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LIFTOFF: UNLEASHING INNOVATION IN SATELLITE COMMUNICATIONS TECHNOLOGIES

WEDNESDAY, FEBRUARY 8, 2023

House of Representatives,

Subcommittee on Communications and Technology,

Committee on Energy and Commerce,

Washington, D.C.

The Subcommittee met, pursuant to call, at 10:30 a.m., in Room 2232, Rayburn House Office Building, Hon. Bob Latta [Chairman of the Subcommittee] presiding.

Present: Representatives Latta, Carter, Bilirakis, Walberg, Dunn, Curtis, Joyce, Weber, Allen, Balderson, Fulcher, Pfluger, Harshbarger, Cammack, Obernolte, Rodgers (ex officio); Matsui, Clarke, Veasey, Soto, Eshoo, Cardenas, Craig, Fletcher, Dingell, Kuster, Kelly, 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; John Lin, Senior Counsel, C&T; Sean Kelly, Press Secretary; Peter Kielty, General Counsel; Emily King, Member Services Director; Tim Kurth, Chief Counsel, CPAC; Giulia Leganski, Professional Staff Member, 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; Dan Miller, Minority Professional Staff Member; Elysa Montfort, Minority Press Secretary; Joe Orlando, Minority Senior Policy Analyst; Greg Pugh, Minority Staff Assistant; Caroline Rinker, Minority Press Assistant; Michael Scurato, Minority FCC Detailee; and Johanna Thomas, Minority Counsel.

*Mr. Latta. Good morning, and I'd like to call the Subcommittee on Communications and Technology to order. And the Chair now recognizes himself for five minutes for an opening statement.

Thank you to our witnesses for agreeing to appear in person to provide your expertise on five pieces of bipartisan legislation and discussion drafts that aim to promote U.S. leadership in satellite communications technology. Last week, the subcommittee held a hearing to discuss the state of the satellite marketplace in the United States. That hearing provided insight into the challenges and opportunities in the rapidly changing satellite marketplace.

Today, we will hear from a different slate of witnesses representing a wide range of the satellite industry and how the legislative text being considered would impact the current regulatory landscape. The five pieces of legislation include the gentlelady from Washington, the chair of the full committee and the gentleman from New Jersey, the ranking member, their Satellite and Telecommunications Streaming Act. This legislation would codify a statutory framework and streamline the Federal Communication Commission's satellite licensing process by clarifying what information the FCC should consider in an application and put shot clocks on how much time the FCC has to complete its review and grant a license.

Next, we will discuss the Secure Space Act led by the ranking member, the gentleman from New Jersey and the gentlelady from Washington, the full committee chair, which would prohibit the FCC from granting authorization for a satellite service to operate in the United States if such satellite service poses a national security risk. This bill -- bipartisan work on this committee to secure our nation's communications networks in the ground by now looking to secure our services in space.

Next we will have the gentleman from Ohio and the gentlelady from Washington's ALERT Parity Act, which would establish a process for the FCC to ensure that satellite technology can be used to ensure access to wireless and emergency alerts and 911 service remain uninterrupted during times of emergency. Then we will have the gentleman from -- both from Florida legislation -- on the Launch Communications Act, which would help streamline the process for approving access to wireless frequencies or commercial space launches and reentries.

Many times, the process requires approval by both the FCC and the National Communications and Information Telecommunications and Information Administration, which would result in delay. This legislation would help improve that process. And last but not least, we will discuss the Precision Agriculture Satellite Connectivity Act, which is

led by myself and the gentlelady from Illinois. This legislation will require the FCC to look at its current satellite rules to determine if rule changes can be made, remote precision agriculture.

Despite the billions of dollars that had been made available -- over the last two years, it is clear that traveling in my district had too many -- and still lack access to the internet. Republicans have long called for technology neutrality and next-generation satellite network provide broadband speeds and latency that rivals other forms of broadband service. Farmers and ranchers across America increasingly rely on technology, include efficiency and yields by also minimizing cost.

In the 21st century, that technology must be connected to the internet for its benefits to be totally realized. Gathering, processing, ensuring data in real time can help farmers and ranchers make better decisions. While many farmers and ranchers have made progress getting access to fixed and wireless terrestrial networks over time, we've heard at our hearing last week that satellite technology played a key role. In some cases, satellite technology can connect directly to equipment or sensors in the field.

And in other cases, satellite technology provides back-hall wireless towers nearby. I am excited to be considering these five pieces of bipartisan legislation today, and thank

you again to our witness being with us today and look forward to the discussion.

[The prepared statement of Mr. Latta follows:]

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

*Mr. Latta. At this time, the chair now recognizes the subcommittee ranking member from California for five minutes for an opening statement.

*Ms. Matsui. Thank you, Mr. Chairman, and I thank the witnesses for being here today. I am glad that we are building on the progress of our first hearing with another bipartisan discussion today. The bills before us hold the potential to boost innovation, cut the red tape and increase security in the satellite ecosystem. Having the perspective of both government agencies and industry standards will give us a holistic perspective.

It will help inform these bills as they move through the committee process. As both the FCC and Congress move forward on updates for satellite licensing process, hearings like this will give us a chance to harmonize these efforts. It is important that this committee and the FCC are working hand-in-glove to advance complementary rather than conflicting policies. The five bills before us today are bipartisan and cover a wide swath of issues crucial to the satellite marketplace.

Chairwoman McMorris Rogers and Ranking Member Pallone's SAT Streamlining Act to modernize an often onerous licensing and market actors process at the FCC. Specifically, the bill would require a reasonable shot clock that will create a more responsive process at the FCC. It would also require the FCC

to issue rules to promote tech-neutral rules of the road in space.

While there is still a discussion draft, I look forward to working toward a consensus bipartisan introduction. As ongoing feedback with the FCC and industry is considered, I know we're on the right track. And as I mentioned at last week's hearing, I'm glad to see progress on the Secure Space Act. As an original cosponsor of the -- bill, I know this is a national security and economic imperative. The FCC has been doing great work keeping the -- entity of this current, and I'm excited to have an opportunity to discuss that work.

We also have legislation on today's agenda that would make changes to the way some emergency alerts are handled. As a member of the California delegation, I know the stakes for this information is literally life and death. During emergencies like wildfires, these alerts need to be accurate and timely, no exceptions. It's important to get policy in this space right, and I'm looking forward to additional conversations on this bill.

We're also going to discuss the LAUNCHES Act on Representative Soto and Dunn. As it stands now, companies willing to conduct commercial space knowledge must navigate a complex process of overlapping federal interest seeking access to Spectrum. And rather than coordinating multiple launches at once, this process can only be done on individual

basis causing delays. The LAUNCHES Act would require the FCC to continue its work streamlining this process. This would create more -- for both federal and private organizations. And finally, we have a chance to discuss the Precision Agriculture Satellite Connectivity Act from Chairman Latta and Congressman McKelly, which would require the FCC to report to Congress on opportunities to update a satellite to rural precision agriculture.

My new district is home to a rich tradition of agriculture with family farms that have been passed down from generations. These small communities are desperate for connectivity and modern farming tools to stay prosperous. On the government side, the FCC and MTI are already taking crucial steps to advance U.S. leadership. I'd like to note that in January 2021, I urged -- Biden to develop a unified process to spectrum management and to consider updating the memorandum of understanding between the FCC and NTIA. Thanks to the hard road -- before us today, that suggestion has come to fruition. I'm excited to hear more about how that new MOU can support better coordination and satellite regulations. We have a lot to discuss and I'm eager to get started. With that, I yield back the remainder of my time.

[The prepared statement of Ms. Matsui follows:]

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

*Mr. Latta. Thank you very much. The gentlelady yields back, and at this time, the chair recognizes the gentlelady from Washington, the chair of the full committee, for five minutes --

*The Chair. Good morning, and thank you, Mr. Chairman. Today we will discuss solutions to unleash innovation in the satellite communications marketplace. Last week, we heard from witnesses about how satellite systems will play a role in closing the digital divide, how they will connect Americans in times of disaster and emergencies and how they will enable the technologies of the future to lead China, technologies like precision agriculture, which is valuable for farmers in Eastern Washington working to improve their yields and lower their costs, streamlining the federal regulations to enable technology that helps put food on the table is why efforts like the Satellite and Telecommunications Streamlining Act are so important.

We also heard from witnesses about the threat that China and others pose to our economic and national security if we do not take action. These hearings could not be more timely. With the Chinese Communist Party illegally launching a balloon over the continental United States and spying on American assets and citizens, this experience was a frightening reminder of the need to secure our networks from the Chinese Communist Party, both networks on the ground and

satellite communications. China will stop at nothing to undermine American values, steal American data and use that information to advance its authoritarian agenda around the world.

We cannot let that happen. I'm pleased to have the witnesses before us who can speak to the five bipartisan bills we're considering to encourage investment, innovation and competition in the satellite communications industry to solidify America's dominance in this sector. Last Congress, I introduced with -- with then the chairman, Frank Pallone, the Satellite and Telecommunications Streamlining Act. Today we are considering that language as a discussion draft as we continue to work with industry and government stakeholders to make sure that we get it right. This is the first major legislative effort since 2000 to update our laws and regulations related how satellite systems are licensed in the United States.

This legislation would reform the Federal Communications Commission's process to grant satellite licenses, establish a statutory framework that directs the FCC to act swiftly to approve satellite license applications and incentivize operators to be responsible stewards of space and spectrum in the global marketplace.

We heard repeatedly at last week's hearing about the need for our government to move quickly to stay relevant. In

order for U.S. companies to compete globally, they must move first. They must be incentivized to design their systems to better serve the unconnected, whether in America or in developing countries that the Chinese Communist Party seeks to dominate. I thank Ranking Member Pallone for working with me on this legislation.

We are also reviewing Ranking Member Pallone's Secure Space Act, a bill that I'm proud to co-lead. This bill builds on Energy and Commerce Committee's leadership to make sure untrusted equipment and software is removed from American communications networks.

In 2020, President Trump signed the Secure and Trusted Communications Network Act, which prohibits federal subsidies from being used for untrusted equipment and authorizes a grant program at the FCC for carriers to remove that equipment from their networks. The grant program is short by 3 billion, and we are working with our colleagues across Congress to fund that shortfall as soon as possible.

With Chinese flying reconnaissance balloons over our land, the timing could not be more urgent. Additionally, last year, Congress passed the Secure Equipment Act to close a loophole that allowed vulnerable equipment to remain in our networks regardless of whether it was federally funded or not.

The Secure Space Act would expand this work by applying

similar requirements to our satellite communications technologies. By prohibiting the FCC from granting authorization for satellite services that pose a national security risk, we will not allow risky businesses to serve the United States.

Now is the time to act, to plow the hard ground necessary to legislate. I'm pleased to see members across the subcommittee working in a bipartisan manner to lead on solutions to solve some of our toughest challenges, including how America can lead and win the future with satellite technologies that improve people's lives. I look forward to hearing from the witnesses and --

[The prepared statement of The Chair follows:]

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

*Mr. Latta. Thank you. The gentlelady yields back. And at this time, the chair now recognizes the ranking member of the full committee, the gentleman from New Jersey, for five minutes.

*Mr. Pallone. Thank you, Chairman Latta. I'm going to sound like Chairwoman Rodgers with my opening statement today, so please forgive me, but I think it just shows that we are very bipartisan in addressing the next frontier of the commercial space industry. And the stakes could not be higher for the American satellite marketplace. Just this last week, we witnessed the Chinese government's balloon flying high above American airspace. This incident demonstrated the urgency for us to explore every method possible to protect our nation from these and other aerial threats would prevent our foreign adversaries from using our skies for their surveillance missions. And satellites have a role to play in achieving these objectives. And the legislation we are discussing today would help ensure that our satellite marketplace remains competitive, nimble, and protected from untrusted actors.

Today's legislation will also allow satellites to play a greater role in helping first responders in the public when natural disasters and other emergencies strike. Better earth imaging will also help us monitor and track some of the most urgent global issues like the worsening climate crisis.

So first I appreciate that we're considering H.R. 675, the Secure Space Act, bipartisan legislation that I reintroduced with Chairwoman Rodgers last week. This bill would extend the Secure and Trusted Communications Network Act Framework to the U.S. licensing of non-geospace -- orbit satellites to protect the public from untrusted entities and foreign adversaries. As innovations flourish, we must protect the satellite marketplace and its role in the supply chain from threats by non-trusted actors.

We can't risk our satellite networks facing the same challenges as our other communications networks here and globally. We'll also be discussing the Satellite and Telecommunications Streamlining Act, a bipartisan discussion draft that Chairwoman Rodgers and I introduced last year. The legislation would streamline the satellite licensing process at the FCC for certain satellite applications. This bill would strengthen the competitiveness of the United States satellite industry, which is imperative, given other countries, including our foreign adversaries, are making aggressive moves to dominate the industry.

There is no question that the U.S. must remain a market leader in this sector. Failure to do so 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. We're also considering H.R. 682, the Launch Communications Act, bipartisan bill reintroduced last week by representative Soto and Dunn. This bill would enhance the ability of entities to launch rockets from the U.S. by streamlining the FCC's process for authorizing access to spectrums for commercial space launches and space reentries.

It would also encourage continued competitiveness and growth in the American commercial space industry. Then we have the Precision Agriculture Satellite Connectivity Act, a bipartisan discussion draft in Subcommittee Chair Latta and Representative Kelly. That would encourage advancement in the innovation of precision agriculture. This bill requires the FCC to review its rules related to certain satellite services to develop recommendations to promote precision agriculture and record these findings to Congress.

And finally, there's the Advanced, Local Emergency Response Telecommunications or ALERT Parity Act. This is, again, a bipartisan discussion draft on Representatives Johnson and Schrier that will also -- that would also introduce -- or they introduced last Congress. And it would allow satellite communication providers to access Spectrum in temporary situations so that local customers can retain access to 911 and other lifesaving services where service is not available.

This could be in circumstances where the area is remote,

where the area is experiencing certain outages caused by natural disasters. And with this bill, Americans would not have to worry about being able to reach first responders and loved ones in an emergency. So every bill or discussion draft we are considering today is bipartisan, and we look forward to hearing feedback from these witnesses and other stakeholders.

I'm determined to continue working with Chairwoman Rodgers and Chairman Latta, Ranking Member Matsui and other members of the committee so that we can make sure the United States leads the rest of the world in satellite communications industry. And time is certainly of the essence. So I welcome our panelists, look forward to hearing from them. It's also nice to see that a familiar face will be before us today, David Goldman, but I don't see David. Where is he? Is he here? No? He is not here yet. He served as the subcommittee Democratic chief counsel for seven years, and I thank him in advance for being here. With that, Mr. Chairman, I yield back the balance of my time.

[The prepared statement of Mr. Pallone follows:]

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

*Mr. Latta. We'll give -- we'll let him know he had a glowing report, very accurate. But the gentleman yields back, and we have now concluded with the member opening statements. The chair would like to remind members of the -- committee rules. All members' opening statements will be made part of the record. We'd also like to again thank our witnesses for being with us today to testify before the subcommittee. Today's witnesses will have five minutes to provide -- to provide an opening statement, which will be followed by a round of questions from the members. At the conclusion of the first panel, the subcommittee will briefly recess so we can prepare for the second panel of witnesses. The second panel will begin promptly thereafter.

Our first witness panel for today's hearing will include Mr. Bill Richardson, the deputy associate general counsel for agenda review for the Federal Communications Commission and Mr. Charles Glass, chief of the International Spectrum Policy Division of the National Telecommunications and Information Administration. And just to mention -- again, familiarize everyone with the lights, you have five minutes. It will be green. At one minute, you will have yellow. And then time is up, is it red, so finish up your statement at that time. We appreciate it. I also want to make mention. You will see members on both sides going up and out of here today because we also have two committees, Oversight and Health, meeting

together downstairs. And so we'll have two -- these two hearings running at the same time, so I apologize for people having to get up and down, but we have that going on today.

And so with that, Mr. Richardson, you are recognized for five minutes for your opening statement.

STATEMENT OF WILLIAM RICHARDSON, DEPUTY ASSOCIATE GENERAL COUNSEL FOR AGENDA REVIEW, FEDERAL COMMUNICATIONS COMMISSION; AND CHARLES GLASS, CHIEF, INTERNATIONAL SPECTRUM POLICY DIVISION, NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

STATEMENT OF WILLIAM RICHARDSON

*Mr. Richardson. Chairman Latta and Ranking Member Matsui, Vice Chairman Carter, Chair McMorris Rodgers, Ranking Member Pallone, and members of the subcommittee, thank you for the opportunity to be here with you today. Your consideration of these five bills will address a number of critical issues facing the commission and a rapidly expanding satellite industry, and we welcome the opportunity to work closely with you in these efforts.

The commission's role in the licensing and regulation of satellite communications systems began over 60 years ago, including the launch of the first communications satellite to orbit the earth. As you heard last week, there is widespread recognition that the satellite licensing process today needs updating in light of the growing number and complexity of satellite applications and the increased potential of the satellite sector for broadband coverage, emergency services and U.S. competitiveness in a global marketplace.

Acknowledging the work of Chair McMorris Rodgers and Ranking Member Pallone, FCC Chairwoman Rosenworcel has agreed that the new space age needs new rules. The commission has already taken a number of steps in recent years to modernize this process. To start, it has increased by 38 percent the size of its satellite staff to help speed up its work. Another critical action the commission has recently taken is an initiative to modernize the FCC by establishing a Space Bureau which is designed to prioritize attention to the growing needs of the satellite industry.

In addressing these bills, I would note that the FCC has provided technical assistance on several of them, and we welcome the opportunity to continue to engage with your offices in that process. First, the Secure Space Act of 2022. This bill would bar the commission from granting licenses or market access petitions for non-geostationary orbit satellite systems held or controlled by certain entities. It is similar in concept, as you've heard, to the Secure Equipment Act of 2021, which barred the commission from issuing equipment authorizations of certain equipment that would pose an unacceptable risk to the national security of the United States or security and safety of United States persons.

In implementing this bill, we would expect to draw heavily on the experience we had in implementing that

legislation last November. Second, the SAT Streamlining Act of 2022. In considering this bill, last week, industry witnesses recognized the need to balance concerns that incumbent satellite and terrestrial licensees may have about potential interference from new entrants with a need to support growth of and competition in this rapidly changing industry in three ways, streamline processes, adequate availability of spectrum, and effective processes for sharing spectrum where, as is increasingly the case, exclusive spectrum is no longer available.

As I note in my written testimony, the commission has taken or is actively considering steps that align with many of these goals, including through pending rulemakings. Third, the Launch Communications Act would focus not on satellite service but on the spectrum needed for launch and reentry of satellites.

In 2021, recognizing that need in the face of an expanding commercial space launch industry, the commission completed action to allocate the 2200 to 2290 megahertz band for this purpose on a secondary basis. At that time, it also proposed licensing and service rules for use of this band and sought comment on use of additional bands for these purposes, including some of those referred to in this bill. We welcome the Launch Communications Act's support for this proceeding.

Finally, the other two bills in draft that you are

considering today would direct the FCC to address important priorities as well, promoting precision agriculture through satellite delivery in consultation with the existing task force established by the commission and USDA and facilitating service to areas that are unserved by terrestrial providers or temporarily unserved because of natural disasters or power outages. Thank you for inviting me to participate in today's hearing, and I look forward to assisting the subcommittee in considering these bills. I'd be happy to answer your questions.

[The prepared statement of Mr. Richardson follows:]

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

*Mr. Latta. Thank you very much.

Mr. Glass, you are recognized for five minutes.

STATEMENT OF CHARLES GLASS

*Mr. Glass. Good morning, Chairman Latta, Chairwoman Rodgers, Ranking Member Pallone, Ranking Member Matsui and members of the subcommittee. On behalf of Assistant Secretary Alan Davidson, thank you for the opportunity to testify about the National Telecommunications and Information Administration's work on satellite issues.

My name is Charles Glass. I serve as the chief of the International Spectrum Policy Division in NTIA's Office of Spectrum Management and have been in this world for the last eight years. NTIA has several responsibilities with respect to how to -- our nation utilizes spectrum resources, including those used by space-based systems such as satellites.

First, NTIA is the principal advisor to the President on telecommunication issues, including those involving radiofrequency spectrum. Second, we directly manage the use of spectrum by federal agencies, as I will describe more fully momentarily. In addition, NTIA maintains a research and testing lab, the Institute for Telecommunications Sciences in Boulder, Colorado, which provides critical theoretical and real-world knowledge on spectrum engineering.

NTIA is, of course, part of the Department of Commerce. So we strive to ensure that spectrum resources are maximized

for the growth and vitality of our nation's economy. One of the department's key strategic goals is to advance U.S. leadership in the global commercial space industry. Several other parts of the department are also actively engaged in this effort.

NTIA, through the Department of Commerce, works to ensure that sufficient spectrum is accessible for U.S. companies to pioneer and lead in their global space-based industries. As NTIA is well aware, space is one of the areas where a strong mutually beneficial relationship exists between the federal government and American industry. NTIA works with the federal agencies to ensure that their vital mission supporting national security, weather forecasting, space exploration, radio astronomy and a host of other important federal equities are fully supported and protected while balancing the need for increased spectrum access for commercial activities.

For satellite systems, this is accomplished through domestic efforts in concert with the FCC in its rulemaking and licensing efforts, which are coordinated with NTIA under memorandum of understanding between our agencies. Internationally, NTIA leads, files and coordinates federal satellite authorizations and registrations while working with the FCC to ensure maximum access to spectrum for commercial activities. NTIA is also committed to protecting critical

infrastructure, including satellites, from malignant actors that pose a threat to our security. Now for an overview of our spectrum management operations. For federal systems, OSM has a process for reviewing and certifying the spectrum supportability for our proposed system. We also have a separate but related process for assigning specific frequencies to each federal system.

As a result of these efforts, we process roughly 200 certifications for federal agencies every year and make nearly 100,000 frequency assignments to the agencies. NTIA also is responsible for coordinating federal satellite filings internationally to ensure protection of our existing satellite systems.

The international filing process is conducted in coordination with the FCC, which transmits all satellite filings to the International Telecommunication Union. NTIA also leads international delegations in bilateral discussions with foreign administrations for coordination of our federal satellite systems with new foreign satellite systems. The ITU publishes a quarterly report of satellite systems being registered, and NTIA works with the federal agencies to identify any foreign systems with which coordination will be required.

We have an equally important role in connection with the coordination of nonfederal systems that either share spectrum

with federal systems or operate using nearby frequencies. Our goal in these cases is to balance protecting critical federal operations, promoting spectrum efficiency and supporting commercial development.

OSM coordinates either directly with the FCC or, at times, with the system proponents themselves. We also work closely with the FCC through our long-standing interagency processes. Notably, NTIA and FCC recently agreed to an update of the MOU that is enhancing our coordination in a number of important ways.

NTIA has an important role in preparing for each world-rated communications conferences, which takes place typically every four years. NTIA coordinates and reconciles federal views and proposals with the FCC and the U.S. Department of State to ultimately develop U.S. views and proposals that account for all U.S. spectrum stakeholders. Thank you for the opportunity to testify today. I look forward to answering any questions you may have regarding NTIA's work on satellite matters.

[The prepared statement of Mr. Glass follows:]

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

*Mr. Latta. And thank you very much, Mr. Glass, for your testimony today. And we will now move into the question and answers portion of the hearing. I will begin the questioning and recognize myself for five minutes.

Mr. Richardson, the FCC has led the Precision Agriculture Connectivity Task Force for nearly five years. While this task force has included some discussion about satellite technology, most of this recommendation do not address the role satellites can play in providing broadband or earth observation services. Does the FCC have any plans to re-examine its rules governing satellite services to see if there are any changes that could promote precision agriculture?

*Mr. Richardson. Thank you for the question, Mr. Chairman. Precision agriculture is recognized, I think, by the commission as a way that satellites' technology can contribute in the future to improving the work of farmers and ranchers. The task force that you are referring to is one that has recently issued four working group reports. And these working groups, appointed by the commission and the USDA, have included a broad range of experts from the satellite industry as well.

These are interim reports. They are -- my understanding is that they are on the way to being developed into a final report, which the FCC will be looking at in terms of

recommendations for any changes to our rules that could facilitate use of satellite to deliver precision agriculture.

*Mr. Latta. I just want to make sure. Is there a timeline that you are looking at trying to have those reports in by?

*Mr. Richardson. I am not sure when the commission is expected to act on that, but I could check back.

*Mr. Latta. I appreciate that. Thank you. Mr. Richardson, when processing rounds were first established by FCC 20 years ago, there was no way to predict there would be the number of systems authorized and launched today. However, the processing round system stipulates that after a lead application is put on public notice, other prospective satellite operators only have a limited window to submit an application. But I appreciate the commission's efforts to reorganize its international bureau into a -- into a Space Bureau of Office of International Affairs.

Do you agree that the process around framework takes too long regardless of the staff resources?

*Mr. Richardson. The question of revisiting the commission's processes is an excellent one, and it's one the commission has teed up in a pending rulemaking, several pending rulemakings, actually. These processing issues are something that commenters are due to be filing with the commission, their recommendations for change, March 3rd for

comments, April 3rd for reply comments. And we are looking forward to getting their ideas about the processing round and other issues that we flag for -- for comment.

*Mr. Latta. Thank you. And not to be picking on you a little more, but the ALERT Parity Act on today's hearing would require the FCC to issue rules that establishes a process for satellite operators to provide wireless emergency alerts and 911 service using terrestrial spectrum. The Warren Act provides the FCC authority to ensure that the provision of these lifesaving services are technically feasible and reliable.

While I recognize that the current secondary market has produced many partnerships, has the FCC evaluated what changes, if any, under law would be needed to ensure that the WEA alerts and 911 service provided by satellite operators receive the same treatment as --

*Mr. Richardson. I think the ALERT Parity Act is -- recognizes the importance of using satellite where feasible to fill in the gaps, if you will, for critical 911 and alert services. As you know, section 1 of the Communications Act identifies as one of the key priorities for the commission the promotion of public safety.

We have, as you say, been -- recently received applications for some very interesting partnerships to provide services between satellite and terrestrial that

essentially broken down some of the stovepipes, if you will, that we've had in the past. And these are being looked at by our technical experts, our public safety experts and our licensing experts to see what kinds of issues they may pose.

And I think those are directly relevant to the same issues that you're looking at in this bill. I think that it is an intriguing new way to promote these emergency services in areas that don't currently have them, which is a very important priority.

*Mr. Latta. Thank you very much. And I will yield back the balance of my time and recognize the gentlelady from California, the ranking member, for five minutes.

*Ms. Matsui. Thank you, Mr. Chairman. As an original cosponsor of the Rip-and-Replace bill, which required the FCC to establish the covered list, I'm glad to see these restrictions being implemented in other industries. However, for this list to have teeth, it's imperative that the FCC constantly be evaluated and updated. Mr. Richardson, can you describe the FCC's process for updating the cover list and how to keep it current in rapidly evolving satellite marketplace.

*Mr. Richardson. Thank you for the question. This is something we've been looking at with our federal partners. And to step back, it's important to stress that, under the Secure Networks Act, the determinations of whether particular

services by particular entities pose an unacceptable risk to national security and, therefore, get put on the covered list come from other federal agencies and -- or under the -- the National Defense Authorization Act passed by Congress.

So what we first do is we -- we look to what the federal agencies have done. If they have put a covered service on the list, then we have a process through public notice system to implement that covered list --

*Ms. Matsui. Thank you. Two years ago, I wrote then President-elect Biden, urging him to develop an administration spectrum strategy that is persistent, concerted and effective. Mr. Glass, can you describe the NTIA's role in -- spectrum management generally and the implications in -- for the satellite ecosystem.

*Mr. Glass. Thank you very much, Ranking Member Matsui. Coordination of individual applications typically is not time-consuming and is handled through pre-coordination per NTIA's MOU with the FCC. The cases that take most time for technical analysis involve either exceptions to the existing rules or actual rulemakings where new rules are being created or old rules are being modified. In those cases, it can take additional time for all stakeholders, including NTIA and federal agencies, that have important equities to agree on the data and the methodology for analyzing the impact of proposed FCC actions.

Once FCC publishes notice of its proposed actions, at that point in the process, such issues generally are addressed through the FCC's public proceeding, and NTIA may submit information to the FCC for the record on behalf of the executive branch. Beyond that, in terms of any policy implications, I'm not in a position to comment, but our staff can follow up with your staff as required.

*Ms. Matsui. Certainly will. Thank you very much. NTIA is responsible for coordinating the federal government's participation in the International Telecommunications Union's world radio communication conferences. With WRC 23 coming up later this year, we have an excellent opportunity to continue U.S. leadership. Mr. Glass, what steps is NTIA taking to prepare, and what are the implications for U.S. leadership in the international satellite ecosystem at the WRC?

*Mr. Glass. Thank you for that question. NTIA is working closely with the FCC and State Department as well as the federal agencies and commercial stakeholders to prepare for WRC 23. On the federal side, which NTIA manages, federal agencies have proposed a number of proposals, and NTIA is working to get those reconciled as U.S. proposals. At the same time, the FCC is running its process with nonfederal stakeholders. And we coordinate that effort very carefully to ensure that we have strong U.S. proposals going forward to the WRC.

*Ms. Matsui. Okay. Thank you. The FCC has several proceedings before it with implications for the satellite ecosystem, including the 12 gigahertz proceeding. The docket on this proceeding shows that there is much for the FCC to consider, and I hope it will continue to follow the science as it considers feedback. Mr. Richardson, I know it is difficult to discuss in open proceeding, but can you provide a brief update on the timeline here?

*Mr. Richardson. I went -- I would like, if I could, to get back to you on the timeline for that. I can say that the question of harmful interference between terrestrial and satellite, which is the key issue in that proceeding, as in many FCC proceedings, is one that, as you indicate, has generated very complex technical engineering studies on both sides. And the commission technical experts are working their way through the competing analyses there, and we are working as fast as we can on that.

*Ms. Matsui. Okay. Keep me updated. Thank you very much, and I yield back the balance of my time.

*Mr. Latta. Thank you very much. The gentlelady yields back. The chair will informally pass on the ranking member of the full committee until she returns from downstairs. We will now recognize the gentleman from Florida's 12th District for five minutes.

*Mr. Bilirakis. Thank you, Mr. Chairman. I appreciate

it very much. Last week, I chaired a hearing in the Subcommittee on Innovation Data -- on the threats we face if China was to lead on emerging technologies. I'd like to continue that discussion, if I may. Mr. Richardson, have Chinese-based NGSOs applied for U.S. market access, and are there different review processes in place for foreign-based operators, especially for those countries that are adversaries as opposed to U.S.-based businesses?

*Mr. Richardson. These are very good questions. I can say that we have not received any market access requests from Chinese NGSOs if that is -- that is your question. A few years ago, a U.S. company did request approval for Earth station support to a Chinese-owned company. Those applications were never granted and were ultimately withdrawn last year.

In terms of market access and national security issues, the commission has the ability on its own motion to refer applications for market access through Earth station applications to the executive branch group of the committee formally known as Team Telecom for its expert views and recommendations on key national security law enforcement, trade policy and foreign policy issues. And we generally take our lead from those on their recommendations.

*Mr. Bilirakis. Thank you. I have another question for you. As you know, we are in the process of removing Chinese

equipment from our terrestrial networks through rip-and-replace. But we cannot renew the Huawei debacle. I'm sure you agree. Once the satellite is launched, there is no retrofit. During the -- does the FCC reviews the origin of satellite parts from China or other adversaries when approving or denying an application for NGSO? So in other words, you can speak to other adversaries as well including Russia, of course.

If not, does the FCC have the authority to either include that factor in their review or ban component parts from companies that are deemed national security threats?

*Mr. Richardson. I will begin by talking about the issue of component parts, which the commission has looked at in the context of its implementation last year of the Secure Equipment Act that's been discussed this morning. This is a complex question that commission teed up in a notice of proposed rulemaking some time ago about whether the -- the commission can and should regulate equipment with respect to component parts. And it ended up seeking further comment on that last November, so we are looking at the comments to see when they come in about the practical impact of that, how we would identify component parts, how we would assess their threat to national security.

But again, I would circle back to our -- our general authority would extend these parts, but we would look in the

context of applications to our friends in the federal -- our federal partners to get their expert guidance on the extent of the threat to national security, these component parts.

*Mr. Bilirakis. Very good. Anybody like my time? I'll yield back.

*Mr. Latta. Well, thank you. The gentleman yields back the balance of his time, and the chair will informally pass on the ranking member of the full committee's questions until he returns from downstairs. But we'll now recognize the gentleman from Texas's 33rd District for five minutes.

*Mr. Veasey. Mr. Chairman, thank you very much.

Mr. Richardson, I wanted to ask you. The Satellite and Telecommunications Streamlining Act would stream on FCC's satellite licensing process for satellite applications. I understand and support the need to streamline this process. The FCC, the satellite industries and consumers, could certainly all benefit.

How would this bill specifically ensure that any changes made to the satellite components of a renewing applicant are brought quickly to the attention of the Satellite Division's staff in order to speed up that work?

*Mr. Richardson. I think the -- first I should say that this is a great question that the commission itself has been looking into in its own rulemaking sort of in parallel with this bill as to how we can simplify our application process,

avoid the back-and-forth with the applicant that sometimes creates delays and how we can establish a regulatory certainty for applicants by making clearer what the requirements would be in terms of performance criteria, for example. That's one of the issues that we are addressing in our rulemaking and is also addressed in this -- this bill.

If we can establish the ground rules, if you will, going forward for applicants, it will be easier and more expeditious for them to proceed with -- for us to proceed with processing the applications.

*Mr. Veasey. Thank you very much. The subcommittee also recognizes the need for output spectrum given the increased deployment of satellites that provide critical services to Americans. As new technologies are developed and deployed on the field, what additional best practices should Congress consider that would facilitate the FCC's Satellite Division's ability to adjust constant changes -- changes happening in the satellite industry?

*Mr. Richardson. I think we at the commission recognize, as we have over the years, that we always have to keep up with very dynamic changes in our industries that we regulate. And satellite today is one of the -- the biggest and best examples of that. I think we have proceeded, as I said, to increase our staff to develop -- that are develop -- that are working on these applications. And we are very

excited to be implementing a reorganization to have a Space Bureau that's devoted to the needs of the satellite industry so that we can address those needs more expeditiously.

*Mr. Veasey. What is the FCC doing specifically to, you know, attract young engineers, people that have come out of college, particularly if they go into the private sector and they make more money? What are you guys doing to make the job more attractive to them working in the satellite --

*Mr. Richardson. That is a very good question. I'm -- I'm not directly involved in that. I'd be happy to get back to you with what we are doing to do that, but I think there was a Washington Post article today generally by Max Stier of the Partnership for Public Service who is talk -- who identifies this as a -- a broader issue for the federal government in terms of increasing the attractiveness of the federal workforce for younger people coming out of school.

*Mr. Veasey. Thank you very much. Mr. Glass, the bills under consideration today align with the updated memorandum of understanding on radiofrequency spectrum -- between the FCC and the NTIA. Do you feel that they -- that there is coordination there?

*Mr. Glass. Thank you for that question. Yes. We do believe that we have a robust process for coordination under the memorandum of understanding. We had a target to -- for improvements and additions to that MOU. We reaffirm and

emphasize the respective roles of the FCC and NTIA as the agencies responsible for managing spectrum use in the United States.

It ensures improved and effective communications between the agencies. It emphasizes importance of evidence-based spectrum policymaking, engineering collaboration and reliance on data analyses and engineering best practices. It promotes effective long-range planning at the agency principal and staff levels. It enhances processes for coordination of proposed spectrum actions. It commits to best efforts to identify potential issues as early as possible, and it articulates an isolation path between the agencies where necessary.

*Mr. Veasey. Thank you very much. I appreciate that. Mr. Chairman, I yield back.

*Mr. Latta. Thank you very much. The gentleman yields back the balance of his time. The chair now recognizes the gentlelady from Washington, the chair of the full committee, for five minutes. Thank you.

*The Chair. Thank you, Mr. Chairman. Mr. Richardson, I -- just before I begin my questions, I notice in your testimony that your testimony is, quote, limited to providing an overview in the state of the law and commission proceedings and to, quote, technical drafting assistance, not to opine on any possible policy or website changes. However,

your testimony also states mine and Ranking Member Pallone's SAT Streamlining Act is, quote, designed to inform the continuing efforts of the commission. Do you consider opining on the purpose of all the legislation? Your testimony is to being technical drafting assistance?

*Mr. Richardson. We are happy to provide technical drafting assistance and to work with the committee, subcommittee, in developing the bill and my point was to try to demonstrate that we at the commission are engaged in a similar initiative and have -- are looking forward to ideas from industry and the public about how to do that in our proceeding and would like to work with you to make sure that you're aware of those recommendations and that input as well.

*The Chair. Okay. Because I do want to get to the state of play as it relates to the commission proceedings. In other words, the United States Supreme Court decision last fall, EPA v. West Virginia, the court cautioned that major agency actions must be rooted in clear statutory direction, that as the complexity of these licensing applications increases, so does the likelihood that the FCC's actions could be challenged in court. Would having a specific grant of statutory authority help the FCC defend its actions in court on satellite rules?

*Mr. Richardson. It's a very topical question for many agencies. I think, in our case, I would say always from an

Office of General Counsel perspective, the more authority that Congress grants us, specific or general, the better. But as I've said in my testimony, it was about 80 years ago. The U.S. Supreme Court made clear in the NBC case that with respect to Title III of the Communications Act -- that is managing radio spectrum -- the Commission has very broad authority for the reasons very relevant to this proceeding, that, quote, dynamic nature of the industries that we regulate.

So we believe that we have adequate authority under Title III to regulate and license satellite transmission of radio communications. But we -- we -- we, as I say, always welcome additional authority.

*The Chair. Okay. And I'll just also quote from the EPA decision just within the -- all the members here. It says, "Something more than a merely plausible textual basis for the agency actions necessary,'' the agency instead must point to, quote, clear congressional authorization -- it's going to be ongoing discussion. As you know, my Satellite and Telecommunication Streamlining Act would establish a statutory framework, providing the FCC direction on satellite licensing.

And while it's important to act quickly on applications, it's also necessary to balance speed with providing a stable spectrum environment that encourages investment. This

legislation would establish performance objectives and make it clear to applicants that what information needs to be submitted with an application in order to make the timely decision.

Giving -- given the FCC's December proposed rule on statutory application processing, do you think such regulatory framework would help speed up the satellite licensing process?

*Mr. Richardson. That's a very good question, and I think that we are hopeful that with the recommendations we get, we can finalize some processes that make -- make it clearer what is required in the original application to avoid, as I said earlier, the sometimes back-and-forth with the applicant that chews up time. And if we can establish regulatory certainty around the ground rules for performance criteria, which is something that -- that your bill specifically calls for our rulemaking to do, I think that would be very, very helpful and --

*The Chair. Thank you. Very quickly here at the end, the World Radio Communications Conference takes place later this year. Certainly this is going to impact satellite operators. Would both of you speak briefly to what the administration's priorities are on the agenda?

*Mr. Richardson. I would like, Madam Chair, if I could, to take that back. I'm not really prepared to --

*The Chair. Okay.

*Mr. Richardson. -- to answer that one.

*The Chair. Mr. Glass?

*Mr. Glass. Thank you, Madam Chairwoman. I'm also not in a position to comment on that, but our staff can work with your staff to describe that. Thank you.

*The Chair. Thank you. Thank you both for being there. I yield back.

*Mr. Latta. Thank you. The gentlelady yields back. The chair now recognizes the gentleman from Florida's Ninth District for five minutes.

*Mr. Soto. Thank you, Chairman, and appreciate both your support, our ranking member's and of course my fellow Floridian, Dr. Dunn, on this great bill we're hearing today, the LAUNCH Communications Act. From our backyard in Kissimmee, back in Central Florida, we had quite the display of rockets coming up. It's something that makes our region very special, being the district right next to Cape Canaveral. And we have seen full view of the busiest space -- in the world over there with NASA recently launching Artemis, SpaceX, ULA, Blue Origin and so many more on making sure we continue to be the top nation in space flight in the world.

2022, we saw 57 orbital class rockets, a record. But wait. 2023 is no slouch either. Eighty-seven launches set

for this year, another record. And who knows? We might see a hundred by 2024 on -- and FCC licenses for each of these launches is -- it's a cumbersome bureaucracy. It's one that has been there because there hasn't been enough direction by Congress.

We know we -- we need to cut the red tape to boost space innovation. And I appreciate the FCC's efforts on moving forward in response to us filing this bill now three years -- three terms in a row, efforts to utilize the 2200 to 2290 band of spectrum is a -- is a good promise. I know our witnesses have talked about that already. The LAUNCH Communications Act will ensure that they finish the job and have statutory framework to ensure that it can't go back and forth based on who is on the FCC.

We need to secure Spectrum specifically and permanently for spaceflight. Mr. Richardson, thank you for being there. Can you speak more about the commission's role in facilitating the launch of satellites and -- and of commercial space launches as we continue to increase -- what actions do you think the commission can continue to build upon our take from regulatory approach that will create more certainty for a lot of these launches?

*Mr. Richardson. Well, thank you for your focus on this important question. I think we are recognizing that with the growth of the satellite industry comes a growth of the

satellite launch industry, which is also, as you say, from your own backyard, very visible. I think the things that we can do in addition to having allocated that additional spectrum is to -- and we very much appreciate your interest in that proceeding in bringing it to close. The things we can do, I think, are one, we've asked questions about are there other bands that we might be able to also use for this purpose. And the second is finalizing our proposals for service and licensing rules for this so that we have the system in place to take advantage of the new allocations.

In the past, my understanding has been that this has been somewhat cumbersome because we had to go through a so-called special temporary authorization or STA process because there was no spectrum allocated for this purpose. And so we're -- we're on our way toward a new regulatory environment and, again, appreciate your interest in that proceeding.

*Mr. Soto. I believe we are nearing two years now, also this rule-making and effort at the FCC. Is that a long-time or is that sort of par for the course? How would you describe the progress we've made so far?

*Mr. Richardson. Well, I've been practicing before the commission and now at the commission for over 40 years. And I think there is a wide variety of time frames for commission proceedings. But I think we -- we understand the priority

that needs to be placed on this proceeding.

*Mr. Soto. Well, we appreciate the FCC being responsive even to our efforts as we are still working on passing this bill into law. The -- can you talk a little bit about what happens when you miss a launch window because you can't get a license in time and the effects it could have on America's space competitiveness?

*Mr. Richardson. I'd like to take that back if I could. I am not familiar with the situation that you posed.

*Mr. Soto. Well, allow me to, for the identification of the committee, discuss with them a little bit. You know, if you don't get that license on time or we have various weather obstacles that prevent launches, you are constantly having to apply again and again and again. It could be over three to four to five attempts in the -- in the midst of one effort to launch a rocket. So we really want to make sure this is nimble because weather can be unpredictable. The FCC licensing should be more so. Thank you for your testimony, and Mr. Chairman, I yield back.

*Mr. Carter. [Presiding.] The gentleman yields. The chair now recognizes the gentleman from Michigan, Mr. Walberg, for five minutes.

*Mr. Walberg. Thank you, Mr. Chairman, and thanks to the witnesses for being here.

Mr. Glass, as part of the administration's national

spectrum strategy or otherwise, is the NTIA considering the needs of commercial space operators to access spectrum, and are there ways NTIA can accelerate access to spectrum for commercial launches, especially whenever agency approval is required?

*Mr. Glass. Thank you, Congressman. With respect to our efforts, we coordinate very carefully with the FCC. But your question gets into policy issues that I'm not able to comment on. So if you like, our staff can get back with your staff to fully explore that.

*Mr. Walberg. I'd appreciate that. Only ask questions that we hope we can get an answer for. So, Mr. Richardson, the SAT Streaming Act would establish shot clocks, so to speak, for the FCC to grant or deny certain applications, modifications or renewals. If enacted, the SAT Streamlining Act, would the FCC be able to meet these time frames? And if not, why not?

*Mr. Richardson. That again is a question that the commission has teed up in its rule-making that's in parallel with these bills asking for industry and the public to comment on the nature of the shock clocks and the time periods. So that's under review, and we -- we don't have the comments yet from various perspectives of industry and the public for what the appropriate time period would be. I think another point I'd like to raise about the shot clocks

-- and I -- is in my written testimony is that the way the FCC processes applications -- and this is not unique to satellite -- is that we first have a time period for accepting for filing the applications, which then sets the time clock for comments. And then the question about the second shot clock is how long after we get the comments do we need to have to act?

And I just wanted to make a point that -- that shot clocks generally would -- would be best framed, I think, from the point of view of acceptance for filing in terms of -- rather than from when it comes in the door. One of the things we are trying to do is identify ways to streamline the process so it's clearer what needs to be in the application when it comes in the door, and that's one of the problems. But I just wanted to focus on that acceptance for filing piece as an important part of the puzzle.

*Mr. Walberg. Well, I appreciate that. I think our -- some of our biggest concerns that come through our local offices -- and I can only imagine we're talking about the rapid expansion of satellites and telecommunications that it is frustrating to have the goal in mind, and the bureaucracy holds it up. So I -- I certainly get what you are saying about making sure that we know how to approach the application. But timeliness is extremely important.

*Mr. Richardson. We completely agree with that, and we

are looking to expedite this process, as I mentioned, not just through these rulemakings that, again, have much in common with this bill. But also, we've increased the staff for processing these applications. And NGSO applications are often technically very complex. We've got more staff, 38 percent more staff, in the Satellite Division to handle them now. And we have, as I said, focused our priority on this emerging satellite industry and its importance by creating a bureau that's designed to focus on their needs. We hear what you are saying.

*Mr. Walberg. I wish you all good speed.

*Mr. Richardson. Thank you.

*Mr. Walberg. Coming from Michigan, we like speed. Let me -- let me follow up that. Can you describe the differences in the roles of International Telecommunications Union and the FCC in regulating satellite communication systems?

*Mr. Richardson. My focus has been on FCC regulations. So I will be happy to take back the question about the ITU. But basically the FCC rules for satellite, which is obviously a global service in many respects, have to be consistent with the rules of the ITU. And so applicants generally need both an ITU and an FCC authorization. But the ITU piece, I'm not personally involved in, and I'd be happy to give you more information about that piece.

*Mr. Walberg. I appreciate that. Thank you. I yield back.

*Mr. Carter. The gentleman yields back. The chair now recognizes the gentleman from California, Mr. Cardenas, for five minutes.

*Mr. Cardenas. Thank you very much, Mr. Chairman. Appreciate this opportunity. The chairman looks more like a pharmacist right now. Are those bags full? Anyway -- during last week's Communication and Technology Subcommittee hearing, also on the subject of satellites, we heard from stakeholders on important positive roles satellites play in our everyday lives, and it affects all of our lives.

And in the United States of America, I think we are fortunate as Americans that we are probably touched more by satellite in our country than most countries around the world because we are more developed, and we have an economy that depends so much on it. Today we continue discussing the importance of ensuring we have a rigorous process in place to maintain U.S. leadership and satellite communication technologies and to promote competition in American satellite marketplace. Mr. Richardson, how will the FCC's Space Bureau and the legislation we are considering today promote a competitive and innovative satellite marketplace?

*Mr. Richardson. I think the focus of both is to identify ways that we can promote deployment of satellites in

this country and make us more competitive in that global marketplace.

*Mr. Cardenas. And how is the FCC collaborating with other agencies to help improve harmonization in space policy matters?

*Mr. Richardson. By "harmonization,'' do you mean internationally or -- well, that is something that is part of the work process, I think, to make sure that our allocations and international allocations sync up. And we are very delighted that the ITU's new Secretary General, someone with a long experience in this field at the ITU and, previous to that, working at NTIA. So we look forward to that coordination.

*Mr. Cardenas. So when it comes to the United States, how would you describe our position when it comes to satellites past, present and going forward when it comes to being a leader and/or collaborator internationally?

*Mr. Richardson. Well, we very much believe that the United States should lead the way in satellite global marketplace.

*Mr. Cardenas. Are we seeing that way at the moment?

*Mr. Richardson. We have some very strong competitors.

*Mr. Cardenas. Who would that be?

*Mr. Richardson. Well, a number of them, you heard from last week, and some more and I think you are going to be

hearing from this week right after this panel but -- and there is a variety of segments in the satellite industry that are described in the communications marketplace report that I cited in my written testimony, which has a lot of information about who these players are and what their market share is and things like that. So I would commend that to you as an excellent summary but would happy -- be happy to answer any other questions you might have about where we stack up, if you will, if that's your question in the global marketplace.

*Mr. Cardenas. Because it's my understanding that the projections are that -- about 5500 satellites in space. And as soon as 2030, it might be past 55,000 or more potentially.

*Mr. Richardson. Yes. I think that's a direct result of the tremendous success of the NGSO satellites which require many, many more satellites than the GSO systems. And that's -- that's where I gather there is a projected boom. And that's one of the many challenges for regulators in terms of addressing the higher volume that we can expect and have seen in the last few years.

*Mr. Cardenas. So what role would Congress have to play when it comes to keeping up with that pace? Would you need to see a much more complex stacking regimen within the FCC in order to keep up with that pace?

*Mr. Richardson. Well, we have increased our staffing already by 38 percent.

*Mr. Cardenas. So you don't need any more help? You have all the staff --

*Mr. Richardson. I would never say that.

*Mr. Cardenas. Okay.

*Mr. Richardson. And I think you heard last -- I think you heard last week from industry witnesses about the staffing question, both numbers and expertise.

*Mr. Cardenas. Yeah.

*Mr. Richardson. It's a very -- it's a very complicated -- particularly engineering satellite is very complicated.

*Mr. Cardenas. And how -- how does it -- how does it feel right now when it comes to having domestic staff training and potential experts coming into possibly being future staffers at the FCC with the right expertise when it comes to organically people who grew up here who went to college here in this area?

*Mr. Richardson. Again, I would like to take that back with the -- to give you an answer from the people who are focused more on the -- on the recruitment angle. I think that's your question.

*Mr. Cardenas. I'd love to hear from -- thank you so much Mr. Chairman. I yield back.

*Mr. Latta. [Presiding.] Thank you. The gentleman yields back. And this time, the chair recognizes the vice chair of the subcommittee, the gentleman from Georgia's First

District for five minutes.

*Mr. Carter. Thank you, Mr. Chairman, and thank both of you for being here. We appreciate it. This is extremely important and very educational for those of us who are not quite as up as other people are on this particular subject. You know, I think that all of us would agree on both sides of the aisle that regulations and red tape are -- are hindering innovation and, a lot of times, inhibit our global competitiveness.

So we have to be very careful about that. And there is probably no better example than the satellite marketplace. While we watch our adversaries like China and Russia, we got to ensure that the federal government is not holding innovators back. I truly believe and have always said that the greatest innovators in the world right here in the United States of America, and I believe that. But we've got to help them.

And one way we can help them is not to hold them back and to get out of their way. So I want to thank the chairman for -- for bringing this important topic to our attention because it is important. I want to start with you, Mr. Richardson, and ask you. Tell me about processing rounds. What is that system? When was it implemented, and what was -- why was it implemented? What was the need for that?

*Mr. Richardson. That's a good question about

processing rounds because that's a focus of much of the commentary on this streamlining of the process. For GSO satellites, as I recall, the commission established a first-come, first-serve system for NGSO satellites or NGSO-like satellites. It uses a processing round. And if you are in the same processing round, you have the same priority. If you are not in the same processing round, you have secondary priority.

*Mr. Carter. When was that set up? Was that years ago, or was that just recent?

*Mr. Richardson. It's not recent. I -- I would have to -- I would like to get back to you on the exact date for that. There is a -- there was a proceeding that established the processing rounds. I'm happy to give you that information.

*Mr. Carter. Does it still function today like it was intended to originally? Do you know?

*Mr. Richardson. Well, one of the questions I think that's been teed up in commission proceedings is whether, in light of the differences within GSO and the rapid changes in the industry, should we revisit the way we conduct our processing, including processing rounds.

*Mr. Carter. Okay. Let me ask you this. Do you feel like the workforce at the commission is -- is well-equipped to handle the volume and the complexities of applications?

*Mr. Richardson. That was the subject of last week's hearing that I think the industry felt that we needed more support. And I think I -- I'm not authorized to ask you for additional support, so I won't do that.

*Mr. Carter. And I understand that and -- but let me tell you I'm not interested in throwing money at it. Tell me how we can make it more efficient.

*Mr. Richardson. Well, I think there were good points made last week about, as you say, the complexity of satellite engineering, which is a key part of the processing. And as you know, there are disputes between incumbents and new entrants about whether there is potential interference and how they share spectrum. We are trying to develop rules around that to make that a clearer process that has regulatory certainty attached to it.

But it does need experts. And I certainly recognize the point that the more difficult it is to attract skilled experts to replace the ones that are moving, you know, toward retirement, the better it is for us.

*Mr. Carter. Okay. Mr. Glass, let me ask you. Can you explain the procedures in place to measure interference and protect federal systems when commercial users need access to spectrum for launches?

*Mr. Glass. Thank you for that question. Yes. At NTIA, we coordinate very carefully with the federal agencies

through our interagency process to make sure that we understand what their issues are with any potential interference. We coordinate, then, with the FCC to make sure that we as the U.S. make a smart decision going forward that ensures efficiency and would allow us to maximize the use by spectrum operators.

*Mr. Carter. How do you resolve disputes?

*Mr. Glass. We have a dispute resolution process that is in our new MOU that would allow us to address any issues there.

*Mr. Carter. Okay. I will stay with you, Mr. Glass. Last year, the FCC and NTA -- NTIA established a spectrum coordination initiative. Has this initiative improved issues related to spectrum sharing?

*Mr. Glass. I think that was worked into our memorandum of understanding with the FCC, and it has improved our coordination with them. And I think that it will continue to allow us to improve the process.

*Mr. Carter. Do you agree with that, Mr. Glass? Or excuse me. Mr. Richardson.

*Mr. Richardson. Yes, I would. I think that the -- under the MOU, we've made increasing efforts to coordinate better with NTIA and its federal agencies.

*Mr. Carter. Okay, good. Thanks, Mr. Chairman. I yield back.

*Mr. Latta. Thank you. The gentleman yields that. The chair now recognizes the gentlelady from Texas's Seventh District for five minutes.

*Mrs. Fletcher. Thank you so much, Chairman Latta and Ranking Member Matsui for organizing today's hearing so that we can continue on last week's important discussion on satellites. And as I noted in my questions last week, there are so many areas of importance for our communities that we are talking about here and such great potential.

I want to follow up on the questions that Mr. Carter was just asking and Chairwoman McMorris Rodgers asked a little bit earlier about some of the challenges and the changing environment and the growing workload associated with the current satellite licensing demands. But I know that the SAT Streamlining Act includes a number of proposals to amend the Communications Act to better reflect those changes. So could you just elaborate, Mr. Richardson, a little bit on -- on the reforms that are included in the bill in addition to some of the staffing issues that we've been talking about and some of the retention issues?

Can you just talk about any of the other reforms that are included in the bill that you think would have a positive impact at the FCC?

*Mr. Richardson. It's a very good question, the details of the bill and how they might relate to our pending

rulemaking, which tracks it in many respects. I think the key issues that the bill identifies are the need to have a rulemaking to clarify what the performance criteria are for satellites so that applicants know what to expect. It has a process for expediting on applications for minor modifications that shouldn't take a whole lot of time. I think it would allow us to establish a process that would avoid the back-and-forth about parts of the application if the applicant maybe didn't realize they needed to be put in there, but we can be clearer about what's required. And it -- I think those are the key things. But there -- there are issues, for example, like letting those in the satellite industry know what are the ground rules for sharing. What are the ground rules for harmful interference, which, in my experience, I'm not an engineer, but I know it's -- it's a -- it's a very, very complicated question, particularly in the satellite field.

And what we've done is we've proposed in this rulemaking some very specific proposed alternatives for people to comment on about how to measure interference. And again, once we get those ground rules squared away, the hope is that the application process, again, with the -- coupled with the priority of additional staffing and in a new bureau that's focused directly on this, we'll be able to address the challenge.

But I have to say that it is a -- it is a -- everyone recognizes that the volume of these applications and the numbers of satellites up there are increasing very, very dramatically.

*Mrs. Fletcher. Well, thank you very much for that. With the time I have left, I want to switch gears a little bit with a question for both of you to touch on something that we haven't touched on as much today at this hearing, but I know, in prior Congresses, we've touched on the Science, Space and Technology Committee a little bit. And it's important to our discussion here as well. So Mr. Richardson and Mr. Glass, could you both just talk a little bit about how the FCC and NTIA can do more to help improve space sustainability and reduce orbital debris in lower orbit.

*Mr. Richardson. I'm --

*Mrs. Fletcher. Should I start with Mr. Glass?

*Mr. Glass. Thank you for that question. With respect to orbital debris, that gets outside of the spectrum issues that I'm able to answer. However, we would be more than glad to get back with your staff with that answer.

*Mrs. Fletcher. Okay. Thanks.

*Mr. Richardson. From the FCC's perspective, we have another proceeding that's been pending, asking questions about how to resolve some of the questions about orbital debris. We did, last year, address one specific aspect of it

which is the amount of time that it -- after a mission is over that a satellite needs to be decommissioned, deorbited. And that is a significant issue because I think there are now 4800 or more satellites up there. And the industry, I think, agrees that this is a potential issue for collisions, avoidance maneuverability, explosions. And so what we've done is we have established a rule that requires that for -- orbiting satellites of five years.

*Mrs. Fletcher. Thank you so much for that. I see that I've gone over my time, and I thank you, Mr. Chairman and yield back.

*Mr. Latta. The gentlelady yields back. The chair now recognizes the gentleman from Florida's Second District for five minutes.

*Mr. Dunn. Thank you very much, Mr. Chairman. Closing the digital divide is encouraging innovation in satellite communications, outstanding priority for me personally and for this committee. Satellite operators can help provide broadband across the country and, in fact, around the world. The ability to maintain internet access during and after natural disasters is also vitally important as we discovered after Hurricane Michael in my home district.

And so I want to thank the chairman for organizing this hearing and highlight the bipartisan legislation we are discussing today. This is also -- one of the bills is also a

LAUNCH Communications Act, which I reintroduced with my esteemed colleague from Florida, Darren Soto. The LAUNCH Communications Act streamlines some of the bureaucratic elements of the launch process, making it easier for private companies to obtain authorizations for temporary use of necessary spectrum. And I look forward to working with Congressman Soto and members of the committee to get this bill passed this session. We need to ensure that the regulatory processes, in fact, support innovation and don't hamper that or get in the way.

Mr. Richardson, the FCC's policies guiding the licensing process for the special temporary authorizations were designed decades ago. Do you think they still meet the needs of a U.S. commercial launch market where we're launching, on average, two times a week?

*Mr. Richardson. It's a very good question. I think that this -- this bill brings needed focus to the changes in the satellite launch industry. As the satellite industry has grown, the satellite launch needs have grown. We need -- we need to do better. And I think we -- we began that with that allocation of additional spectrum to permit applications that avoid the special temporary authority.

*Mr. Dunn. Obviously, we'd like to standardize the process so everybody knows what they're going to be using ahead of time. And this, by the way, is what, you know, the

various launch companies -- satellite veterans what they will ask of us is to come in and get involved here. So 2013, the FCC began proceedings to reallocate spectrum specifically for launches, commercial launches, and create a streamlined process, a whole process here. So I understand the NTIA, you said you support this effort on requiring the FCC, I believe, earlier today. So this goal, however, remains pending. It is 10 years later. Wouldn't it be beneficial to get these things through?

*Mr. Richardson. We have a proceeding designed to do that, to establish the service rules and the licensing rules now that we have the spectrum, so that's the next step.

*Mr. Dunn. Yes. Mr. Glass, you previously confirmed your NTIA support for these processes. Can you comment on how bundling licenses might be beneficial if you think it would be beneficial. So that's the launch, the unorbited, and the decommissioned spectrum.

*Mr. Glass. Thank you, Congressman, for that question. Unfortunately, that's outside my area of expertise specifically. I'm more oriented on the process with respect to registration, coordination, etc., of satellites. I had -- can, however, make sure that we get back to your staff with an answer.

*Mr. Dunn. So I actually -- maybe Mr. Richardson can answer that question, bundling of licenses for -- for

spectrum. So for the whole -- I mean, the launch, the orbit -- on-orbit missions and decommission.

*Mr. Richardson. If I understand your question, it's about improving and accelerating the process for granting applications.

*Mr. Dunn. You bundled license. You give out all of those license all at once. You don't have to go back and ask for another license to -- different license to communicate with a satellite and other one to deorbit.

*Mr. Richardson. I don't know whether that's raised under our proposals or not. Could I get back to you on --

*Mr. Dunn. Yeah, so, you know, that's -- as we've talked about streamlining here today, this seems like an obvious way to streamline that process, give everybody some -- with that, I yield back my time. Thank you very much, Mr. Chair.

*Mr. Latta. The gentleman yields back. The chair now recognizes the gentleman from New Jersey, the ranking member of the full committee, for five minutes.

*Mr. Pallone. Thank you, Chairman Latta. I appreciate having the FCC and NTIA here to provide feedback on these bipartisan bills. With respect to the Secure Space Act, I'm interested in hearing more about how we can ensure that space infrastructure doesn't create the same national security vulnerabilities to our U.S. communications like we've seen

out of some of our other infrastructure and networks. So let me ask Mr. Richardson how would the Secure Space Act ensure the security of U.S. satellite marketplace?

*Mr. Richardson. Thank you for the question. This is an area where we have first looked at use of universal service funding and protected that against the Rip-and-Replace Program I'm referring to. And then we -- last year, we completed proceeding pursuant to Congress's mandate to deal with equipment authorizations. And this bill would focus on satellite -- NGSO satellites is the way it's drafted, as I understand it. And I think we would apply much the same regime, which requires a finding that a service is a specific kind of communications equipment or service.

And then a determination by a designated executive branch agency that the production or provision of that service is -- poses unacceptable risk to the national security of the United States or U.S. persons. And then, under this bill, the commission, much like the secure networks, the Secure Equipment Act Bill -- Act would -- would put these on a covered list and bar us from granting applications to those persons or their affiliates.

*Mr. Pallone. So, I mean, the commission's authority to oversee and regulate communication systems of all types is clear. But the SAT Streamlining Act aims to enshrine that authority more explicitly in the -- can you just explain

maybe better the -- the value in codifying the FCC authority over the satellite market as the discussion draft proposes.

*Mr. Richardson. It's a good question about the law in this area. I think it would -- as I've said in my written testimony, it's well established under Title III of the Communications Act of 1934, really the Radio Act of 1927 that with respect to radio spectrum management the commission has a plenary rule in making sure that those who are licensed serve the public interest. So we think we have established authority, but it's -- it's always helpful to have a confirmation and additional statute of the direction you think we should be going.

*Mr. Pallone. Mr. Glass, I'm pleased to see the progress being made by NTIA to reclaim its role in coordinating federal spectrum users and to restore order to spectrum management operations. But what does NTIA's coordination with the FCC look like with respect to the satellite industry?

*Mr. Glass. Thank you for that question. That is handled through our -- the revision of our MOU we -- that we have with the FCC. And it allows us to promote effective long-range planning at the agency, principal, and staff levels to make sure that we maximize access to spectrum for satellite operators. We coordinate very carefully on the special temporary authorizations quite often directly with

the operators in precoordination to allow us to be able to facilitate that process as quickly as possible.

*Mr. Pallone. Thanks a lot. Thank you, 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 recognizes the gentleman from Utah's Third District for five minutes.

*Mr. Curtis. Thank you, Mr. Chairman. I thank the witnesses. Mr. Glass, I'd like to highlight some of your efforts and the efforts of others internationally on the international spectrum policy. Particularly, I understand after five years of Chinese leadership, the ITU, we've been successful in getting our candidate in -- general -- Secretary General Doreen Bogden-Martin -- I think I pronounced that correctly -- who was competing against a former Russian candidate -- right? -- who worked for Huawei, clearly very important to the U.S. interest.

And I find this very interesting. I worked -- I had a bill called the TAIPEI Act that passed on 2020, and its whole point was to make sure that Taiwan was relevant in these international organizations and it really -- the point of the bill was to do exactly what you've done here, is to make sure we have good leadership overseas. So can you tell us a little bit about your work there and why this is so important

for the United States.

*Mr. Glass. Thank you for that question. So the election of our candidate is the new Secretary General of the ITU, was a huge step in our continuing leadership. The U.S. should strive to continue to fill leadership roles throughout the radio communication sector of the ITU, which is responsible for satellite registration and coordination, and we should continue to lead in the development of agenda items at WRCs and sharing studies for those agenda items to ensure long-term U.S. leadership for satellite communications technology.

The U.S. has a long history of leading on satellite issues, and I believe we'll continue to be on the forefront of needed changes for satellite regulations and adoption of technologies in the ITU.

*Mr. Curtis. Can you give us a sense why this matters? If we don't do this, what could go wrong. If we are not leading internationally, tell us why this matters.

*Mr. Glass. Leadership in any technology is always important, but you are getting into policy areas that are beyond my purview to comment on, so we can get back with you with a more thorough answer.

*Mr. Curtis. Okay. That's fine. And you mentioned this briefly in your remarks. But besides the selection, what would you like to see the United States do to exert

influence internationally?

*Mr. Glass. As I said, Congressman, I think that we need to continue to fill leadership roles throughout the radio communication sector of the ITU and to make sure that we are leading and putting forward advanced technologies into WRC agenda items and to continue our leadership in those studies.

*Mr. Curtis. Well, thank you to both of you. More just a comment, and that is just how critically important your success in my -- is in my district has some specific geographic challenges, and satellite offers some solutions for it. And we are all hampered by -- it's been discussed quite length today updated government regulations and bureaucracies. And we feel that deeply in our district, so I'd like to thank you for your work and wish you all success. Thank you. Mr. Chair, I yield my time.

*Mr. Latta. Thank you very much. The gentleman yields back the balance of his time. At this time, the chair recognizes the gentlelady from New York for five minutes.

*Ms. Clarke. Thank you very much, Mr. Chairman. I thank our ranking member for convening today's hearing, and I thank our witnesses for joining us today. Advances in satellite communication technology represent another major step towards bridging the digital divide and unleashing the full potential of our nation, from connecting those in

hard-to-reach rural and tribal lands serving as a backstop for access in emergency services like 911 and providing a secure communications channel for those fighting oppressive regimes around the world. The satellite industry is already playing a critical role at home and abroad.

As the pace of advancement continues and satellite operators and wireless carriers begin pairing up to integrate their networks and eliminate coverage gaps, we need to ensure that Congress establishes a regulatory landscape conducive to fostering these kinds of innovations while balancing the spectrum needs of the federal government. We also need to ensure that the FCC can keep up with the pace of licensing applications it is receiving both today and into the future.

So my -- my first question is directed to both of our panelists. The FCC recently announced its adoption of Chairwoman Rosenworcel's plan to establish a new Space Bureau. How can this new bureau other -- and other recent FCC action related to satellite licensing work to foster further innovation and keep us competitively globally? And let's start with you, Mr. Richardson.

*Mr. Richardson. Thank you for the question. We are very excited to have this proposed reorganization, which is subject to approval by the appropriators. But I think the key is not only the increased staffing that we've already had, the 38 percent that I mentioned before but also the

focus of this new bureau will be devoted to the satellite industry because we recognize that -- that this is an extremely important industry. Its importance is growing for all of the reasons that you identified.

*Ms. Clarke. Mr. Glass?

*Mr. Glass. Thank you. So our coordination with the FCC is handled through our memorandum of understanding. I don't think that will be directly impacted by the new bureau, but we, of course, look forward to working with them and continuing our close collaboration.

*Ms. Clarke. Very well. Mr. Richardson, there seems to be a widespred agreement that updating the FCC satellite licensing process is necessary for increased global broadband coverage. Considering that the Satellite and Technologic -- excuse me -- Telecommunications Streamlining Act will codify the FCC's authority to grant licenses for GSO and NGSO satellite services, could you tell us how this authority would expedite broadband coverage in the U.S., and what kind of resources or support you think would be necessary for the FCC to carry out the mandates of this bill effectively?

*Mr. Richardson. It's a very good question about a very important challenge. I think that the commission and the authors of this bill are proceeding in tandem to try to identify ways that we can simplify the application process and expedite it that way to establish regulatory certainty

about the kinds of policies that we'll be governing, the processing of the applications. And then we do recognize that as the number of these applications increases, particularly we're talking about NGSO applications. We need to be positioned to be able to feel those on a prompt basis. And I think that the witnesses last week identified the need for our capabilities to be such that we can do that both on in terms of how many engineers and others we have but also the experience needed to handle these things.

*Ms. Clarke. Very well. I've only got seconds left, so I'm going to yield back and thank you very much, gentlemen, for your expertise.

*Mr. Latta. Thank you very much. The gentlelady yields back, and the chair now recognizes the gentleman from Pennsylvania's 13th District for five minutes.

*Mr. Joyce. Thank you, Chairman Latta, and Ranking Member Matsui for hosting today's hearings. And thank you for the witnesses. Mr. Richardson, as we have seen this past week, adversaries continue to test the resolve and grit of the United States. You mentioned in your testimony that the Secure Space Act would prevent certain covered equipment which includes Huawei and ZTE from being granted licenses or market assets petitions from non-geostationary orbit. Can you talk more about some of the work that the commission is doing to prevent our adversaries from gaining a foothold in

this critical infrastructure?

*Mr. Richardson. It's a very topical question and a --

*Mr. Joyce. Indeed.

*Mr. Richardson. -- very important one. I think the commission has been devoted in a number of different ways to identifying national security threats to our communications infrastructure. One is -- and forgive me if I'm misunderstanding your question, but began with a Rip-and-Replace Program and moved, directed by Congress, in the Secure Equipment Act to bar Huawei and others from being authorized to use the commission process to permit the distribution of their equipment of certain kinds in the United States.

We have also recently taken action to revoke international common carrier authorizations from three Chinese government-owned companies. And we have, in all of these efforts -- and if this bill were enacted in this area with satellite, we would be working very closely with our federal partners, the expert national security agencies, which provide us with recommendations and advice about the nature of the threats and how it relates to the particular equipment involved.

*Mr. Joyce. Mr. Glass, can you talk more about how intergovernmental coordination can create a friendlier regulatory environment for the satellite industry?

*Mr. Glass. Thank you very much for that question. Yes. We endeavor always to work in a collegial manner with our partners both at the FCC and in the private industry to ensure that we maximize the access to the spectrum while, at the same time, making sure that we take care of concerns with the federal agencies in our interagency coordination process. We believe that this is a robust process and allows us to work in a very efficient manner with them.

*Mr. Joyce. How can Congress better assist with encouraging more intergovernmental coordination between NGIA and the FCC for nongovernment use of federal spectrum bands?

*Mr. Glass. Thank you for that question, but that gets into policy areas I'm not able to comment on, but my staff can get back with your staff to answer that.

*Mr. Joyce. Thank you. I appreciate that. Mr. Richardson, would you feel comfortable in commenting on that?

*Mr. Richardson. I think I would just say that the revised MOU, I think, is a demonstration of the fact that the FCC and NTIA recognize the importance of working well together. And from my perspective, it's been working very well.

*Mr. Joyce. Thank you both. Mr. Glass, I would appreciate the follow-up answer to that question. And Mr. Chairman, I yield the remainder of my time.

*Mr. Latta. Thank you. The gentleman yields back, and

the chair now recognizes the gentlelady from California's 18th District for five minutes.

*Ms. Eshoo. Sixteenth District.

*Mr. Latta. I'm sorry.

*Ms. Eshoo. Think of Sweet 16.

*Mr. Latta. Sixteen. Well, there you go. Sweet 16. I'll remember that now.

*Ms. Eshoo. Okay. Thank you, Mr. Chairman, for this legislative hearing, and thank you to the witnesses. Mr. Richardson, during last week's hearing of this subcommittee, we heard a lot from industry about the delays in various applications by satellite companies. Some of the bills we are considering today are trying to address those concerns.

You mentioned in your written testimony that the FCC recognizes the new space-age needs of the new rules and that it's taken a number of steps to modernize its processes regarding satellites. What are those steps that FCC is taking, and how are they actually going to modernize the process?

And as a follow-up, does the FCC need any new authorities to help modernize the process?

*Mr. Richardson. Thank you for the question. I was --

*Ms. Eshoo. You're welcome.

*Mr. Richardson. I was quoting from the chairwoman about the new space-age needs, new rules, which is a

demonstration, I think, that the commission unanimously recognizes that we are in a new era with satellite, particularly NGSO satellites. And we need to look at ways to streamline things. So we very much appreciate the efforts of this subcommittee.

*Ms. Eshoo. But what are the steps?

*Mr. Richardson. The steps would be --

*Ms. Eshoo. I know the rest.

*Mr. Richardson. Okay.

*Ms. Eshoo. I know the rest, but what are the steps?

*Mr. Richardson. The steps would be to simplify the application process so that we don't have miscommunication with the applicant about what the FCC needs, establish the ground rules for things like how to measure interference, how to -- how to permit sharing because, in many of these bands, there isn't exclusive spectrum. They all need to share it. These are things that the commission has teed up for industry and public comment, so we are -- we need to address those.

*Ms. Eshoo. I think we're going to -- at this subcommittee, need to track that because it's important. Otherwise, it's -- it sounds good on paper but doesn't really effectuate where we -- on land and what we want to accomplish. In your written testimony, you pointed out that the Secure Space Act does not include a specific grant of rulemaking authority to the FCC to implement it. Now, the

FCC recently adopted rules regarding my Secure Equipment Act, which prevented the FCC from issuing licenses to telecommunication companies that pose a national security risk to our country like Huawei and CTE. We are obviously not very fond -- how important is that rulemaking authority to the success of the policy, and what can the FCC do or not do if you don't have it?

*Mr. Richardson. I'm glad you asked that question. I think that I want to emphasize that we don't -- as I think I've indicated before, we don't -- we have broad authority already under Title III of the Communications Act. It's a matter of an administrative convenience, I think, if we had rulemaking authority as we did under the Secure Equipment Act. It's not necessary.

*Ms. Eshoo. So you have what you need?

*Mr. Richardson. We do.

*Ms. Eshoo. Good. Excellent. You've mentioned the MOU several times since I came into the hearing room. What exactly is in it? What's new that's in it?

*Mr. Glass. Thank you. So with the existing success of the MOU, the framework was targeted for improvements and additions. It reaffirms and emphasizes respective roles of the FCC and NTIA, as the agency is responsible for managing spectrum in the U.S.

*Ms. Eshoo. Sir, I don't know what you are talking

about. You need to break it down into something that's understandable. You are reading something, but it doesn't make sense to me.

*Mr. Glass. I --

*Ms. Eshoo. What's new that's in it?

*Mr. Glass. We have improved processes for coordination to allow us to better communicate with the FCC and --

*Ms. Eshoo. But what is that? What does that mean?

*Mr. Glass. I will have to get back with your staff on an answer for that.

*Ms. Eshoo. But is it speaking a better language? I mean, what is it? We are all for getting along with each other, but this is something that -- it seems to me it's something beyond what you just said. At least I hope it is because that doesn't -- that kind of sounds like -- law. I don't know. I don't understand it. Maybe others do. I don't.

*Mr. Richardson. One thing I think --

*Ms. Eshoo. Maybe the MOU is important.

*Mr. Richardson. We agree. I think one thing, as I recall, that it does is it focuses on making sure that each party has adequate time to review the proposals for use of spectrum by the other party.

*Ms. Eshoo. Can you get back to me on this --

*Mr. Richardson. Yes.

*Ms. Eshoo. -- here? Thank you. Yield back.

*Mr. Latta. Thank you. The gentlelady yields back, and the chair now recognizes the gentleman from Texas's 14th for five minutes.

*Mr. Weber. Think of it as sweet 14. Anyway -- two can play that game.

*Mr. Latta. You are making fun of me.

*Mr. Weber. Oh, no, no. It's all -- it's all good. It's all good. Texas is the sweet spot of the United States if you all can't tell that I'm a Texan.

Mr. Glass, I want to go to you. In your description of your all's roles, you have one of your principal advisors covers the President of the United States. Number two, he managed to -- spectrum. And you had the key goal as to advance U.S. leadership. Witnessing the recent balloon foray across United States of America and things of that nature, it really brings up an interesting question to me. You manage the spectrum. FCC manages the spectrum. Is that right, Mr. Richardson?

*Mr. Richardson. For nonfederal users.

*Mr. Weber. For nonfederal users. And that's exactly my point here, is that you talk about things. There is an -- actually table here, and you all probably don't know the frequency numbers about VHF being 30 to 300 megahertz and the UHF being 300 to a thousand megahertz. Are you all that

technical about it?

*Mr. Glass. I understand that.

*Mr. Weber. You understand that?

*Mr. Richardson. Yes.

*Mr. Weber. Okay. Well, what megahertz would you rather apply for? I'm just messing with you. That's okay. The point I'm making is this. But you have the International Telecommunication Union which we -- you say we discussed our guy elected to. But you've got bad actors out there. You've got China, and you've got a whole bunch of them that would rather do things and radio -- against our best interests. In radio frequencies, power wattage means a lot when you're -- when you're broadcasting your signals. You all follow me? The amount of wattage that you use. What is to prevent China from over-broadcasting us in wattage on any of these frequencies? Mr. Glass, I'll start with you.

*Mr. Glass. Thank you for that question. Unfortunately, you are getting into policy issues with respect to that that I'm unable to comment on, and we would have to get back with you on an answer on that.

*Mr. Weber. Is you all's -- you manage federal agency spectrum, so surely a federal agency that would be in harm's way where a foreign country could overpower their frequency, surely that would fall within your purview?

*Mr. Glass. We have a process for identifying and

trying to address interference both domestically and internationally. That process is very detailed, and that is something that we could get back with you on.

*Mr. Weber. Is that something that's handled by the no such agency, NSA?

*Mr. Glass. I would not know to be able to answer that question.

*Mr. Weber. Okay. Mr. Richardson, you --

*Mr. Richardson. With respect to commercial spectrum, there is a staff at the FCC that monitors use of frequencies. I mean, broadcasting, for example, they couldn't make it from China to here. It wouldn't -- it wouldn't work. You are talking about satellite?

*Mr. Weber. Well, it depends on the positioning of the satellite.

*Mr. Richardson. Yeah. You are talking about satellite.

*Mr. Weber. Correct.

*Mr. Richardson. That -- we monitor the use of spectrum in the United States and obviously do --

*Mr. Weber. So let me --

*Mr. Richardson. -- refer to some of these other -- those other agencies you mentioned.

*Mr. Weber. If I can interrupt, Company A, B, C -- telecommunications, whoever that is, suddenly somebody is

dispossessing their signal so that they can no longer use that signal because they are overriding them with the higher wattage available to displace that signal. Do they come to you, or do they come to Mr. Glass?

*Mr. Richardson. Well, I can give you an example when I was in private practice. We had a problem in the Los Angeles -- our client, ABC, was being overrun by a station from Mexico. We came to the -- the FCC and they -- they addressed the problem with their Mexican counterparts.

*Mr. Weber. And so Mexican is a friendly -- Mexico is a friendly country. So that would fly in that instance. It probably wouldn't fly to an unfriendly nation?

*Mr. Richardson. I don't know that that situation has ever occurred, but I --

*Mr. Weber. It's going to occur. You are going to have our enemies try to displace our capability of satellite signals.

*Mr. Richardson. I think if I could get back to you on the ways that we might address that problem --

*Mr. Weber. If you don't mind, that would be great. I'll just reserve that. You all get -- reach back out to our office. Mr. Chairman, thank you, and I yield back.

*Mr. Latta. Thank you. The gentleman yields back the balance of his time, and the chair now recognizes the gentleman from Georgia's 12th District for five minutes.

*Mr. Allen. You got that correct. Thank you, Chair Latta. Thank our witnesses for being here today. Yeah. This is a critical time in our nation's communication systems, a lot of high-tech advancements that we -- that we talked about today. You know, Congress is trying to keep up with innovation across all -- all areas of technology. Of course, you know, China is -- you know, we are in constant competition there and for federal agencies like the ones before us today have got to be nimble enough to address the multitude of needs. And we certainly have our work cut out for us in Congress. That's where I've been so pleased with the rate at which the committee has begun its work here over this past three weeks. Energy and Commerce Committee participated in six hearings, two roundtables, six briefings and one markup with another markup scheduled for tomorrow. So we are -- we are out of the gate very quickly. And that's why the American people send us here. Mr. Richardson, let's talk about the Secure Space Act.

Does your agency ever receive applications from the types of entities which this bill has jurisdiction over?

*Mr. Richardson. Not to my knowledge.

*Mr. Allen. Okay. And --

*Mr. Richardson. Oh, you are talking about satellite applications?

*Mr. Allen. Yeah.

*Mr. Richardson. Yeah. Not to my knowledge.

*Mr. Allen. And what would be the impact if one of those applications was somehow prohibited?

*Mr. Richardson. Well, I guess the question the bill addresses is the potential threat to national security from having equipment of that type in a position to communicate over U.S. territory. And that would be a problem that I think, as is currently the case, these kinds of applications would be ones that -- for satellite services, just like for international -- services or cable landing licenses, all of these kinds of applications, we would be in a position to refer them under our established policy since 1977 -- 1997 -- excuse me -- to refer them to Team Telecom for their recommendations about national security, law enforcement, foreign policy and trade policy concerns. And we have -- the example I mentioned before of Chinese government-owned international 214 applications for common carrier service in the United States, which were revoked, the -- our federal partners provided key recommendations on those.

*Mr. Allen. Good. Thank you. This is a question for both of you. Obviously, I'm in a -- well, a big part of my district is rural. And of course we had issues with both broadband. Of course we use a lot of that in agriculture. And what initiatives do you see that we need to implement to make sure that we get satellite coverage, what we need as far

as technology to rural areas in this country?

*Mr. Richardson. Well, I can start. I think the draft bill on precision agriculture is an important indication of the importance of satellite to addressing those particular needs of farmers and ranchers. And as I mentioned earlier, we have commissioned together with USDA a task force that has come up with some recommendations for how to make use of spectrum, including satellite, in deploying for these precision agriculture purposes. And that's -- that's one. I think the other is the promise of satellite broadband to cover areas that it makes no economic sense for terrestrial folks to cover. And then the other very intriguing idea of one of the other bills is can we use satellite to fill in, in areas where, because of disasters or other reasons, whether in rural areas or not, we need a better ability to communicate nine -- with 911 or send out emergency alerts. And that's a very interesting combination of terrestrial and satellite, if you will.

*Mr. Allen. Mr. Glass, I apologize. I'm out of time, so I have to yield back.

*Mr. Latta. Thank you. The gentleman yields back, and the chair now recognizes the gentleman from Ohio's 12th District for five minutes.

*Mr. Balderson. Thank you, Mr. Chairman, my fellow Ohioan. Thank you both for being here today. And I'd like

to first go with Mr. Richardson. Satellites and cellular presents a great opportunity to fill in coverage gaps across the nation. In rural Ohio, in Appalachia specifically, these coverage gaps are more pronounced and have a profound impact on the ability of my constituents to connect with their friends, family and coworkers.

My question, Mr. Richardson, can you briefly explain the process satellite companies need to go through to receive authorization from the FCC to use satellite technologies to provide cellular services?

*Mr. Richardson. By "cellular services,'' you mean fill in service where --

*Mr. Balderson. Yes.

*Mr. Richardson. -- where there is no cellular terrestrial service?

*Mr. Balderson. Yes, sir.

*Mr. Richardson. This is something that, as I said, is a new concept that our technical experts are looking at in the context of a couple of applications that have been filed to do just this. And they do raise some technical issues about the way those could be coordinated, and we are looking at that right now.

*Mr. Balderson. Okay. You mentioned in your testimony that the commission has already taken several steps to modernize the application approval process. Can you

elaborate on that and expand on what the SAT Streamlining Act would do to complement those efforts?

*Mr. Richardson. Sure. That's a good question. And I -- I -- when I said we have taken several steps, the commission takes steps first by issuing notices of proposed rulemaking because the law requires that. And the purpose of that is to make sure that we are informed by the industry and members of the interested public about what the right steps would be. So we've teed up steps that are very similar to the steps in this bill. They are how can we make the application forms simpler. Can we do that by establishing ground rules for what kinds of measures we take for harmful interference and sharing of spectrum. Can we address other issues or we'll agree is an example of them that, right now, applicants receive their -- their grants of applications conditioned on the outcome of orbital debris proceedings.

So those are the steps, I think, that would -- would help. And again, we -- we -- we agreed with the subcommittee's draft bill that these are things that would help promote more expedited satellite service, and that's why we're -- we launched these various rulemakings to kind of bring them home to do that kind of thing.

*Mr. Balderson. Okay.

*Mr. Richardson. I should say, too, that -- I think I said in my written testimony this is -- when I was in private

practice, I loved getting my applications granted as quickly as possible. And the commission generally helped me out with that. But the process for public participation is one that ensures that we balance the need for expedition with ensuring that our main mission -- one of our main missions that we -- we don't pose any harmful interference to other licensees or potential licensees. And so we -- we have to balance those two together.

*Mr. Balderson. Okay. Thank you. My last question, what technical considerations, be it spectrum or usage of other issues, does the commission consider when deciding whether to authorize satellite to cellular service, and would it be helpful for Congress to spell out what technical considerations the commission should be considering?

*Mr. Richardson. I think this comes up in the ALERT Parity Bill before you. And I believe that it would make sense for our technical experts in the public safety field, because this deals with 911 and EAS in the engineering field because of the potential, you know, coordination needs and in the licensing field because the question is, you know, how do you -- how do you issue licenses to do this that they would be happy to give you some technical assistance in some of the issues that these new forms of -- these partnerships, you know, pose.

*Mr. Balderson. Okay. Thank you very much. Mr.

Chairman, I yield back.

*Mr. Latta. Thank you. The gentleman yields back the balance of his time. The chair now recognizes the gentleman from Texas's 11th District for five minutes.

*Mr. Pfluger. Thank you, Mr. Chairman, and I'd like to thank the witnesses for being here to discuss some of these. I know a lot of questions have been asked. And there's, you know, a lot of details discussed. I kind of want to go more broadly. And I'll open it up to both of you here. When it comes to the policies that we have, how we are competing with -- let's say China. Let's call this, I think, what it is. And the policies we have on issuing the appropriate permits and licenses to do -- you know, my district, we've got a lot of agriculture. Very interested in the precision agriculture when it comes to the cotton industry, being able to utilize technology that exists, you know, whether it's the planting or the fertilization or any of the other -- any of the other new things that are going to be available.

But also more broadly, when it comes to national security issues that we have of communications and how we get through this process at the speed of relevancy, what are the major hang-ups for speed of relevancy right now? We'll just -- if you guys can give me a minute each, and then we can go to the next question.

*Mr. Richardson. Okay. What I think on the precision

agriculture, the work of our task force is referred to in the bill, and we appreciate the support for bringing that to closure. I think it was one of the comments we heard earlier. On the national security issues, I think we do need to maintain our position in the global economy with our satellite industry to make sure that it's as streamlined as possible. And that's what we are working to do.

*Mr. Pfluger. Mr. Glass?

*Mr. Glass. So we work very carefully through our coordination process to ensure we continue our leadership and development of advanced technologies. But beyond that, I think your question gets into policy issues that I'm unable to answer, and we would have to get back with you --

*Mr. Pfluger. I mean, do you have an opinion on --

*Mr. Glass. I do not have an opinion.

*Mr. Pfluger. You know, let's -- let's consider a couple of things. And let me just, you know, open back up. I mean, where in the energy space when it comes to production of energy do we need to be focused and do we need to be looking at these capabilities to -- to enhance the production, to enhance, you know, the overall efficiencies? I mean, where can we go in the energy industry to use satellite technology to help, you know, whether it's accomplishing all the goals that we went to accomplish with taking care of our Earth and making sure that we have

efficient energy specifically in the Permian Basin for the production of oil and gas. Can you talk to that?

*Mr. Glass. Thank you. That unfortunately is outside my area of expertise, so I would be unable to give you an answer today. But, however, our staff can get back with you on an answer.

*Mr. Richardson. I think you are identifying one of the important potential uses of satellite, which is to cover broad swaths of territory in identifying things that the energy industry can use. I think there are specific kinds of licenses that have been issued by the FCC for that purpose, and I'd be happy to get back to you about the uses of the satellite spectrum to facilitate the work in the industry -- industry.

*Mr. Pfluger. Mr. Glass, let's talk about the nonfederal use of spectrum bands. You know, we are talking about the increasing leadership in the private sector, the dual-use technologies. Do you believe NTIA and other federal agencies need to enhance their relationships with the private sector?

*Mr. Glass. Thank you very much for that question. We are always striving to enhance our communication and our ability to coordinate with both the FCC and private industry to increase efficiencies and to be able to maximize spectrum use by commercial sector.

*Mr. Pfluger. Do you think we are doing enough?

*Mr. Glass. I --

*Mr. Pfluger. Are we operating at the speed of relevancy on those relationships with the private sector?

*Mr. Glass. Thank you for that. We are always striving to improve because there is always room for improvement.

*Mr. Pfluger. Mr. Richardson, any thoughts on that?

*Mr. Richardson. On -- on the -- the ability of the private industry to work with the federal government agencies, is that -- is that --

*Mr. Pfluger. That's right.

*Mr. Richardson. -- the question I -- obviously, the FCC promotes those relationships. And I -- I would concur that I think we have done a pretty good job of making sure that federal government users and commercial users can meet eye to eye.

*Mr. Pfluger. Okay. We have some questions we'll submit afterwards, I get back.

*Mr. Latta. Thank you. The gentleman yields back, and the chair now recognizes the gentlelady from Florida's Third District for five minutes.

*Mrs. Cammack. Thank you, Mr. Chairman. Thank you to our two witnesses for this first panel for appearing before -- I'll just follow up on my colleague from the great state of Texas, his commentary about striving to improve. Mr.

Glass, you said we are, quote, always striving to improve. By what metrics are you tracking that type of progress?

*Mr. Glass. Thank you for that question. I am not aware of specific metrics for tracking that. We are, however, through our MOU with the FCC constantly looking to improve our processes and communication, improving our processes in being able to facilitate access to spectrum by the commercial sector. And that is done in the MOU that we currently have by setting specific timelines for communication of all parties so that we can streamline that process.

*Mrs. Cammack. So without specific metrics, the only tangible way that you can measure progress is by communication timelines?

*Mr. Glass. I am unaware of any specific metrics. There may be -- and we can get back to your office with that answer.

*Mrs. Cammack. Okay. That would be very, very helpful. Mr. Richardson, how should changes like the improvements in the Streaming Act be developed to ensure that the FCC can maintain a flexible position not only to address the issues that are within the licensing space today but also those in the future without impeding innovation within the industry? And I’m sure you have some personal expertise that you can speak to before your time here -- FCC.

*Mr. Richardson. Well, I think the history of regulation at the FCC, if you follow a timeline, has been to be increasingly aware and addressing the question of is -- is -- when is regulation needed, and when is it not needed. I think that's something that's always at the forefront and people may have disagreements about.

*Mrs. Cammack. Not in Washington.

*Mr. Richardson. Right. But -- but I think the commission is well-attuned, again, through its rule-making processes because it hears a lot about this from all sides about how much regulation is too much and how much is too little.

*Mrs. Cammack. So in -- in your personal capacity as someone who worked to help expedite applications et cetera --

*Mr. Richardson. Oh.

*Mrs. Cammack. -- what regulatory burdens are, at this point in time, unnecessary that we, in this body should address to potentially take off the books.

*Mr. Richardson. I -- I can't identify particular regulations. I think one of the things that we've been working on with respect to satellite applications and this bill also addresses is are there ways that we can simplify our forms from my -- my experience example is when I first started private practice in 1977 -- I'm ashamed to say it was a long time ago. We had renewal applications that were like

this. And they were reduced to a postcard.

And that was in broadcasting. It was a little different. This is more complicated. So the technical showings, engineering showings for satellite applications on Schedule S, I think it is, are more fulsome. But one of the things we strive for is sort of a can we simplify them so that we -- the processors can say, yeah, got that. Yeah, got that, you know, and move on down. And that's -- that's one of the goals of this rulemaking.

*Mrs. Cammack. Do you think that the current legislation addresses ways that the FCC and satellite companies can coordinate on the technological advancements that are being made? Is there an element that we need to address that can help facilitate those changes in rapidly changing environments?

*Mr. Richardson. Well, it -- it -- it does. This legislation does address those, as do our rulemaking proposals because they -- they try to hit all of the subjects as well. In other words, how do we make the application simpler, avoid confusion? How do we establish ground rules in advance for interference and sharing? How does the processing round system work? These are things that both these bills address and the FCC addresses. And we are -- this is a rulemaking that just went out in December. So the comments from industry and the public on how best to do this

are due -- comments, March 3rd. Reply comments, April 3rd. So we are looking forward to seeing whether we can get recommendations and suggestions that we can finalize into new rules for the new space age, you know?

*Mrs. Cammack. I appreciate it. My time is expired. I yield, Mr. Chair.

*Mr. Latta. Thank you. The gentlelady's time has expired, and the chair now recognizes the gentleman from California's 23rd District for five minutes.

*Mr. Obernolte. Thank you, Mr. Chair. Thank you to both our witnesses. I have enjoyed the hearing. Mr. Richardson, you had highlighted in your testimony you need to develop effective processes for the sharing of spectrum. And you mentioned that it's particularly important that the satellite spectrum that is not dedicated to one user that is intended to be shared with new, different users. I know that you've had some experience in your career with the question of what constitutes harmful interference and how that can be mitigated. Can you talk a bit more about that?

*Mr. Richardson. Yes. It's a very good question that has eluded me for many years as to what -- because the challenge about harmful interference is it depends on the context. Depends on what spectrum you are using, how far away it is geographically, how far away it is in spectrum terms. Is it adjacent? Is it co-channel? That kind of

thing. And the path -- and in satellite, I am not an engineer. So all I know is it's extremely complicated, and I always relied on the engineering professionals to sign the applications.

So I'm -- I'm a little bit at loss to talk about the nature of harmful interference. But we have a definition in our rules of harmful interference. And it's -- it's, I think, one of the benefits of this pending rulemaking is that it lays out their -- in the satellite context specific alternative ways of measuring it. And we haven't decided which is the best way. We are seeking comment on that. But it's an effort I think to get to your question, which is what exactly is harmful interference in this particular context.

*Mr. Obernolte. Sure. So -- and I know you mentioned to Congressman Carter in his question that you were developing guidelines on the issue. Let me ask a follow-up question about that. With this interesting situation there, the established companies are developing more and more sophisticated methods of eliminating interference. So this creates a reverse incentive when we sit down at the negotiating table to figure out what interference is considered harmful that the new entrants, the lack of this more sophisticated technology might have a different standard for what constitutes harmful interference, a lower standard than the companies that do have better technology for

limiting interference. So how can we level the playing field when we are dealing with such complicated issues as that.

*Mr. Richardson. I would like, if I can, to ask our engineers about that question and get back to you.

*Mr. Obernolte. Okay. But you understand the point, though; right? It's -- when a company says you are interfering with me and the other company says, well, your technology just isn't good enough. You should be able to eliminate that interference, you know, that's a tough issue for the government to deal with.

*Mr. Richardson. Right. It's a good question. I would like to get back to you on --

*Mr. Obernolte. Okay.

*Mr. Richardson. -- on that.

*Mr. Obernolte. We look --

*Mr. Richardson. Yeah.

*Mr. Obernolte. -- forward to that. Mr. Glass, I know that the NTIA has done some work on this, and we have a laboratory for telecommunication science in Boulder that actually is dedicated to, among other things, measuring interfering and not identifying what exactly constitutes harmful interference. Can you talk a little bit about the virtual laboratory and where NTIA is on that subject?

*Mr. Glass. Thank you very much for that question. Yes. We do believe that it's important to address that issue

up front rather than after the fact. So we have processes in place specifically through our memorandum of understanding with the FCC, which now emphasizes the importance of evidence-based spectrum policymaking, the engineering collaboration to go behind and make sure that we are addressing the systems which have a reliance on data, the analyses and the engineering best practices to make sure that we address any potential interference before it occurs.

*Mr. Obernolte. Yeah. It would be interesting, actually, to go down and take a tour of that lab. I'm sure I'd be interested in -- scare up some -- some other participants here. So NTIA has the often conflicting goals of, at the same time, trying to protect spectrum from the people who paid for access to it. And then also the -- the mission of encouraging competition in the sector when the spectrum is shared, can you talk a little bit about how those two ideas are intentioned and how the NTIA navigates promoting those two -- those two conflicting goals simultaneously?

*Mr. Glass. Thank you. I'm not sure that the two goals are conflicting. We work to make sure that we maximize efficiency of the federal use. We work very carefully with the FCC and industry to maximize their access to that spectrum. We are currently working on an enduring pipeline to enable spectrum access for commercial systems. And it is

good best practices to make sure that that efficiency enables us to operate in an environment where there is no interference.

*Mr. Obernolte. How do you navigate the international complexities of the -- I mean, obviously we're just one country. And although we try to be the leader in this space, we have to convince other countries to adopt our way of thinking. Can you talk about the way that that task is -- complicates -- those rules?

*Mr. Glass. Well, it gets back to having U.S. leadership on satellite systems in -- internationally. And as long as we maintain that, we are able to follow the standard practices of registration coordination in bringing into use of satellites, which would put us in a priority position to other players and enable them to coordinate with us rather than us coordinating with them on such use.

*Mr. Obernolte. Sure. And what are the things that might -- that might jeopardize our leadership in this space?

*Mr. Glass. I would not be able to comment specifically on that issue. That's something I would have to get back to your office on.

*Mr. Obernolte. I look forward to it. Thank you very much to both of you. I would yield back.

*Mr. Latta. Thank you. The gentleman yields back. The chair now recognizes the gentleman from Ohio's Sixth District

for five minutes.

*Mr. Johnson. Thank you, Mr. Chairman, and I really appreciate the opportunity to waive on today to talk about this really very important issue. I'm proud to be sponsoring the ALERT Parity Act with my colleague Kim Schrier. As you've heard, this bill would require the FCC to issue rules within 18 months of enactment to establish an application process granted and in seeking to provide wireless emergency alerts to 911 service in unserved areas. I got a lot of those unserved areas. It also requires the FCC to establish service rules whereby providers of emergency connectivity service may access spectrum held by a licensee so long as it does not cause interference to the licensee.

And we just heard from my colleague, Mr. Obernolte, that -- that interference is a -- is a really problematic thing too. We got to get to the bottom of that. But first and foremost, enabling 911 calls and texts and emergency alerts in remote and unserved areas is not only common sense, it's a lifesaving necessity.

Every person deserves access to emergency assistance, period. No matter where they live in the United States. As you know, this bill is very narrow in scope. It would only enable emergency service providers to connect to individuals' phones where there is no cellular service either due to an outage or because there is not a mobile carrier providing

service in that area. To many of us, it's frustrating if we lose cell service temporarily. It's unfathomable for the many to understand that there remains in America remote areas that still lack reliable cellular service. As there is now technology that will enable distressed Ohioans in rural Appalachia lacking mobile cell service to reach emergency assistance, I believe we have a responsibility to make it happen to ensure American innovation can serve our communities that are otherwise not connected. Thank you, Chairman Latta, for including my discussion draft in today's legislative hearing, and thank you to our witnesses for your insight on all these very important satellite communications bills.

So Mr. Richardson, I'm going to go to you first. As I mentioned, one of the intended requirements in my legislation, the ALERT Parity Act, is that emergency service providers may only use spectrum if it does not cause interference for your licensee of that spectrum -- for the licensee of that spectrum. In your opinion, what kind of coordination will be required to ensure noninterference?

*Mr. Richardson. That's a very good question, and I think I should start out by saying that the commission very much shares your goal of ensuring that everybody everywhere has access to 911 emergency alerts, that kind of thing. I think that -- and that -- and that satellite can be a major

contributor to this. To respond to your question about coordination and interference, these are some questions that our engineers are looking at now with respect to some specific proposals that we have. But I should note that the proposals we have right now --

*Mr. Johnson. Well, I'm a computer scientist myself, and it seems to me that this is a matter of the engineers that -- that are overseeing the various technologies sit around the table. They are probably the right ones to figure this out among the different agencies and among the different licensees and users.

*Mr. Richardson. Right. Generally, the FCC, in terms of frequency coordination very much relies on the -- the different users to try to coordinate their use of spectrum. And one way that that's being done in this set of applications we have before us now is through a kind of partnership between one terrestrial and one so that they are working in tandem with each other.

*Mr. Johnson. The point I was trying to make there is probably not political appointees and bureaucrats that are sitting around the table that don't understand the technology that need to coordinate and collaborate on the interference issue. Let me ask you another question. Does the FCC have the personnel and technical resources necessary to handle an increase in satellite licenses?

*Mr. Richardson. We have recently increased by 38 percent the staff. I think we can always do better with more staff. I'm not here to -- I'm not here -- authorized to ask you for that so --

*Mr. Johnson. In some cases, more is always better, but I don't -- I don't know that that's the case in the government work. So --

*Mr. Richardson. Well, one of the --

*Mr. Johnson. Yes or no? Do you have enough people to handle increased licenses or not?

*Mr. Richardson. I don't know the answer to that.

*Mr. Johnson. Can you get it back to --

*Mr. Richardson. Yes, sir.

*Mr. Johnson. Okay. Thank you very much.

*Mr. Richardson. Could I -- could I just --

*Mr. Johnson. I yield back. Thanks for having us. It's up to the chairman if he'll indulge.

*Mr. Latta. Go right ahead, please.

*Mr. Richardson. Thank you. I just wanted to ask -- answer one thing which was -- which referred to last week and by some of the questions this week. It's not just a matter of how many. But the expertise of the satellite engineers is very important.

*Mr. Johnson. Oh, absolutely. Yeah. Thank you. I yield back, Mr. Chairman.

*Mr. Latta. Thank you. The gentleman yields back the balance of the time. Well, seeing no other members wishing to ask questions of this panel, again, I want to thank our witnesses for being with us today. Without objection, the committee -- subcommittee will now briefly recess to switch out the latest panels for the second panel. So the subcommittee will stand in recess.

[Recess.]

*Mr. Latta. The Subcommittee on Communications and Technology will come to order, and again, I'd like to first thank all of our witnesses for being with us today, and again, I just want to explain we have two subcommittees jointly meeting downstairs, and some members will be coming back up again here in a very short period of time. But I really appreciate you all coming up today to testify and for your patience on the second panel.

And as we've heard from before that we have -- you each have five minutes for questions or for your opening statement, which will then be followed by questions. And so our second witness panel for today's hearing will include Mr. Dave Goldman, senior director of satellite policy at SpaceX; Mr. Peter Davidson, Vice President of global government affairs and policy at Intelsat; Ms. Whitney Lohmeyer, professor of engineering at Olin College of engineering; Ms. Danielle Pineres, vice president of regulatory affairs and

compliance at Planet Labs.

And at this time, Mr. Goldman, you are recognized for five minutes. And again -- but before I just explain the lights again. You'll see that it will be green. One minute, it goes yellow. And then it will start flashing red at five minutes. So Ms. Lohmeyer, you are recognized for five minutes, and thanks again for your testimony.

STATEMENT OF WHITNEY Q. LOHMEYER, PROFESSOR OF ENGINEERING, OLIN COLLEGE OF ENGINEERING; PETER DAVIDSON, VICE PRESIDENT OF GLOBAL GOVERNMENT AFFAIRS & POLICY, INTELSAT; DAVID GOLDMAN, SENIOR DIRECTOR OF SATELLITE POLICY, SPACEX; AND DANIELLE PINERES, VICE PRESIDENT OF REGULATORY AFFAIRS AND COMPLIANCE, PLANET LABS

STATEMENT OF WHITNEY LOHMEYER

*Dr. Lohmeyer. Thank you, Chairman Latta, Ranking Member Matsui, and distinguished members of the committee. I am Whitney Lohmeyer, and I hope that sharing my experiences in the satellite industry will help Congress better define clear rules and policies for spectrum. I hope that these rules will also foster innovation, maintain U.S. leadership and safeguard the people in this nation.

While pursuing my Ph.D. at MIT, I was hired as one of First Web -- I was hired as one of One Web's first employees. I served on the U.S. delegation to the ITU's World Radio Conference in 2015. I traveled to Shanghai to coordinate our spectrum with Chinese operators, and I co-authored One Web's U.S. market access application, which initiated the first FCC processing round of the last six or seven years.

Later, I joined the faculty at Olin College where I direct Olin Satellite and Spectrum Technology and Policy

Group, OSSTP, and I am a PI on NSF's $25 million Spectrum Act's research center. In a consulting hat, I have drafted and managed eight full part 25 FCC commercial licenses and also more than 10 experimental licenses. The FCC adopted processing rounds in 2003 to authorize systems more efficiently. Today's FCC inherited this framework that unfortunately incentivizes or can incentivize systems to file prematurely and to overfile.

So an operator can modify its authorization as long as the interference environment is not increased from what it initially proposed. Operators are starting to file for every orbit that they could conceive of launching in order to ensure flexibility with the intent to decrease the number of satellites down the road. This has resulted in applications of thousands of satellites per network that are challenging for the commission to validate and impossible -- nearly impossible, I'd say, to assess interference.

My research group, OSSTP, found that it took an average of two years for the FCC to authorize first processing round applicants, which increased to three years in the second round. In the May 2020 round, less than a third have received authorization. And in this last round, all remain under review. When a round is initiated, applicants have four months to file, creating a scramble, especially for those who have not fully defined their systems. They are

unable to submit full, complete orbital debris or interference showings, which leads to back-and-forth inquiries at the FCC and delays authorization. OSSTP petitioned the FCC, which aligned with the SAT Streaming Act we're talking about today to mandate a one-year shot clock for NGSO applications, which would offer regulatory certainty, particularly given the Commission's milestones in surety bond requirements.

Systems have to launch and operate half of their constellation within six years of grant and their full constellation within nine. They are also required to post a $5 million surety bond within 30 days of grant. This is particularly challenging for companies like start-ups, and they are struggling to plan for the financial and technical build-outs of their system.

A mandated shot clock would provide clarity and reduce perceived risks for investors. And applicants could, of course, seek waivers should one year not be appropriate. NGSOs also include services beyond FSS and MSS which may first come to mind. These services offer weather monitoring and earth imaging, navigation and orbit -- in-orbit servicing. They can be critical in times of emergency as well as in natural disasters and can be deployed for precision farming and another important stakeholder's launch vehicle suppliers who have established an impressive weekly

launch cadence. All of these stakeholders have spectrum needs and need a seat at the table when we consider the regulations at hand. I applaud the FCC under Chairwoman Rosenworcel for establishing the Space Bureau, and I hope that Congress will provide the SEC with adequate resources, including funding to expeditiously and support -- expeditiously grant -- I'm sorry -- expeditiously support this new bureau.

The increasingly long wait times for authorizations and the lack of clarity in the licensing process is concerning to our vibrant investor community and is causing our talented ecosystem of entrepreneurs that our nation has intentionally grown to consider filing and operating overseas. This wave of investment in energy and the satellite sector is awe-inspiring, and we must ensure the SEC is not a bottleneck in this historic period of time. It's encouraging to see the committee's attention on our complicated and dynamic industry, and I look forward to answering your questions.

[The prepared statement of Dr. Lohmeyer follows:]

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

*Mr. Latta. Thank you very much for your testimony, and Mr. Davidson, you are recognized for five minutes.

STATEMENT OF PETER DAVIDSON

*Mr. Davidson. Great. Well, Chairman Latta and Ranking Member Matsui, thank you so much. And other distinguished members of the committee here today, Mr. Joyce. Thank you so much for inviting me to testify here today. I want to start by applauding the subcommittee for focusing the first two hearings of this Congress on the space sector. These are timely hearings reflecting the urgency of rationalizing the legal and regulatory frameworks given the blazing speed of technological development in the space industry.

I am proud to be testifying before this subcommittee today representing a company that's played a pivotal role in the space industry for over five decades. Our rich history starts with President John F. Kennedy signing the 1962 Communication Satellite Act creating Intelsat. In 1965, we launched the Early Bird Satellite, the first commercial satellite in the world. And we broadcast Neil Young -- we did broadcast the Beatles, and we broadcast Neil Armstrong walking on the moon.

And then more recently in 2020, we completed the first in-orbit successful life extension of a satellite. Intelsat has led innovation in the space industry and has been a good steward of the space environment for over 50 years, and we continue to be at the forefront of satellite technology

today. So part of our responsibility as an industry leader is to promote investment in innovation while ensuring space sustainability. While about 4,000 satellites have been launched in the last 10 years, there are estimates that almost quadruple that number will be launched in the next decade. And I think we even heard higher numbers today to that.

So it's -- it's -- so threading the needle between investment, innovation and space sustainability is perhaps the most critical task facing U.S. and international policymakers today. Intelsat applauds the Energy and Commerce Committee members and the staff for initiating policy discussions on streamlining the FCC application process, equitable access to spectrum, advancing space sustainability and ensuring rural connectivity and emergency communications. And in particular, we support the SAT Act goals of modernizing the processing round system, expediting the FCC application process, addressing sustainability by incorporating specific orbital debris measures and setting clear guidelines for technical compatibility among the various satellite systems.

These changes will promote competition and innovation in space. As the SAT Act moves through the legislative process, Intelsat believe it's important to ensure that the legislation will encourage industry-wide competition,

investment in innovation and not put a finger on the scale for any one business model. We believe all the orbits will be increasingly be working together in integrated networks to deliver products and services so U.S. and international policies should support the health of all orbits. We also support the implementation of information-sharing guidelines among stakeholders as an important aspect of space sustainability in an increasingly crowded environment.

While it is not directly addressed in the bills being considered today, you heard last week about the importance of spectrum to the satellite industry. Spectrum is the foundation of the space economy. The continued erosion of spectrum allocated to satellite services will significantly impede the ability of the U.S. to lead in this sector. We need to reverse this trend.

Advances in information technology and communications continue to spur economic growth around the world, but they also highlight a growing access disparity between the haves and the have-nots. As many of you have seen in your districts, there is a significant divide between well-connected urban centers and off-the-grid rural areas. Satellite is the only technology today that can provide truly global coverage.

At Intelsat, our 56 satellites cover 99 percent of the earth’s populated regions. If we are going to connect

consumers in hard-to-reach areas, we need to adopt smart regulatory policies and streamline access for satellite operators, allocate spectrum efficiently and manage space resources wisely.

I have addressed Intelsat's support for the goals of the other four bills in written testimony, and I look forward to discussing these in the question-and-answer segment. But in conclusion, I'd like to reiterate four points. Number one, continued access to spectrum with regulatory certainty is the cornerstone for a vibrant U.S. space economy. Number two, space sustainability is fundamental to ensuring the continued growth of the space economy.

Number three, maximizing the efficient use of spectrum in space can only be achieved through a regulatory framework that requires transparency and information-sharing among industry operators. And number four, satellites are an excellent solution for broadband connectivity in hard-to-serve areas and in disaster preparedness and response. Thank you very much.

[The prepared statement of Mr. Davidson follows:]

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

*Mr. Latta. Well, thank you very much for your testimony.

Mr. Goldman, you are recognized for five minutes.

STATEMENT OF DAVID GOLDMAN

*Mr. Goldman. Thank you, Chairman Latta, Ranking Member Matsui, and members of the subcommittee. Thank you for the opportunity to speak with you today about the importance of maintaining U.S. leadership in satellite communications technology. My name is David Goldman, and on behalf of my 11,000 colleagues at SpaceX, I want to thank the subcommittee for its focus on modernizing and improving the regulatory system for satellite authorizations.

I am the senior director for satellite policy at SpaceX. In this role, I serve as the lead for regulatory matters at SpaceX's global -- for global -- SpaceX's global satellite constellation. But prior to joining SpaceX, I had the great honor of serving as chief counsel for this subcommittee under Ranking Member Pallone.

Being back in this hearing room reminds me of all the bipartisan bills this subcommittee passed while I was here that helped ensure that more Americans are connected. I'm excited to be here once again to work with the subcommittee on another collection of an important bipartisan bills. We are here at a critical moment in the global race to provide high-speed internet with low-Earth-orbit satellite networks. Doing so is needed to ensure continued U.S. leadership in space technology and telecommunications more broadly.

As the world's leading launch provider, SpaceX is proud to build, launch and operate all of our space systems in the United States. In 2016, SpaceX filed at the FCC to become a U.S. operator of a global low-Earth-orbit satellite constellation that we had yet to name.

Since then, Starlink Generations 1 and 2 have been licensed, and SpaceX has launched nearly 4,000 satellites to orbit providing high-speed low-latency internet to every corner of the world. To get Starlink to orbit, we now launch our Falcon 9 rocket, on average, every four days in unmatched flight cadence. Just a few short years since being licensed, SpaceX has launched one of the largest infrastructure projects in space.

We now provide high-speed internet access to more than a million households with thousands more added every week. We serve those in urban, suburban, rural and tribal communities, most of whom have never had access to broadband before. Starlink has also demonstrated high value when terrestrial services are disrupted, either by natural disaster or conflict. And Starlink's capability to support emergency communications will only be enhanced with our direct-to-cell service, which will save lives by eliminating cell dead zones.

That SpaceX has moved rapidly is not incidental. SpaceX must move fast to stay ahead of foreign competition. To

maintain America's lead, the commission's processes must not create drag on U.S. technology innovation, business viability and the deployment of critical services to consumers.

Unfortunately, the current FCC has inherited a regulatory regime designed for a previous era. I want to highlight four key areas. First, processing timelines at the FCC are unacceptably long, resulting in multi-year delays for application approval. Importantly, the commissioners have recognized on a bipartisan basis the need for reform. This reform is crucial. U.S. authorized systems are at a critical risk of being outpaced by foreign licensed competitors. For example, review of Starlink's Gen 2 application took nearly three years. This process must be more expedient.

And forcing clear, reasonable timelines will not result in less thorough regulatory review. Rather, doing so will remove the current incentive for foreign licensed operators and latecomers to game the system by endlessly filing frivolous comments in a deliberate effort to overwhelm, mislead and ultimately delay hard-working FCC staff. Second, FCC regulations must be explicitly grounded in statutory authority. Otherwise, applicants are left to guess at what requirements and conditions will be imposed, creating considerable regulatory uncertainty for U.S. licensees. Third, Congress and the FCC should reward systems that are designed to be spectrally efficient and share spectrum. Too

often, the current approach rewards inefficient systems designed with yesterday's technology. At the same time, essential spectrum authorized for shared satellite use like the 12 gigahertz band must continue to be available and protected from harmful interference.

Finally, the U.S. must end its approach of providing preferential regulatory treatment to foreign licensed systems. As it stands, the FCC imposes one set of stringent rules on U.S.-authorized systems like SpaceX's Starlink and then altogether different, far less burdensome set of rules on foreign licensed systems that seek U.S. market access.

As a matter of public policy, this is upside down. The SAT Act and the other bills address -- that we are considering today address many of these challenges head-on. With its one-year deadline for action, the SAT Act would add much-needed certainty for satellite licensing and improve U.S. competitiveness.

The LAUNCH Communications Act will result in more efficient handling of launch spectrum approvals. The Secure Satellite Act will protect U.S. telecommunications technology against foreign competitors like China. Thank you again for the opportunity to testify. I welcome your questions.

[The prepared statement of Mr. Goldman follows:]

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

*Mr. Latta. Well, thank you very much for your testimony. Ms. Pineres, you are recognized for five minutes.

STATEMENT OF DANIELLE PINERES

*Ms. Pineres. Thank you, Chairman Latta. Thank you, Chairman Latta, Ranking Member Matsui, and members of the subcommittee. I am honored to appear before you today to discuss how Earth observation data from space can help governments and commercial companies make better decisions for life on Earth and how streamlining licensing requirements, preserving access to spectrum and protecting the low-Earth-orbit operating environment can support space operators.

The commercial remote-sensing community is vibrant, innovative and growing and provides data and analytics tools used by scientists, researchers, companies, communities, federal agencies and individuals to empower better data-informed decisions. As Congress and relevant federal agencies collaborate on steps to enable continued growth and innovation in the commercial space sector, Planet recommends consideration of technology-neutral policies that enable innovation across a diverse range of space actors. The continued importance of spectrum to support satellite capabilities and the need for a timely and responsive licensing regime that keeps pace with technology development.

Planet is an integrated aerospace remote sensing and data analytics company whose mission is to image Earth's

landmass every day in order to make global change visible, accessible and actionable. Planet designs, builds and operates the largest constellation of Earth-observing satellites in human history.

Imaging with multiple spectral bands and delivering this data within operational decision-making processes for thousands of users across sectors. At Planet, we believe you can't fix what you can't see. Planet is able to line-scan the earth and image the entirety of Earth's landmass every day at 3.7 meter resolution using our Dove satellite constellation of approximately 180 small sats that are about the size of a loaf of bread. Additionally, Planet's sky sat fleet of 21 satellites can be tasked to image specific portion -- specific points on earth and enables Planet to deliver 50-centimeter resolution images to customers.

Planet also leverages machine learning to transform imagery into information feeds that detect objects and track change, providing customers with deeper insights on planet imagery. Planet has a daily reported history of the planet everywhere for the past six years and adds new imagery on a daily basis. This growing data set offers rich historical context across the globe as well as deep imagery stacks for application development and machine learning-based analytics. Planet's data sets complement government-operated space and ground-based sensors and dramatically improve the spatial,

temporal and spectral resolution available to decision-makers and scientists for monitoring real-time changes in wildfire spread in California to recording daily changes in Arctic ice to better understanding crop production and food security around the world. Planet and its commercial satellite imagery are empowering governments, companies and individuals with the daily data they need to address the challenges they face.

I'd like to discuss today just a few examples of how Planet data has an impact here on Earth. Agricultural customers use Planet imagery in their farm management platforms, allowing farmers to make more informed decisions around ideal investment in seed and crop protection products, when to plant, water and harvest and scout monitoring to identify underperforming crops early in a season.

Satellite imagery provides the near-daily coverage necessary to conduct crop yield analysis, land-use change and monitor additional impacts to farms. Norway's International Climate and Forest Initiative or NICFI is a pioneering program to stop global deforestation. It uses Planet data across all tropical developing countries between 30 degrees north and 30 degrees south in latitude to support the prevention of deforestation and help save the world's tropical forests.

The NASA Harvest, Food Security and Agriculture Program

utilizes Planet data to benefit global food security, agriculture and human and environmental resiliency. They are using Planet data to monitor Ukraine's farmland, which is known as the world's breadbasket, to enable better understanding of the impacts to global food supply resulting from the Russian invasion of Ukraine. Finally, the California Forest Observatory is a data-driven forest monitoring system that leverages Planet satellite data and artificial intelligence to map drivers of wildfire behavior across California, including vegetation fuels, weather, topography and infrastructure.

This provides communities and decision makers the data that they need to invest in mitigation and prevention to keep communities safer. In order for Planet to continue delivering these insights to our customers and to facilitate continued innovation and U.S. leadership in the commercial space sector, we need to work together as industry and government to protect the operational environment for satellites so we can preserve access to space for future generations.

We also need reliable access to spectrum to communicate with and operate our satellites and ensure that we can download the more than 30 terabytes of data that we collect every day. And we need targeted changes to existing regulatory and licensing frameworks to streamline the

approvals necessary to operate in space. We ask that the committee continue its efforts to streamline licensing requirements, preserve access to satellite spectrum, and protect the LEO operating environment to support space operators. Planet appreciates the invitation to testify today and the subcommittee's attention on these important issues. And I look forward to your questions.

[The prepared statement of Ms. Pineres follows:]

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

*Mr. Latta. And thank you very much for your testimony today, and I thank all the witnesses. And now we'll move into the questions and answers from portion of the panel. I'll begin the questioning, I recognize myself for five minutes.

Mr. Goldman, low-Earth-orbit systems like Starlink have the potential to offer broadband speeds that can unlock numerous opportunities for rural America. Would you discuss some of the benefits, including the impact they could have especially on agriculture here in the United States?

*Mr. Goldman. Yeah. Thank you very much for the question. I really appreciate it. I think one of the really exciting things about these new next-generation satellite systems like Starlink is they have the potential to bring urban-quality broadband speeds to rural areas. And you can bring -- so you are bringing service not only to places where you are connecting them for the first time, but they are actually getting high-quality broadband at the same time, that they are not getting a second-tier internet. You don't have to compromise just because you are living in a rural area.

And so I think one of the values of your -- of the legislation that the committee is considering is that what you're doing is facilitating the deployment of these constellations that brings the speed and brings these vital

connections to rural areas. And you ask about precision agriculture. One of the hardest things -- even assuming that everything is working right, one of the -- it's most of -- our government's programs for broadband right now are about households and not necessarily about getting to the last acre of farmland. It's -- you are looking at densities of population and not saying we need connectivity in places where there is not necessarily people, but we have important crops or other things that we are growing.

And so I think one of the things that we can -- we can do is, by using satellite technology, you can bring these kinds of speeds to be able to do these vital services out -- out to every corner of the farm.

*Mr. Latta. Thank you very much. And Ms. Lohmeyer, the FCC's current structure of licensing satellite systems from processing rounds seems to have its pros and cons. As someone who has filed applications with the FCC for low-Earth orbit satellite systems, what challenges do processing rounds present to companies that want to enter the marketplace today or for existing satellite operators that want to make innovative upgrades for their systems?

*Dr. Lohmeyer. So the existing challenges really -- oh, thanks. The existing challenges come down to timing, market entry and how that impacts competition. So for entrants, those who are applying, like I mentioned, the processing

round can force the filer to prematurely submit an authorization. And given what I will say is the fortunate fact that the FCC does have a thorough and diligent stance on orbital debris rules and orbital debris showings that can delay the authorization process.

For those who are incumbents who are either already authorized or operational, they have uncertainty when it comes to protections and interference risk from later round filers. And I will say the FCC has initiated proceedings on NGO sort of sharings looking at this, the impact, effectively, of early rounds versus later rounds and stressed, too, that what we need are rules that balance these expectations of our incumbents, which are investment-backed, with the needs of incentivizing for innovation and competition.

*Mr. Latta. Thank you. Ms. Pineres, Planet is a different type of satellite operator than SpaceX in that it provides earth observation sensing capabilities. Would you please briefly explain how Planet's services are used by farmers and ranchers and sorry. Only about a minute left.

*Ms. Pineres. Sir, I'd be delighted. So agricultural customers -- agricultural customers use Planet imagery in their farm management platforms, allowing farmers to make more informed decisions. Variable rate applications optimize input and water use efficiency to reduce overfertilization

while boosting yields. Sustainable agriculture monitoring, including crop rotation, conservation tillage and cover cropping -- I actually grew up on a farm myself in Idaho. But farming today is a very high-tech business. And actionable satellite data to promote precision ag fits right in with this vision for the future of farming.

Also say it's important that Planet data we offered into the farm management platforms that farmers are already using, understanding that not everyone is a geospatial analysis expert. So we are really trying to meet our customers where they are in terms of bringing them actionable satellite data.

*Mr. Latta. Well, thank you very much, and my time is just about to expire, but I have a couple more questions that I will submit to you all and for feedback on them. At this time, my time has expired, and I yield to the gentlelady from California, the ranking member of the subcommittee, for five minutes.

*Ms. Matsui. Thank you very much, Mr. Chairman. Thank you very much, Mr. Chairman. Satellite systems are capable of providing service globally regardless of where they are licensed. That means companies can get access to the U.S. market through foreign regulatory body rather than through the FCC. Asymmetry in the requirements for operators seeking FCC license versus market access and space system and significant consequence for U.S. international leadership.

Mr. Goldman, I asked this question at the last hearing, but it's worth reiterating now. Yes or no. Do you believe our licensing and market access requirements should incentivize U.S. operations whenever possible?

*Mr. Goldman. Yes, absolutely.

*Ms. Matsui. Chairwoman Rosenworcel is doing what she can with the resources she has to keep the FCC responsive to the needs of the satellite marketplace. However, it's clear that with the increase in satellite applications and potential expand -- potential expand the scope proposed in these bills, the agency needs more resources to keep up. Mr. Davidson, do you have concerns U.S. leadership and increased spending -- if we don't provide a commensurate increase in resources to the FCC?

*Mr. Davidson. Yes. Thank you, Congresswoman, for that question. I think absolutely. And I think what you heard last week and what you heard in the earlier panel today was kind of a unanimous endorsement of what you just said, that with the advances in technology today, things are becoming much more sophisticated, not just the quantity of resources but the quality of the resources that are there. And I think the chairwoman has recognized that and in the additions that she's made there.

But I think with -- with the pace of technology and now, with -- if this legislation passes, you are going to have a

broader mission given to the FCC. So absolutely they will need more resources to accomplish this.

*Ms. Matsui. Thank you. As more system operators begin to share congested spectrum bands, it will be increasingly important that satellites are spectrally efficient to allow more effective use of limited resource. Mr. Goldman, can you describe the measures that can be used to measure spectral efficiency, and how can we incentivize improvements in efficiency?

*Mr. Goldman. Yeah. Thank you very much for the question. We -- this is exactly -- this is exactly the point. And Professor Lohmeyer was mentioning earlier that the processing round systems at the FCC actually can somehow -- can sometimes actually disincentivize building efficient systems. Unlike -- this subcommittee deals with terrestrial licenses where people get exclusive rights to certain bands. On satellite, it's completely different. Everyone has to share. And that actually can create this incentive to build the least efficient system because it allows you to box out your competitors.

And so what I think the Satellite Streamlining Act does is it recognizes this, and it encourages -- tells the FCC to look into encouraging efficiency. SpaceX has actually petitioned the FCC asking for them to pick this up exactly and start building in metrics such as how much speed are you

-- are you providing per square mile on the ground per person. How much speed are you providing, trying to drive an incentive towards -- that you actually are rewarded for having a more efficient system as opposed to being right -- right now, the current system actually rewards you for being inefficient.

*Ms. Matsui. Okay. Thank you. I am interested in the deal that SpaceX has struck with T-Mobile, which would permit T-Mobile customers with off-the-shelf devices to receive Starlink signals from the outer range of the usual T-Mobile network coverage. This is exciting, and I know that other companies are trying to offer similar services.

Mr. Goldman, how is SpaceX overcoming the challenges of sharing spectrum with wireless licenses? And what role do you see for satellite to supplement terrestrial networks?

*Mr. Goldman. Yeah, great. That's a great question. So the model that we are using is we actually -- we -- as you mentioned, we have a deal with T-Mobile. So we -- we are actually working with the terrestrial operators rather than seeing them as the adversary and trying to battle against them. We are trying to work with them and see them as partners. And so we actually have a deal where we are going to be using T-Mobile spectrum with their permission. And essentially our satellites will operate like wireless towers in space.

So as you mentioned, just a phone off the shelf when you are in a dead zone will be able to connect with the satellites.

*Ms. Matsui. Okay. I'm using my time here. So, anyway, I -- I really do. I yield back the balance of my time.

*Mr. Latta. Thank you. The gentlelady yields the balance of her time, and the chair now recognizes the gentlelady from Florida's 12th District for five minutes.

*Mr. Bilirakis. Thank you, Mr. Chairman. I appreciate it. In a global market for NGSO systems, if the U.S. regulatory burden for approvals and launches are too burdensome, a company could theoretically launch elsewhere and retroactively apply for market access. This would equate to other countries benefiting from satellite technologies while we sit in a regulatory quagmire. Mr. Goldman, question for you. In your written testimony, you stated the U.S. approval timeline is, on average, two-and-a-half years. How does the U.S. regulatory burdens for satellite approvals compare to foreign countries, and have you launched outside of the United States or at least considered it due to more friendly regulatory environments?

*Mr. Goldman. Thank you so much for the question. So I guess to start out with, we are -- SpaceX is proudly a U.S. company. We build, launch and operate all of our systems

within the United States, and we are completely licensed within the United States. But that's actually why -- specifically why we are so concerned about making sure that the -- the U.S. regulatory process keeps up with the innovation because it is true. As Ranking Member Matsui was mentioning, the nature of satellites is that you can license anywhere in the world and still be able to operate in the lucrative U.S. market.

And we have seen that. We have seen that happening. More and more satellite operators go and license overseas and then come back. And they basically escape U.S. oversight of their operations but still are able to take advantage of the U.S. market. So I think we think that one of the key -- the key steps to take that's addressed in the Satellite streamlining Act is if you can shorten the timeline to be able to do these approvals. The other thing that the U.S. does that no one else does is it's completely transparent. So it is actually -- to answer your question about does anyone else take this long, it is hard to know because other countries kind of do it behind closed doors. And in the U.S., you can see it.

I can tell you our -- we are now operating in 46 countries, 59 total markets. We have not run into those problems in other places when we are operating in other countries. So I think the Satellite Streamlining Act would

do a great deal to try to bring back and incentivize people back to licensing in the United States again.

*Mr. Bilirakis. Sounds good. Ms. Lohmeyer, do you have anything to add? I know you had some testimony with regard to this issue.

*Dr. Lohmeyer. In particular, folks filing administrations overseas and then obtaining market access here?

*Mr. Bilirakis. Correct.

*Dr. Lohmeyer. I think I would primarily just echo what Mr. Goldman said. The primary reasons folks go overseas is the perceived onerous nation -- onerous nature of the FCC's process, like we described, the public nature as well. And I think as the FCC also conducts complete overview of the technical and legal narratives that are required to be submitted before submitting the ITU filing, which establishes international priority, whereas other nations have a less diligent process. There is pros and cons to that so --

*Mr. Bilirakis. Okay. Thank you. Next question is for Mr. Goldman. You also discuss in your written testimony the Starlink capabilities that allow for a satellite to provide services to areas devastated by natural disaster. I've seen hurricanes, being from the state of Florida, from time to time leave residents stranded both physically and from outside communication. How long does it take to reposition

-- reposition a satellite to provide coverage to a disaster zone, and how do you complete that task without disrupting service to other populations? I specifically recall, Representative Dean, that that happened. Absolutely.

*Mr. Dunn. Representative Dunn?

*Mr. Bilirakis. Yeah. I guess that was Hurricane Michael; right?

*Mr. Dunn. Yes.

*Mr. Bilirakis. Yeah. So if you could answer that question, I appreciate it very much.

*Mr. Goldman. No. I appreciate that. And I actually -- I, myself -- I grew up in Tampa. So I saw hurricanes and saw exactly what they did. We actually -- last year, we started working with state of Florida government. And when hurricanes came in last year during hurricane season, we were able to deploy basically overnight. We don't need any additional ground infrastructure to be able to bring in our service. And our satellites are everywhere already.

They are already spread. We don't have to move the satellites. So essentially as soon as we get the call, we can move in with our equipment and be able to bring service to people immediately, which is what we did last year during this -- during the hurricane season.

*Mr. Davidson. Could I add just one -- one thought to that, Congressman? That is, for example, in Tonga, we were

the first into Tonga when the disaster happened there last year. So we are able to set up our -- carry a backpack with our satellite equipment on it on a commercial plane, land in Tonga. We were there for a week or two before anybody else could come and set up comms there. So satellite, as David is saying, is a very nimble way to get into those areas quickly. And you can preposition equipment so that, you know, areas that are prone to disasters can have that equipment ready to go.

*Mr. Bilirakis. Very good. I yield back the balance of my time. Thank you, Mr. Chairman.

*Mr. Latta. Well, thank you. The gentleman yields back. The chair now recognizes the gentleman from California's 29th District for five minutes.

*Mr. Cardenas. Thank you very much, Chairman Latta and Ranking Member Matsui for having this very, very important hearing. For decades, satellites have been used for GPS communications and remote sensing. In 2022, the GAO found that there are almost 5500 active satellites in orbit. And one estimate predicts that they may launch an additional 58,000 satellites by 2030. Satellite technologies provide more opportunities to advance critical research in health, agriculture, energy and more. Mr. Pineres (sic), in your testimony, you mention the work that Planet does to capture daily images of Earth to show how the planet is changing and

to help us make better decisions.

In California, we are experiencing more extreme weather, hotter temperatures, longer and more severe drought, worsening wildfires and dangerous flash flooding. We are not just seeing this in California, but we are seeing this all over the country and all over the world. How does Planet's satellite imagery reveal drought indicators and aid in drought response across the world?

*Ms. Pineres. Thank you for the question. Measuring the impact of drought is critical for evaluating its severity and monitoring its change in identifying vulnerable areas. Planet's data allows users to record, process and analyze water resources and land cover changes on the ground over time at a high spatial and temporal resolution. Planet's analytics products called planetary variables include a soil moisture content variable which can measure the volume of water contained in soil at a 5-centimeter depth. And these products pair Planet's daily data with other public data sets to provide actionable insights.

And I would just add, too, that in response to questions regarding, you know, other types of extreme weather, hurricanes and disaster response, Planet's data can also provide kind of critical situational awareness in those -- at those times for building damage assessment and also for evacuation paths.

*Mr. Cardenas. And on how -- could you elaborate on how access to sufficient wireless spectrum is critical to the work and data that you provide?

*Ms. Pineres. Yes. Thank you for the question. We rely on wireless spectrum in order to communicate with our satellites, to command the satellites and, critically, to download the more than 30 terabytes of data that we -- that we downlink every day. So wireless spectrum is critical for our operations, for the work that we do and to provide data to our customers. We are also really interested in new types of spectrum technologies, for instance, intersatellite links that can connect satellites in space to speak to each other.

One of the challenges in the earth observation sector is we operate a little bit differently than other satellite operators. We only communicate when we're within view of a ground station. So it limits our downlinking opportunities but how many ground stations we have. So intersatellite links can provide both better reactivity in terms of sending commands to the satellite about where to image and also better downlinking capabilities to get images faster to customers particularly in disaster situations.

*Mr. Cardenas. Thank you. I'm just amazed at the projection of numbers. 5500 satellites today to possibly an additional 58,000 or more in the very near future. Are we going to be sending up bumper cars instead of satellites or a

combination thereof? How fast are the satellites moving, and does congestion concern anybody?

*Mr. Davidson. Yes. Congressman, I addressed in my opening statement this exact issue. So I think it's the health of the orbits and particularly the LEO orbit that could limit the ability for, you know, innovative new products to be launched. So it's going to be a crowded environment.

So part of the licensing process needs to be an understanding of where this -- where these new satellites are being deployed, how they are managed, how they -- how we can understand where they are. Are operators communicating with each other? In the GEO orbit, it's a very, I would say, collegial orbit. All the operators talk with each other. When something happens, we help each other out. So it's -- you know, there is a lot of information sharing. The LEO orbit, as you mentioned, is going to become very crowded.

So what I refer to as the bucket of space sustainability issues, so tracking, disclosure, you know, transparency, maneuverability of can you move your satellites around an orbital debris, managing orbital debris, all part of the space sustainability bucket that's going to be critical for the future of the industry.

*Mr. Cardenas. Yes, please.

*Dr. Lohmeyer. The inclusion of technologies like

standard fixtures on board satellites are incredibly important as well as in-orbit servicing. One Web, back in 2015 was even -- or 20, yeah, 2015 was even working on creating some of these devices.

*Mr. Cardenas. But people can launch satellites anywhere on Earth. They bring the capability. They get the information, you know, from somebody's lands. Is the United States the standard bearer, or who is the standard bearer today and who should we -- who should be the standard bearer going forward?

*Dr. Lohmeyer. I think the United States is definitely a leader in these technologies with NASA and FCC as well as private sector.

*Mr. Davidson. And I would also just note that the U.S. has a huge market. It's a huge addressable commercial market. So people who want to do business here need to comply with our -- with the standards of the United States.

*Mr. Cardenas. Thank you very much. Thank you.

*Mr. Latta. Thank you very much. The gentleman's time has expired and yields back. The chair now recognizes the gentlelady from Washington, the chair of the full Committee of Energy and Commerce, for five minutes.

*The Chair. Thank you, Mr. Chairman. Mr. Goldman, I want to start with you and just thank you for testifying on behalf of SpaceX and your effort -- your efforts to offer

rules, satellite connectivity and provide launch services to other companies. At our hearing last week, we heard a lot about the importance of spectrum and spectrum access for satellite services. My SAT Streamlining Act would provide direction to the FCC on how to incentivize satellite operators to reduce spectrum efficiently. As we are considering ways to streamline and clarify the FCC's rules to encourage upgrades and new interest into the marketplace, what principles should we consider when trying to strike the right balance in providing adequate protection from interference and also encouraging innovation?

*Mr. Goldman. Thank you so much for the question, and thank you for having us today. I think you are putting your finger exactly on the -- the biggest issue that we have in satellite right now is how do we, in a shared spectrum environment -- how do we give enough certainty to licensees that when you get your license, these systems cost tens of billions of dollars to build. How do you get -- how do you have enough certainty that your license is going to -- is going to actually mean something to you going forward while you spend these billions of dollars.

At the same time, because it's a shared environment, you don't want to cut off having new entrants enter. And so how do you do both things at the same time, which is a very, very difficult balance. And I compliment you and your staff for

taking this on in the -- in the SAT Streamlining bill of trying to strike that balance. It really is -- I think that you're -- you are addressing it correctly, which is you are thinking exactly about the -- how do you make sure that these licenses will continue to have value at the same time that you're encouraging the efficiencies and encouraging people to build in the technology that does cost more to be able to share the spectrum better.

So I think that's the key, and I think that's exactly what your bill is getting at.

*The Chair. Thank you. Mr. Davidson, Intelsat is also accompanied with storied American history, starting over 50 years ago in the government-owned system. Today, you are at the forefront of innovation and working to integrate multiple orbits and multiple spectrum bands into one integrated system. This discussion draft would grandfather certain systems' use of Spectrum as the FCC sets out the new roadmap for Spectrum use going forward. Would you also address the balance on the need to streamline the process or protecting billions of dollars in investment made by satellite operators under the current rules?

*Mr. Davidson. Great question, and I would concur with David in his assessment of this threading the needle. I think this really is the critical issue your committee and policymakers are going to have to address, which is dealing

with the fact that there is a lot of investment up there in space right now and that there were -- there was commitments made of billions of dollars.

The same time, we want to encourage innovation and investment and new entrants. So really, finding that -- you know, threading the needle in that regard is going to -- is going to really be critical. I'm not going to necessarily draw a line on the grandfathering where you should or should not do that. I would just say, from a principal perspective, you've got to find the right balance between protecting investment and encouraging new investment. And I would say the spectral efficiency, we are in complete agreement on that as well. There are old systems that need to be phased out that are, you know, potentially nearing end of life that are extremely inefficient systems. And we are building cutting-edge efficiencies into all of our -- we have -- we have many new satellites in product -- in production right now.

Our software-defined satellites are going to be the most efficient satellites that GEO has ever produced.

*The Chair. Thank you.

Ms. Lohmeyer, you are an aerospace engineer with years of experience advising satellite operators as NGSO systems are getting larger and more satellites are launched into orbit. It will be important that these systems are designed

with flexibility to maneuver and deorbit safely. What role should the FCC have to ensure satellite systems' license will be good stewards in space?

*Dr. Lohmeyer. The FCC should serve as the authority on the front end to make sure that these operators are good stewards, require compliance using NASA's debris assessment software tool. It should also continue to regulate and codify rules that are built from NASA's standards and interface with NASA, comply, if you will, with ODMSP in a holistic, not piecemeal approach so not a single reg but look at the scenario as a whole and then interface with agencies, NASA and Office of Space Commerce more -- more closely to coordinate those different efforts. Thank you.

*The Chair. Thank you. Thank you, everyone. I yield back.

*Mr. Latta. Thank you. The gentlelady yields back. The gentleman from Florida is recognized for five minutes.

*Mr. Soto. Thank you, Mr. Chairman. In our last panel, we talked a lot about my backyard in Kissimmee where we get to see the full magnificence of America's busiest spaceport, the world's busiest spaceport in Cape Canaveral with NASA, SpaceX, ULA, Blue Origin and more and the increasing number of launches, 57 in 2022. We have, 2023, 87, which is set to be another record. But I think a lot of people don't realize how many of those are from SpaceX, 31 in 2021. Sixty-one in

2022. They are reusable, economically efficient. So Mr. Goldman, first, thanks for your company's commitment to Central Florida. I guess my first question is how many -- how many launches do you have on tap for 2023?

*Mr. Goldman. I think we have roughly about 100 on the manifest. Right now, we are going about every four days so far this year.

*Mr. Soto. So that's a lot of flights. So how helpful would the LAUNCH Communications Act be in increasing and helping your busy launch schedule by streamlining FCC licenses?

*Mr. Goldman. Oh. Thank you so much for that question, and thank you for that legislation. It really is putting its finger on a very, very important issue. As you know, the -- the authorization process for commercial launches was -- was built a long time ago. In fact, it was not built. It just kind of happened. And so we now -- right now, for every single launch, we have to go to the FCC to get special temporary authority for every single launch, sometimes multiple authorities for -- for a 41 launch depending on what's going on.

The process at the FCC, there isn't much of one. It's -- you go to the FCC. You fill out their form. They reach out to NTIA. They reach out to the other agencies. And then it all is kind of manual and then comes back. When you are

launching every four days, and that's just us, this process is just -- it's on the verge of breaking. And so I think your bill recognizes that and puts in effective measures to try to address this and be able to make sure that the Space Coast remains the Space Coast going forward.

*Mr. Soto. And we appreciate Dr. Dunn's help on this in a good bipartisan bill. Central Florida has a lot of advantages in space flight. We are closer to the equator -- the fuel. We have the Atlantic in front of you just in case something goes wrong. And the talent there -- but the weather is not always cooperative; right? So you want to give the committee a sense of how often you may have to go to one to two to three launch windows just in the -- one of these flights?

*Mr. Goldman. Oh, it happens all the time. And especially when you start getting into hurricane season and things get very, very unpredictable. It really kind of depends on the launch. Some of our launches, when we are launching our Starlink satellites, we have a lot more flexibility. But when you are launching astronauts, everything needs to be absolutely perfect.

And so you really need to have that certainty. And, again, as your bill recognizes, you can't always just keep going back and forth with the government and asking is this time okay. Is this time okay? Is this time okay? You need

to be able to coordinate more in real time to make sure that especially these -- these life-carrying missions are secure, that they are predictable and that we have everything in place before the launch goes.

*Mr. Soto. So when we see a schedule of 87 launches for 2023 for the Cape, you could have a real pile-up -- right? -- of launches running into each other date-wise if you have bad weather for an extended period of time. So how would -- how would that figure into why it's so critical that we get this right?

*Mr. Goldman. Yeah, absolutely. Again, it's going back and forth with the government agencies. It just becomes -- at some point, you hit the breaking point. It just becomes not viable. And you will -- you are going to start having launches that get delayed not because there is anything wrong with the launch, but the paperwork hasn't been processed in time.

And so what you're -- what your bill does is it clears out that problem, and it makes sure that when the launch is ready to go, when the technology is ready to go, that we can go.

*Mr. Soto. As we look to American space dominance and see the Chinese increasing their space launches and Russians being not only our partners but our main competition on these, how important is it for us to maintain our space

dominance to really get everything just right so we can beat a schedule?

*Mr. Goldman. Oh, it's absolutely critical. As you recognize, there is -- foreign powers around the world are -- they are looking at the United States with envy. They recognize the United States has taken the lead in space. And you are seeing a lot of state-backed actors who are trying to build competitors to what the U.S. has. And what we need to do is make sure that our regulatory systems keeps us in the lead.

*Mr. Soto. Thank you so much. Committee, this is something our nation is getting right, but we do have work to do to keep our place as the world's dominant space power. I yield back.

*Mr. Latta. Thank you. The gentleman yields back. The chair now recognizes the gentleman from Michigan's Fifth District for five minutes.

*Mr. Walberg. Thank you, Mr. Chairman, and thanks to the panel.

Ms. Pineres, precision agriculture has revolutionized food production all across the nation, really all across the world. But I'm worried that farmers in rural Southern Michigan, my district, won't be able to harness this technology due to lack of connection. This is something different than simply broadband in their homes. What are the

benefits that satellites could have on precision agriculture and, more specifically, has the FCC taken a comprehensive look at what rules may need to be updated to advance the use of satellite technology for this purpose?

*Ms. Pineres. Thank you very much for the question. So as I mentioned in my prior testimony, Planet's data is -- it can be very important in sort of a different approach to precision agriculture than the broadband connectivity that Starlink provides. So it's -- what we're providing is the imagery that can be downloaded into existing farm management platforms to help farmers visualize the crops, what kind of -- how the crops are developing, whether they need more fertilizer, whether they need more water. And we are -- Planet's satellites deliver the kind of daily cadence that farmers need in order to be able to monitor precision agriculture needs over time.

To your question about the commission, Congress created, not so long ago or instructed the FCC to create a precision agriculture task force that would look at broadband connectivity for precision agriculture. That statute, however, doesn't really acknowledge the importance of Earth observation data for precision agriculture. And so we welcome the Precision Ag Act under consideration here today. And, you know, I think that's one way -- it references Earth observation satellite data. So that's one way we can work

with the FCC to sort of expand what the Precision Ag Task Force is working on to look not just to broadband connectivity but also the role that Earth observation can play.

*Mr. Walberg. Thank you. Ms. Lohmeyer, your testimony, you discussed how applicants only have a brief window for designing a system and filling -- and filing with the FCC to join a process and round. What incentive does that provide for satellite operators to design efficient or responsible systems?

*Dr. Lohmeyer. So it's important to note that not all systems are in this kind of scramble that I describe. There are lead applicants as well as those that follow. And so there are numerous operators who have the time to methodically think out and plan and design, procure, manufacturers. And so that fits nicely with the regulatory process.

*Mr. Walberg. And then Mr. Goldman, in SpaceX's experience, how has the processing round framework affected your ability to compete against international competitors like China?

*Mr. Goldman. It's been a strain, to be totally frank. It's -- the processing rounds work for what they are. But foreign competitors don't have the same regulatory burdens that you do when you are going through the FCC's process. I

think one of the main issues has been just delays in approvals when it can take multiple years before you are approved. Again, state-backed competitors are not -- not facing those same kinds of delays. And it makes it difficult for the U.S. to maintain its lead when it continuously has to go through these delayed processes.

*Mr. Walberg. Well, thank you for your testimony. Mr. Chairman, I yield back.

*Mr. Latta. Thank you. The gentleman yields back. The chair now recognizes the gentlelady from Texas's Seventh District for five minutes.

*Mrs. Fletcher. Thank you, Chairman Latta. Thanks again to both you and Ranking Member Matsui for organizing today's hearings into two very informative panels and -- and I really want to focus on this panel on a follow-up on what we were discussing in our hearing last week as well just about the great potential to deliver emergency communications before, during and after emergencies and natural disasters. This is something we are unfortunately all too familiar with in my home in Houston and -- and so we have been very focused on ways to improve communication both from government to residents and also between agencies and between first responders. And so I want to direct my first question to Ms. Lohmeyer. Specifically, can you talk about some of the specific challenges that both governments and industry are

facing when it comes to implementing and providing emergency communications using satellites?

*Dr. Lohmeyer. Sure. So efficient licensing frameworks like we've been mentioning --

*Mrs. Fletcher. Mm-hmm.

*Dr. Lohmeyer. -- that enable multiple different types of services to be deployed, subsidies to overcome the cost of user terminals and the service. And I say "subsidies'' because when I think of emergency services, I think of kind of two different types if you will. There is the always on like 911, medics, fire.

*Mrs. Fletcher. Mm-hmm.

*Dr. Lohmeyer. And then there is triaging these natural disasters like FEMA come to mind.

And I think clearer rules for that first type and then even sort of lessons learned from past experiences where we have had scenarios like in 2017 in Puerto Rico. The hurricanes came in. And one anecdote that we often don't share is, in that time, Project Loon, a Google initiative to use high-altitude platforms, was quickly licensed to deploy services. The cellular infrastructure wasn't in place due to the hurricane, and so those balloons actually backhauled over O3B satellite network. So satellites not only provide these two that I mentioned. We also provide -- or two being the direct-to-device and broadband. But they also serve a kind

of multitiered infrastructure as well.

*Mrs. Fletcher. Well, and it's interesting the way you described it because I -- when I'm thinking about this, I'm thinking about those moments when your existing infrastructure has stopped working and satellites coming in and being able to help fill the gap like the description -- like the scenario you described in Puerto Rico. And I think that that is something that we have seen, is what happens when what you are usually relying on fails.

Certainly with satellite technology, there is a lot that people are usually losing when it comes to satellite technology as well, so I don't mean to suggest that that's not the case. But certainly we have some hard infrastructure that we use in our emergency communications and that we have unfortunately seen go out time and again. And it's in those moments of true crisis where if there is a quickly dispatchable, deployable technology that can fill that gap, I think it's incredibly important. So I'd love to continue that conversation in this committee obviously throughout this Congress.

I also want to touch on -- on kind of a related issue but this bill that Representatives Johnson and Schrier have introduced, the ALERT Parity Act, to require the FCC to establish a process for satellite to provide these emergency services and create rules for that temporary spectrum use.

And I think it will go a long way towards some of the things that we've been talking about and some of the challenges that we've seen.

But I think one of the -- one of the questions from this morning, especially, is sort of focusing on the FEC -- FCC portion of the process that's outlined in the bill. How else can Congress work? What else can we do here to ensure that the satellite technology is available to bolster these communications and maybe, Mr. Davidson, you look like you might have an answer. Something you want to say so -- first.

*Mr. Davidson. Well, I thank you, and thanks for the question. I just -- I just add -- add very quickly that I think the whole ecosystem, so everything we are talking about here today contributes to the satellite industry's ability to make -- to respond to these disasters. So all the stuff that we are talking about -- I mean, we truly are the first responders. We are able to go in. I mentioned, I think, before you came in that we can fly commercial to a site with a -- with a -- with a backpack with the satellite equipment in it.

We can be up and, you know, transponding information before anybody else. So in disasters, oftentimes, terrestrial networks go out. So we really are the ones that can get there, and then we transition to other networks. So I would say the health of the whole system, including

spectrum and kind of regulatory efficiency would help in the disaster context as well.

*Mrs. Fletcher. Great. Thank you for that perspective, Mr. Goldman -- anything to add?

*Mr. Goldman. Yeah. I actually completely agree with the answers that came before me. So as Mr. Davidson said, you are looking at a collection of really important critical bills that really are going to be super helpful. We are able to roll out our equipment basically overnight. We can reposition it and be there before the event if we know that it's coming. And we are able to -- in the past couple of years, the Starlink system has been able to help in wildfires in California and Germany.

We were able to help in Tonga, as Mr. Davidson -- and so you are able to deploy this stuff immediately and bring basically urban-quality broadband to a natural disaster immediately and connect people. And as Professor Lohmeyer -- it's not just for the satellite connectivity. You can also be backhauled for mobile phones as well.

*Mrs. Fletcher. Okay. Well, thank you so much. I see that I once again used up my five minutes because this is really interesting. So I thank all of you for your time, your testimony today. And I thank you so much, Mr. Chairman, for recognizing me and holding this hearing, and I yield back.

*Mr. Latta. Thank you very much. The gentlelady yields back. The chair now recognizes the gentleman from Georgia's First District, the vice chair of the subcommittee, for five minutes.

*Mr. Carter. Thank you, Mr. Chairman. Thank each of you for being here. This obviously is extremely important, as you all know. And it is important in our country. It is important in our world. This is the future right here. I mean, the global satellite marketplace is estimated to be worth $40 billion by 2030. And, you know, we had approximately 4,000 satellites had been launched in the last -- in the last 10 years.

And the next 10 years, that number is expected to quadruple. And, you know, it's just overwhelming what's happening here. So we all understand that. I want to ask you -- I'll start with you, Mister -- I'll start with Mr. Goldman. Tell me how, just very briefly and succinctly, how can we balance efficiency with safety and sustainability as we legislate? Tell me what we can do.

*Mr. Goldman. Thank you so much for the question. Fortunately, I think the bills that you have in front of you are striking a very good balance on doing that. Your point is exactly right. In order to be able to have a robust competitive market, everybody has to be efficient. And so by identifying that and putting that at the forefront and saying

that everybody needs to use their resources, whether it's the spectrum resources or the -- or orbits, your resources in space, making sure that you are as efficient as you possibly can is the only way that we are going to be able to continue this going and reach those numbers that you were talking about for the economy.

*Mr. Carter. Mr. Davidson, your opinion?

*Mr. Davidson. Yes. So I agree with that, and I would say also that there need to be some requirements in terms of transparency. So as you are applying for a license, you have to be -- your satellite should be trackable. We need to know where they are. We need to know what the relationship with others are going to be. We need to know what the interference levels are going to be. And this can all happen prelicensing. And then we can also look at the issue of maneuverability. Do we need to be able to move satellites around in orbit to avoid interference or take other measures?

So these are all things that can be looked at the very beginning of the process. And it need not be bureaucratic or slow as long as you have the right number of engineers and scientists kind of looking at how these are going to interact with each other.

*Mr. Carter. Okay. Fair enough.

*Ms. Pineres. Could I jump in just on the maneuverability piece?

*Mr. Carter. Yeah, sure. Go ahead.

*Ms. Pineres. Thank you very much. On maneuverability, I just wanted to add that the importance of a technology-neutral approach to maneuverability. So in other words, when Congress is looking at -- at new statutory language instructing the FCC on new orbital debris policies, allowing for -- for companies to innovate their way to maneuverability so mandate the desired outcome and let people innovate to get there versus mandating a specific requirement for propulsion or other kind of specific -- technology-specific requirement.

I would also add just on the point of transparency I think in addition to everything that happens at the commission prior to launch, I think it is incredibly important for space operators in the LEO environment to be communicating with each other to avoid conjunctions. We -- as Planet published our ephemeris data which tells where our satellites are and where they are going, operators like SpaceX do as well. But not everybody does that. And I think Congress can play an important role. Policymakers can play an important role in encouraging industry to come to standards and best practices around sharing that kind of information.

*Mr. Carter. Well, thank you for that. Thank you for using the word "encouraging'' as opposed to "mandate.''

First start -- I don't like that word but -- and I couldn't agree with you more about innovation. We want to encourage innovation. And sometimes the best way we can do that is to get out of the way so -- well, let me switch gears real quick. I represent a lot of South Georgia. You know, we like to say in Georgia there are two Georgias. There is Atlanta and everywhere else. Well, I represent everywhere else. We got a broadband problem, particularly in South Georgia and particularly with reliable broadband connectivity.

And just tell me about regulatory barriers that exist or do you feel like may exist at FCC and NTIA. Have they -- have they added to the current digital divide that we -- that we see how -- that is due to the -- due to the licensing of a satellite system, Mr. Goldman?

*Mr. Goldman. Thank you for the question. Yeah. You know, Starlink, our broadband system, is built specifically to bring broadband to everywhere else. So we appreciate that. Yeah. Unfortunately, the FCC right now is saddled with old rules that were developed decades ago, frankly. And --

*Mr. Carter. We just had them on the first panel, and, you know, that is something we were asking about.

*Mr. Goldman. Yeah. And I think that the commissioners, the current crop of commissioners have all

mentioned it, have all talked about the importance of updating the rules. And we really do appreciate kind of on a bipartisan basis. They have been recognizing that. But it really does need --

*Mr. Carter. Are they doing it? I mean, recognizing and doing is two different things.

*Mr. Goldman. I -- they have a number of rulemakings that they are working on right now that hopefully will -- will get us there soon.

*Mr. Carter. Nice way of saying no. I'm sorry. I'm running out of time. Go ahead and finish up.

*Mr. Goldman. No. I'm sorry. That's --

*Mr. Carter. All right. All right. Well, I am out of time. And thank you, Mr. Chairman, and I yield back.

*Mr. Latta. The gentlemen's time has expired. He yields back, and the chair now recognizes the gentlelady from Illinois's Second District for five minutes.

*Ms. Kelly. Thank you, Mr. Chair. Thank you, Ranking Member, and -- excuse my voice -- to the witnesses. My district, Illinois's Second Congressional District, has a strong rural sector with close to 2,000 farms that serve as the economic backbone of the district and, quite frankly, agriculture in the state of Illinois. Many of these farmers and producers have felt the squeeze of the pandemic's economic impacts and supply chain challenges. Nevertheless,

these farmers and producers in the Second District have maintained productivity, generating corn, soybeans, wheat that continued feeding our families, fueling our cars and help raising our livestock. Our farmers are vital to Illinois's economy. And when I go home to my district, I regularly hear about the measures farmers want us to take in Congress to support them, notably the need for us to pass solutions to combat surging input costs and help learn from and implement successes from conservation practices.

So because of that, I was excited to hear a little at last week's hearing about how satellite services could benefit our farmers, particularly how the application for satellite services would allow farmers to utilize GPS to control tractors and other farm equipment and utilize sensors to determine if additional water or fertilizer is needed for any crops.

For these reasons, I was proud to partner with Chair Latta in introducing the Precision Agriculture Satellite Connectivity Act, which I'm not going to go into as I'm showing -- but when you are last, a lot of your questions have been asked already. But I wanted to ask about last September. The White House hosted for the first time in 50 years a conference on -- nutrition and health. Part of the purpose of the conference was to accelerate progress and drive significant change in hunger, improve nutrition and

close the disparities around them.

Ms. Pineres, will you provide more background on Planet's work with NASA harvest food security and agricultural programs and in particular, how the data enables a better understanding of the impact of certain work -- global food supplies.

*Ms. Pineres. Thank you, Congresswoman, for the question. So NASA Harvest is leveraging Planet's data or daily Planet scope imagery, which our Dove satellites produce, and combining it with other environmental, economic and social science impact data to see what crops we are growing and what crops we are not growing on a field-by-field level across Ukraine.

And that resulted in an August 2022 outlook that actually predicted more crops had been harvested and planted along both the Russian-occupied and Ukrainian-held territories than previously expected. And so by monitoring agricultural fields for change, researchers can determine what stage a crop is in from space without having to go field-by-field for crop estimates. Planet and NASA Harvest actually recently announced a new partnership last month that will build on this work regarding Ukraine and then scale it to conduct regional and global assessments.

And that solution will be offered to national governments, multilateral institutions, NGOs and other

interested parties around the world.

*Ms. Kelly. Thank you so much. Thank you to the witnesses.

*Mr. Latta. Well, thank you very much. The gentlelady yields back. At this time, the chair recognizes the gentleman from Florida's Second District for five minutes.

*Mr. Dunn. Thank you very much, Mr. Chair. So great panel. Thank you all for being here. Mr. Goldman, in your opening remarks, you -- in your written statement, you highlighted some of the ways that the foreign competitors are able to game the system and get approved -- to slow our companies down. These two separate standards seem so un-American to me. I wonder is the FCC inadvertently giving an upper hand to foreign competition? Is this something that is built into the deck, or do we have to write a statute in law that says level playing field? That just doesn't -- it seems a lot --

*Mr. Goldman. Thank you so much for the question. The FCC doesn't need a statute to be able to level the playing field. And to just back up and clarify what I was talking about, the -- for -- satellites are inherently global, which means that you can apply for a license anywhere in the world. Everybody wants to then operate in the United States because we have the best market. And so -- but what the FCC's rules are currently are that if you are licensed overseas, for the

most part, they are going to trust that you are -- the country that licensed you already kind of looked at the -- how safe your system is, how -- whether it's going to be protecting space or not. And so for the most part, they are saying they are not going to apply the FCC's rules to those systems.

The problem is, is the U.S. is actually the most forward-leaning, has the strongest rules in the world for orbital debris. So for saying that, you are essentially -- what you are doing is encouraging systems to leave the United States, go license elsewhere and come back. And so we have actually petitioned, asking for the FCC to fix that. And I think the legislation you have in front of you will also do that as well.

*Mr. Dunn. Excellent. So we heard a lot about how satellite broadband can help the digital divide -- rural broadband and whatnot. The federal government -- tens of billions of dollars -- grants for rural broadband and whatnot. But to our dismay, it tends to not be tech-neutral, so technology-neutral. They tend to sort of feed the fire on that. What programs are there that -- well, satellites are eligible for to help the rural broadband, and what would you like to be part -- and then I'm going to ask you to answer the same question, Mr. Davidson.

*Mr. Goldman. Yeah. That's a really good point. I

know when the -- when Congress passed the infrastructure law last year, it specifically called out that these programs should be technology-neutral. Unfortunately, NTIA, when they went to implement it, put in a very strong preference for fiber, as you recognize. I -- we were disappointed in that. We think that it should be more performance-based metrics. If you are able to get certain speeds, if you are able to get certain latencies, the consumer doesn't care how it got there. They just want the service to be there.

And so we are hopeful that these programs going forward will be more technology-neutral. We are working with NTIA. We are talking to them. We are also talking to the states to see if there is any ways that we can work with them.

*Mr. Dunn. I would love it if you'd share some -- yes. That's good with the states too. But I'd love it if you'd share with us words -- the wording of that kind of statute that we might pass in this committee at another time. So keep us on -- on speed dial.

*Mr. Davidson. Yes, Congressman. So I agree with that. I agree with that statement, and there are -- I don't know how many of these programs are out there, and they all have different standards. So it is very difficult to know what you are going to qualify for in the the rural utility service and the U.S. Department of Agriculture is even, I think, more fiber-centric than some of the FCC and NTIA programs. So it

is kind of interesting. You have an agricultural department that has the most restrictive.

*Mr. Dunn. Yes.

*Mr. Davidson. You know, it is -- and you are not -- listen. You are not going to build fiber to a tractor anytime soon. So satellite is a great alternative, and yet it is disqualified from many of the programs.

*Mr. Dunn. And it is worth reminding ourselves that some of these comm competitors that we have overseas are actually government-backed programs. We are competing against --

*Mr. Goldman. That's exactly right.

*Mr. Dunn. -- nation-states, not just -- Mr. Chairman, I will yield back. Thank you very much.

*Mr. Latta. Well, thank you very much. The gentleman yields back. The chair now recognizes the gentleman from Pennsylvania for five minutes.

*Mr. Joyce. Thank you, Mr. Chairman. I think we can all agree that we recognize connectivity continues to be a serious issue throughout rural areas. I represent Pennsylvania's 13th congressional district, which is a large agricultural district spanning from Gettysburg, Pennsylvania, out to Somerset County. Nearly 800,000 Pennsylvanians go without fast, reliable broadband including almost a half a million of them living in rural communities.

Now we must work together to bridge that digital divide. And that's why you must take an all-of-the-above approach when ensuring those in rural areas have the same connection, the same speeds as those in Philadelphia and Pittsburgh. Ms. Lohmeyer, can you talk more on how reforming FCC licensing requirements will better connect my constituents in rural Pennsylvania?

*Dr. Lohmeyer. In general, I think as we lean towards more and strive towards more efficient licensing rules with clear regulations, we are going to be able to deploy systems more rapidly.

*Mr. Joyce. And with that rapid deployment, do you see that we see a fair share of that going into the rural, underserved areas?

*Dr. Lohmeyer. Satellites uniquely positioned to cover ubiquitously. And so there is not actually benefit or, if you will, to focus on the cities where they are densely populated. So it is actually an ideal location for satellites to prove out that there is a business case. And --

*Mr. Joyce. And we look forward to that being proven out in the rural areas.

Ms. Pineres, following up on my previous question about the importance of rural connectivity, you mentioned in your testimony how farmers are making more informed decisions

based on the imagery from Planet. Can you talk about the work that the FCC's precision agriculture taskforce has done in the satellite space and realizing that food security is national security? Can you talk about how Precision Agriculture Satellite Connectivity Act will benefit farmers in congressional districts like mine which have a large rural agricultural component?

*Ms. Pineres. Thank you, Congressman, for the question. As I mentioned in my -- in my prior testimony, the underlying statute that formed the FCC's precision agriculture taskforce actually does not -- focuses just on broadband and does not really look at Earth observation and the importance of imagery of satellite imagery like Planet's and the importance that it can bring to farmers in rural and remote areas.

So I welcome the Precision Agriculture Act. I think the fact that it references earth observation imagery is very helpful. I think we'd be glad to work with the committee on some other language potentially to change the underlying statute so that the sort of mandate of the task force is broad enough to include not just broadband but also the kind of imagery that we think can make a real difference for farmers.

*Mr. Joyce. And I think that is important that this gives us that opportunity to, as you say, make that real difference for farmers.

Mr. Chairman, thank you. I yield the rest of my time.

*Mr. Latta. Thank you very much. The gentleman yields back. The chair now recognizes the gentleman from Texas's 14th District for five minutes.

*Mr. Weber. Thank you, Mr. Chairman. Ms. Lohmeyer, understanding you have a background as an aeronautical engineer. The SAT Satellite Streamlining Act would require the FCC to issue technology-neutral, objective and measurable performance objectives for space -- and orbital debris. Given your experience providing technical advice to satellite companies, I have got really two questions. It is how should the FCC's rules look to incentivize satellite operators to be good stewards of space. And the second part of that is how do we compare that to other countries. Are we going to be in this alone, or are we going to be subject to being disadvantaged by those rules? What say you?

*Dr. Lohmeyer. So the first question, how do we incentivize our operators to be good stewards of space, I actually, from my time at One Web and from working with the operators, feel that they are on board with these rules. They want America to lead in this place and maintain the position as an example internationally.

We even have companies coming out, start-ups with investments that are geared towards the sustainability initiatives. And if you will repeat your second question for

me --

*Mr. Weber. Well, it's going to be -- let's stay on the first one just --

*Dr. Lohmeyer. Sure.

*Mr. Weber. -- a minute. So the SAT Streamlining Act you are saying really is not needed -- pretty good actor in taking care of the debris. But if you follow that up with -- how about the other countries, the other licensed satellitees, if that is the right term. Are they going to be just as good at cleaning things up and their debris?

*Dr. Lohmeyer. I have not seen as diligent measures internationally.

*Mr. Weber. Are there other countries that you are aware of -- this might be a question for some of you all too -- that have those kinds of requirements from a -- maintaining a satellite that's basically free of debris or doesn't cause debris? Are you aware of any?

*Mr. Davidson. Well, Congressman, I just add that I think one of the key questions here is -- is a -- is the U.S. market too. So that's why I think we can provide an example for the rest of the world whether -- a lot of this stuff is international. I think if you want to do business in the United States, which everyone is going to want to do, you have to meet those standards. Then I think the rest of the world will, you know, follow along and try to do that. So,

you know, listen. They have to be smart. It has to be smart regulation. It shouldn't be overregulation. But it should address the issues that will keep particularly the LEO orbit, you know, sustainable for the next -- you know, next generations.

*Mr. Weber. Well, Congress never overregulates.

Mr. Goldman?

*Mr. Goldman. Yeah. So I agree with Mr. Davidson. So the main idea here is that the U.S. is the market that everybody wants to operate in. What the Satellite Streamlining Act does that's really smart is it does two things, is it extends the U.S. orbital debris rules to anyone who wants to operate here. But it also has features in it that -- that bring -- once -- it encourages people to come back, which there is potential for expedited processing if you are a U.S. licensee.

So you are doing two things at once. You are taking away the incentive to move out of the United States while you are actually creating an incentive to come back. And so I think that's why I think the Satellite Streamlining Act actually strikes a really nice balance to be able to address these things without overregulating.

*Mr. Weber. Let me change gears real quick. Mr. Goldman, you said earlier that the least efficient satellite companies are able to box out their competitors.

*Mr. Goldman. Mm-hmm.

*Mr. Weber. Okay. And what would incentivize them not to have the least efficient system because they can box out their competitors?

*Mr. Goldman. I think if you started creating incentives and rewards within the regulation for having -- we have the regulations anyway. If we have them where they benefit you for building in -- for investing in more efficient technology that's better at sharing, then you can create the kind of current race to the bottom. You can turn that into a race to the top by rewarding people for doing the right thing.

*Mr. Weber. Okay. And then Mr. Davidson, you said that applying for a license, your satellite needs to be trackable. Is that to say that the satellite is already launched? Are you talking about it needs to be -- have a tracking --

*Mr. Davidson. No. In terms of your -- when you are applying for a license to operate that these are some of the requirements you should have to satisfy. So you should be able to demonstrate where your satellite is going to go, that you are -- you know, you are transparent in terms of the information, what the interference likelihoods are. All that should be done upfront. And that -- it can -- the standards can be set out very clearly, and you either qualify or you don't qualify to be given a license.

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

*Mr. Latta. Thank you. The gentleman yields back the balance of his time, and the chair now recognizes the gentleman from Georgia's 12th District for five minutes.

*Mr. Allen. Thank you, Chair Latta. And I said in my opening statement before the first panel of witnesses that our committee needs to make it our highest priority to work to meet the needs of our private partners. I come to Congress from the business world, although I grew up on a tractor.

And the last time that I operated a tractor, I planted a row of peanuts 16 inches over from where the farmer had planted them last year, and I didn't touch -- he said, "Don't touch a thing.'' And so with that, Ms. Pineres, obviously you all are involved in agriculture. That has evolved over the years. And you can kind of cover a little bit of that. But what do you see in the future? I mean, obviously farming continues. I mean, we are -- we are satisfying 115 percent of our food needs with less than 2 percent of the population right now. But where do you see this thing going?

*Ms. Pineres. Thank you. Thank you for the question. It is really exciting to see farming go high-tech, as you said, and I think Planet's imagery can play an important role in that. As I mentioned in my prior testimony, the ability

for farmers to -- to really access farm-level data and have that cadence be near daily so they can see change in their crops over time and help decide -- help them make important decisions about, you know, how much inputs they are going to need in terms of fertilizer, water, I think that's -- that's really important. I'd also say, in addition to kind of visual imagery, I had mentioned earlier that Planet also offers a planetary variable for soil moisture content which enables farmers to see how much water is in the soil and help make decisions about water usage as well.

So I think, you know, I hope that we will see a future that Planet can play a role in a future where, you know, we are able to do more with less, less inputs, less land and feed more people.

*Mr. Allen. Well, farming is the largest industry in my district and the largest in our state, and we don't have much dry land farming anymore. It is, like I said, very precise. And you mentioned the moisture content of the soil and just putting just enough water. They also plant the seed with fertilizer already in it. And so it is pretty amazing.

The Starlink and -- or Mr. Goldman and Mr. Davidson, do Starlink -- and tell us to provide a service to farmers and ranchers and what role does satellite technology have to play in supporting precision agriculture technologies?

*Mr. Goldman. Yeah, absolutely. Thank you for the

question. And as Mr. Davidson said, you know, we are not -- we are not expecting to see fiber to the tractor anytime soon. So satellite is the solution. I can tell you, for Starlink, we have high-performing antennas that are essentially flat. And you can actually put it on a tractor and be able to get high-speed broadband all the way to a tractor anywhere to the last acre on the field.

And so we are currently -- so first of all, we have farmers who are customers who are using these services already. But we are also working with a lot of farm equipment manufacturers and trying to think of new ways and new -- new innovative ideas to be able to integrate high-speed broadband into the equipment that is being used already.

*Mr. Davidson. And Congressman, we have a slightly different business model at Intelsat than Starlink does. We have multi-orbit, multi-layer with a 5G core. So that means we utilize partnerships, and we have our GEO satellites. And we have MEO and LEO partners that we integrate into the network. And we have the largest infrastructure in -- terrestrial infrastructure of any satellite operator as well. So all of this stuff is -- operates through from end to end 5G compatibility. So we are doing many of the same things that Starlink is with a slightly different business model that delivers that, you know -- well, sometimes different

services, sometimes similar services and working again with equipment manufacturers and -- and farmers to provide the service.

So the future is very bright for this. And I think as long as government provides the right foundation, you are going to see more progress in this area.

*Mr. Allen. Well, food supply is going to be a international need, and certainly we need to continue to look at every way we can produce food because we are going to be doing a lot for the rest of the world. I only have just 24 seconds but -- and you can submit this to me. I just -- we learned there is a lot satellites up there. And we know that technology like in these things is changing by the hour. I mean, do some of those satellites need to come down, and we need to put new ones up there? And you can just submit that in writing rather than take committee time.

I would just like to know what is the program on recycling all the stuff up there and using the best, latest technology. With that, Chairman, I yield back.

*Mr. Latta. Well, thank you. The gentleman yields back. And at this time, the chair will recognize the gentleman from Utah for five minutes.

*Mr. Curtis. Thank you, Mr. Chair and Ranking Member, our witnesses. Thank you for this hearing. I want to go in a little different direction and talk about technology that

it feels like we are just in the very beginning of using satellite technology to monitor specific sources of carbon emissions. It feels like this is in its infancy, but it might be a good tool particularly overseas and narrowed down source emissions. I understand within a square mile which would be very helpful. There are some hurdles. For example, there are issues with visibility through cloud cover. But potential for this technology is immense. Danielle, I'm trying to pronounce your last name.

*Ms. Pineres. Pineres.

*Mr. Curtis. Pineres. Okay. Thank you. Satellite technology could be used to ensure closed societies like Russia and China are being transparent about their emissions. Can't this technology be used to ensure China is giving reliable data on their emissions and uncover possible accidents that are harmful to the environment?

*Ms. Pineres. Thank you very much for the question. Planet is actually working to understand methane emissions. And we have plans for a new groundbreaking hyperspectral satellite constellation called Tanager. And we expect to begin launching this year. Our hyperspectral mission is designed to support the identification of methane emissions at the facility scale so at a very small scale along with a myriad of other applications that can improve life on earth spanning across areas such as biodiversity, water quality,

etc.

So we are actually undertaking this hyperspectral mission as part of the Carbon Mapper Coalition, which is a public-private partnership with a broad-based coalition of industry and nonprofit organizations. So we are really looking forward to seeing how this hyperspectral data can complement the other satellite imagery that Planet uses but really hoping that it will be a game changer in terms of ability to identify emissions to allow governments to -- governments and companies to keep tabs both on their own emissions, others' emissions and there would be a lot more transparency around emissions and accidents going forward.

*Mr. Curtis. And keeping people accountable. I am told most of the satellites with these capabilities are government-owned. But is this technology useful in the private sector? Do you think we will see this grow?

*Ms. Pineres. We do believe it is useful in the private sector. As I mentioned, we do have plans to launch a hyperspectral constellation. And so I guess we'll see. But I think Planet certainly sees value in hyperspectral data, particularly for these climate change emissions-monitoring-type applications.

*Mr. Curtis. I'm aware of one company that is using it for mining industry gas and oil, better track methane. Are there challenges that we should be aware of in Congress with

getting these capabilities licensed?

*Ms. Pineres. Thank you very much for the question. You know, I think one thing that is interesting about Planet and our -- we have slightly different licensing needs than are -- than are faced by others on the panel. For instance, we are -- we are typically exempted from the processing round requirements because of the Earth observation, the Earth exploration satellite service spectrum that we use. We share our spectrum in a different way. But nevertheless, you know, we really appreciate the committee's work on the SAT Streamlining Act and the focus on ensuring a transparent and timely licensing process that will enable us to continue to get our satellites authorized and have those authorizations in place to permit our business to go forward.

*Mr. Curtis. I have no doubt that China is also very interested in this technology. What do we need to do to stay ahead of them, and how do we -- how do we make sure that we dominate in this technology?

*Ms. Pineres. Yeah. What a great question. There is -- as you've heard from across the panel today, the U.S. is a -- a leader in terms of regulation but also behind; right? We are doing great on orbital debris and sort of leading the way on that. But in order to have effective orbital debris policy, it can't just be the United States. We need to be working with others globally to try to make sure that

everyone around the world is abiding by these orbital debris rules.

I think in addition, we -- in addition to FCC regulation, we also face Earth observation regulation specific to our industry. And so we really appreciate NOAA, our regulator, streamlining the rules back in 2020 for Earth observation satellites and look forward to continuing to work with them to try to make some additional changes to try to make sure that the U.S. remains the -- the world leader in this technology.

*Mr. Curtis. Thank you. I didn't mean to neglect the other three. Twenty seconds left if any of you have any comments on these issues. Good. Thank you. Mr. Chairman, I'll yield my time. Thank you.

*Mr. Latta. Thank you very much. The gentleman yields back, and the chair now recognizes the gentleman from Ohio's 12th District for five minutes.

*Mr. Balderson. Thank you, Mr. Chairman. Mr. Green or Mr. Allen just left, but I wanted to acknowledge and thank you all for being here, give my shout-out to former colleague of ours, Bob Gibbs, Congressman Gibbs, who is a Starlink customer. And I had to hear all about it for two weeks, about how great it was. And he installed it himself, so he is quite accomplished.

But on his farm, it is very useful. And it has been a

saving grace for him and his wife and his grandchildren. And I have had numerous folks from the congressional district, Kyla who works with our -- Farm Bureau and just the successes that they've had. So thank you, Starlink, Mr. Goodman (sic). And I will direct my questions predominantly to you today. So SpaceX recently announced a partnership with T-Mobile -- T-Mobile that would pair Starlink's satellite with T-Mobile's wireless network.

During the first panel, I discussed the importance of filling in the coverage gaps that hurt my constituents in rural and Appalachia Ohio. Excuse me. This innovation from the private sector sounds like a promising start, but we must ensure it's not thwarted by unnecessary red tape before it has a chance. Mr. Goodman, what regulatory barriers have you run into while seeking authorization from the FCC to provide satellite to cellular services?

*Mr. Goldman. Thank you so much for the question and for the kind words. Really do appreciate it. And so to just back up one step, we do have a deal with T-Mobile where we are going to be using their licensed spectrum. And essentially our satellites will look like a wireless tower to a phone. So when you don't -- when you are in a dead spot, when you are -- when you can't -- when your phone can't see a normal cell tower, it will see our satellites as though it is a tower and be able to fill in those gaps.

At this point, I am happy to say we have not run into any significant regulatory problems. But it is -- it is in the early time on this. We actually just had to re-file an application for this yesterday. So we are -- we are early in the process. I do expect where regulations struggle is when you have something that doesn't fit neatly into any of the boxes that they are used to. And this is -- this is one of those things. Regulators are not used to seeing -- they are not used to seeing someone asking to use satellites in cellular spectrum. So we are going to have to work closely with the FCC to try to figure out how to smooth things out. So far, we have gotten very positive feedback from the FCC and the staff, but it is going to be a regulatory challenge.

*Mr. Balderson. Okay. Thank you. To follow up with that, how will the SAT Streamlining Act and the ALERT Parity Act make that process easier for you and other companies that may wish to provide cell -- satellite to cellular service?

*Mr. Goldman. Well -- sorry. That's a mouthful. One of the great things about the Satellite Streamlining Act is it gives us certainty that when we apply for a license, we know we have some idea of when we are going to get it. Right now, we have no -- we put in an application. We have no idea when it is going to come out. It is really hard to build technology when you have no idea when you are going to be able to start using it.

So it really adds to that certainty, which is absolutely necessary. On the ALERT Parity Act, it is a really interesting idea that we would really love to be able to work with you on. One of the things that it does that is a novel concept is that in the event of an emergency, it allows you to be able to use other spectrum that is not already being used to be able to provide lifesaving services. And our equipment that we are going to be using with the T-Mobile service actually can access other spectrum bands. For example, there is mobile satellite spectrum that is not actually being heavily used right now.

And so one possibility is that under that -- this act is that we might be able to access some of that spectrum in event of an emergency.

*Mr. Balderson. Okay. Thank you very much. My last question is Professor Lohmeyer. Thank you for being here, Professor. In your testimony, you touched on the SpaceX and the T-Mobile partnership. Can you outline some of the technical concerns that this partnership would need to address to move forward with deployment?

*Dr. Lohmeyer. Well, one thing that was coming to mind when you were just speaking was just this history since I have been involved. In 2015 at the World Radio Conference, U.S. delegation was prioritizing terrestrial spectrum allocations. And we've seen at the FCC seaband -- 107;

right? The shift from terrestrial allocations and targeting satellites -- satellite frequencies for terrestrial use. Now we are in this paradigm where -- shift where satellite services are looking at terrestrial frequencies for use.

And so going back to things that we needed, prioritizing satellite at the international and national level and the regulatory frameworks for those spectrum allocations.

*Mr. Balderson. Thank you very much. I yield back, Mr. Chairman.

*Mr. Latta. Thank you. The gentleman yields back. The chair now recognizes the gentlelady from Tennessee for five minutes.

*Mrs. Harshbarger. Thank you, Mr. Chairman. Thank you, witnesses, for being here today. Mr. Goldman, I represent a very rural district in East Tennessee, and there is a lot of areas where laying fiber for traditional broadband is just difficult. What is the status of Starlink's deployment and what speeds do Starlink service currently offer?

And I read where you have the Starlink project that will be expanded in Wise County, Virginia, which is, you know, the district next to me in Southwest Virginia that are going to be serving students. And I saw in Eastern Kentucky where you have expanded the program that's connecting residents to telehealth, which is going to be -- telehealth is here to stay, and we are going to be able to utilize that for those

residents. So what is the status of the Starlink's deployment?

*Mr. Goldman. Yeah. Thank you so much for that question. And those are the kinds of projects that have been most exciting things that we are working on. So I really appreciate highlighting those. And -- right. In Wise County, we were able to work with the county, and we initially -- we started with 40 units that we -- of our user terminals to be able to connect people in Wise County. And the program went so well that we've been expanding it since then. And it really has been a great success because what we were able to do is bring high-speed broadband to people who just didn't have -- not even like they had slow options. They had no options.

*Mrs. Harshbarger. No options.

*Mr. Goldman. No -- and so it really has been very fulfilling and exciting to see. As you mentioned, Western Kentucky, we have similar ones. The good news is that our system is everywhere already. We are seeing, on average, about 100-megabit speeds. So it's about what you -- anyone would need for kind of residential use. We have enterprise services that can go faster than that. We've even seen kind of burst speeds that are at, like, 350 megabits where you can actually get even much, much higher. So -- and so we are available anywhere at this point.

We do have areas where we are essentially oversubscribed in some areas. And so we have a little bit of a wait list. What we are -- we are continuing to launch. We are launching every four days to put up more satellites. And that will give us more capacity to be able to put more people on the network, even in places where we are a little bit congested right now.

*Mrs. Harshbarger. Yeah. In addition to high-speed Internet, it is my understanding that the LEO systems like Starlink can provide important complementary services or add-on capabilities for terrestrial networks as well. And I saw last year that SpaceX announced a direct-to-sale service, which is supposed to end the dead zones in a lot of distressed counties too for mobile service. Could you provide an update on the build-out of that system and talk a little bit about what Starlink is or will be able to offer to assist with other communication challenges beyond the high-speed LEO internet?

*Mr. Goldman. Yeah. Thank you for the question. This is another one that we are really excited about. We just submitted a new application for that, actually, yesterday for that service. We are hoping to start launching those satellites, assuming FCC approvals coming this year. We are hoping to be able to start launching those antennas on our satellites as soon as this year. We are working with

T-Mobile for a very rapid rollout of that once we have approval. It works with your standard phones already. So as soon as we are able to start launching enough satellites to have service, your phones will already be able to do it.

And, yeah, I -- to full disclosure, this isn't going to be a 5G service, but it will allow you to text and have emergency alerts and things like that. And hopefully at some point we will have voice and kind of low-speed data too.

*Mrs. Harshbarger. Well, that is pretty sweet. I have got a little bit of time left. You know, I am reading about the Secure Space Act. And, you know, other countries are moving forward with significant investment in LEO systems. And I read here where China is aggressively -- of course we know they are pursuing a satellite constellation, which is StarNet. But the statement that you have says while the U.S. has blocked the installation or use of Chinese hardware telecommunications network domestically due to security concerns, many nations have few options when it comes to telecommunications infrastructure and must rely on whoever -- whoever can provide that for them. They won't -- matter if they are going to spy on them or whatever.

Are you aware of any countries who are using telecommunications from adversarial nations to the U.S.?

*Mr. Goldman. Well, we have seen this on the terrestrial side already where we have seen what has happened

is I think Congresswoman Eshoo was mentioned earlier with Huawei and ZTE. What they have been able to do is work with countries around the world that have no other options and bring low-cost options and get there before kind of U.S. manufacturers or anyone else would be able to deploy the equipment.

In space so far -- so far, the U.S. is ahead. But we are watching over our shoulder that foreign actors -- it's not just that it's foreign actors and it's foreign powers. It's they have state-backed systems. So they will be able to -- they will have resources that just no private actor is going to have. And so the only way that the U.S. is going to keep its lead is that we continue to innovate as quickly as possible and that the regulatory burdens don't slow us down.

*Mrs. Harshbarger. That is a big deal. We got to get on it. Thank you for that, and, Mr. Chairman, I yield back.

*Mr. Latta. Thank you. The gentlelady yields back. The chair now recognizes the gentleman from Texas's 11th District for five minutes.

*Mr. Pfluger. Thank you, Mr. Chairman. I thank the witnesses for being here. I know it has been a long day, but we appreciate the opportunity to talk with you about these issues and really hone in on some things. I will start with Ms. Pineres. We talked a lot about the impact on satellite technology on precision agriculture. And I'm just kind of

wondering. You know, there has been a lot of answers today already. So without being redundant, I mentioned this in the first panel that the district I represent has a lot of cotton. And, you know, it is very helpful to have the -- the understanding of not just the soil but where the precision location of the seed is. And can you just kind of talk to me about some of the emerging technologies and where this is headed and what we should be looking at.

*Ms. Pineres. Yes. Thank you very much for the question. So I mentioned that satellite imagery can be used for precision agriculture in order to monitor soil, moisture content in order to allow farmers to see on -- on sort of a crop -- a field-by-field bases on a daily basis what the crop health is looking like and where they might need more inputs to get the right output at the end of the day. And so we -- we continue to offer that to farmers to try to meet them where they are. You know, they are not geospatial experts. So we offer our satellite data within the -- the farm management platforms that farmers use today.

In addition, you know, just to move to a slightly different area, we also have a contract with NASA. And I talked about NASA Harvest earlier, but we also have a contract with NASA where researchers that are funded by any U.S. federal civilian agency or the National Science Foundation, including their contractors and grantees, have

access to our data. So I think there is something on the order of 2,000 research papers that are out there on a wide variety of topics. Could be agriculture. It could be climate change, you know, Arctic monitoring, lots of different areas.

And so I think the continued availability of our data for scientific research can also lend itself to better agriculture applications in the future.

*Mr. Pfluger. How many farmers are you seeing? I mean, percentage increase. And we don't even know this. And anybody -- welcome to answer this, but I mean what's the increase that we've seen over the last 10 years, say, in applications for agriculture used by producers?

*Ms. Pineres. That's a great question, one I would have to get back to you on in terms of uptake on our data. But I would be happy to follow up.

*Mr. Pfluger. Any risk when it comes to cybersecurity for agriculture?

*Ms. Pineres. That is a great question. We haven't talked about cybersecurity much yet on the panel today. I think all satellite operators are very conscious of cybersecurity risk. And so we all take measures to protect our networks.

*Mr. Pfluger. Okay. I'll go with Ms. Lohmeyer on the next one. Just, you know, from your experience, what is

keeping you up at night when it comes to the action process of authorizing and getting, you know, the -- is government acting at the speed of relevancy? Are we able to get the appropriate licenses and authorizations, and is that process moving fast enough to keep up with technology?

*Dr. Lohmeyer. So your first point, what is keeping me up at night when I work on these applications and just to shed light on what the experience is like. So we have got NTA wanting to file. They collect. And they collect data on their systems. They perform interference analyses. And then they have got this package that they submit into the system that is the IBFS on the international bureau side if it is an experimental license. It is the ELS. And they are different. And they are database-driven.

And it is almost this kind of period of time where you are about to submit. There is relief after you submit. And then there is a waiting game. You wait until the FCC comes back with inquiries. And it is just in this black box. But I think we talked about earlier the system could be improved upon if there was more of a means for communicating with the FCC automatically. So say you submit a document and it just uploads to a website. But maybe there is additional features that could allow you to know the status of that document. Maybe there is questions. Maybe it is just accepted after review.

The same thing applies for coordination, which pertains to your relevancy question as we interact with international players. So the coordination process is such that sometimes you are sitting on other sides of the table from an operator. But it is actually the administration so the FCC in the U.S. or Ofcom in the U.K. that -- that arrange or organize these sorts of exchanges. And so you submit letters to the FCC which then forward the letters to Ofcom or which other nation has a co-frequency use.

And that admin submits letters to its operators. So some way to really automate this process and reduce the waiting time would address relevancy.

*Mr. Pfluger. I am out of time, but I will submit a question on whether or not that hampers our competition --

*Dr. Lohmeyer. Thank you.

*Mr. Pfluger. -- with other countries in the world.

*Mr. Latta. Thank you very much. The gentleman yields back, and the chair now recognizes the gentlelady from Florida for five minutes.

*Mrs. Cammack. Thank you, Mr. Chairman. Thank you for our witnesses for hanging in there, your endurance. It is a very important topic. But I recognize that a lot of this is technical. Basically, at this point, all of my questions have been asked that I had prepared. So we are just going to free-ball it here. So all the witnesses -- this is to you,

but since I only have four minutes and 38 seconds, please keep your answers brief.

In the first panel, Mr. Glass from NTIA, he was speaking about coordination efforts. We are talking Commerce Department and the FCC. And I was looking back on my notes. And one thing that he had mentioned was, quote, they were always striving to improve. When I asked him to follow up on that about what does that mean exactly because, you know, bureaucrats, they say that; right? What does that mean? What metric do you measure to -- when you talk about improvements?

And he said that they don't have any. So speaking from the private side, the industry side, what would be a acceptable metric, a system by which they can measure a tangible level of improvement that increases transparency for industry efficiencies within a system so that we can keep moving forward on this and gives the public, quite frankly, confidence that things are moving forward. And we can just go right down the line.

*Ms. Pineres. Thank you very much for the question. I want to think about metrics. It is a really important issue, and I wouldn't want to just come up with one off the top of my head. So let us circle back with you on any specific metrics. But I will say I think in terms of outputs that we see from the private sector side and things that have been

useful, the NTA, FCC MOU, the renegotiation of that, you know, we are seeing and hearing about increased communication between the FCC and NTIA. And we think that is really critical.

I would say, also, as we are talking about satellite streamlining and ways to make coordination -- ease the burdens of coordination, make things easier, I think early communication by the FCC to NTA of satellite applications could be very useful. Most of the satellite applications need to be coordinated with federal operators. And so I think that looking at how early the FCC is sharing those applications at NTA may be one measure we could take a look at.

*Mrs. Cammack. Okay. Mr. Goldman?

*Mr. Goldman. Yeah. Thank you for the question. I think looking at speeds -- speed of decision-making is critical. It is -- when I was listening to the panel this morning, there was a lot of talk about the MOU and the increased coordination. And absolutely. This spectrum is shared not just with commercial interests but also with federal interests and absolutely needs to be coordinated with everyone who is there.

But the more people you add into coordination process, the more everything slows down. And so I think making sure there is a counterbalance that as we more -- add more parties

to the coordination discussion, we are looking at longer and longer timelines. And so being able to make sure that we keep the pressure going the other way as well, that these -- these coordination discussions are thorough and they are complete, but they are also done in a timely way.

*Mrs. Cammack. Thank you.

*Mr. Davidson. I would just add -- I don't know if this is a metric or not. But it -- if you look at orbital debris, kind of the regulation of orbital debris --

*Mrs. Cammack. Mm-hmm.

*Mr. Davidson. -- I don't know. There is maybe five agencies, maybe more than five, that are involved in some aspect of that. And the jurisdictional, you know, kind of land grabs on that -- in that topic are not efficient. And so there should be some -- I don't know whether it is coordination or clarification of who is in charge of what in the U.S. government I think would be very useful to have.

*Mrs. Cammack. I like that.

*Dr. Lohmeyer. And I would just like to share that the FCC has, in fact, recently required an NTIA data form for its filers, especially experimental licenses, which effectively documents the technical parameters, power, modulation schemes, to assess interference into its network, which is a step above what was required in the past which usually looked like a series of emails back and forth to Air Force, NOAA and

NASA, which was kind of a guessing game of who you needed to include as well so --

*Mrs. Cammack. Okay. Thank you. I'm running short on time. So I am going to ask two questions be submitted for the record, one dealing with specific regulations that you would love to see taken off the books. Second, since this is a committee on innovation in this space, some of the workforce challenges that you all are seeing in trends and how we can address on the front end. But I am going to give my last 30 seconds to you, Mr. Goldman. My district -- emergency departments and first responders are having to invest upwards of $15 million per county. And I represent 12 in building out an updated emergency communication system. Can you touch on the work that SpaceX is doing in addressing those first responder communications and where that might be a good alternative.

*Mr. Goldman. Yeah. We don't need the same sort of ground infrastructure to be built out. We are already there. We already have coverage. So you don't need to do that initial huge -- we are kind of already done the huge investment upfront. And we can, just with the deployment of user equipment, we can come in. And we are already actually working with a lot of first responders in Florida to do that. And I am happy to work with your office to see what we can do specifically in your district.

*Mrs. Cammack. Excellent. We are three minutes -- seconds over.

*Mr. Latta. Okay.

*Mrs. Cammack. I yield.

*Mr. Latta. Amazing. The gentlelady's time has expired, and the chair now recognizes the gentleman from Idaho for five minutes.

*Mr. Fulcher. Thank you, Mr. Chairman. I, too, am going to deviate here right at the end of the hearing from the -- a little bit. But what has been on my mind throughout this discussion has been the issue of security and dependability. And things that pop into my mind that could disrupt service, malfunction, cyber attack, some kind of breach, obsolescence, some kind of collision. Knowing what you do about the technology and the circumstances it is operating within, what is our greatest vulnerability to security and dependability? And I will start with Ms. Lohmeyer.

*Dr. Lohmeyer. Tough question. I think I would like to get back to you on the record.

*Mr. Fulcher. And please do that. And I am just going to ask Mr. Davidson. Security, dependability. What is our biggest fear? What should we worry about? What should our -- keeps us awake at night?

*Mr. Davidson. Yeah. So, first of all, I invite you to

come out to our network operations center in Tysons Corner here in Virginia. It is just about 16-minute drive from the capital. So you can watch yourself. We are flying the satellites from that office there, and you can kind of see what is going on and in that -- in that setting. So some of our engineers will be able to tell you about kind of what their biggest fears are. I do think that -- I think cyber security is something we should be very concerned about. I mean, we have our subsidiary, IGC, does a lot of work with U.S. national security agencies and intelligence agencies. And so we build that into our network. So we feel like they are extremely secure. But there are a lot of operators around the world that don't have that kind of security with -- you know, built into their systems. And as, you know, Mr. Goldman had mentioned before, you know, there aren't always the incentives to build state-of-the-art, whether it be spectral efficiency or security into your equipment. So I think there are a lot of vulnerabilities in the cyber throughout the world. Not everyone is up to the same standards as the folks on this panel.

*Mr. Fulcher. And if there is a problem, it's not like we can go get a technician and a man and go work on it.

*Mr. Davidson. Well, these satellites are up there for, you know, 20 years or so. And so we have to build them. You know, again, we spend billions of dollars. We just launched

-- launched or are launching -- and SpaceX launches most of our satellites. So we, you know, spend billions of dollars building and launching these satellites. And so we design them very well, but that is not necessarily the standard that is held by everyone.

*Mr. Fulcher. Mr. Goldman, speak to security and dependability if you would, please.

*Mr. Goldman. Yeah. Thank you so much for the question. Yeah. We have teams of people who think about this all the time. I think that they would be very upset with me if I gave too much in a public setting, but we are happy to talk to you off-line about a number of those.

But let me just -- a little bit of what we do to address some of these issues. It is all -- our entire system is built end-to-end in the United States. So we manufacture our satellites in Washington. We manufacture our user equipment in California. We launch out of Florida. Everything -- everything is built in the United States. I think one of the bills you actually have in front of you that is being considered at this hearing, this Secure Space Act --

*Mr. Fulcher. Yes.

*Mr. Goldman. -- actually is a very smart bill to be getting ahead of this issue early. I was mentioning earlier we saw what happened on the terrestrial side when we didn't get ahead of that early. And we saw equipment getting built

into the networks that essentially built backdoors into the systems. We can't do that in space. There is no Rip-and-Replace in space. And so it is the fact that the -- that the committee is getting ahead of this now I think is actually really a positive sign and I think will be very helpful into the future.

*Mr. Fulcher. And you say if cyber would be towards the top, cyber attack?

*Mr. Goldman. Absolutely. And at least for us, we have -- our system is encrypted end-to-end. We can't -- we can't even see in ourselves. From the time that it touches our network to the time it leaves, it is completely encrypted.

*Mr. Fulcher. Okay. Thank you. Ms. Pineres, we have got one minute left.

*Ms. Pineres. Thank you for the question. I would just say I think, although our satellites face multiple threats, I think one of the beauties of some of the constellations that you are seeing in low-Earth orbit, NGSO constellations like Planet's, for instance, are Dove satellites. We have approximately 180 up in space today, and we are launching new ones regularly with SpaceX, actually. And so I think having -- if just -- if something happens to just one satellite, we have the redundancy in space to be able to continue to take the imagery that our customers rely on. So I think thinking about security not just in terms of cybersecurity risk or

dazzling of satellites but also thinking about how constellations are designed to provide that kind of redundancy is very helpful.

*Mr. Fulcher. Great. Thank you. Mr. Davidson, I intend on taking you up on that offer.

*Mr. Davidson. Absolutely. I will send you an invite.

*Mr. Fulcher. Thank you.

*Mr. Davidson. Thank you.

*Mr. Fulcher. I yield back, Mr. Chairman.

*Mr. Latta. Well, thank you. The chair now recognizes the gentleman from Ohio for five minutes.

*Mr. Johnson. Thank you, Mr. Chairman, and once again, thanks for allowing me to weigh on to talk about these really important issues. Mr. Davidson let me get right to it with you. As you noted in your testimony, Intelsat has been supporting emergency communications and natural disasters all over the world, although Intelsat has primarily been a geostationary Earth orbit provider. In your view, what type of coordination or best practices should the FCC consider including for the rulemaking required in the ALERT Parity Act enabling the provision of emergency connectivity in remote areas?

*Mr. Davidson. So, Congressman, thank you for the question. I recently just concluded a stint as the chair of the crisis conductivity center. It is part of a World Food

Program coordination for our world disaster. So what happens is whether it is terrestrial providers or satellite providers get together and figure out how to get in quickly. And, you know, oftentimes satellite is the first one to be able to get in there. So it is really critical first responder. So your question is a really good one.

So we use our own spectrum rights that we already have when we go into areas for disaster response. So we kind of self-provision both the equipment and the use of the spectrum. So I don't know that I'm the best one to be able to advise for people who don't have that -- the spectrum or the equipment, what they need, so I may defer to another panelist to answer specifically that question. But I think the intent of your -- of the legislation is excellent. And I think focusing on the needs of -- you know, these things pop up. You can't -- can't always plan for them. And so putting the things in place in advance, which your legislation does, I think is a good -- is great policy.

*Mr. Johnson. Okay. Mr. Goldman, as I mentioned last week to Amazon about Project Kuiper, I am very excited about the possibilities of LEO satellite broadband and the integral role that it would play in bridging the urban-rural digital divide. I have actually had the opportunity to set up Starlink at your office here in D.C. And I saw for myself how easy it was to set up and even did a speed test. I have

got a staff member back in Ohio that is -- that is using the system to connect her entire farm, loves it. While Starlink is available in some areas in Ohio, I know there are many more in our rural Appalachian district who are eagerly waiting for Starlink to become available in their communities.

How many additional satellites does SpaceX intend to launch in order to meet the great demand across the United States and globally while maintaining the promised speeds and latency for existing customers? Will you need more than the 4,408 satellites authorized by the FCC?

*Mr. Goldman. Yeah. Thanks for the question. Yes. The FCC actually just authorized us last month, two months ago, for our new Gen-2 System, which is another 7500 satellites initially. And those actually will be more capable satellites. We have already started launching into the -- into those orbits that is already going to start adding new capacity to the network. And so we are going to be launching more and more capable satellites. And we continue to innovate. It is just like innovation on the ground. You just keep doing it. You don't stop. And so the system should become more and more capable over time, and we should be able to make sure that we are really excited about the amount of demand that we see in your district, and we are excited to be able to get all those people who want the

service to be able to get on as quickly as possible.

*Mr. Johnson. Okay. Continuing with you, Mr. Goldman, have there been any important takeaways for SpaceX from your experience providing vital internet service in Ukraine?

*Mr. Goldman. In Ukraine? Oh, yeah. That is something I personally am very proud of that we were able to do. And basically the Ukrainian government asked us to step in and help when the Russian -- Russia invaded. And within 48 hours, we had service. And we are providing service to -- we continuing to provide service to Ukrainians across the country. Important lessons, that is a good question. I don't know. We have been learning a lot through the entire process. That is obviously a very contentious area to be providing service. What we have seen is efforts to try to jam the system. So we have had to learn how to be able to avoid jamming. It has definitely taught us a lot of lessons on how to make the system more resilient and more redundant.

*Mr. Johnson. Well, maybe you don't want to answer this here but just a follow-on, are you talking to DoD and any of our special operations folks? I mean, that is a pretty compact system to be able to take anywhere.

*Mr. Goldman. Yes, we are, and I am happy to talk to you off-line about that as well.

*Mr. Johnson. Okay, great. Thank you, Mr. Chairman. I yield back.

*Mr. Latta. Thank you. The gentleman yields back, and seeing no further members here to ask questions, I -- again, I want to thank our witnesses for being with us today. You can tell --

*Mr. Goldman. Thank you.

*Mr. Latta. -- from the questions for last -- when you started -- last couple hours has been a lot of -- a lot of interest. You know, a couple things that I always -- I listen to and I always say is that this subcommittee, this committee, we look over the horizon five to 10 years, and so we always have to have your input and make sure that we are getting the right laws in the books and then followed by the right regulations.

Another thing is that we always see the government or any agency picking winners and losers out there because usually it is going to be the losers. So we want the best that can be out there for everyone. So I ask unanimous consent to insert -- documents included on the staff hearing documents list. Without objection, that will be ordered. And without objection, so ordered.

Pursuant to committee rules, I remind members that they have 10 business days to submit questions for the record, and I ask that witnesses respond to the questions promptly. Members should submit their questions by the close of business on February the 23rd.

And without objection, the subcommittee is adjourned.

[Whereupon, at 3:13 p.m., the Subcommittee was adjourned.]