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Subcommittee on Communications and Technology Hearing

Liftoff: Unleashing Innovation in Satellite Communications Technologies

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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 (LEO) 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.

I. Planet Overview

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 the entire landmass of the Earth daily 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.” With approximately 180 satellites in orbit, 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. Additionally, Planet’s SkySat fleet of 21 satellites can be tasked to image specific points on Earth and enable Planet to deliver 50 centimeter resolution imagery 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 than ever before. Planet data empowers users with a living dataset of global change, with new imagery added on a daily basis. This growing dataset offers rich historical context across the globe, as well as deep imagery stacks for application development and machine learning-based analytics. Planet has a daily recorded history of the planet everywhere for the past six years and with our Earth Data Platform, our customers are able to see change and take action.

II. Commercial Earth Observation Data Enables Better Decisions

Planet’s cloud-based, AI-enabled daily global imagery, along with data from other commercial providers, enables scientists, governments, corporations, and communities to make informed decisions. These datasets complement government-operated space and ground-based sensors, and dramatically improve the spatial, temporal, and spectral resolution available to decision makers and scientists. From 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. Below are 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 investments 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.



PlanetScope, June 22, 2021: Tazewell County, Illinois

Norway's International Climate and Forests Initiative (NICFI), a pioneering program to stop **global deforestation**, 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. NICFI provides that data to the UN Food and Agriculture Organization, the Ministries of Forestry for the relevant countries, and researchers and non-

governmental organizations (NGOs). Some of the data is also made universally open as a digital public good.¹

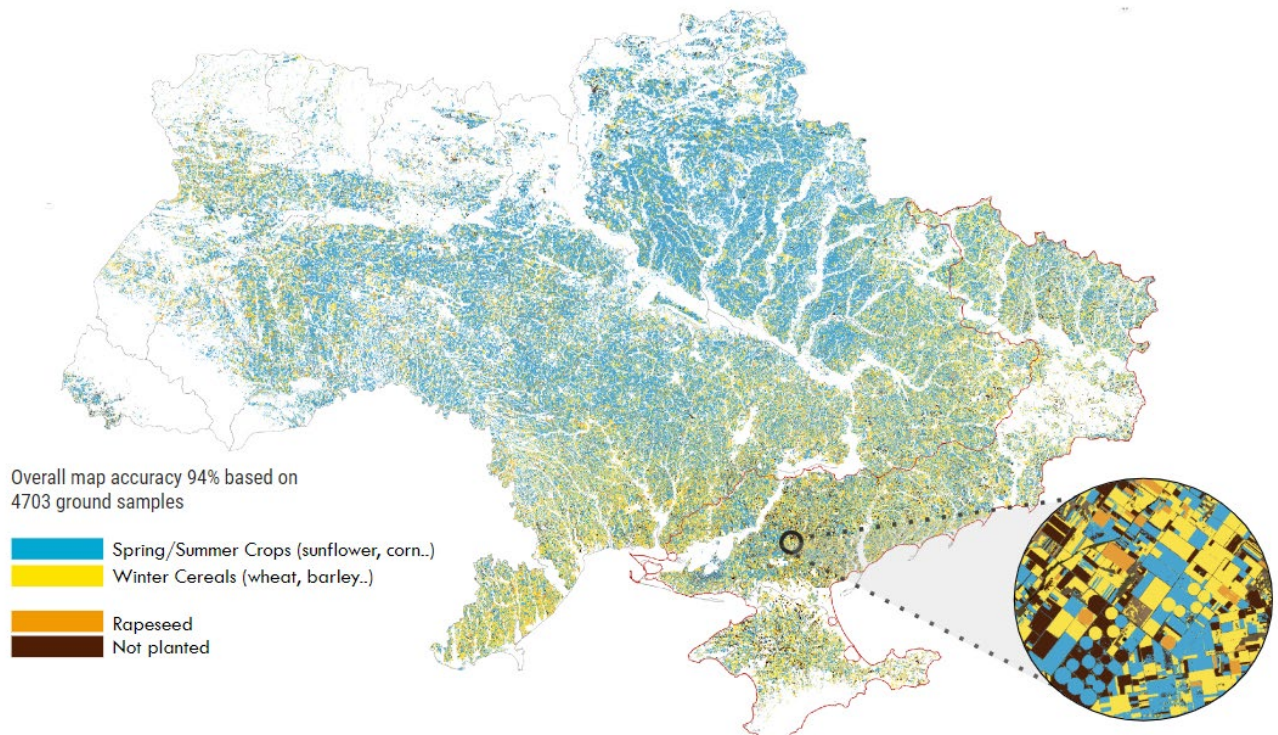


PlanetScope, January 16, 2021: Deforestation, Chiribiquete National Park, Colombia

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

¹ *Norway’s International Climate and Forests Initiative Satellite Data Program*, Planet Labs PBC (2023), <https://www.planet.com/nicfi>.

better understanding of the impacts to global food supply resulting from the Russian invasion of Ukraine.²



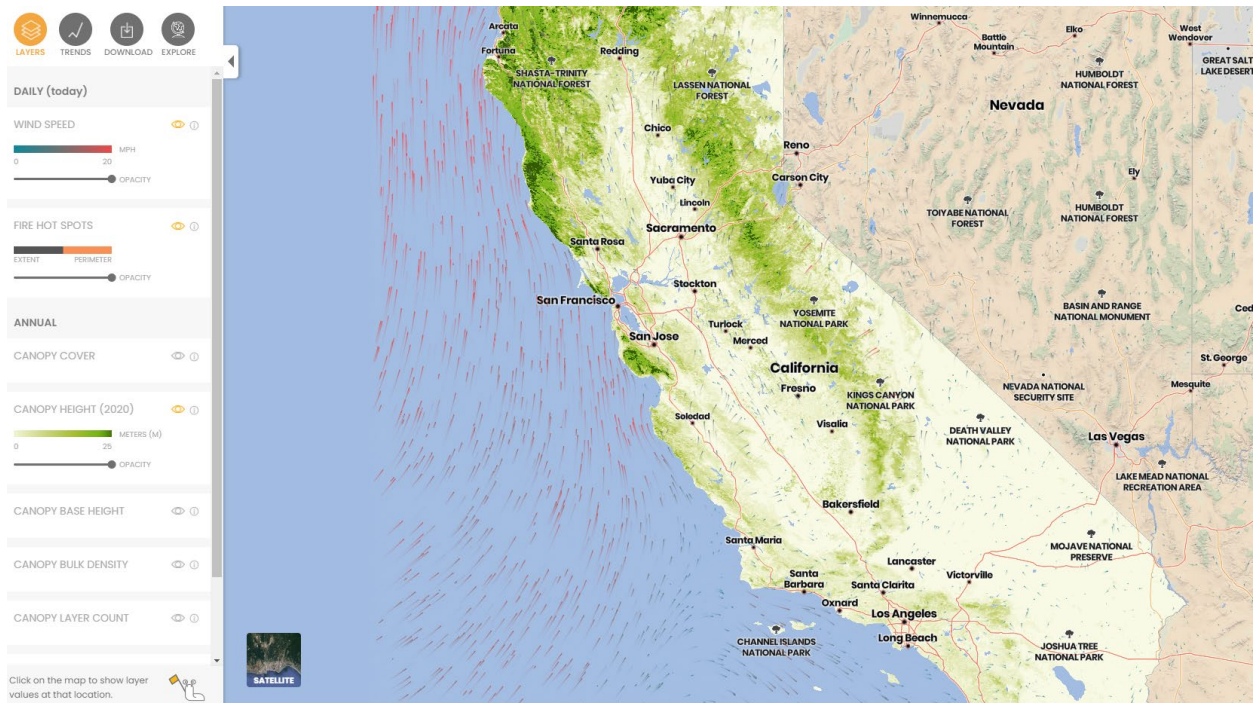
*NASA Harvest: Ukraine Crop Map 2022 (August Occupation Boundaries)*³

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 they need to invest in mitigation and prevention to keep communities safer.⁴

² Adam Voiland & Mary Mitkish, *Earth Data for Informed Agricultural Decisions: Larger Wheat Harvest in Ukraine Than Expected*, NASA Harvest (Dec. 2, 2022), <https://nasaharvest.org/news/larger-wheat-harvest-ukraine-expected>.

³ Planet Labs PBC, Investor Day Presentation, at 13 (Oct. 12, 2022), [https://s29.q4cdn.com/903184914/files/doc_presentation/2022/Planet-Labs-PBC-Investor-Day-Presentation-October-2022-\(Web-Version\).pdf](https://s29.q4cdn.com/903184914/files/doc_presentation/2022/Planet-Labs-PBC-Investor-Day-Presentation-October-2022-(Web-Version).pdf).

⁴ Paris Good, *California Forest Observatory Sets New Standard for Mapping Forests and Wildfire*, Planet Labs PBC (Sept. 14, 2020), <https://www.planet.com/pulse/cfo-mapping-new-standard-wildfire>.



California Forest Observatory⁵

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;
- Reliable access to spectrum to communicate with and operate our satellites, and ensure we can download the more than 30 terabytes of data we collect every day; and
- Targeted changes to existing regulatory and licensing frameworks to streamline the approvals necessary to operate in space.

⁵ California Forest Observatory, <https://forestobservatory.com> (last accessed Feb. 4, 2023).

III. Industry and Government Can Collaborate to Improve Space Sustainability and Address Orbital Debris in LEO

Planet takes seriously its responsibility as a satellite operator to minimize its impact on the space environment. Planet has safely operated over 200 satellites with its current designs, and safely disposed of more than 150 satellites over the past decade. We take a variety of steps in designing and operating our fleets of satellites that help to minimize the potential for debris and maximize the sustainability of the LEO environment in which we operate.

International Efforts. There are many international initiatives underway to move toward a more sustainable LEO environment. Planet participates in the World Economic Forum’s working group on Space Traffic Management and Orbital Debris, the Paris Peace Forum’s Net Zero Space initiative,⁶ and also helped to beta test the Space Sustainability Rating (SSR). The SSR is an effort by World Economic Forum’s Global Future Council, European Space Agency, MIT, BryceTech, University of Texas at Austin, and EPFL Space Center to develop a tool that allows operators to understand the impact of their missions on the space environment and other operators.⁷ These efforts bring attention to the issue of space sustainability and can help shape international commercially reasonable best practices for space actors.

ASAT Testing. Planet appreciates the U.S. Government’s work as a whole toward ensuring safe and responsible operations in space. In particular, Planet greatly appreciates and supports the U.S. Government’s leadership in committing not to conduct destructive, direct-ascent anti-satellite (ASAT) missile testing. For the last ten years, Planet has raised concerns about the impact destructive ASATs have on a healthy space ecosystem. ASATs threaten operations in LEO, jeopardize astronauts’ safety, and risk destroying satellites that provide

⁶ Paris Peace Forum, *Net Zero Space*, <https://parispeaceforum.org/en/initiatives/net-zero-space>.

⁷ Space Sustainability Rating: Leading the Path Towards a More Sustainable Use of Space (2022), <https://spacesustainabilityrating.org>.

critical services to humanity. There is no such thing as a responsible kinetic ASAT. The narrow commitment by the United States to limit ASAT tests is an important first step, and Planet was pleased to see widespread support at the UN General Assembly for a resolution calling for a ban on direct-ascent ASAT weapons.⁸ Planet hopes that other nations follow the lead of the United States and also commit to the direct-ascent ASAT test ban, thereby creating over time an international behavioral norm.

Federal Communications Commission (FCC) Orbital Debris Efforts. The FCC has been active in its efforts to curb the proliferation of debris in LEO. Planet supports the 5-year deorbit rule that the Commission adopted last year⁹ as a reasonable measure to reduce the time that space objects remain in space and pose a collision risk to other operators.

With respect to remaining issues still under consideration in the FCC's orbital debris proceeding, Planet has advocated for a risk-based, technology neutral approach to maneuverability in which policymakers could set a desired target for maneuvering capability that operators could innovate to meet in a variety of ways. Critically, policymakers should consider how any new requirement will be applied. Satellite designers and manufacturers have a long development pipeline and would need significant time to adapt to any new requirement. An implementation period running to the end of an operator's license term (or 5 years from the date of any final FCC order) correctly balances the need for near-term steps to prevent debris creation with operators' reasonable investment-backed expectations. In short, any new requirements for maneuverability should state a safe operating requirement but the implementation should be up to the licensee to allow for technological innovations. Further, we recommend grandfathering of

⁸ Jeff Foust, United Nations General Assembly Approves ASAT Test Ban Resolution, Space News (Dec. 13, 2022), <https://spacenews.com/united-nations-general-assembly-approves-asat-test-ban-resolution>.

⁹ See generally *Space Innovation; Mitigation of Orbital Debris in the New Space Age*, Second Report and Order, IB Docket Nos. 22-271, 18-313, FCC 22-74 (rel. Sept. 30, 2022).

existing licenses and for new debris policies to be mindful of creating additional barriers for new companies to compete in this emerging market.

Space Sustainability Policy Collaboration, Harmonization, and Transparency. As Congress and the agencies continue to work with industry to address space sustainability, Planet urges close collaboration among the Office of Space Commerce (OSC), the FCC, Congress, and other interested U.S. government entities on orbital debris policy. The OSC has been charged with implementing a civilian space situational awareness capability. At the same time the FCC has adopted new regulations aimed at curbing orbital debris in LEO and is actively considering further actions. As both agencies work independently in these related areas, there is an opportunity to closely collaborate on policy developments to avoid conflicting or duplicative regulation.

As the OSC works toward implementing the new civilian space capability, Planet has encouraged the establishment of an open architecture for space-based tracking assets that will help promote transparency and sustainability. Countries have launched or are planning to launch space situational awareness (SSA) satellites. The United States should lead by making as much of its space-based tracking data open as is feasible and encouraging other allied nations to do the same. Creating an open architecture in a standard data format enables interoperability in data sets and increases the fidelity of data to improve forecasting models. Further, a virtual constellation of SSA satellites could lead to a more resilient, upgradable, and participatory space architecture and strengthen collaboration with allies toward a sustainable space environment.

IV. Access to Sufficient Wireless Spectrum Resources Is Critical to Supporting Continued Innovation in Commercial Space Services

Satellite operators rely heavily on wireless spectrum resources to send and receive important information to and from their satellites. Everything from commands to the satellite,

telemetry about the health of the satellite, to “payload downlink” for the images and data that the satellite collects, transmits wireless spectrum to and from the satellites and the ground stations on Earth. Planet and other remote sensing operators rely on and share a limited number of spectrum bands allocated for the non-Federal Earth Exploration Satellite Services (EESS). These frequencies should be maintained for EESS use.

Planet currently downlinks more than 30 terabytes of data per day; as demand grows for our services and as new capabilities come online, this number will increase. Moreover, time is often of the essence to deliver our data to the companies and governments that rely on it, including for disaster response. As a result, spectrum needs are likely to grow, not lessen, over time. Intersatellite links (ISLs) pose an important opportunity for the remote sensing industry, as they can speed the time from tasking a satellite to the time an image is delivered to a customer, as well as provide an “always on” connection with satellites that increases safety of space operations. There are efforts underway at the International Telecommunication Union to enable new frequencies for ISL use and Planet supports the use of these new technologies to improve reactivity and reduce latency.

V. Space Operators Require Prompt, Reliable, and Transparent Radio Frequency Licensing Regimes

Planet appreciates this Committee’s and the FCC’s focus on streamlining the complex and time-intensive licensing process for satellite systems. As Chairwoman Rosenworcel has noted, the FCC has before it today applications for 64,000 new satellites and saw an eight-fold increase last year in the number of applications for fixed satellite service gateways.¹⁰ But the licensing rules were built for a simpler time and in large part for different kinds of satellites, so

¹⁰ Remarks of Chairwoman Jessica Rosenworcel to the Satellite Industry Association, *Space Innovation and the FCC*, Washington, D.C. (Nov. 3, 2022), <https://www.fcc.gov/document/chairwoman-rosenworcel-remarks-satellite-industry-association>.

Planet agrees that now is the time to revisit those rules so that they can keep pace with the innovation occurring in the U.S. commercial space industry.

Space operators such as Planet need a prompt, reliable, and transparent radio frequency licensing regime in order to consistently meet commercial requirements such as launch milestones and contractual deliverables, and to reduce uncertainty. Given the increase in the number of FCC applications for space and ground stations, appropriate resources and staffing are needed to process applications in a timely manner. We appreciate the FCC Chairwoman's commitment of additional resources to the International Bureau (Bureau) to help with the huge influx of new satellite-related applications, and look forward to seeing how the creation of a standalone Space Bureau could foster close collaboration with other agencies working on space issues to improve harmonization on space policy matters. We also applaud the Commission's efforts to seek comment on appropriate approaches to streamline the satellite licensing process. The Notice of Proposed Rulemaking on Expediting Initial Processing of Satellite and Earth Station Applications (NPRM) tees up several good ideas for improving the radio frequency licensing process for satellite operators¹¹ and Planet looks forward to participating in the proceeding. We appreciate the continued collaboration of the U.S. Government and other space operators on ideas to continue to improve the licensing process.

Planet encourages continued regular communication between the FCC and NTIA on wireless spectrum issues, including with respect to satellite and ground station applications. The new Memorandum of Understanding between the FCC and NTIA represents an important step forward in active and regular collaboration between the FCC, NTIA and federal government

¹¹ *Expediting Initial Processing of Satellite and Earth Station Applications*, Notice of Proposed Rulemaking, IB Docket Nos. 22-411, 22-271, FCC 22-95 (rel. Dec. 22, 2022).

spectrum users.¹² Because spectrum coordination across government agencies is needed for most space station and Earth station applications, prompt FCC transmission of applications to NTIA is critical to allow for coordination early in the licensing process.

Planet discourages the Commission and the Committee from taking actions that could result in unnecessary dismissal of license applications. For example, dismissing applications because they contain internal inconsistencies or omissions, as the Commission raises as a possibility in the NPRM, is unlikely to achieve faster processing times. Planet appreciates the Bureau's efforts to work with satellite operators to address information gaps or inconsistencies, which can be resolved by supplemental filings without a dismissal. Similarly, shot clocks for FCC action on license applications, particularly without built-in flexibility to address challenging circumstances (such as complex spectrum coordination questions, new proposed uses not anticipated under domestic or international regulations, or incomplete information provided by the operator), could result in a larger number of dismissals. Dismissal requires an operator to restart the process, which creates additional regulatory burdens on both the operator and the Commission that should be avoided.

VI. Legislation Under Discussion

Planet appreciates the attention of this Committee to these important issues and the legislation proposed for discussion today. There are two bills in particular on which we would like to offer specific comments, given their relevance and importance to our industry.

Precision Agriculture Satellite Connectivity Act. Planet's data is widely used to support the agricultural sector and inform precision agriculture. The goal of precision agriculture is to

¹² Memorandum of Understanding Between the Federal Communications Commission and the National Telecommunications and Information Administration (Aug. 1, 2022), <https://www.fcc.gov/document/mou-between-fcc-and-ntia-spectrum-coordination>.

optimize the use of crop inputs to produce higher yields and avoid environmental degradation. Planet's near-daily, 3 meter resolution imagery makes this possible by giving farmers the best chance to obtain imagery at the time they need it to drive decision making throughout the growing season.

The draft *Precision Agriculture Satellite Connectivity Act* has an important goal to review the FCC's rules to promote precision agriculture with the Precision Ag Connectivity Task Force (Task Force). Although the Task Force has incorporated a broad approach to precision agriculture needs and included satellite imagery in some of its work, the statute creating the Task Force does not include direct consideration of the accessibility of satellite imagery to support precision agriculture. Planet would be pleased to work with the Committee to consider whether such a statutory change may be helpful to complement the review and report required under the draft legislation.

Satellite and Telecommunications Streamlining Act. As discussed above, the prompt, reliable, and transparent processing of FCC licensing applications is key to the future growth of the satellite and remote sensing industries so we can continue to deliver actionable insights to our customers. Planet appreciates the diligent efforts of Chairwoman McMorris Rodgers and Ranking Member Pallone, as well as Chairwoman Rosenworcel, to address lengthy and unpredictable license application processing times at the FCC. We also appreciate the iterative approach being taken with this legislation, with multiple discussion drafts being released and extensive feedback sought from across the satellite industry.

Planet is continuing to review the most recent draft bill released with this hearing. We do appreciate recent updates to the legislation, which include technology neutral performance objectives and procedures which may prevent unnecessary denials of applications. We hope the

Committee continues engaging with the community on the legislation to ensure reforms are achieved that provide the transparency, reliability, and timeliness envisioned by all parties.

VII. Conclusion

Space-based Earth observation data plays a key role in understanding our changing world. 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. 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. I look forward to your questions.