. Walberg. Thank you, Mr. Chairman.

Ms. Bingen, this committee has taken action to prevent untrusted companies, like Huawei and ZTE, from offering service or having equipment present in communications networks in the United States.

If companies that raise similar national security concerns were to provide satellite services in the United States, what does that mean for American data and sensitive uses of satellite services?

Ms. Bingen. If a Chinese company, most likely backed by one of their State-owned enterprises, built and operates a system, whether it be space-based or terrestrial, I would be concerned that they would now have the means and the access to steal sensitive data, whether it be personal information, sensitive technology, or business information, that they would be able to conduct espionage, that they would be able to block access, et cetera.

And I say this because they have a military-civil fusion policy that basically says, hey, commercial, you have got to help our military. They have a national intelligence law that compels individuals and organizations to support their national intelligence

activities and to keep it secret. So there is more there that gives me concern.

Mr. Walberg. More there there. Yeah. Thank you.

Ms. Manner, back to you. You mentioned the need for increased U.S. support at the International Telecommunications Union and at the World Radiocommunication Conference. What type of support did you have in mind?

And secondly, how can the U.S. set itself up for success at the World Radiocommunication Conference, and what would be a successful outcome?

Ms. Manner. Thank you. So first off, there has been times where the satellite industry is not fully represented in the U.S. positions at the WRC, and there tends to be favoritism toward certain technologies over satellite. For instance, we have seen some situations where the U.S. has favored positions that would actually harm the satellite industry from deployment or continued use of certain frequency bands. So that is an area we are concerned with.

In terms of success at the U.S., I do think that we -- this is one -- this is one where I do think additional resources are critical. We are incredibly understaffed on the Federal Government side, in my view, at the WRC. We do a really good job with minimal resources, but having additional staff at the three agencies that tend to lead, which are the FCC, Department of Commerce's NTIA, and Department of State, would certainly put us into a better situation.

And we have already -- I am proud to say that we are seeing some support already for the preparation for the WRC. So early process, but that is something we are doing a good job on. So thank you.

Mr. Walberg. Thank you. I yield back.

Mr. Latta. Thank you very much. The gentleman's time has expired.

And the gentleman from Florida's 12th is recognized. And just to let everybody know, we are at 5 minutes now.

Mr. Bilirakis. Thank you. Thank you, Mr. Chairman. I appreciate it very much.

With recent redistricting, now I represent Hernando and Citrus County in Florida, two wonderful counties. In meeting after meeting with the constituents and local leaders, I regularly hear that internet connectivity and cell phone service are top issues to be addressed. As I frequent these counties, I can agree it is a very serious problem going through those counties for many, many years, even though I didn't represent them.

Satellite innovation offers hope for these areas, especially to those where terrestrial networks are unrealistic due to marshy land conditions, and hopefully neutralize the digital divide once and for all.

So, Mr. Stroup, for realistic coverage to consumers and as a stable business model, you need to launch thousands of NGSO satellites. Does the FCC review and approve these as a whole, in batches, or one by one? What is the timeline for getting approvals? And is the regulatory process the same or different for geostationary satellites as with the NGSO systems?

Mr. Stroup. Thank you for the question. And I actually might suggest deferring to one of my members who has actually been through the process and can give you the exact details in terms of timeframes, if you don't mind.

Mr. Bilirakis. Yes, please.

Mr. Stroup. Julie.

Ms. Zoller. Thank you. I can speak to our experience. We applied for our FCC license in July of 2019 and received it in July of 2020. So it took a year, well ahead of our planned operation date.

Mr. Bilirakis. Very good. Thank you.

Moving to a different topic, yesterday I chaired a hearing, very honored to chair a hearing, a subcommittee hearing on Innovation, Data, and Commerce on the threats we face if China was to lead on emerging technologies such as autonomous vehicles. We are not going to let that happen. Obviously, those threats exist as we navigate the satellite space as well in this race.

Mr. Stroup, again --

Mr. Latta. Okay. If I can interrupt the gentleman for just one second. We are down under 3 minutes.

Mr. Bilirakis. Okay. All right. No problem. I will submit the question. Is that okay?

Mr. Latta. That is fine.

Mr. Bilirakis. All right. Thank you very much. I yield back.

Mr. Latta. At this time, we are going to recess, because the votes are getting down to about a minute and a half now. And we are going to ask the members that are coming back that as soon as that last vote is over to be right back here so we can get you all released from your witness chairs. So thank you very much, and we stand in recess.

[Recess.]

Mr. Latta. I recognize the gentlelady from Tennessee for 5 minutes.

Mrs. Harshbarger. Well, thanks for coming back. Thank you, Mr. Chairman.

I want to start with Ms. Deckard. You know, I serve a rural district in east Tennessee, and there are mountains in the region, Great Smoky Mountains National Park. And we get more than double the number of visitors than anybody else does in the country, of any other national park, as a matter of fact. It was 14.1 million last year.

But I say that to say this: Your Lynk system, we had fires back in 2016 that killed 14 people. I know it is not like California, but it was devastating to that community. And if they had had access -- they didn't have communication. Even the EMS responders didn't have communication with each other. So that was devastating.

You say in your testimony that your model is to partner with carriers so they bring the spectrum and the customers in. You bring the space-based infrastructure to fill the gaps in the network.

And my question is this: What kind of reception have you gotten from U.S. carriers, and how many partners do you need to offer this service?

Ms. Deckard. Thank you for the question. So the mobile network operators are very excited about the potential for being able to extend their coverage. I think, you know, they are open to learning about the technology and they want to make sure that it doesn't interfere with their terrestrial networks.

And as Lynk was rolled out and as a function of our experimental licenses with the FCC, we actually give the mobile network operators in the U.S., within the spot beam of where we are operating them, we give them our test schedule and they monitor and sign off on our tests.

So over time, we have been building that relationship with them. And you actually need one large mobile network operator really to go into the FCC to be able to partner.

Mrs. Harshbarger. That is good to hear. You know, we have the Appalachian Trail too. And I know that I have hiked on that Appalachian Trail, and there is no service. I don't care -- you have to carry a GPS device to do that. But if we could do that on the phone, that would be fantastic. I know there are some apps you can download to tell

you about the terrain, but --

Thank you for what you have done with EMS, and they have made a lot of corrections in Gatlinburg in different places after that fire, a lot of insufficiencies have been corrected because of that.

I want to turn to you, Ms. Bingen. And, you know, it is astonishing, in your testimony, you said in 2021 the U.S. National Geospatial-Intelligence Agency assessed that China was the global leader in three of nine categories of commercially space-based imagery capabilities. And then you go on down to say the U.S. commercial providers maintained the lead in only three categories.

If there are nine categories, who else leads in the other three, I guess, is my question?

Ms. Bingen. I am looking at a chart, and NGA has this available as well. So the other three -- let me make sure I understand my flags here. Argentina, Korea, and then I believe this is Finland.

Mrs. Harshbarger. Really?

Ms. Bingen. But I can get back to you on that.

Mrs. Harshbarger. Well, that is just -- our fight is against China in so many ways. So I just was curious, since they weren't listed, what they were. But I am looking at the categories you did list. We need to be number one. We need to be ahead in all nine, basically. Thank you for that.

And I know I have got a little bit of time. This is for Ms. Zoller and Ms. Manner. You know, I have told you before I live in a very rural district. I have two distressed counties, and a lot of my constituents rely on satellite internet. And we know that Congress has spent an astronomical amount of money in the last 2 years, and of that, the

vast majority of broadband funding is going to end up going toward fiber for the last mile.

Without significant permitting reform, you know, I have serious concerns about the money actually getting into internet, into the homes of the people I serve, because I know it is not there yet.

You know, in the likely event that this money fails to deliver universal service for east Tennesseeans, what level of service can my constituents expect from satellite internet, and what can Congress do to help satellite internet companies deliver stronger service in places like east Tennessee?

Ms. Manner. So I think the good news is today -- and that is growing -- there is some hundred -- there is some higher speed service. We are bringing even higher speed than we have today later this year and a number of other operators and my colleagues from Amazon as well.

I think the bigger issue is the funding issue. And, unfortunately, the way BEAD is being implemented is a way that essentially closes the door for satellite broadband. So having an oversight hearing perhaps with NTIA to talk to them about how they are spending the money to make sure that it does get out.

And as I talked about, it doesn't have to be the final solution. It could be an interim solution until other technologies can come. But satellite is up today, and it is continuing to grow. You know, we are putting up new satellites, a lot of other folks are. So you are seeing greater capability. So it is really an affordability issue. I have been to your district and love it there, so I --

Mrs. Harshbarger. It is the most beautiful part of Tennessee. It goes from Bristol Motor Speedway to Dollywood. So what else do you want, you know?

Ms. Zoller?

Ms. Zoller. Thank you. LEO constellations are a great way to connect people in rural and remote communities around the world who are out of reach of traditional wired and wireless networks and who will stay that way.

We look forward to serving your community. I would agree with Ms. Manner that, to the extent that funding is provided, it should be done so on a technology-neutral basis.

Mrs. Harshbarger. Yeah. Do you want to chime in, sir?

Mr. Stroup. I would agree with both of my colleagues. I mean, the service is affordable. It is available immediately, and there are more constellations being launched every day.

Mrs. Harshbarger. I know. Why don't they understand this? Well, anyway.

Okay. I have talked to all of you. So I guess, with that, Mr. Chairman, I yield back.

Mr. Latta. Thank you very much. The gentlelady's time has expired and yields back.

The chair now recognizes the gentleman from Ohio for 5 minutes.

Mr. Johnson. Thank you, Mr. Chairman. And I thank you and Ranking Member Matsui for allowing me to waive on. I served on this subcommittee for five terms, and it didn't work out that way this session, but these issues are all very, very important to me. So you are going to get requests from me to waive on quite often, so I hope that is okay.

Ms. Zoller, I am very excited about what you are doing with Project Kuiper and the prospects of LEO satellite broadband playing such a critical role in bridging the urban-rural digital divide, because we got a lot of that problem in my rural Appalachian district. And that is true for all the providers.

Are there any specific actions that Congress could take that would assist in the FCC's ability to process license applications to keep up with the demand so that they can process it more efficiently?

Ms. Zoller. I am excited too. And I appreciate your question.

I think that the congressional attention on these issues is very motivating, in terms of fostering motivation within the Commission to move out on some rulemakings, to make more spectrum available for nongeostationary satellite systems, aligning the U.S. rules with what is available more globally already, and to also clarify how we will share spectrum with each other in the future, because that lack of clarity can be the source of a lot of controversy during the application process.

Mr. Johnson. Sure. Are there other regulatory hurdles that you are facing for Project Kuiper to successfully launch your satellites and provide these services?

Ms. Zoller. The international regulatory landscape is a patchwork of different rules and requirements. Many countries look to the ITU for guidance on how to allocate spectrum, what services should share together and so on, and many are behind the United States in terms of making decisions that would enable nongeostationary systems.

So I think it is really important that the U.S. go to the World Radio Conference with a strong voice, a very pro-satellite voice, and help us move the rule set in a direction that enables American innovation.

Mr. Johnson. Okay. All right.

Continuing, Ms. Zoller, in your testimony, you mention the importance of the U.S. presenting key priorities at that World Radiocommunication Conference later. You just mentioned some of them moving, you know, speaking with a loud voice. Are there other messages that the U.S. should be given at that conference?

Ms. Zoller. A particular area of importance is the mobility of earth stations for nongeostationary systems. It is something we already allow here in the United States for systems like ours, but it is not the case globally. And this is an issue on the agenda of the 2023 World Radio Conference. And we would like to see a good decision out of the Conference, knowing that it is 4 years between treaty events and it could be many, many more before such an issue is revisited.

Mr. Johnson. Okay. Mr. Stroup, in your testimony, you mentioned China's investments in satellite systems and the services they are offering at below market rate or free globally. This is very concerning from a national security standpoint in addition to commercially for U.S. competitors, because we all know there are likely a lot of unknown and unintended consequences of letting the Chinese play in that global marketplace.

What specific ways can Congress support domestic innovation and bring U.S. providers back to a more level playing field internationally?

Mr. Stroup. I think ensuring the health of satellite providers is one of the key aspects of it, because certainly what they are seeking to do is consistent with some of the other infrastructure investments that they have made in various countries. And ultimately, to have a successful constellation, whether it is a geo or non-geo system, you want to provide service globally.

So I think that helping to ensure the strength of the industry through the many things that we have talked about -- access to spectrum, stable regulatory environment -- are all key things to ensuring the competitiveness of our companies.

RPTR DETLOFF

EDTR CRYSTAL

[12:59 p.m.]

Mr. Johnson. Okay. All right.

Well, Mr. Chairman, again, thanks for allowing me to waive on, and I yield back.

Mr. Latta. The gentleman yields back.

And seeing no other members here wishing to ask questions, I want to, again, thank the panel for being with us today. I think that, as you can tell from all the questions you had and so many members being here wanting to ask those questions, that it is a fascinating topic, one that we have to be very, very concerned about. So, again, I just want to thank you.

And I ask unanimous consent to insert in the record the documents included on the staff hearing documents list. Without objection, that will be the order. Without objection, so ordered.

[The information follows:]

******** COMMITTEE INSERT ********

Mr. Latta. Pursuant to committee rules, I remind members they have 10 business days to submit questions for the record, and I ask the witnesses to respond to the questions promptly. Members should submit their record questions by the close of business on February the 16th.

And without objection, the subcommittee is adjourned. Thank you very much.

[Whereupon, at 1:00 p.m., the subcommittee was adjourned.]