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Washington, DC 20548

December 8, 2022

Congressional Committees

### **National Security Space: Overview of Contracts for Commercial Satellite Imagery**

Commercial remote sensing satellites and the data they produce have transformed the way the U.S. approaches critical national security issues, among other things. Based on recent trends, the commercial space industry is expected to grow significantly in the coming years and therefore may be able to address more of the Intelligence Community's (IC) and Department of Defense's (DOD) imagery needs. As a starting point, the federal government should have good visibility into its current spending and contracts for commercial satellite imagery.

The House Appropriations Committee report that accompanied a bill for the Fiscal Year 2022 DOD appropriations act, included a provision for us to report on contracts related to commercial satellite imagery across the national security community.<sup>1</sup> In its report, the committee expressed concern that the federal government may not be adequately leveraging its buying power to ensure the best value and may not be minimizing the redundancy and duplication of commercial imagery purchases across the government. Subsequently, in July 2022, we issued a classified report on how the DOD and the IC acquire commercial satellite imagery and analytic services that use remote sensing data.<sup>2</sup> In September 2022, we issued an unclassified version of this report.<sup>3</sup> The classified and unclassified versions of the report address most of the reporting provisions for us in House Report 117-88.

The purpose of this correspondence is to provide supplemental information to address the provision in House Report 117-88 not covered in our July 2022 (GAO-22-105072C) or

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<sup>1</sup>H.R. Rep. No. 117-88, at 320-321 (2021). The provision does not define national security community, but on the next page of this document we describe how we identified relevant federal departments and agencies.

<sup>2</sup>GAO, *National Security Space: Actions Needed to Better Use Commercial Satellite Imagery and Analytics*, GAO-22-105072C (Washington, D.C.: July 22, 2022). (SECRET//NOFORN) The scope of our review included the National Reconnaissance Office (NRO), the National Geospatial-Intelligence Agency (NGA), the Defense Intelligence Agency (DIA), the Office of the Director of National Intelligence (ODNI), the Office of the Secretary of Defense, five military services, nearly all combatant commands, and commercial vendors that supply satellite imagery and analytic services to the federal government.

<sup>3</sup>GAO, *National Security Space: Actions Needed to Better Use Commercial Satellite Imagery and Analytics*, [GAO-22-106106](#) (Washington, D.C.: Sept. 7, 2022). This unclassified version omitted classified content in GAO-22-105072C but retained the same objectives, methodology, and recommendations. We made two recommendations to the Secretary of Defense and two recommendations to the Director of National Intelligence. DOD concurred with the recommendations for the Secretary to (1) establish clear roles and responsibilities across IC and DOD stakeholders for the acquisition of commercial satellite imagery and (2) assess various approaches to determine the most effective ones at incorporating and scaling emerging commercial satellite capabilities. ODNI did not state if it concurred with the two recommendations to the Director to (1) develop specific performance goals and measures that would support progress toward maximizing the use of commercial imagery and (2) develop guidance to establish specific roles and responsibilities for commercial analytic services that use remote sensing data.

September 2022 ([GAO-22-106106](#)) reports. Specifically, this product provides an inventory of contracts across the national security community for commercial satellite imagery. We divided the information into two enclosures: one unclassified enclosure covering 10 civilian federal departments and a classified enclosure covering DOD components, the Office of the Director of National Intelligence, and the Central Intelligence Agency.<sup>4</sup> For the unclassified inventory, see enclosure I. The classified enclosure will be provided to those with the proper clearance and need to know.

To develop the inventory of contracts across the national security community for commercial satellite imagery, we first identified relevant federal departments and agencies. Departments and agencies included are either principal members within the National System for Geospatial Intelligence or federal civilian agencies that support military or humanitarian operations as identified in Joint Publication 2-03, *Geospatial Intelligence in Joint Operations*, with one exception.<sup>5</sup> We then collected information from agency officials through interviews and follow-up documentation, on their commercial satellite imagery contracts, including the title, type, maximum annual value, period of performance, and mission purpose.<sup>6</sup>

Contracts identified by agency officials in the inventory were either those initiated in fiscal year 2022 or in previous fiscal years, but were still within their period of performance at any point in fiscal year 2022.<sup>7</sup> We included contracts in the inventory where vendors delivered satellite imagery to the government that they had collected from their own commercial capabilities, unless otherwise noted. Additionally, we obtained commercial satellite imagery contract information from all DOD components, including the defense intelligence components, using data DOD collected in 2022 in response to Office of Management and Budget direction and our inquiries.<sup>8</sup> According to agency officials, DOD data validation steps included having senior leadership from every component verify their information as accurate and complete.

We also reviewed documentation and interviewed DOD officials concerning the methodology the department used to develop their classified inventory. DOD provided in this inventory information on space-based commercial remote sensing capabilities, which included contracts and funding for imagery, analytic, and other services going back to fiscal year 2021. We used the portion of this inventory that covered imagery contracts that were still current in fiscal year 2022. DOD's inventory included information—similar to what we collected from federal civilian

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<sup>4</sup>We used data DOD collected in a department-wide data call that included defense intelligence components, military services, combatant commands, the Office of the Secretary of Defense, the Joint Staff, and the Defense Advanced Research Projects Agency.

<sup>5</sup>Joint Pub. 2-03, *Geospatial Intelligence in Joint Operations* (July 5, 2017). We also included the National Aeronautics and Space Administration (NASA) due to its focus on space, although it is not specifically identified in Joint Publication 2-03 as a member of the National System for Geospatial Intelligence.

<sup>6</sup>For the purpose of this data collection, we used DOD's definition of imagery, which describes imagery as images (i.e., pixels) acquired or licensed from a commercial entity, and the imagery is collected from space-based commercial remote sensing capabilities, or satellites, unless otherwise noted. We included electro-optical, hyperspectral, multispectral, and radar imagery. Contracts involving radio frequency emissions were not included.

<sup>7</sup>Contracts reflecting that their periods of performance have ended are not listed in the inventory.

<sup>8</sup>For the purpose of their data collection, DOD defines imagery as images (i.e., pixels) acquired or licensed from a commercial entity, and the department focused on space-based commercial remote sensing capabilities, or satellites. According to DOD officials, they also created an "other" category for anything acquired relating to space-based intelligence, surveillance, and reconnaissance. Radio frequency emissions fell in this category and were not included in imagery contracts.

agencies—on key contract elements: funding agency, title, type, monetary value, period of performance, and mission purpose. We confirmed that the methodology DOD used was sufficient for our purposes.

From the table in enclosure I, summary observations regarding the purchase and use of commercial satellite imagery by 10 federal civilian departments and agencies include:

- Five of 10 federal civilian departments and agencies—Agriculture, Commerce, Energy, Interior, and the National Aeronautics and Space Administration (NASA)—reported current commercial satellite imagery contracts.<sup>9</sup> Officials from departments and agencies with contracts cited specific needs for procuring commercial satellite imagery, including needed revisit rates, rapid tasking, resolution, or wavelengths outside of the visible spectrum.
- All five federal civilian departments and agencies that have commercial imagery contracts during this period have contracts with Planet; three of these five departments and agencies have current contracts with Maxar.
- NASA reported the largest amount of commercial satellite imagery spending on current contracts for federal civilian departments and agencies. Additionally, NASA officials reported spending a total of \$75,657,508 since 2018 across five blanket purchase agreements—contracts for commercial satellite imagery that are still current.
- Excluding NASA and the Department of Energy, other federal civilian departments and agencies reported they have current contracts, which total a maximum annual contract value of \$2,067,948.
- Five departments and agencies did not report current commercial satellite imagery contracts—Homeland Security, Justice, State, Transportation, and Treasury.
- Eight of 10 departments and agencies reported that they use commercial satellite imagery acquired by the National Reconnaissance Office (NRO) and the National Geospatial-Intelligence Agency (NGA) through their participation in the National System for Geospatial Intelligence or through their access to commercial imagery in NGA's Global-GEOINT Enhanced Delivery, a web-hosted service.<sup>10</sup> According to the Department of Interior, 68 federal organizations used this service in fiscal year 2021, including 2,559 individual federal civilian users.

We conducted this effort from May to December 2022, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and

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<sup>9</sup>Department of Energy officials reported that the contracts they identified are sub-contracts to the department's prime contractors managing and operating two of their laboratories. We included the contracts in our inventory because they involve commercial satellite imagery and enable the prime contractors to fulfill the terms of their contract with the department.

<sup>10</sup>The National System for Geospatial Intelligence is the combination of technology, policies, capabilities, doctrine, activities, people, data, and organizations necessary to produce geospatial intelligence in an integrated, multi-intelligence environment. There are many non-DOD federal departments, such as Homeland Security, State, Energy, and Interior, that participate in this system.

conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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We are sending copies of this correspondence to the appropriate congressional committees and relevant department and agency officials involved in this audit. In addition, the correspondence is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this correspondence, please contact me at (202) 512-5130 or [mazanecb@gao.gov](mailto:mazanecb@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this correspondence are listed in enclosure II.

A handwritten signature in black ink, appearing to read "Brian M. Mazanec". The signature is fluid and cursive, with a long horizontal stroke at the end.

Brian M. Mazanec  
Director, Defense Capabilities and Management

Enclosures–2

*List of Committees*

The Honorable Jack Reed  
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United States Senate

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Chair  
The Honorable Richard Shelby  
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Committee on Appropriations  
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Chairman  
The Honorable Mike Rogers  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Honorable Betty McCollum  
Chair  
The Honorable Ken Calvert  
Ranking Member  
Subcommittee on Defense  
Committee on Appropriations  
House of Representatives

## Enclosure I: Federal Civilian Department and Agency Commercial Satellite Imagery Contracts

The table below identifies 10 federal civilian departments and agencies and whether they maintain current commercial satellite imagery contracts, including the maximum annual contract value, based on information reported by the departments and agencies.

**Table 1: Federal Civilian Department and Agency Commercial Satellite Imagery Contracts**

Department or agency	Contract title	Vendor	Maximum annual contract amount	Mission purpose
<b>Department of Agriculture</b>				
Agricultural Research Service	WorldView 3 Satellite Imagery for Research Studies (2022)	Maxar	\$14,280	Use imagery with processing software to divide soybean fields into management zones and monitor the effects of herbicide damage to soybean fields throughout the growing season.
Foreign Agricultural Service	U.S. 2022 Crop Progress and Condition Monitoring High Resolution Satellite Imagery Acquisition	Planet	\$815,000	Acquire biweekly satellite imagery over the continental United States for the 2022 U.S. crop season.
<b>Department of Commerce</b>				
National Oceanographic and Atmospheric Administration (NOAA)	Acquisition of Near Real-Time High Resolution Multispectral and Synthetic Aperture Radar (SAR) Satellite Imagery	Center for Southeastern Tropical Advanced Remote Sensing (CSTARS)	\$17,000	Customized, rapid tasking of satellite imagery on an as-needed basis to support disaster response and hazards detection.
NOAA	Multi-Spectral Satellite Imagery for the Marine Pollution Surveillance Program	Planet	\$58,279	Customized, rapid tasking of satellite imagery on an as-needed basis to support disaster response and hazards detection.
NOAA	Synthetic Aperture Radar (SAR) Acquisition	ICEYE	\$37,600	Customized, rapid tasking of satellite imagery on an as-needed basis to support disaster response and hazards detection.
NOAA	Synthetic Aperture Radar (SAR) Data for the U.S. National Ice Center	Maxar	\$1,000,000	SAR imagery acquired facilitates assessments of the current state of sea ice in the polar regions.

Department or agency	Contract title	Vendor	Maximum annual contract amount	Mission purpose
<b>Department of Energy</b>				
Oak Ridge National Laboratory	SkySat Flexible Tasking <sup>a</sup>	Planet	\$74,250	Test, evaluate, and demonstrate how current commercial imagery capabilities are applicable to a Department of Energy mission.
Sandia National Laboratories	Standard Purchase Order 2359840 <sup>a</sup>	BlackSky	Not included	Provide imagery for research and development work in part to support a project that demonstrates intelligent coordination of sensors.
Sandia National Laboratories	Standard Purchase Order 2371353 <sup>a</sup>	BlackSky	Not included	Provide imagery for research and development work in part to support a project that demonstrates intelligent coordination of sensors.
Sandia National Laboratories	Purchase Order 2318919, Planet Labs <sup>a</sup>	Planet	\$49,950	Develop, vet, and test ground system algorithms in part to mitigate schedule and technical risks for certain ground system algorithms.
Sandia National Laboratories	Planet Services for Integrity Box LDRD <sup>a</sup>	Planet	\$8,967	Develop technology to ensure the integrity of commercial satellite imagery.
Sandia National Laboratories	Standard Purchase Order 2333903 <sup>a</sup>	Planet	Not included	Provide imagery for research and development work in part to support a project that demonstrates intelligent coordination of sensors.
Sandia National Laboratories	Purchase Order 2394567, Planet Labs <sup>a</sup>	Planet	\$99,842	Develop, vet, and test ground system algorithms in part to mitigate schedule and technical risks for certain ground system algorithms.
Sandia National Laboratories	Purchase Order 2404380, Planet Labs <sup>a</sup>	Planet	\$7,617	Develop technology to ensure the integrity of commercial satellite imagery.
Sandia National Laboratories	Purchase Order 2335673 <sup>a</sup>	ICEYE	Not included	Demonstrate how current commercial imagery can be used for a Department of Energy mission.
Sandia National Laboratories	Purchase Order 2408393 <sup>a</sup>	ICEYE	Not included	Demonstrate how current commercial imagery can be used for a Department of Energy mission.
<b>Department of Homeland Security</b>				
	<i>None<sup>b</sup></i>	<i>None</i>	<i>None</i>	<i>None</i>
<b>Department of the Interior</b>				
Bureau of Reclamation	G1 Planet Labs Order 2021 LCR MSCP	Planet	\$53,756	Provide medium- to high-resolution multispectral satellite imagery for vegetation classification and health monitoring, evapotranspiration estimates, and water accounting and verification.
Bureau of Reclamation	Newlands Remotely Sensed Multispectral Imagery	Blue Raster LLC <sup>c</sup>	\$23,569	Provide multispectral and panchromatic imagery to identify areas that have been irrigated during the normal irrigation season on the Newlands Project.

Department or agency	Contract title	Vendor	Maximum annual contract amount	Mission purpose
Office of Surface Mining Reclamation and Enforcement	Daily/Best-Available Earth Observation System Monitoring Service	Blue Raster LLC <sup>c</sup>	\$48,464	Provide access to a daily satellite imaging capability to monitor reclamation and revegetation status over large, remote, and difficult to access areas on regulated mining areas, which are scheduled for inspections. Includes ability to task satellites when higher-resolution imagery for elevation models is required.
<b>Department of Justice</b>				
	<i>None<sup>b</sup></i>	<i>None</i>	<i>None</i>	<i>None</i>
<b>Department of State</b>				
	<i>None<sup>b,d</sup></i>	<i>None</i>	<i>None</i>	<i>None</i>
<b>Department of Transportation</b>				
	<i>None<sup>b,e</sup></i>	<i>None</i>	<i>None</i>	<i>None</i>
<b>Department of Treasury</b>				
	<i>None<sup>b,f</sup></i>	<i>None</i>	<i>None</i>	<i>None</i>
<b>National Aeronautics and Space Administration (NASA)</b>				
Earth Science Division (ESD)	Multiple User System for Earth Sensing (MUSES) and DLR Earth Sensing Imaging Spectrometer (DESI)	Teledyne Brown Engineering, Inc.	\$7,000,000	Unlimited access to hyperspectral imaging spectrometer data from a platform on board the International Space Station.
ESD	Earth Observations from Private Sector Small Satellite Constellations Pilot	Planet	Not applicable <sup>g</sup>	Access to imagery and other information from the PlanetScope (Dove) and RapidEye satellite constellations.
ESD	Earth Observations from Private Sector Small Satellite Constellations Pilot	Spire Global Subsidiary, Inc.	Not applicable <sup>g</sup>	Unlimited access to Spire's catalog of satellite data.
ESD	Private Sector Small Constellation Satellite Data Product Pilot	Maxar	Not applicable <sup>g,h</sup>	Collect Clouds, Aerosols, Vapor, Ice and Snow (CAVIS) imagery from WorldView-3 and WorldView-4 satellites.
ESD	Commercial Smallsat Data Acquisition Program	Airbus	Not applicable <sup>g</sup>	Earth-relevant data products obtained for scientific evaluation, including SAR satellite data products from TerraSAR-X, TanDEM-X, and PAZ constellations.
ESD	Commercial Smallsat Data Acquisition Program	BlackSky	Not applicable <sup>g</sup>	Earth-relevant data products obtained for scientific evaluation from their commercial electro optical small satellite constellations.

Source: GAO compilation of contract information reported by federal departments and agencies. | GAO-23-106042

Notes: (1) Contracts identified in table by respective federal departments and agencies are either those initiated in fiscal year 2022, or represent contracts initiated in previous fiscal years that were still within their period of performance at any point in fiscal year 2022. Contracts initiated in previous fiscal years where the periods of



performance have ended are not listed here. As part of the contracts, vendors delivered satellite imagery of different types to the government, which vendors had collected from their commercial capabilities, unless otherwise noted. (2) Federal departments and agencies included in this table are identified in Joint Publication 2-03, *Geospatial Intelligence in Joint Operations* (July 5, 2017) as either a principal member of the National System for Geospatial Intelligence, or a civil agency that supports military or humanitarian operations, with the one exception being NASA. (3) For the purpose of this data collection, we leveraged DOD's definition of imagery, where imagery refers to images (i.e., pixels) acquired or licensed from a commercial entity. We included electro-optical, hyperspectral, multispectral, and radar imagery. Contracts involving radio frequency emissions were not included.

<sup>a</sup>Department of Energy officials reported that these contracts are sub-contracts to the department's prime contractors managing and operating two of their laboratories. The contracts are included here as they involve commercial satellite imagery and enable the prime contractors to fulfill the terms of their contract with the department.

<sup>b</sup>Department or agency officials confirmed that they did not have any current commercial satellite imagery contracts that they managed or funded. These departments, however, are still able to leverage commercial satellite imagery acquired by other federal entities, such as imagery acquired by the National Reconnaissance Office (NRO) or National Geospatial-Intelligence Agency (NGA).

<sup>c</sup>Blue Raster LLC is a reseller of Planet imagery and products, according to Department of Interior officials. Officials reported that the vendor is primarily focused on providing access to imagery via a graphic user interface, internet web browser, and an application programming interface key.

<sup>d</sup>State Department officials reported that their agency has two analytic service contracts in which the vendors analyze in part commercial satellite imagery—one dealing with arms control and the other with conflict stabilization in Africa.

<sup>e</sup>Federal Aviation Administration officials reported that their agency has one service contract dealing with weather data that leverages in part government satellite imagery as an input but does not involve the collection of commercial satellite imagery.

<sup>f</sup>Department of Treasury officials within their department's Office of Terrorism and Financial Intelligence reported that they do not have current commercial satellite imagery contracts.

<sup>g</sup>NASA officials reported that these entries involve contracts entered into under a blanket purchase agreement, and there is no annual maximum contract value. Instead, under the agreements, NASA is able to place fixed-price orders or calls not to exceed a maximum value of \$7 million per order. According to these officials, these agreements were issued pursuant to Federal Acquisition Regulation (FAR) section 13.303, "Blanket Purchase Agreements (BPAs)" and FAR section 13.5, "Simplified Procedures for Certain Commercial Items." See 48 C.F.R. §§ 13.303 and 13.500 (2021). NASA officials also reported that they awarded the following total dollars to date across a multiyear period on these blanket purchase agreements: Planet (\$47,022,608 since 2018); Maxar (\$3,735,948 since 2018); Spire Global Subsidiary, Inc. (\$21,799,730 since 2018); Airbus (\$1,349,142 since 2021); and BlackSky (\$1,750,080 since 2021).

<sup>h</sup>NASA officials reported that their agency does not buy data previously acquired by NGA's Maxar NextView License.

## **Enclosure II: GAO Contact and Staff Acknowledgments**

### **GAO Contact**

Brian M. Mazanec, (202) 512-5130 or [mazanecb@gao.gov](mailto:mazanecb@gao.gov).

### **Staff Acknowledgments**

In addition to the contact named above, Nick Cornelisse (Assistant Director), Robert Breitbeil (Analyst-in-Charge), Tracy Barnes, TC Corless, Suzanne Kaasa, and Richard Powelson made key contributions to this correspondence.

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