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Thank you for that kind introduction. It's my pleasure to speak here today.

I'm going to speak today about the topic of orbital debris. Orbital debris is a collection of "junk," both natural and manmade, that orbits our planet. It moves pretty fast, too—like 17,000 miles an hour, more or less. For perspective, a marble moving at that speed would blow up your car. Orbital debris presents a real and present danger to all commercial activity in space, and we should do what we can to reduce the potential harms created by its further generation. But, as we do this, we should take a fresh look at past and present risks, and we should give credit for approaches that are low risk, not just panic and increase regulatory burden because debris is in the news. Both the private sector and regulators have a role to play here, and today I want to be clear about what the FCC's regulatory role can, and I think should, be. The speech, in parts, can be a bit technical, but I'm happy to address any lingering questions afterward.

The topic of orbital debris could not be more timely, and I mean that literally. A few hours ago, a 4-ton piece of a Chinese rocket booster created an approximately 65 foot crater as it slammed into the surface of the moon at around 5800 miles per hour. This is the first known example of a piece of space junk colliding with something in outer space well beyond typical orbital height. This ought to worry us, especially because we don't want the sector as a whole to get blamed. Don't get me wrong—I don't think this by itself means we need more regulation. It's more that we need a fresh perspective.

Last Saturday, Elon Musk announced that Starlink was live in Ukraine, with additional terminals en route. It's hard to confirm reports of Starlink usage in Ukraine because of the fog of war, but I have no reason to think that the effort failed.

I think there are lessons to be learned both in Ukraine's ask and in Starlink's response.

In times of conflict, disruptions to internet connectivity, especially in rural regions, are a new kind of infrastructure risk. America is increasingly moving vital services, from public safety to logistics to industrial production, onto Internet-based technologies. And we're hardly alone in this. Disruptions to these can instantly place whole regions, even whole countries, on the wrong side of the "digital divide," so questions of continuity and stability are more pointed every day.

We're not alone in this, and internationally, it's not just about Ukraine. Cutting off access to communications infrastructure is a tactic used, to devastating effect, in kinetic conflicts, cyber warfare, and governmental suppression of unrest. The northern Tigray region of Ethiopia, Myanmar, and Kazakhstan—and I could go on—have all experienced targeted communications disruptions in recent years. Indeed, the widespread use of Twitter during the Arab Spring protests, over a decade ago, demonstrated the vital role that Internet communication was already playing in world affairs. Small wonder, then, that a decade later—that disruption to communications is central in both interstate conflicts and intrastate suppression. The little guy may not have much, but typically, these days, he has a phone. This isn't just about the little guy in far-off countries, either. Emergency and disaster response over here must also think hard about robustness and redundancy as our vital services increasingly depend on always-on, high-speed, high-reliability Internet.

How does satellite internet impact this situation? We in this room are by now habituated to thinking about satellite internet as a cure for poor rural connectivity. And, of course, it may well be. But what else can it become? For one thing, it can become the common man's Iridium. Think about it: world governments rely on satellite connections to go where other forms of communications cannot, and to work when other forms of communication do not. But if someone in a region in conflict has a high-speed consumer internet ground terminal and a satellite pointed at it, well, that might just work about the same.

And, of course, the same reasoning applies over here in the aftermath of a hurricane, earthquake, or blizzard. Other advances in connectivity are proposed by companies that promise to provide satellite backup for ordinary, consumer-grade cell phones where there's no terrestrial connectivity.

And then, disrupting connectivity isn't so easy anymore. The signal must be jammed; the terminal must be destroyed; or a ground station, potentially a continent away, must be hacked or otherwise disrupted. That defense may not be perfect, but it's better than the alternative, where a bad actor may need only a pair of pliers, or a hurricane might just need to destroy some poles. Redundant capabilities are suddenly available just as they're most needed.

I'm not sure if the high-speed consumer internet satellite companies were thinking about the security of ordinary people as a use case when they started development, but, as with so many new uses for technology, new capacities have created new possibilities.

Starlink's speed in responding to the Ukrainian request also drew attention. Ukraine's Vice Prime Minister Mykhailo Fedorov "atted" Elon Musk on Twitter for help, and twelve hours later Musk announced that Starlink was live in Ukraine. The speed with which Starlink was able to respond to the Ukrainian request relates not only to what I'm sure are its responsive internal controls, but to the very nature of the service itself, with larger implications for capacities from the sector taken as a whole. Satellites can change where they're pointing a lot faster than new cable can be laid.

I couldn't be more proud of the leadership of American industry in the emerging space economy. But that leadership does not belong to us ineluctably or by right—it is the consequence of actions that we have taken, of excellence that we have achieved by enormous effort. If we are to *maintain* leadership, it will be because of actions we take *now* and efforts lying in the future. And, if I may, more than just American leadership in the space economy is at stake. Failure to act may imperil the existence of the very space economy itself and our prospects as a spacefaring civilization.

Congresswoman McMorris Rodgers and Congressman Pallone recently jointly announced bipartisan draft legislation seeking to promote competition, innovation, national security, and American leadership in the commercial satellite communications industries. One of those bills, the Satellite and Telecommunications Streaming Act, proposes two things. First, a word is spared for the development of orbital debris rules at the FCC. I am going to focus on that piece in a moment. Second, it provides a process for streamlining the processing of NGSO space station licensing, while at the same time applying a set of public interest criteria to those streamlined applications.

Minor quibbles with the language aside—naturally, as a regulator at an independent agency, I prefer to see broad-brushed authorizing statutes, whereas this one is filled with specific, expert drafting—I respectfully, and with due deference, would applaud Congress adopting the act with due speed. Why?

Well, to take the matter in reverse order—can it be doubted that the United States would be benefitted by faster application processing? Not at all. That is the principal complaint that we receive from satellite service companies—from established players to new entrants—and it isn't close. It's a familiar story: "Hey, we haven't heard about our application for several months. We're just trying to fly a CubeSat. What gives?"

Now let me be clear. This bill needs to be funded. Dedicated and expert FCC staff in the International Bureau are working as fast as they can to clear the decks, and they need help. We won't be able to achieve the objectives of the bill without staffing up. And, relevant sidebar: on a headcount basis, the NTIA is about to be responsible for administration of broadband infrastructure subsidies in the amount of, like, a couple hundred million per person. And we thought we were short-handed at the FCC! But, if we

are given the tools to succeed, the FCC can. The bill offers a more efficient, more responsive, and fairer application process. It deserves support.

And, unless I miss my guess, it will enjoy broad support across the commercial space sector. If there are concerns, we can hash them out through the FCC's notice and comment process, which should proceed with the urgency that this question warrants. We want fairness for all players, and, if the bill is passed, I will be happy to work with my colleagues to make sure that we achieve it.

Some in Congress and elsewhere have expressed some opposition to the bill. Not, that is, about the streamlining of applications—at least, not specifically. That would be pretty surprising. After all: satellites must be licensed to access the U.S. market, and the licensure process must be more than a rubber stamp on the application. No, the refrain is that the U.S. already has onerous launch and satellite regulations, and we don't need more. I take that criticism to heart. American rules should promote safety, but that isn't enough. We should be thinking about ways to make our rules add value to the sector so that American registration becomes a clear plus for satellite companies. If we make it hard for the good guys to launch satellites, we've failed. That leads me to the first part of the bill, and what I really want to focus on: orbital debris.

Arguments against the FCC's regulation of orbital debris mitigation standards are familiar by now. Those arguments generally come in about three varieties. One, the market is going to figure it out. Like a hill arises from the intrinsic nature of an ant, orbital debris best practices sufficient to operators and the public will emerge from the interactions and incentives of launch and satellite companies. Two, onerous orbital debris regulations will push satellite operators and launch companies out of the United States and into other jurisdictions. If you can launch from Lesotho and de-orbit into Denmark, why would anyone come to the United States to be interrogated for a year over the lobes of their antennas? Third, even if orbital debris regulations are appropriate, the FCC lacks competent authority to implement them. At most, it ought to incorporate standards developed elsewhere, ideally from an independent expert agency like NASA or an international organization rather than a domestic, executive body with a domestic, executive agenda.

Naturally, this is oversimplified. So, let's be fair and address each with due respect. It's reasonable to hypothesize that the market is going to figure the orbital debris question out for itself. Well, let's consider the real world example of conjunction events. On the government side, our own military warns China when Chinese-created debris may conjoin with Chinese-satellites. Why? Well, when a bolt going Mach 22 hits your visual imaging satellite, it doesn't much matter if the threads are metric or Unified National, does it? We already see voluntary, bilateral action in this area in the state sector. And similarly for commercial operator conjunction events, right? After all, satellite operators have already developed a unified software platform, enjoying universal adoption, of standard modeling, automatic messaging, and rapid actioning for conjunction events. Right? Well, no. Not quite. A lot of conjunction events are still being handled by email correspondence—sometimes with counterparties not replying on weekends. There are incommensurable approaches to conjunction modeling. And it is often, even usually, unclear which operator bears the maneuvering burden, and what exactly that burden is.

Now, we might say: the unsolved nature of the coordination problems here doesn't prove that there is no market solution. It's a new market. The market needs time to act. Okay. But what if we don't have time to act?

The rate of satellite launches is exploding, and it shows no signs of slowing. More and more mega-constellations are being licensed, some with actual plans for development and launch. How long will it take before orbits of various types reaches their carrying capacities? Shouldn't we have some idea what the applicable capacity is before we either approve or deny anyone's application? We do things like this

all the time in other industries. And here, we may need to leapfrog a market-based, iterative process if circumstances dictate. That said, I don't want to single LEO out. It's the newest big thing, but that doesn't mean it's the greatest risk. Speaking of entrenching incumbents, we want to make sure that when we think about orbital debris risk, we're conscious of how low and small LEO satellites are, and how fast their debris decays, compared to higher, larger satellites whose characteristics are often setting baseline assumptions in current regulatory approaches, both inside and outside the FCC.

We might otherwise say: well, the fact that licensees come to complain to the FCC is not particularly illustrative of anything except that the status quo exists and that the FCC is a conventional regulatory ombudsman for such things. That does not suggest it's the optimal solution in the future.

Quite right. But I would have two replies to that. One: you regulate with the agencies that you have. If you think things are tough now, imagine standing up a Federal Satellite Commission, appointing leadership, hiring a team, waiting for notice and comment, settling the procedural precedent. And two: the FCC's conventional role as an industry convener is precisely why it's a *good* choice for handling orbital debris which is, at its base, an issue of coordination. The notice and comment rulemaking process is tailor-made to address the issues that industry itself has not yet hammered out, and it can be done at the FCC, as nowhere else in the market, in such a way as not to stifle innovation by favoring incumbents. We all know about other cases of regulatory capture, including in private standards bodies. What if the FCC is best positioned to be the honest broker at this time of rapid change and development?

Lastly on this point: the FCC adopts industry best practices as a matter of course literally all of the time. Industry is utterly free to come to the FCC with an orbital debris mitigation scheme amenable to most industry participants, and it will enjoy fair evaluation and possibly adoption in toto.

Now, for the jurisdiction questions. Let's discuss how to make the United States a jurisdiction of first resort for participants in the space economy, and to discourage the flight of capital and innovation to other jurisdictions. Well, here's the thing, at least as it relates to the proposed bill: the best thing that we can do for that is to pass it! A streamlined applications process will *inevitably* help more than a clear grant of authority to address orbital debris standards hurts. Look, it isn't overlong evaluation of applicants' orbital debris mitigation plans that is gumming up the works. A lack of staffing; hammering out the finer points of processing rounds; managing application modifications that do not matter at all to orbital debris; this is what's holding things up.

Well, okay, then you say sever the orbital debris language from the draft, and leave it just as establishing a streamlined process and the application of public interest standards to that process. First, I might suggest that an enabling statute that requires that we apply public interest to licensee applications for space stations leaves the door open for the FCC to apply its orbital debris standards anyway, and in fact might push us right through. Second, as I just mentioned, we already have orbital debris standards that we apply to licensees. So a mere clarification of the grant of authority to do so and a provided direction for those standards, at a minimum, permits Congress to have had a direct say in the rules, giving any future failure of those standards a clearer ledger of political accountability. I think this will soften the rules by comparison to those the FCC would draft on its own authority.

And lastly on this point: hang on a second. Is a thoughtful regulatory regime actually anti-business at all? Maybe a clear, certain, meticulously and parametrically-defined set of orbital debris standards from a rulemaking body is precisely what the doctor ordered. I mean look at our financial regulatory system. The SEC is a powerful and active financial regulator by international standards. But, compared to other countries, isn't the United States a great place to do business? Overall, the rules help us here. I don't particularly enjoy comma-checking in a prospectus, but it's a part of why everyone in the world wants to

do business here. Global capital has voted with its feet, as it were, and surely there's a reason why the rich all over the world like to park their money in U.S. assets.

This brings me to the final point: the FCC's putative lack of statutory authority to regulate orbital debris. The argument here is simple: either the FCC lacks regulatory authority over the evaluation of orbital debris mitigation plans for its licensees simpliciter; or it has authority, but that authority is limited to where orbital debris might affect the purposes to which a license or grant of market access is put. That is, radiofrequency access to U.S. ground stations. In support of these points, some significance is often ascribed to the materially different conditions of space, as opposed to terrestrial, operations.

Taking these in reverse order, I am fully unconvinced by the latter argument that our authority is highly constrained. Orbital debris can certainly impact a satellite's access to the U.S. market, because it can impact an actual satellite. The obliteration of a satellite seems to me a plausible nexus with what that satellite's antenna does.

But where there is skepticism of the FCC's authority over the question at all, let me address it. First: the FCC has been evaluating orbital debris plans for licensees and market access grantees for well over two decades. If the FCC lacked the authority, Congress was free to say so and stop us. It didn't, and I see no signals from Congress overall that we're pushing our authority too far.

Next, while it is of course true that our regulations interact with NOAA and the FAA, and there is concern about overregulation or duplication such as might render FCC regulations nugatory, nothing could be further from the truth. Observe, for instance, that the FCC barely dips a toe into broader concerns of space traffic management or space situational awareness in its implementation of orbital debris mitigation rules, and indeed is relatively constrained in the application of its broad Title III public interest authority as it applies to how space is managed. At the FCC, we don't tell applicants how to micromanage their space assets, we just ask that there really be a plan that really gets to the result everyone wants: a good operating environment where all players, including the international ones launching abroad who want U.S. market access but don't have to listen to the FAA, are following our rules.

Lastly, some of the arguments related to the inherent difference of the operating environment of space, or the particulars of how orbital debris rules are applied, I find unavailing. First of all, space isn't that far away. It's like, pretty much right there. The Karman line is closer to us than San Antonio. That's like, what, the length of a broadcast contour as the crow flies? And if orbital debris rules are rules on where space stations can be and how they have to station keep, avoid other stations, de-orbit after a particular length of time, and so on—I'd just say that any broadcaster can draw a throughline between a construction permit and regulations about safety and operation. I think there'd be fewer complaints about these if there was more assurance about the responsiveness and support of the FCC.

I'm not saying that the FCC is empowered to do *whatever* it wants to prevent orbital debris at any cost, but I *am* saying that it is empowered to do *something*.

And it should. Orbital debris is not yet a crisis. But, if we fail to act, looking not just at new entrants but assessing the situation as a whole, we can certainly make it one. An opportunity is available for bold American leadership that protects space as an operating environment not just now, but for the Artemis moon colony in 2024 and a Mars colony in 2054. In clarifying the FCC's authority to act and giving clear guidance in the formation of its orbital debris rules, the Satellite and Telecommunications Streamlining Act seizes that opportunity. Thank you.