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INSIGHT

FY2024 Defense Budget Request: Space-based Satellite Programs

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Introduction

The U.S. Department of Defense (DOD) develops, procures, and deploys satellites in various orbits to enable space operations aligned with operations in other domains. DOD's Fiscal Year (FY) 2024 funding request for Research, Development, Test, and Evaluation (RDT&E) and Procurement of space-based satellites includes upgrades to existing satellites and development and procurement of new satellites. In considering this funding request, Congress may assess whether to authorize and appropriate FY2024 funds at amounts equal to, less than, or greater than DOD's request. Congress may base this assessment not only on DOD's requested satellite funding and acquisition schedules, but also on analysis of program performance, industry trends, business cases for military use, and alternative procurement strategies,

For FY2024, DOD requested $26.1 billion for the "development and procurement of spacecraft; launch vehicles; space command and control systems; and terrestrial satellite terminals and equipment." This represents a $4.4 billion increase over the department's FY2023 request. According to DOD, $11.0 billion of the FY2024 request would fund acquisition of satellites through three broad efforts: the GPS Enterprise; space-based missile warning systems; and satellite communications (SATCOM) (see **Table 1**). Congressional testimony and public statements from the Director of the National Reconnaissance Office (NRO) in April and May of 2023 suggest that an indeterminate portion of the remaining $15.1 billion may fund classified satellite programs, including programs that may be managed jointly by NRO and the U.S. Space Force.

Table 1. Summary of Selected Fiscal Year 2024 DOD Space-based Satellite Funding

in Millions of U.S. dollars

	FY2023 Enacted		FY2024 Request	
DOD Program	**RDT&E**	**Procurement**	**RDT&E**	**Procurement**
Global Positioning System Enterprise	953.9	753.5	980.1	279.7

DOD Program	FY2023 Enacted		FY2024 Request	
	RDT&E	Procurement	RDT&E	Procurement
Space-Based Missile Warning Systems	4,548.1	148.7	4,927.0	39.4
Satellite Communications Projects	2,735.4	881.8	4,146.2	592.9

Source: DOD, Office of the Under Secretary of Defense (Comptroller)/Chief Financial Officer, *Program Acquisition Cost by Weapon System: United States Department of Defense, Fiscal Year 2024 Budget Request,* April 2022.

Note: Table data aggregate funding across all DOD RDT&E and Procurement appropriations. Totals may include an indeterminate portion of classified funding.

Discussion: Satellite Programs

Global Positioning System (GPS) Enterprise

GPS satellites, which DOD budgets often refer to as space vehicles (SVs) due to their capacity for propulsion, provide "world-wide, 24-hour a day, all-weather, 3-dimensional positioning, navigation, and timing (PNT) information for military and civilian users." By law, the Secretary of Defense is responsible for assuring the sustainment and continuous operation of GPS services.

The U.S. Space Force is responsible for developing, maintaining, and operating GPS SVs and ground control systems. DOD's FY2024 budget request includes programs to modernize GPS SVs for civilian and military uses in addition to enhancing military user equipment and satellite control. DOD requested FY2024 Procurement funds for GPS III satellites ($121.8 million); GPS III follow-on satellites ($119.7 million); and GPS cryptographic security devices ($0.89 million). DOD requested FY2024 RDT&E funds to develop GPS III follow-on satellites ($309.0 million); the GPS III Next Generation Operational Control System ($317.3 million); and Military GPS User Equipment ($353.8 million).

Space-Based Missile Warning Systems

DOD explains that it modernizes space-based missile warning systems (i.e., upgrades existing systems and develops new systems) in order to rapidly and reliably detect and track strategic missile attacks "on the United States, its deployed forces, and its allies," regardless of launch origin. DOD's modernization efforts to perform these functions include the Next Generation Overhead Persistent Infrared (OPIR) and Resilient Missile Warning and Missile Tracking (MW/MT) programs. They are intended to respond to adversary efforts to destroy, jam, or disable satellites and degrade satellite data processing, according to testimony by the Assistant Secretary of Defense for Space Policy.

DOD requested $4,927.0 million in FY2024 RDT&E funds for OPIR and MW/MT efforts intended to eventually field 3 satellites in geosynchronous orbit; 2 in highly elliptical orbit; 39 in low earth orbit (LEO); and up to 9 in medium earth orbit. These satellites would replace an existing Space-Based Infrared System (SBIRS) developed in the mid-1990s and launched beginning in 2004.

Satellite Communications Projects

As of August 15, 2022, the U.S. Space Force manages all day-to-day satellite communications (SATCOM) missions for the Armed Services. Space Force reports SATCOM RDT&E and Procurement projects in three capability sets: strategic, protected tactical, and wideband and narrowband. According to DOD, the purpose of these sets is to provide "survivable, anti-jam, low probability of detection/interception, and worldwide secure and survivable communications for tactical and strategic

users." Strategic SATCOM efforts focus on nuclear weapon command-and-control. Protected tactical SATCOM focuses on enabling secure communications among combat forces despite adversary efforts to deny access to portions of the electromagnetic spectrum. Wideband and narrowband SATCOM satellites aim to ensure high-data-rate global communications (wideband) and clear voice and data communication regardless of weather conditions (narrowband).

DOD's FY2024 SATCOM request includes $4,146.2 million for RDT&E and $592.9 million for Procurement, including the following unclassified efforts.

Strategic

The Evolved Strategic SATCOM (ESS) program request comprises $632.8 million in FY2024 to develop prototype satellites, mission control hardware, and cryptographic units for modernized advanced extremely high frequency (AEHF) nuclear command and control communications. AEHF satellites are located in geostationary orbit 22,000 miles above earth's surface, "optimal for continuous earth coverage." DOD states that the "strategic need date" for delivering a complete operational ESS capability is FY2032.

Protected Tactical

DOD's FY2024 request included $360.1 million for Protected Tactical SATCOM prototypes designed to allow testing of new space technology on-orbit. An additional $76.6 million would support software and ground infrastructure design to allow deployed forces to bypass jammed satellites and securely access commercial and military SATCOM (in multiple orbits) during combat.

Wideband and Narrowband

DOD's FY2024 request included $230.8 million to increase SATCOM resilience against electromagnetic interference for dismounted servicemembers, ground vehicles, ships and aircraft; $101.1 million to upgrade radio access and satellite control facilities; $56.5 million to procure Wideband Global SATCOM sub-system components; and $49.4 million to optimize communication beams and enhance power control of wideband SATCOM.

Congress may respond to DOD budget requests for satellite programs aimed toward ensuring space operations meet the requirements of future combat.

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