U.S. Defense Space-Based and -Related Systems Fiscal Year 2016 Budget Comparison

Update 2

President's FY 2016 Department of Defense Budget Request, House Passed FY 2016 NDAA (H.R. 1735), SASC Passed FY 2016 NDAA (S. 1376), House Passed FY 2016 Defense Approps (H.R. 2685), and SAC Passed FY 2016 Defense Approps (S. 1558)

This document provides an overview of unclassified space-based and related programs requested in the Department of Defense's (DoD) FY 2016 Budget in comparison with the House Passed FY 2016 NDAA (H.R. 1735), SASC Passed FY 2016 NDAA (S. 1376), House Passed FY 2016 Defense Approps (H.R. 2685), and SAC Passed FY 2016 Defense Approps (S. 1558). The first section provides a comparison of funding levels for major satellites, programs and launch service acquisitions, followed by a more detailed analysis of each program. A middle segment contains verbiage pertaining to various space programs. An appendix at the end of the document provides a chart of unclassified DoD space and space-related programs organized by the various funding proposals.

Satellites, Programs and Launch Services – FY 2015 Funding*

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
Satellites & Programs						
Mobile User Objective System (MUOS)	219.000	56.103	56.103	56.103	50.403	56.103
Advanced Extremely High Frequency (AEHF)	607.468	561.598	561.598	561.598	415.598	586.596
Global Positioning System (GPS)	875.518	952.686	952.686	753.468	950.686	952.686

*Please note that the numbers used for this table reflect the numbers explicitly called out in the relevant document. In some cases, the sum of the budgets for each category does not match the total funding level given in the document.

Space Based Infrared System (SBIRS)	786.485	834.101	844.101	834.101	783.101	834.101
Wideband Global SATCOM (WGS)	67.496	109.819	131.819	109.819	126.819	89.819
Weather System Follow-on	39.901	76.108	56.108	76.108	56.108	21.108
Space Fence	200.131	243.909	243.909	243.909	238.909	243.909
JSPOC Mission Systems (JSPOC)	73.779	81.911	81.911	81.911	81.911	79.911
Launch						
Evolved Expendable Launch Vehicle (EELV)	1,647.746	1,455.915	1,555.915	1,455.915	1,335.915	1,599.915

Mobile User Objective System

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	12.300	16.171	16.171	16.171	16.171	16.171
Satellite Communications - Mobile User Objective System (MUOS)	12.300	16.171	16.171	16.171	16.171	16.171
Procurement	206.700	39.932	39.932	39.932	34.232	39.932
Fleet Satellite Comm Follow-On	206.700	39.932	39.932	39.932	34.232	39.932
Total	**219.000**	**56.103**	**56.103**	**56.103**	**50.403**	**56.103**

Mission

The Mobile User Object System (MUOS) is a narrowband military satellite communications (MILSATCOM) system that supports a worldwide, multi-service population of mobile and fixed-site terminal users with narrowband beyond-line-of-sight satellite communications (SATCOM) services. Capabilities will include a considerable increase to current narrowband SATCOM capacity as well as significant improvement in availability for small terminals. MUOS will augment and replace the eight Ultra High Frequency Follow-On (UFO) system satellites that currently provide narrowband tactical communications. On February 24, 2012 the first Mobile User Objective System satellite was successfully launched.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $16.171 million for MUOS;

Procurement:

- $14.449 million for Ground System Updates
  - Includes "on-site and depot replenishment and tech refresh equipment for the entire MUOS Ground system, which includes 4 remote access facilities (or ground stations) and 2 satellite control facilities. The unit cost fluctuations are driven by varying system configuration requirements (i.e. equipment type, cost, and quantity) and location of the particular sites. As a result of site-specific requirements, costs are not allocated evenly across all the sites per FY. The budget is scaled to provision the entire ground system with adequate replenishment equipment to mitigate parts obsolescence and availability issues. FY14-20 represents 4 ground stations and 2 satellite control facilities."
- $21.500 million for Satellite Storage
- $796 thousand for EELV Launch Vehicle Production
- $3.187 million for Satellite Production

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $56.103 million to fully fund the MUOS program at the President's FY 2016 request.
- The committee report simply states that "the committee supports the U.S. Navy Mobile User Objective System (MUOS) program to provide next-generation narrow-band tactical satellite communications to U.S. forces" and further, that "the committee is aware of the progress being made on the program, and continues to support efforts that accelerate the schedule to provide the full MUOS capability to the warfighter."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services passed FY 2016 NDAA would authorize to appropriate $56.103 million to fully fund the MUOS program at the President's FY 2016 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $50.403 million for MUOS in FY 2016. The $5.7 million reduction comes out of the MUOS Procurement account. The Committee Report cites "excess storage" as the rationale for the decrease.

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $56.103 million to fully fund the MUOS program at the President's FY 2016 request.

Advanced Extremely High Frequency

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	314.378	228.230	228.230	228.230	88.230	253.230
Advanced MILSATCOM	192.038	53.505	53.505	53.505	It is unclear what specific effect the reduced authorization level would have on Advanced MILSATCOM.	53.505
Evolved AEHF MILSATCOM	122.340	174.725	174.725	174.725	It is unclear what specific effect the reduced authorization level would have on Evolved AEHF MILSATCOM.	199.725
Procurement	298.890	333.366	333.366	333.366	327.368	333.366
Advanced EHF SVs 3 and 4	67.866	93.140	93.140	93.140	It is unclear what specific effect the reduced authorization level would have on Advanced EHF SVs 3 and 4.	93.140
Advanced EHF SVs 5 and 6	231.024	240.226	240.226	240.226	It is unclear what specific effect the reduced authorization level would have on Advanced EHF SVs 5 and 6.	240.226
Total	**613.268**	**561.598**	**561.598**	**561.598**	**415.598**	**586.596**

Mission

The Advanced Extremely High Frequency (AEHF) system is a joint service satellite communications system that will provide survivable, anti-jam, worldwide secure communications for strategic and tactical users. AEHF is the follow on program to the existing extreme high frequency system MILSTAR satellite, providing ten times the throughput and greater than five times the data rate of the current MILSAT II satellites. AEHF is also a cooperative program that includes International Partners: Canada, the United Kingdom, and the Netherlands. On May 4, 2012, the second Advanced EHF satellite was successfully launched.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $53.505 million for AEHF Key Management Infrastructure (KMI) transition;
- $32.116 million for AEHF Capabilities Insertion Program (CIP);
- $32.851 million for protected MILSATCOM "design for affordability";
- $95.435 million for protected tactical demonstration;
- $14.323 million for evolved AEHF (E-AEHF) strategic only;

Procurement:

- $77.175 million for checkout and launch for AEHF space vehicle (SV) 3 and 4;
- $7.563 million for AEHF SV 3 and 4 technical support (FFRDC) to include obsolescence and DMS studies and analyses (PMA);
- $6.100 million for AEHF SV 3 and 4 program office support (PMA);
- $2.302 million for AEHF SV 3 and 4 enterprise systems engineering & integration (SE&I);
- $15.965 million for support – support cost element category;
- $186.859 million for AEHF SV 5 and 6 block buy;
- $2.926 million for checkout and launch for AEHF space vehicle (SV) 5 and 6;
- $1.890 million for command and control systems-consolidated (CCS-C) launch support for AEHF 5 and 6;
- $12.031 million FOR AEHF SV 5 and 6 technical support (FFDRC) to include obsolescence/DMS studies and analyses (PMA);
- $19.500 million for AEHF program office support (PMA);
- $9.934 million for AEHF SV 5 and 6 enterprise systems engineering & Integration (SE&I);
- $8.976 million for ACF/IC2 Test Asset Support

FY 2016 Congressional Action

House Passed FY 2016 NDAA (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $561.598 million to fully fund the AEHF program at the President's FY 2016 request.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $561.598 million to fully fund the AEHF program at the President's FY 2016 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $415.598 million for AEHF in FY 2016. A $6 million reduction comes out of the AEHF procurement account. The Committee Report cites "Unjustified support growth" as the rationale for the decrease.
- The committee report also expresses the committee's concern that "that the Air Force is using Space Modernization Initiative (SMI) funding to begin and sustain new development programs," and "the Committee believes that SMI funding should be used to make evolutionary upgrades to existing programs to enhance mission effectiveness and avoid parts obsolescence." However, "over the last few years, the Air Force has attempted to begin next generation technologies using SMI funds within the Advanced Extremely High Frequency (AEHF) and the Space Based Infrared (SBIRS) satellite programs."
- The Committee states that it "can find no analyses of alternatives or fully vetted operational requirements documents that support the initiation of these efforts" and further asserts that "the Government Accountability Office has found that these efforts are limited by lack of direction, are focused on isolated technologies, and are not set up to identify insertion points for a desired future system. The Committee is skeptical of the operational impacts, potential program risks, and cost of these new efforts."
- Accordingly, "before investing in this architectural approach, the Committee recommends that the Joint Requirements Oversight Council assesses the operational impacts and approves the requirements; the Secretary of the Air Force completes an analysis of alternatives, and the Director of Cost Assessment and Program Evaluation certifies that the new program is cost effective."
- The committee asserts that "until these actions have been completed, funding for these efforts is premature" and reduces the fiscal year 2016 request for AEHF SMI by $140 million."

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $586.596 million to fund the AEHF program at $25 million above the President's FY 2016 request.
- According to the committee report, the committee "supports the Air Force's development of a new Advanced Extremely High Frequency [AEHF] Protected Tactical Waveform [PTW] which offers the ability

to provide tactical anti-jam communication utilizing existing space and user terminal assets. The 2016 budget request includes funding for the development of new terminal modems, but the Committee is concerned 180 that the mission management system and PTW ground station hub electronics and software are not being co-developed, which could lead to a multi-year delay in the fielding of the system and the potential for non-optimal system design."

- Accordingly, the committee would appropriate an additional $25 million "for the AEHF Protected Tactical Waveform mission management system and ground station hub electronics and software development to enable protected communications utilizing existing military and commercial space assets."

Global Positioning System

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	668.990	673.422	673.422	673.422	673.422	673.422
GPS III Space Segment	212.571	180.902	180.902	180.902	180.902	180.902
GPS III - Operational Control Segment	299.76	350.232	350.232	350.232	350.232	350.232
NAVSTAR Global Positioning System (User Equipment)	156.659	142.288	142.288	142.288	142.288	142.288
Procurement	206.528	279.264	279.264	80.046	277.264	279.264
GPS IIIA Space Segment	141.797	199.218	199.218	0.000	199.218	199.218
GPS IIF and launch support	50.000	66.135	66.135	66.135	64.135	66.135
OCS COTS Upgrade	12.656	11.882	11.882	11.882	11.882	11.882
NAVSTAR GPS Space	2.075	2.029	2.029	2.029	2.029	2.029
Total	**875.518**	**952.686**	**952.686**	**753.468**	**950.686**	**952.686**

Mission

The Navstar Global Positioning System (GPS) provides for worldwide, accurate, common grid three-dimensional positioning/navigation for military aircraft, ships and ground personnel. The system also has applications for civil, scientific and commercial functions.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $1.290 million for Search and Rescue GPS (SAR/GPS);
- $129.449 million for GPS III SVs 1 and 2;
- $41.900 million for production readiness
- $8.263 million for systems engineering/launch/on-orbit support and testing;
- $288.992 million for operational control segment OCX development;
- $23.300 for Technical Support/development of the Standardized Space Trainer (SST), Enterprise Mission Planning Systems
- $611.240 million for GPS Enterprise Integrator
- $68.744 million for Military Global Positioning System User Equipment (MGUE) increment 1 technology development;
- $4.800 million for MGUE advanced technology;
- $54.938 million for system/platform integration and performance certification;
- $13.806 million for information assurance and test/evaluation;

Procurement:

- $3.308 million for GPS III SV 11+ SAR;
- $247.310 million for GPS II SV 3 through 10 space vehicle
- $1.700 million for GPS II SV 3 through 10 launch services
- $15.400 million for A&AS – GPS III SV 3-10 FFRDC
- $18.500 million for A&AS – GPS III SV 3-10 PMA

FY 2016 Congressional Action

House Passed FY 2016 NDAA (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $952.658 million to fully fund the Global Positioning System at the President's FY 2016 request.
- The committee report "recommends the Air Force fully leverage the non-recurring investment in program planning for the future space vehicles. The committee continues to support evolutionary acquisition with technology insertion plans to meet warfighter requirements. The committee continues to recommend that the Department take the necessary steps to accelerate the development and fielding of M-code capable user terminals. M-code capable receivers, when paired with the necessary space and ground capabilities, will provide significantly greater anti-jam capabilities for the warfighter. The committee addresses this matter elsewhere in this Act."
- The committee report also addresses the ground segment, stating that "the committee is also aware of the challenges with the Next Generation Operational Control Segment (OCX). OCX is designed to deliver incremental capabilities in multiple blocks. The program has rigorous information assurance requirements to ensure the system is secure from adversary threats."
- The committee also suggested in its report that "an independent advisory team, compromised of experts from other Department of Defense agencies and federally funded research and development centers, may provide valuable support to ensure the Government meets its objectives on this critical program. Therefore, the committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics to provide a briefing to the House Committee on Armed Services by October 1, 2015, on the potential value and feasibility of establishing a temporary independent advisory team for GPS OCX."
- The FY 16 NDAA also addresses U.S. dependence on GPS signals, "despite the reality that GPS jammers are relatively inexpensive and widely available." The committee discusses a potential backup system, stating "the committee is aware of a related National Security Presidential Directive which assigns the Secretary of Transportation, in coordination with the Secretary of Homeland Security, the responsibility to develop, acquire, operate, and maintain backup position, navigation, and timing capabilities that can support critical transportation, homeland security, and other critical civil and commercial infrastructure applications within the United States. This system could be of some benefit to the Department of Defense, but would not address all Department of Defense and warfighter requirements, as this system would be focused geographically within the United States."
- Accordingly, "the committee directs the Secretary of Defense to provide a briefing to the House Committee on Armed Services by January 15, 2016, on the Department of Defense requirements for backup position, navigation, and timing capabilities, including the plan and estimated cost to address such requirements. The committee expects the briefing to also include an assessment of the potential benefit of a U.S.-based ground system and any current or planned funding for this activity."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $753.468 million for the GPS program, $199.218 million less than the President's FY 2016 request. The $199.218 reduction comes out of Air Force Space procurement account. The committee report cites the rationale for the decrease as "GPS III SV10 early to need."
- The committee states its concern that "the GPS III and GPS OCX programs are facing a number of development issues that have resulted in significant cost increases and schedule delays," Government Accountability Office (GAO) estimates that "GPS III is currently $471.0 million (11 percent) over its initial

total program cost estimate and the first GPS III satellite is not scheduled to launch until January 2016, a 21 month delay."

- According to the GAO report, the GPS Operational Control Segment (OCX) also is "failing to meet many of its cost and schedule requirements. The GPS OCX Block 0 delivery has been delayed until April 2016, and the program is not expected to meet its initial operational capability until January 2020, a 53 month delay."
- Also per the GAO, the Military Global Positioning System User Equipment (MGUE) "is accelerating risk reduction efforts in software and security certification. However, there is concern given a November 2014, Office of Test and Evaluation assessment that found that MGUE's development maturity was overstated and that the program has asserted technical maturity not yet demonstrated.
- Accordingly, "the committee recommends a provision that would require the Secretary of the Air Force to provide quarterly reports to the Comptroller General of the United States on the Global Positioning System III (GPS III) space segment, the Global Positioning System Operational Control Segment (GPS OCX), and the Military Global Positioning System User Equipment (MGUE) acquisition programs."
- Each quarterly report must include: "(1) the status on cost, schedule, and performance; (2) a detailed description of any technical risk impacting cost, schedule, and performance; (3) any changes to program requirements; (4) an assessment of how risks are to be addressed and their associated costs; and (5) an assessment of the extent the segments are synchronized."
- In addition, "the provision would require the Comptroller General to provide a briefing to the congressional defense committees within 30 days of receiving the first report and as necessary after subsequent reports. The reporting requirement would sunset on the date at which GPS III, GPS OCX, and MGUE reach their full operational capabilities."
- In section 1610, "The committee recommends a provision that would establish a council to review and be responsible for the Department of Defense positioning, navigation, and timing enterprise, including positioning, navigation, and timing services provided to civil, commercial, scientific and international users. This council would terminate 10 years after the date of enactment."

<u>House passed FY 2016 Defense Approps (H.R. 2685)</u>

- The House passed FY 2016 Defense Appropriations bill would appropriate $950.686 million for GPS in FY 2016. A $2 million reduction comes out of the GPS IIF and launch support procurement account. The Committee Report cites "Unjustified support growth" as the rationale for the decrease.

<u>SAC passed FY 2016 Defense Approps (S. 1558)</u>

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $952.686 million to fully fund the GPS program at the President's FY 2016 request
- The SAC bill fully funds the GPS II Operational Control Segment (OCX) at the President's FY 16 request of $350.232 million. Significant development delays however have plagued the project, and according to the report, "it will not be available until approximately 4 years after the Air Force begins launching GPS III satellites in fiscal year 2016," which "has prompted the Air Force to investigate buying a temporary ground capability to ensure that the first GPS satellite can be integrated into the existing constellation."
- However, "the Committee notes that such a temporary fix would not enable implementation of the technology improvements promised with OCX, including the improved anti-jamming capability of M-code. In light of these problems and delays, the Committee questions the Air Force's plan to accelerate the launches of several GPS III satellites, reversing a decision in the 2015 budget request."
- Accordingly, "the Committee directs the Cost Assessment and Program Evaluation [CAPE] and Joint Requirements Oversight Council [JROC] to review the cost of and validate the requirements for accelerating GPS III launches ahead of the plan laid out in the fiscal year 2015 budget submission."
- Regarding competition, "the committee supports the decision of the Air Force to compete future GPS space vehicles after SV–10 to make the program more affordable while sustaining and enhancing GPS capabilities" and "believes that more advanced technologies, such as a modern digital payload, will alleviate production problems while providing enhanced mission capability and affordability."

- Accordingly, “the Committee directs the Secretary of the Air Force to allocate $80 million of the GPS III Space Modernization Imitative budget toward technology maturation efforts for a digital navigation payload and satellite vehicle development for the GPS III SV11+ production competition.”

Space Based Infrared System

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	309.501	292.235	302.235	292.235	241.235	292.235
SBIRS High Element EMD	230.893	203.540	213.540	203.540	203.540	203.540
Space Modernization Initiative (SMI)	78.608	88.695	88.695	88.695	37.695	88.695
Procurement	476.984	541.866	541.866	541.866	541.866	541.866
GEO SVs 3 and 4	95.189	62.501	62.501	62.501	62.501	62.501
GEO SVs 5 and 6	318.450	379.814	379.814	379.814	379.814	379.814
HEO hosted payloads 3 and 4	37.245	10.361	10.361	10.361	10.361	10.361
Space Based IR Sensor Program	26.100	90.190	90.190	90.190	90.190	90.190
Total	**786.485**	**834.101**	**844.101**	**834.101**	**783.101**	**834.101**

Mission

The Space Based Infrared Systems (SBIRS) program will provide early warning for the United States and its allies in four mission areas: missile warning, missile defense, technical intelligence and battle-space awareness. SBIRS will augment and then replace the Defense Support Program (DSP) constellation. SBIRS will provide shorter revisit times and greater sensitivity than the current DSP constellation. SBIRS provides increased detection and tracking performance in order to meet requirements in U.S. Space Command's Capstone Requirements Document and Operational Requirements Document (ORD).

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $203.540 million for SBIRS EMD;
- $11.597 million for Evolved SBIRS;
- $23.159 million for data exploitation;
- $21.612 million for hosted payloads;
- $29.747 million for Wide Field of View (WFOV) testbeds;
- $2.493 million for management services;

Procurement:

- $10.768 million for Geostationary (GEO) Satellite Vehicles (SV) 3 and 4 integration and assembly;
- $8.317 million for GEO SVs 3 and 4 launch vehicle and range integration;
- $20.963 million for GEO SVs 3 and 4 launch operations and checkout;
- $22.000 million for Interim Contractor Support (ICS);
- $0.453 million for GEO SVs 3 and 4 advisory and assistance services (A&AS) (PMA);
- $228.712 million for GEO SVs 5 and 6 hardware;

- $46.308 million for GEO SVs 5 and 6 integration and assembly;
- $25.508 million for GEO SVs 5 and 6 obsolescence non-recurring;
- $11.922 million for GEO SVs 5 and 6 launch vehicle and range integration;
- $8.124 million for GEO SVs 5 and 6 other support;
- $33.966 million for GEO SVs 5 and 6 FFRDC;
- $22.981 million for GEO SVs 5 and 6 advisory and assistance services (A&AS) (PMA);
- $2.293 million for GEO SVs 5 and 6 program support;
- $2.928 million for HEO hosted payloads 3 and 4 host accommodation;
- $7.542 million for HEO hosted payloads 3 and 4 launch operations and checkout;
- $7.633 million for SBIRS Mobile System and Fixed Comm Electronics Upgrades;
- $82.557 million for (2) SBIRS Survivable Endurable Evolution (S2E2)

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $844.201 million for the SBIRS program in FY 2016, $10 million above below the President's FY 2016 request. The committee report notes that the additional $10 million is appropriated to RDT&E, for "exploitation of SBIRS."
- Section 1611 "would require the Under Secretary of Defense for Acquisition, Technology, and Logistics, in cooperation with the Secretary of the Navy, the Secretary of the Air Force, and the Director of National Intelligence, to conduct an evaluation of the Space-based Infrared System to detect, track, and target, or develop the capability to do the detect, track and target, against the full-range of threats to the United States, deployed members of the Armed Forces, and the allies of the United States, and provide the results of such evaluation to the congressional defense committees not later than December 31, 2016."
- The committee report mentions further discussion of Section 1611 in a classified report annex.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $834.201 million to fully fund the SBIRS program at the President's FY 2016 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $738.101 million for SBIRS in FY 2016. The $51 million reduction comes out of the space modernization initiative account. The Committee Report cites "SMI WFOV" as the rationale for the decrease.
- The committee report also expresses the committee's concern that "that the Air Force is using Space Modernization Initiative (SMI) funding to begin and sustain new development programs," and "the Committee believes that SMI funding should be used to make evolutionary upgrades to existing programs to enhance mission effectiveness and avoid parts obsolescence." However, "over the last few years, the Air Force has attempted to begin next generation technologies using SMI funds within the Advanced Extremely High Frequency (AEHF) and the Space Based Infrared (SBIRS) satellite programs."
- The Committee states that it "can find no analyses of alternatives or fully vetted operational requirements documents that support the initiation of these efforts" and further asserts that "the Government Accountability Office has found that these efforts are limited by lack of direction, are focused on isolated technologies, and are not set up to identify insertion points for a desired future system. The Committee is skeptical of the operational impacts, potential program risks, and cost of these new efforts."
- Accordingly, "before investing in this architectural approach, the Committee recommends that the Joint Requirements Oversight Council assesses the operational impacts and approves the requirements; the Secretary of the Air Force completes an analysis of alternatives, and the Director of Cost Assessment and Program Evaluation certifies that the new program is cost effective."

- The committee asserts that "until these actions have been completed, funding for these efforts is premature" and reduces the fiscal year 2016 request for SBIRS SMI by $51 million."

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $834.201 million to fully fund the SBIRS program at the President's FY 2016 request.

Wideband Global SATCOM System

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	31.425	56.343	52.343	56.343	52.343	56.343
Command and Control Sys-Consolidated (CCS-C)	16.425	8.660	It is unclear what specific effect the reduced authorization level would have on CCS-C.	8.660	It is unclear what specific effect the reduced authorization level would have on CCS-C.	8.660
WGS Space Systems Resiliency Upgrade	15.000	47.683	It is unclear what specific effect the reduced authorization level would have on WGS Space Systems Resiliency Upgrade.	47.683	It is unclear what specific effect the reduced authorization level would have on WGS Space Systems Resiliency Upgrade.	47.683
Procurement	36.071	53.476	79.476	53.476	74.476	33.476
WGS block II follow-on (B2FO)	36.071	53.476	79.476	53.476	74.476	33.476
Total	**67.496**	**109.819**	**131.819**	**109.819**	**126.819**	**89.819**

Mission

The Wideband Global SATCOM (WGS) satellites form an international and joint service satellite communications system that will provide high-capacity communications. The WGS system allows the DoD robust and flexible execution of command and control, communications computers, intelligence, surveillance, and reconnaissance (C4ISR), as well as battle management and combat support information functions. The WGS system is the follow-on to the Defense Satellite Communications Systems (DSCS). Each WGS satellite will deliver the equivalent capacity of the entire existing DSCS constellation.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $8.660 million for Command and Control System-Consolidated (CCS-C) development;
- $47.683 million for WGS upgrade;

Procurement:

- $39.336 million for WGS block II follow-on (B2FO) checkout & launch/launch readiness;
- $2.083 million for command and control system-consolidated (CCS-C) WGS B2FO support;
- $0.242 million WGS B2FO test support;
- $1.042 million WGS B2FO technical analysis support;
- $9.734 million for WGS B2FO program management administration;
- $1.039 million for WGS B2FO A&AS;

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $131.819 million for the Wideband Global SATCOM program in FY 2016, $22 million above the President's FY 2016 request.
    - The House passed FY 2016 NDAA would authorize to appropriate $52.343 million for RDT&E for the Wideband Global SATCOM program in FY 2016, $4 million below the President's FY 2016 request. The committee report cites the reason for the decrease as "excess to need."
    - On the other hand, committee's bill would authorize to appropriate $79.476 million for procurement for the Wideband Global SATCOM program in FY 2016, $26 million above the President's FY 2016 request to fund a SATCOM Pathfinder program.
- Section 1607 would direct the Secretary of Defense "to designate a senior Department of Defense official to procure wideband satellite communications, both military and commercial, to meet the requirements of the Department." If the Secretary of a military department, Under Secretary of Defense for Acquisition, Technology, and Logistics, Chief Information Officer of the Department, or a combatant commander determines that such procurement is required to meet an urgent need, an exception would be made under this section.
- Section 1607 also would direct the Secretary of Defense to "provide a report to the congressional defense committees not later than March 1, 2017, and each year thereafter through 2021, with a brief description of the urgent need, the date, the length of the contract, and the value of such contract" as well as "to submit to the congressional defense committees, not later than 180 days after the date of the enactment of this Act, a plan for the Secretary to meet the requirements of the Department for satellite communications, including identification of roles and responsibilities."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $109.819 million for the Wideband Global SATCOM program in FY 2016 to fully fund the President's FY 2016 request.
- Section 1611 states that "the committee recommends a provision that would require an analysis of alternatives for the replacement of the Wideband Global Satellite System with a report due to the congressional defense committees by March 31, 2017. The analysis shall take into account future bandwidth of space, air, and ground communications systems."

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $126.819 million for the Wideband Global SATCOM program in FY 2016, $22 million above the President's FY 2016 request. A $5 million reduction comes out of the WGS procurement account. The Committee Report cites "Unjustified support growth" as the rationale for the decrease. However, the committee also adds $26 million to fund a SATCOM pathfinder.

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $89.819 million to fund the SBIRS program at $20 million below the President's FY 2016 request. The $20 million reduction comes out of the WGS block II follow-on account. The committee report cites "restoring acquisition accountability: unjustified cost growth" as the rationale.

Weather System Follow-on

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	39.901	76.108	56.108	76.108	56.108	21.108
Weather System Follow-on	39.901	76.108	56.108	76.108	56.108	21.108
Total	**39.901**	**76.108**	**56.108**	**76.108**	**56.108**	**21.108**

Mission

The Weather System Follow-on (WSF) is the Department of Defense's follow-on to the Defense Meteorological Satellite Program (DMSP) and other DoD environmental monitoring satellites. WSF will be comprised of a group of systems to provide timely, reliable, and high quality space-based remote sensing capabilities that meet global environmental observations of atmospheric, terrestrial, oceanographic, solar-geophysical and other validated requirements.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $76.108 million for WSF

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $56.108 million for the Weather System Follow-on program in FY 2016, $20 million below the President's FY 2016 request. The committee report cites the reason for the decrease as "unjustified increase and analysis of alternatives."
- Section 1608 would withhold authorizing any funds for FY 16 RDT&E for the Air Force weather satellite follow-on system until:
    - First, "the Secretary of Defense provides to the congressional defense committees a briefing on a plan developed "to address the requirements of the Department of Defense for cloud characterization and theater weather imagery"; and
    - Second, "the Chairman of the Joint Chiefs of Staff certifies to the congressional defense committees that such plan will (A) meet the requirements of the Department of Defense for cloud characterization and theater weather imagery; and (B) not negatively affect the commanders of the combatant commands."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $76.108 million for the Weather System follow-on program in FY 2016 to fully fund the President's FY 2016 request.
- The committee's recommendation includes a provision "prohibiting the use of funds authorized to be appropriated in fiscal year 2016 and any un-obligated funds made available for appropriation in fiscal year 2015 for the Defense Meteorological Satellite Program (DMSP) or the launch of Defense Meteorological Satellite Program satellite #20 (DMSP–20) until the Secretary of Defense and the Chairman of the Joint Chiefs of Staff jointly certify to the congressional defense committees that:

    - (1) relying on civil and international contributions to meet space-based environmental monitoring requirements is in-sufficient or is a risk to national security and launching DMSP–20 will meet those requirements;
    - (2) launching DMSP–20 is the most affordable solution to meeting requirements validated by the Joint Requirements Oversight Council; and
    - (3) nonmaterial solutions within the Department of Defense, the National Oceanic and Atmospheric Administration (NOAA), or National Aeronautics and Space Administration (NASA) are incapable of providing a solution for cloud characterization and theater weather requirements as validated by the Joint Requirements Oversight Council.
- The committee report discusses the impending gap in space weather data, stating that it "understands that the Space Based Environmental Monitoring Analysis of Alternatives (AOA) assumed continued international support from a Geostationary European Weather Satellite over the Indian Ocean. With that assumption, the AOA concluded that DMSP–20 was not needed. The committee now understands that since the completion of that AOA, a decision was made by an international partner to no longer provide coverage over the Indian Ocean, leading to possibility of a weather gap as early as 2017."
- Despite this fact, "the committee is not convinced that launching DMSP–20 is the most cost effective solution." This is because, "according to the Air Force, a satellite in geostationary orbit is ideal for meeting cloud characterization and theater weather requirements by providing updates to users every 30 minutes. Attempting to conduct the same cloud characterization and theater weather observations using DMSP–20 in Low-Earth Orbit requires multiple satellites and delivers updates to users once every 4 hours, an almost 90 percent reduction in capability."
- The committee "believes that better alternatives to meeting the potential space weather gap exist and should be explored prior to spending between $400 and $500 million to launch DMSP–20 later this decade."
- Accordingly, "the committee directs the Comptroller General of the United States (GAO) to assess whether alternatives for addressing the potential Indian Ocean weather gap exist, and if so, whether those options would be less costly than launching DMSP–20. The committee directs GAO to report their findings in a briefing to the committee by no later than October 1, 2015. In their analysis, GAO should review any current or planned space systems of the Department of Defense (to include the National Reconnaissance Office), NASA, and NOAA. The committee directs the GAO to assess specifically whether the relocation of NOAA Geostationary Operational Environmental Satellite (GOES), or the hosting of an appropriate electro-optical infrared sensor on an alternative Department of De- fense or commercial satellite, could address any future gaps at a lower cost.

<u>House passed FY 2016 Defense Approps (H.R. 2685)</u>

- The House passed FY 2016 Defense Appropriations bill would appropriate $56.108 million for the Weather System follow-on program in FY 2016. The $20 million reduction comes out of the Weather System follow-on program RDT&E account. The Committee Report cites "ahead of need" as the rationale for the decrease.

<u>SAC passed FY 2016 Defense Approps (S. 1558)</u>

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $21.108 million to fund the Weather System Follow-on program at $55 million below the President's FY 2016 request. The $55 million reduction comes out of the Weather System Follow-on RDT&E account. The committee report cites "Improving funds management: Prior year carryover" as the rationale.

Evolved Expendable Launch Vehicle

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	22	84.438	184.438	84.438	84.438	228.038
Evolved Expendable Launch Vehicle	226.000	84.438	184.438	84.438	84.438	228.038
Procurement	1,421.746	1,371.477	1,371.477	1,371.477	1,251.477	1,371.477
Evolved Expendable Launch Vehicle (# of cores)	733.603 (4)	800.201 (5)	800.201 (5)	800.201 (5)	680.201 (4)	800.201 (5)
Space Expendable Launch Capability (SELC)	688.143	571.276	571.276	571.276	571.276	571.276
Total	**1,647.746**	**1,455.915**	**1,555.915**	**1,455.915**	**1,335.915**	**1,599.915**

Mission

The Evolved Expendable Launch Vehicle (EELV) program was designed to improve the United States' access to space by making space launch vehicles more affordable and reliable. The program satisfies the government's National Launch Forecast (NLF) requirements.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $84.438 million for Domestic Launch Service Providers, to invest in two or more launch service providers' new launch system development and/or upgrades to existing launch systems to provide two or more domestic, commercially-viable launch providers that also meet NSS requirement available by the end of FY 2022.

Procurement:

- $556.233 million for Space Expendable Launch Capability (SELC) launch capability;
- $0.555 million for SELC program management administration – other government costs;
- $14.488 million for SELC range, certification, and other direct government costs;
- $632.981 million for launch services (5 launch cores);
- $2.732 million for program management administration – other government costs;
- $10.668 million for program management administration – contractor services;
- $19.516 million for systems engineering and integration
- $32.562 million for range, certification, and other direct government costs;
- $101.742 million for mission assurance;

Acquisition Strategy:

- The Air Force structured the EELV program with a new cost saving acquisition strategy that includes a quantity and rate commitment with the current provider and enables competition if one or more New Entrants are certified. This strategy stabilized the industrial base, provided predictability to maintain

mission success, and reduced costs. The Air Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration (NASA) agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of NSS and other USG requirements. The Air Force continues to actively evaluate the addition of New Entrants to reliably launch NSS requirements. Once a New Entrant demonstrates a successful launch the Air Force intends to award integration studies. If competition is not viable at the time of need, missions will be awarded to the incumbent. The Air Force plans to compete launch service procurements beginning in FY18, if there is more than one certified provider for some or all reference orbits. The implementation of this new strategy enables the DoD to reliably place NSS space vehicles into earth orbit.

- In 2013, the Air Force combined the Launch Services contract and Launch Capability contract into a single contract. The Launch Capability cost plus incentive fee contract line items are annual options and provide launch infrastructure support which includes, but is not limited to, systems and factory engineering, program management, standard integration/testing, launch and range activities, infrastructure, parts obsolescence mitigation, post mission analysis, and studies and analysis. The contract features a Mission Success Incentive fee which incentivizes both mission success and cost control for cost plus contract line items.
- In 2015, Congress added an additional competitive "mission" that will be fully funded in this EELV P-1 line item (i.e., no Capability funds).
- The FY2016 funding request was reduced by $168 million to account for the availability of prior year funds to forward finance launch infrastructure, services, and range activities.

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $184.438 million to fund the EELV program – $100 million more the President's FY 2016 request.
- In the bill, the "EELV Program – Launch Vehicle Development" request of $84.438 million is replaced with $184.448 million for "EELV Program – Rocket Propulsion System Development."
- Section 1604 amends section 1608 of last year's NDAA (the Carl Levin and Howard P. ''Buck'' McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291)). The amended section "would prohibit, with certain exceptions and a waiver, the Secretary of Defense from awarding or renewing a contract for the procurement of property or services for space launch activities under the evolved expendable launch vehicle program if such contract carries out such space launch activities using rocket engines designed or manufactured in the Russian Federation" as well as "prohibit the Secretary from modifying contract number FA8811– 13–C–0003 awarded on December 18, 2013, if such modification increases the number of cores procured under such contract to a total of more than 35."
- Section 1604 would permit the Secretary of Defense "to waive one or both of the prohibitions if the Secretary determines, and certifies to the congressional defense committees not later than 30 days before the waiver takes effect, that the waiver is necessary for the national security interests of the United States, and the space launch services and capabilities covered by the contract could not be obtained at a fair and reasonable price without the use of rocket engines designed or manufactured in the Russian Federation."
- Further, "the prohibition on the award or renewal of a contract would not apply to either the placement of orders or the exercise of options under the contract numbered FA8811–13–C–0003 and awarded on December 18, 2013; or, subject to certification from the Secretary, a contract awarded for the procurement of property or services for space launch activities that includes the use of rocket engines designed or manufactured in Russia if, prior to February 1, 2014, the contractor had fully paid for such rocket engines or had entered into a contract to procure such rocket engines."
- Finally under section 1604, "the Secretary would not be authorized to award or renew a contract for the procurement of property or services for space launch activities described in the prohibition unless the Secretary, upon the advice of the General Counsel of the Department of Defense, certifies to the

congressional defense committees that the offeror has provided to the Secretary sufficient documentation to conclusively demonstrate that the offeror meets the requirements of the exception"

- Section 1606 discusses acquisition strategy and according to the committee report, "would express the sense of Congress that the Secretary of the Air Force needs to develop an updated, phased acquisition strategy and contracting plan for the Evolved Expendable Launch Vehicle (EELV) program; that the acquisition strategy and contracting plan should eliminate the currently structured EELV launch capability (ELC) arrangement after the current contractual obligations; the Secretary should acquire launch services in a manner consistent with full and open competition; that the Secretary should be consistent and fair with EELV providers regarding the requirement for certified cost and pricing data, selection of contract types, and the appropriate audits to protect the taxpayer; and 351 that the Secretary should consider various contracting approaches, including launch capability arrangements with multiple certified providers which continue to provide the necessary stability in budgeting and contracting, and flexibility to the Government."
- Section 1606 "would require the Secretary to discontinue the ELC arrangement by the latter of either the date on which the Secretary determines that the obligations of the contracts relating to such arrangement have been met, or by December 31, 2020" and "would provide a waiver to the discontinuation of the ELC arrangement if the Secretary determines that such waiver is necessary for the national security interests of the United States, the Secretary notifies the congressional defense committees of such waiver, and a period of 90 days has elapsed following the date of such notification."
- Section 1606 would additionally direction the Secretary "to apply consistent and appropriate standards to certified EELV providers with respect to certified cost and pricing data, and audits, in accordance with section 2306a of title 10, United States Code" and to "carry out a 10-year acquisition strategy for the EELV program, in accordance with section 2273 of title 10, United States Code, and other elements of this provision."
- This acquisition strategy in Section 1606 "would establish a contracting plan that uses competitive procedures and provides the necessary stability in budgeting and acquisition of capabilities, and flexibility to the Federal Government" as well as "ensure that a contract awarded for launch services, capabilities, or infrastructure specifically takes into account the effect of all Federal contracts entered into and any assistance provided to certified EELV providers, including the ELC; the requirements of the Department of Defense that are met by such providers including launch capabilities and pricing data; the cost of integrating a satellite onto a launch vehicle; and any other matters the Secretary considers appropriate."
- In addition, "in awarding any contract for launch services in a national security space mission pursuant to a competitive acquisition, the evaluation shall account for the value of the ELC per contract line item numbers in the bid price of the offer as appropriate per launch."
- Section 1606 finally would direct the Secretary "to provide to the congressional defense committees and the congressional intelligence committees, by not later than 180 days after the date of the enactment of this Act, a report on the acquisition strategy detailed within this section."

<u>Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)</u>

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $1,455.915 million to fund the EELV program in FY 2016 to fully fund the President's FY 2016 request.
- In Section 1604, "the committee recommends a provision that would prohibit the Secretary of Defense from awarding a contract, renewing a contract, or maintaining a separate contract line item for the procurement of property or services for space launch capabilities under the Evolved Expendable Launch Vehicle (EELV) program. The provision would define space launch capabilities as work associated with supporting launch infrastructure maintenance and sustainment, program management, systems engineering launch site operations, launch site depreciation, and maintenance commodities. The provision would allow for the Secretary to waive the requirement and award a separate contract or maintain a separate contract line item for launch capabilities only if the Secretary determines and reports to the congressional defense committees 30 days prior to executing a waiver that:

    - (1) awarding or renewing, or maintaining a separate contract line item for launch capabilities is necessary for the national security interests of the United States and the con- tract or contract line item does not support space launch activities using rocket engines designed or manufactured in the Russian Federation; and
    - (2) failing to award or renew such a contract or maintain such a contract line item would have significant consequences to national security and result in the significant loss of life or property or economic harm. The provision would not apply to the placement of orders or the exercise of options under the contract numbered FA8811–13–C–003 and awarded on December 18, 2013. That exception would expire on September 30, 2019.
- The committee report also addresses the EELV Launch Capability (ELC), which was created in 2005 by the Air Force "to augment a fragile domestic industrial base and maintain a national capability to launch national security payloads as set forth in National Security Presidential Directive-40 (NSPD–40)." Since that time, "new launch providers have entered the market and created competition. The committee believes that with the introduction of space launch competition, launch capability subsidies inappropriately inhibit fair competition and are no longer necessary." Accordingly, "to ensure a fair competitive environment in the future, the committee believes that all future competitive launch opportunities should require a bid price that provides a fully burdened launch service cost."
- The committee realizes, however, that "a limited need for launch capability funding could arise in order to meet certain heavy launch requirements that are at significant near-term risk, since the incumbent launch provider announced its intention to no longer produce the Delta IV line of launch vehicles. The Delta IV rocket, which uses a rocket engine designed and manufactured in the United States, is being discontinued prior to its replacement with a new domestically sourced capability. This will leave the incumbent launch provider with only the Atlas V rocket, which uses a rocket engine designed and manufactured in the Russian Federation. The committee is troubled by the incumbent launch provider's decision, given the billions of dollars the taxpayer has provided to the incumbent provider to maintain the capability. The committee also believes that this decision, which may be a result of the prospect of increasing space launch competition, should not create an impression of a lack of competition."
- Therefore, "because of the unique role of the Delta IV in meeting our national security space requirements, the provision includes a limited national security waiver as long as the contract does not support space launch activities using rocket engines designed or manufactured in the Russian Federation."
- In Section 1605, the committee "recommends a provision realigning the cost share of the Evolved Expendable Launch Vehicle (EELV) Launch Capabilities (ELC) between the Air Force and the National Reconnaissance Office (NRO). The provision would require, for fiscal years 2017, 2018, or 2019, that the Air Force request for ELC funding bear the same ratio to the total number of Air Force cores to be procured under the Evolved Expendable Launch Vehicle Launch Services (ELS)."
- The committee also expressed concern that "the existing Memorandum of Understanding between the Air Force and the National Reconnaissance Office (NRO), dated October 7, 2011 provides a disproportionate cost share agreement for the ELC of 75 percent costs to the Air Force and 25 percent of costs to the NRO. The committee believes that this cost share unfairly burdens the Air Force, since, "for example, in fiscal year 2016 the Air Force request of five cores represents just 55.5 percent of the total number of cores requested. In fiscal year 2017, while the NRO projects a request of seven cores, the Air Force projects a request of just five cores, or only 42 percent of the total buy. The committee recognizes that actual launch capability costs in a given year may not be based on the ratio of ELS versus ELC, but believes basing the cost share on the actual number of cores procured in a given year is the most equitable way to share ELC requirements under the current block buy."
- In Section 1605, the committee also notes that "elsewhere in this Act, the committee recommends a provision that would prohibit the award of a new contract, the renewal of an existing contract, or maintaining a separate contract line item for ELC. The committee expects that after the current block buy, future EELV contracts will reflect the total cost of a launch under fully burdened launch services

contracts."

- Finally, Section 1606 includes a committee recommendation for the inclusion of "a provision "that would amend section 1604 of the Carl Levin and Howard P. ''Buck'' McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law to include a plan for the development and fielding of a full-up engine. The committee emphasizes the importance of expediting the developing of a rocket propulsion system by 2019, consistent with the requirements of section 1604."

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $1,335.915 million for EELV in FY 2016. A $120 million reduction comes out of the Evolved Expendable Launch Vehicle Procurement account. The Committee Report cites "reduction for DMSP launch" as the rationale for the decrease.

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $1,599.515 million to fund the EELV program at $143.6 million above the President's FY 2016 request. The $55 million addition is made to the EELV RDT&E account.
- The states that it "continues to view the effort to develop and field an advanced U.S. rocket booster engine as a national security imperative and believes planned Air Force investments for fiscal year 2016 are insufficient to meet the need for a new engine in 2019."
- Accordingly, the SAC bill would appropriate and additional $143.6 "for the Air Force to implement a full scale engine development program that meets Evolved Expendable Launch Vehicle program requirements for national security payload launches," and further states that "given the importance of this issue, the Air Force should move expeditiously to spend appropriated funding for this effort."
- The committee "supports competition in the EELV program and appreciates the Air Force's efforts to find the proper balance between reducing launch costs and maintaining mission assurance as it transitions from a sole source to a competitive procurement environment."
- The report goes on to explain that "in an effort to further enhance competition, last year the Department of Defense Appropriations Act, 2015 added $125million to double the number of competitive launch opportunities in fiscal year 2015 and required that the competition include at least two certified launch service providers. However, the Department of Defense and the Intelligence Community have notified the Committee that Section 1608 of the Carl Levin and Howard P. ''Buck'' McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291; 128 Stat. 3314) restricts the incumbent launch provider's use of the RD–180 engine on its most competitive launch vehicle, nullifying the intent of the Committee's $125 million add for a launch vehicle competition. Additionally, the Department has informed the Committee that Section 1608 would limit the availability of RD–180 engines for future competitions to five, which may create a multi-year gap where the Department has neither assured access to space nor an environment where price-based competition is possible."
- In accordance with the above, "the Committee recommends a rescission of $125 million from fiscal year 2015 funds due to the statutory impediment to competition," but "does not recommend a reduction of competitive launch opportunities in fiscal year 2016, because true competition may still be possible in fiscal year 2016 if Congress implements the Department's recommended modification to Section 1608. The Committee believes that this modification would enable a responsible transition away from the RD–180 as soon as possible while maintaining the goal of reducing launch costs through true competition."

Space Fence

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	200.131	243.909	243.909	243.909	238.909	243.909
Space Fence	200.131	243.909	243.909	243.909	238.909	243.909
Total	**200.131**	**243.909**	**243.909**	**243.909**	**238.909**	**243.909**

Mission

The Space Fence effort will develop a system of ground-based sensors to improve upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to up to 100,000-plus objects, while working in concert with other network sensors.

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $243.909 million for Space Fence;

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $243.909 million to fully fund the Space Fence program at the President's FY 2016 request.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $243.909 million to fully fund the Space Fence program at the President's FY 2016 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $238.909 million for Space Fence in FY 2016. The $5 million reduction comes out of the Space Fence RDT&E account. The Committee Report cites "unjustified increase" as the rationale for the decrease.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC passed FY 2016 Defense Appropriations bill would appropriate would authorize to appropriate $243.909 million to fully fund the Space Fence program at the President's FY 2016 request.

JSPOC Mission System (JMS)

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
RDT&E	73.779	81.911	81.911	81.911	81.911	79.911
Infrastructure	34.781	31.112	31.112	31.112	31.112	It is unclear what specific effect the reduced authorization level would have on Infrastructure.
Mission Applications	38.998	38.390	38.390	38.390	38.390	It is unclear what specific effect the reduced authorization level would have on mission applications.
Increment 3	-	12.419	12.419	12.419	12.419	It is unclear what specific effect the reduced authorization level would have on Increment 3.
Total	**73.779**	**81.911**	**81.911**	**81.911**	**81.911**	**79.911**

Mission

The JMS Program is a Space Command and Control (C2) capability for the Commander, Joint Functional Component Command for Space (CDR JFCC SPACE). The JMS program is predominately a software effort that will produce an integrated, net-centric Service Oriented Architecture (SOA) and the necessary software applications to accomplish required missions. The program will provide a collaborative environment that will enhance and modernize space situational awareness (SSA) capabilities; create decision-relevant views of the space environment; rapidly detect, track and characterize objects of interest; identify/exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the space surveillance network (SSN).

President's FY 2016 Department of Defense Budget Request

Research, Development, Test & Evaluation (RDT&E):

- $31.112 million for JMS Infrastructure increment 2;
- $38.390 million for JMS Mission Applications increment 2;
- $12.419 million for newly-created Increment 3, which includes new start efforts to include pre-Milestone A requirements development, systems engineering and program planning

FY 2016 Congressional Action

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House passed FY 2016 NDAA would authorize to appropriate $91.911 million to fully fund JMS at the President's FY 2016 request.
- The committee report states its continued support for "the Air Force development of the Joint Space Operations Center Mission System (JMS) program" and describes it as a "critical program designed to deliver an integrated, net-centric space situational awareness and command and control capability."

- The committee report further acknowledges the “growing space threat environment” “encourages the Air Force to look for reasonable opportunities to accelerate the delivery of key capabilities, or increments, of the program.” In this regard, “the committee also recognizes and supports the Air Force’s efforts to leverage mature commercial software for JMS, in an effort to reduce costs, increase capability, and shorten schedule timelines.” For this reason, “the committee expects the Air Force to perform thorough market research and evaluation of mature commercial capabilities for the follow-on increment of the JMS program.”
- Finally, “the committee directs the Secretary of the Air Force to provide a briefing to the House Committee on Armed Services by December 1, 2015, on the status and potential to reasonably accelerate the current increment of the JMS program and the plan for future increments, including the status of market research to leverage commercially available capabilities.”

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The Senate Armed Services Committee FY 2016 NDAA would authorize to appropriate $91.911 million to fully fund JMS at the President’s FY 2016 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Appropriations bill would appropriate $91.911 million to fully fund JMS at the President’s FY 2016 request.

SAC passed FY 2016 Defense Approps (S. 1558)

- The Senate Appropriations Committee passed FY 2016 Defense Approps bill would appropriate $79.911 million to fund the JMS program. The $2 million reduction comes out of the JMS RDT&E. The committee report cites “restoring acquisition accountability: excessive cost growth” as the rationale.

Additional Space Programs

Procurement of Commercial Satellite Communications

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The committee report references section 2306c of title 10, United States Code as providing the "necessary authority to the Department of Defense to enter into contracts for periods of not more than 5 years for commercial satellite communications (SATCOM) services which support the broadly covered services identified in section 2306c."
- The committee supports "multiyear leasing of commercial SATCOM as a way to lower costs for the Department, provide greater assurance to meet stable warfighter requirements, and partner with industry providers" when "done appropriately."
- While "the committee recognizes that multiyear leasing is not the solution for all of the Department's commercial satellite communications requirements, but is one useful acquisition approach that Department officials should use. Analysis provided by the Department and industry has shown the potential for significant savings in longer term contracts. Specifically, one group of industry providers publicly stated that ''studies have shown that buying capacity on the spot-market with IDIQ [indefinite delivery/indefinite quantity] contracts costs the DOD [Department of Defense] up to 25 percent more than it would pay with a long-term contract for the same capacity.''
- Section 1609 "would modify the pilot program for acquisition of commercial satellite communications services that was established pursuant to section 1605" of the FY15 NDAA. This section "would require the Secretary of Defense to conduct the pilot program, while removing the requirement to use the working capital fund.
- The committee "is aware of the Secretary's commercial satellite communications ''pathfinder'' efforts, the term currently used by the Department, to more effectively and efficiently acquire commercial satellite communications services. The committee believes these pathfinder efforts meet the intent and direction of the pilot program. Therefore, the committee would authorize multiple methods or pathfinder efforts to be used within the pilot program."
- The committee report states that the Secretary of Defense "would have to establish metrics to track the progress of meeting the objectives of the program" and "would be required to provide annual briefings on the progress of the pilot program, concurrent with the submission of the budget request in each year from fiscal year 2017 through fiscal year 2020."
- The committee recommends $79.5 million (an increase of $26.0 million) to fund the pathfinder pilot program for acquisition of commercial satellite communication services , as authorized in section 1605 of FY15 NDAA.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- Section 1609 of the SASC-passed NDAA "would require the Department of Defense Executive Agent for Space to submit by January 31, 2016 a plan to the congressional defense committees for consolidating the acquisition of commercial satellite communications (COMSATCOM) services from across the Department of Defense into a program office in the Air Force Space and Missile Systems Center" and "would require consolidation to take place within a 3-year period."
- Additionally, it would "require an assessment of the current management and overhead costs, a projection of the consolidated management and overhead costs, and an estimate of the cost of consolidation" and "would require the Director of Cost Assessment and Program Evaluation to review and validate each of the estimates."
- In the committee report accompanying the FY14 NDAA "the committee required the Secretary of Defense to provide a report detailing a 5-, 10-, and 25-year strategy for using an appropriate mix of Department of Defense and COMSATCOM bandwidth. That plan was provided to the committee in August 2014. In the plan's discussion on demand predictions, it described the choices the Department

must weigh in determining the appropriate mix between military satellite communications (MILSATCOM) satellites and the purchase of affordable COMSATCOM services."

- The committee laments that "for years, the purchase of COMSATCOM services has been highly inefficient, and the committee believes that there are a number of approaches being considered to enhance efficiency, such as the establishment of a COMSATCOM working capital fund. The committee believes that if efficiencies can also be gained by consolidating the acquisition of all COMSATCOM service into a program office co-located with the MILSATCOM program office at the Air Force Space and Missile Systems Center, then such moves should be considered."

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The Committee in its report states its support for "efforts by the Air Force to use pathfinder demonstrations to investigate non-traditional approaches for acquiring commercial satellite communications [SATCOM] capabilities."
- The committee believes that "these efforts help the Air Force gain experience with different business models to enable innovative and affordable procurement of long-term commercial SATCOM and may obviate the need for future procurement of costly, military specific SATCOM satellites," and "encourages the Air Force to pursue additional pathfinder demonstrations to achieve savings and take advantage of improved technology and performance offered by commercial SATCOM providers."

Space Situational Awareness

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The committee "continues to support improvements to the space surveillance network (SSN) of the United States. Ground-based optical systems are a critical component of the SSN" and therefore "encourages the Secretary of the Air Force to incorporate emerging technologies in order to accelerate augmentation or replacement of the legacy ground-based optical systems in support of U.S. Strategic Command requirements."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The SASC-passed FY 2016 NDAA bill contains no relevant language.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The committee states that Space Situational Awareness (SSA) is critical and is "concerned about long-duration gaps in actionable satellite data during daytime hours. Therefore, the Committee encourages the Air Force to invest in ground-based optical/infrared capabilities to address daytime gaps in SSA."

Defense Meteorological Satellite Program

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The House-passed FY 2016 NDAA bill contains no specific language about DMSP; however, it does include Section 1610, which on a related note "would prohibit reliance on space-based weather data from the Government of the People's Republic of China or the Government of the Russian Federation, and would require the Secretary of Defense to certify that the Department of Defense does not rely on, or in the future does not plan to rely on, space-based weather data for national security purposes, that is provided by the Government of the People's Republic of China, the Government of the Russian Federation, or an entity owned or controlled by the Government of China or the Government of Russia."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- Section 1607 "recommends a provision prohibiting the use of funds authorized to be appropriated in fiscal year 2016 and any unobligated funds made available for appropriation in fiscal year 2015 for the

Defense Meteorological Satellite Program (DMSP) or the launch of Defense Meteorological Satellite Program satellite #20 (DMSP–20) until the Secretary of Defense and the Chairman of the Joint Chiefs of Staff jointly certify to the congressional defense committees that:

1. relying on civil and international contributions to meet space-based environmental monitoring requirements is insufficient or is a risk to national security and launching DMSP–20 will meet those requirements;
2. launching DMSP–20 is the most affordable solution to meeting requirements validated by the Joint Requirements Oversight Council; and
3. nonmaterial solutions within the Department of Defense, the National Oceanic and Atmospheric Administration (NOAA), or National Aeronautics and Space Administration (NASA) are incapable of providing a solution for cloud characterization and theater weather requirements as validated by the Joint Requirements Oversight Council."

- The committee states its understanding that "the Space Based Environmental Monitoring Analysis of Alternatives (AOA) assumed continued international support from a Geostationary European Weather Satellite over the Indian Ocean" and "concluded that DMSP–20 was not needed." After that finding was made however, "a decision was made by an international partner to no longer provide coverage over the Indian Ocean, leading to possibility of a weather gap as early as 2017. While the committee believes a solution should be identified to address that gap, the committee is not convinced that launching DMSP–20 is the most cost effective solution."
- Among other things, "the committee believes that better alternatives to meeting the potential space weather gap exist and should be explored prior to spending between $400.0 million and $500.0 million to launch DMSP–20 later this decade. For example, the committee understands that the potential gap could be mitigated by simply relocating an existing on-orbit NOAA asset with excess capacity or by hosting appropriate electro-optical infrared sensors on future Department of Defense or commercial satellites."
- For the evaluation of low cost/high value options, the committee mandates that "the Comptroller General of the United States (GAO) to assess whether alternatives for addressing the potential Indian Ocean weather gap exist, and if so, whether those options would be less costly than launching DMSP–20" and "directs GAO to report their findings in a briefing to the committee by no later than October 1, 2015." The GAO report should:
    1. " review any current or planned space systems of the Department of Defense (to include the National Reconnaissance Office), NASA, and NOAA; and
    2. assess specifically whether the relocation of NOAA Geostationary Operational Environmental Satellite (GOES), or the hosting of an appropriate electro-optical infrared sensor on an alternative Department of Defense or commercial satellite, could address any future gaps at a lower cost."

<u>House passed FY 2016 Defense Approps (H.R. 2685)</u>

- The committee report states that "the existing DMSP constellation is healthy" and remembers that "the Air Force stated last year that it prefers not to launch the last satellite before 2019, despite the fact that projected storage costs until 2019 are excessive."
- The report also notes that the explanatory statement accompanying the FY15 DoD Appropriations Act prohibited the Air Force from obligating more than $28 million of FY15 funds "until the Secretary of the Air Force certified that the satellite would be launched by the end of calendar year 2016 in order to reduce the excessive storage costs" and further stated "if the final DMSP satellite would not launch prior to the end of calendar year 2016, the program is expected to be brought to an orderly close during calendar year 2015."
- In fact, the committee report states, "the Secretary of the Air Force has made no such certification, but on March 25, 2015, requested relief from the direction in the explanatory statement."
- The committee feels that "the Air Force has not presented a compelling requirement to change the direction clearly outlined last year. The DMSP constellation remains in good health and the final satellite

is ill suited to meet other emerging weather requirements" and "denies the Secretary's request for relief from the direction in the explanatory statement accompanying the Department of Defense Appropriations Act, 2015," reduces the FY16 budget request by $89.351 million for integration and testing and $120 million for launch and rescinds $50 million from FY15 funds "to bring the DMSP acquisition program to an orderly close."

SAC passed FY 2016 Defense Approps (S. 1558)

- The committee "questions the Air Force's decision to incur these additional costs to launch a satellite with 1990s technology that the Air Force has previously stated no longer meets its requirements" and "believes that such funds would be better spent on developing new technologies and enhancing the capabilities of the next generation of weather satellites."
- Accordingly, the Committee "recommends no funding for the DMSP program in fiscal year 2016" and "recommends a rescission of the $50 million of fiscal year 2015 funds."
- The Committee "expects the Air Force to bring the program to an orderly close with the remaining fiscal year 2015 funds."

National Security Space Acquisition

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The committee report states that "he committee believes in the importance of well-developed acquisition strategies that are designed to manage risks, reduce costs, support the industrial base, and provide for technology insertion planning to meet warfighter and national security requirements" and "is aware of different acquisition planning, strategies, and approaches being taken throughout national security space programs."
- While the committee understands that "there is not one answer for every program, there are best practices and lessons learned that could be applied across the national security space enterprise." Accordingly, "the committee directs the Director, Cost Assessment and Program Evaluation (CAPE), in coordination with the Assistant Director of National Intelligence for Systems and Resource Analyses (SRA) regarding intelligence programs, to provide a briefing to the House Committee on Armed Services and the House Permanent Select Committee on Intelligence by February 1, 2016, on a review of the acquisition practices for national security space programs of the Department of Defense, including with respect to the National Reconnaissance Office, to include:
    1. An analysis of the costs, schedules, and performances of selected, recent, and relevant major current and previous contracts entered into for the acquisition of national security space programs;
    2. An analysis of acquisition practices to determine differences in practices and which practices have proven effective in meeting requirements and appropriately managing cost and schedule;
    3. An analysis of the technology insertion planning, achievements, and challenges for various programs and agencies;
    4. Any recommendations to improve the acquisition and/or cost estimation practices for national security space programs by the Department of Defense; and
    5. Any other related matters the Director, CAPE and the Assistant Director, SRA deem appropriate."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The SASC-passed FY 2016 NDAA bill contains no relevant language.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- In a related provision of the SAC-passed Defense Approps bill, "the fiscal year 2016 budget requests a new 5-year appropriation account to fund space procurement programs. The Committee supports the creation of a new appropriation account and believes that all space-related procurement line items should be included."

- Accordingly, “the Committee recommendation transfers space-related items requested in Other Procurement, Air Force to the new Space Procurement, Air Force account.”
- Importantly, “the Committee does not support the request for 5-year availability of funds and recommends retention of the standard 3-year time period for traditional procurement accounts.”

Responsive Launch

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The committee report points out that the FY14 NDAA “directed the Department of Defense Executive Agent (EA) for Space to conduct a study on responsive, low-cost launch efforts.” In a study that “required a review of the existing and past efforts, an identification of the requirements that would provide the necessary military utility, viability for greater utilization of innovative methods, a consolidated plan for a way ahead, among other areas of review.”
- However, “while the committee has received an interim briefing on this study, the final report is overdue. The committee appreciated the briefing, but is disappointed in what appears to be an overall lack of attention, unity of effort, and strategic approach in this area. In general, the committee supports responsive, low-cost launch efforts to rapidly reconstitute or replenish critical space capabilities, and believes that the Department needs to appropriately investigate and develop this area, including launch and the appropriate payloads.”
- The committee accordingly “encourages the EA for Space to work with the necessary stakeholders in the Department and apply the resources to finish the study and provide a consolidated plan for development within the Department of Defense of an operationally responsive, low-cost launch capability in accordance with warfighter requirements.”

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The SASC-passed FY 2016 NDAA bill contains no relevant language.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC-passed FY 2016 Defense Approps bill contains no relevant language.

Rocket Engine Development

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The house-passed FY 2016 NDAA provides $84.438 million to fully fund Next Generation Liquid Rocket Engine Development at the President’s FT16 request.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The SASC-passed FY 2016 NDAA provides $184.428 million for Rocket Propulsion System Development, $100 million above the President’s FY16 request.

House passed FY 2016 Defense Approps (H.R. 2685)

- The house-passed FY 2016 NDAA provides $84.438 million to fully fund Next Generation Liquid Rocket Engine Development at the President’s FT16 request.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC-passed defense approps bill provides $228.038 million for Rocket Propulsion System Development, $143.6 million above the President’s FY16 budget request.
- The Committee “continues to view the effort to develop and field an advanced U.S. rocket booster engine as a national security imperative and believes planned Air Force investments for fiscal year 2016 are insufficient to meet the need for a new engine in 2019.”
- Accordingly, “the committee recommends an additional $143.6 million for the Air Force to implement a full scale engine development program that meets Evolved Expendable Launch Vehicle program requirements for national security payload launches.”

- The committee report also states that "given the importance of this issue, the Air Force should move expeditiously to spend appropriated funding for this effort."

Integrated Policy to Deter Adversaries in Space

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The house-passed FY 2016 NDAA contains no relevant language.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- Section 1601 of the SASC-passed FY 2016 NDAA bill "would require the President to establish an interagency process to develop a policy to deter adversaries in space" which would be established with a dual-objective of:
    1. reducing risks to the United States and its allies in space; and
    2. protecting and preserving the rights, access, capabilities, use, and freedom of action of the United States in space and the right of the United States to respond to an attack in space and, if necessary, deny adversaries the use of space capabilities hostile to the national interests of the United States.
- Section 1601 also would require the President "to provide a report setting forth the deterrence policy and the answers to Enclosure 1, regarding offensive space control policy, of the classified annex to this Act, to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives within 180 days of the date of enactment."
- The act also provides consequences, stating that "if the report required and the answers to Enclosure 1 are not provided within 180 days of the date of enactment, the provision would prohibit, until provided, the obligation or expenditure of $10.0 million of the amounts authorized to be appropriated or otherwise made available to the Department of Defense for fiscal year 2016 to provide support services to the Executive Office of the President."
- The committee "is concerned that China and Russia have weaponized space and seek to gain an asymmetric advantage against the United States by holding United States space capabilities at risk" and feels that "a multifaceted strategy will be necessary and that the deterrence policy that would be required by this provision is a critical element of that strategy."

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC-passed FY 2016 Defense Approps bill contains no relevant language.

Principal Advisor on Space Control

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- The house-passed FY 2016 NDAA contains no relevant language.

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- Section 1602 of the SASC-passed FY 2016 NDAA bill requires the Secretary of Defense to "designate an individual who is already a full time equivalent of the Department of Defense to serve as the Principal Space Control Advisor, who shall act as the principal advisor to the Secretary on space control activities." Because "the committee believes that the space control mission will see significant growth in the coming years" and "because of the growing importance of space control capabilities, the establishment of a Principal Space Control Advisor would be necessary to coordinate and lead department-wide efforts, streamline decision making, and enhance the level of focus across the department and interagency."

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC-passed FY 2016 Defense Approps bill contains no relevant language.

Major Force Program

House passed FY 2016 National Defense Authorization Act (H.R. 1735)

- Section 1601 would "establish a unified major force program for national security space programs to prioritize national security space activities in accordance with the requirements of the Department of Defense and national security."
- Additionally, "this section would also include an assessment of the budget for national security space programs for fiscal years 2017–20. This assessment, in report form from the Secretary of Defense, would provide an overview of the budget including a comparison between the current budget and the previous year's budget, as well as the current Future Years Defense Program and the previous one with specific budget line identification."
- "Any significant changes, priorities, challenges and risks related to the budget" would also be included in the assessment, and the Secretary would "include any additional matters that the Secretary deems appropriate."
- Section 1601 also directs the Secretary of Defense, "to provide to the congressional defense committees a report not later than 180 days after the date of the enactment of this Act, on the plan to carry out the unified major force program, including any recommendations for legislative action the Secretary considers necessary to fully implement the plan."

Senate Armed Services passed FY 2016 National Defense Authorization Act (S. 1376)

- The SASC-passed FY 2016 NDAA bill contains no relevant language.

House passed FY 2016 Defense Approps (H.R. 2685)

- The House passed FY 2016 Defense Approps bill contains no relevant language.

SAC passed FY 2016 Defense Approps (S. 1558)

- The SAC-passed FY 2016 Defense Approps bill contains no relevant language.

Appendix: Summary of Unclassified Space-related Programs requested in FY 2016 budget**

Budget Authority, $ in million	FY 2015 Consolidated Appropriations Act (Enacted) (P.L. 112-235)	President's FY 2016 DoD Budget Request	House Passed FY 2016 NDAA (H.R. 1735)	SASC Passed FY 2016 NDAA (S. 1376)	House Passed FY 2016 Defense Approps (H.R. 2685)	SAC Passed FY 2016 Defense Approps (S. 1558)
PROCUREMENT						
ARMY, Aircraft Procurement						
Communications, Navigation, and Surveillance	115.795	82.904	82.904	82.904	82.904	82.904
GATM Rotary Wing Aircraft (enhanced GPS capability)	18.209	12.612	12.612	12.612	12.612	12.612
MQ-1 UAV, SATCOM Airborne Data Terminal (SADT) (and number)	36.059 (19)	28.533 (15)	28.533 (15)	28.533 (15)	28.533 (15) †	28.533 (15) ‡
ARMY, Other Procurement						
Defense Enterprise Wideband SATCOM Systems (DEWSS)	118.085	196.306	196.306	196.306	155.000§	196.306
Transportable Tactical Command Communications	13.999	44.998	34.998	29.998	4.998	44.998
Super High Frequency Terminal (SHF Term)	6.494	7.629	7.629	7.629	7.629	7.629
Navstar Global Positioning System	1.635	14.027	14.027	14.027	14.027**	14.027
Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)	11.454	13.453	13.453	13.453	13.453	13.453
Global Broadcast Service (GBS)	18.899	6.265	6.265	6.265	6.265	6.265
Mod of In-Svc Equipment (TAC SAT)	2.849	1.042	1.042	1.042	1.042	1.042
Global Positioning System-Survey (GPS-S)	5.437	4.242	4.242	4.242	4.242	4.242
Joint Tactical Radio System	40.711	64.640	54.640	64.640	64.640	32.320
Joint Tactical Ground Station (JTAGS)	5.286	3.906	3.906	3.906	3.906	3.906
NAVY, Aircraft Procurement						
Common Avionics Changes, Global Positioning System (GPS)						

† The house-passed Defense Approps bill moves MQ-1 UAV funds to Title IX, the Global War on Terror (GWOT) account.
‡ The President requested $260.436 million for 15 MQ-1 UAVs in FY 2016. The SAC-passed Defense Approps bill would appropriate $199.636 million for 15 units. It is unclear what effect, if any, the $60.8 million decrease would have on SATCOM Airborne Data Terminal (SADT).
§ The house-passed Defense Approps bill includes a $25.000 reduction to "level the rate of production" and transfers $20.000 to Title IX, the Global War on Terror (GWOT) account
** The house-passed Defense Approps bill moves $6.000 of the Navstar GPS program to Title IX, the Global War on Terror (GWOT) account

	3.060	7.849	7.849	7.849	6.699	7.849
NAVY, Weapons Procurement						
Fleet Satellite Communications Follow-on	206.700	39.932	39.932	39.932	34.232	39.932
NAVY, Other Procurement						
Maritime Integrated Broadcast System, Joint Tactical Terminal – Maritime (JTT-M)	3.447	-	-	-	-	-
Shipboard Tactical Comms	14.410	8.722	8.722	8.722	8.722	8.722
Submarine Communication Equipment, Submarine High Data Rate Antenna	3.282	6.071	6.071	6.071	6.071	6.071
Satellite Communications Systems	11.453	30.892	30.892	30.892	30.892	30.892
Navy Multiband Terminal (NMT)	247.817	118.113	118.113	118.113	118.113	118.113
Navstar GPS Receivers (SPACE)	15.232	12.359	12.359	12.359	12.359	12.359
Marines CORPS, Procurement						
Intelligence Support Equipment, Commercial Satellite Communication Set	39.790	29.936	29.936	29.936	28.511	29.936
Radio Systems	64.494	80.584	80.584	80.584	69.691	80.584
AIR FORCE, Aircraft Procurement						
Initial Spares/Repairs Parts, MILSATCOM Terminals	5.540	-	-	-	-	-
B-2A, EHF SATCOM and Computers	6.189	-	-	-	-	-
C-32A, Wideband SATCOM	4.000	35.634	35.634	35.634	35.634	35.634
C-37A, Wideband SATCOM	18.000	10.000	0.000	10.000	10.000	10.000
KC-10 Mods, UHF SATCOM Antenna	0.189	-	-	-	-	-
C-40, Wideband SATCOM	4.000	9.900	9.900	9.900	9.900	9.900
E-4, AEHF Compatible Terminal/PNVC	2.400	3.965	3.965	3.965	0.000	3.965
Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)	27.026	44.163	44.163	44.163	44.163	44.163
Other Aircraft, EHF SATCOM	21.784	0.001	0.001	0.001	0.001	0.001
AIR FORCE, Space Procurement						
Advanced EHF	298.890	333.366	333.366	333.366	327.366	333.366
Wideband Gapfiller Satellites	36.071	53.476	79.476	53.476	74.476	33.476
GPS III Space Segment	228.797	199.218	199.218	0.000	199.218	199.218
Spaceborne Equipment (COMSEC)	13.401	18.362	18.362	18.362	18.362	18.362
Global Positioning System (SPACE)	50.000	66.135	66.135	66.135	66.135	66.135
Defense Meteorological Satellite Program	78.000	89.351	89.351	0.000	0.000	0.000

Evolved Expendable Launch Vehicle Capability	668.143	571.276	571.276	571.276	571.276	571.276
Evolved Expendable Launch Vehicle (# of launch vehicles)	733.603 (4)	800.201 (5)	800.201 (5)	800.201 (5)	680.201 (4)	800.201 (5)
Space Based Infrared System High (SBIR High)	444.884	452.676	452.676	452.676	452.676[††]	452.676[‡‡]
AIR FORCE, Other Procurement						
Air & Space Operations Center	25.772	12.043	12.043	12.043	12.043	10.043
Family of Beyond-Line-of-Sight Terminals	57.230	79.592	79.592	79.592	52.192	52.192[§§]
Space Based IR Sensor Program	26.100	90.190	90.190	90.190	0.000	90.190[***]
Navstar GPS Space	2.075	2.029	2.029	2.029	2.029	2.029[†††]
NUDET Detection System Space	4.656	5.095	5.095	5.095	5.095	5.095[‡‡‡]
Air Force Satellite Control Network	54.630	76.673	76.673	76.673	74.673	76.673[§§§]
Spacelift Range System Space	62.713	113.275	113.275	113.275	105.775	93.275[****]
MILSATCOM Space	41.355	35.495	35.495	35.495	30.495	35.495[††††]
Space MODS Space	31.722	23.435	23.435	23.435	23.435	23.435[‡‡‡‡]
Counterspace System	59.603	43.065	43.065	43.065	40.665	43.065[§§§§]
Defense Space Reconnaissance Program	77.898	100.663	100.663	100.663	100.663	100.663
Spares and Repair Parts, Spacelift Range System	3.136	-	-	-	-	-
Spares and Repair Parts, NAVSTAR Global Positioning System	0.309	0.533	0.533	0.533	0.533	0.533
Spares and Repair Parts, MILSATCOM Terminals	12.267	0.054	0.054	0.054	0.054	0.054
DEFENSE-WIDE, Procurement						
Teleport Program, Base	80.622	62.789	62.789	62.789	62.789	62.789
Item Less Than $5 Million, Transport	5.000	5.000	5.000	5.000	5.000	5.000
DISA, EPC/SECN	1.624	1.624	1.624	1.624	1.624	1.624
USSOCOM, Procurement						
Warrior Systems, Communications Equipment and Electronic SOF Deployable Node (SDN)	69.950	56.363	56.363	56.363	56.363	56.363
RESEARCH, DEVELOPMENT, TEST, AND EVALUATION						

[††] The house-passed Defense Approps bill moves SBIRS funds to Title IX, the Global War on Terror (GWOT) account.
[‡‡] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[§§] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[***] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[†††] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[‡‡‡] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[§§§] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[****] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[††††] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[‡‡‡‡] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.
[§§§§] The SAC-passed Defense Approps bill moves funds from this program to the newly-created Air Force Space Procurement account.

ARMY, Applied Research						
Sensors and Electronic Survivability, Tactical Space Research	4.778[*****]	5.808	5.808	5.808	5.808	5.808[†††††]
Electronics and Electronic Devices, Millimeter Wave Components and Architectures for Advanced Electronic Systems	5.357[‡‡‡‡‡]	5.267	5.267	5.267	5.267	5.267[§§§§§]
Command, Control, Communications Technology, Communication Technology, Antenna and Hardware Technologies (formerly named Antenna Technologies)	3.948	2.787	2.787	2.787	2.787	2.787
Command, Control, Communications Technology, Command, Control and Platform Electronics Tech, Battle Space Awareness and Positioning	4.794	3.870	3.870	3.870	3.870	3.870
Military Engineering Technology, Topographical, Image Intel & Space	15.478	16.116	16.116	16.116	16.116	16.116[******]
ARMY, Advanced Technology Development						
Command, Control, Communications Advanced Technology, Space Application Advanced Technology	6.883	5.554	5.554	5.554	5.554	5.554
Electronic Warfare Advanced Technology, TR1: TAC C4 Technology Int, Communication Networking Technologies Brendan Curry (formerly Wireless Mobile Networking)	29.802	-	-	-	-	-
ARMY, Advanced Component Development & Prototypes						
Army Missile Defense Systems Integration, TR5: Missile Defense Battlelab, Analysis,	12.797	10.347	10.347	10.347	15.347	24.347

[*****] The President requested $33.515 million for Sensors and Electronic Survivability in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional $7.750 million for "cyberspace security training" and an additional $5 million for "force protection radar development." It is unclear what effect, if any, the additional appropriation would have on Tactical Space Research.

[†††††] The President requested $38.374 million for Sensors and Electronic Survivability in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $15 million. It is unclear what effect, if any, the additional appropriation would have on Tactical Space Research.

[‡‡‡‡‡] The President requested $56.435 million for Electronics and Electronics Devices in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional $12 million for "silicon carbide research" and an additional $5 million as a "program increase." It is unclear what effect, if any, the additional appropriation would have on Millimeter Wave Components and Architectures for Advanced Electronic Systems.

[§§§§§] The President requested $55.301 million for Electronics and Electronics Devices in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $9 million. It is unclear what effect, if any, the additional appropriation would have on Millimeter Wave Components and Architectures for Advanced Electronic Systems.

[******] The President requested $451.606 million for Defense Research Sciences (Navy) in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $55 million. It is unclear what effect, if any, the additional appropriation would have on Atmosphere and Space Sciences.

and Models and Simulations						
Army Space Systems Integration	13.999	25.061	25.061	25.061	25.061	25.061
ARMY, System Development & Demonstration						
TROJAN-RH12-MIP, Development of SATCOM dishes and receivers	0.983	5.022	5.022	5.022	5.022	5.022
Joint Tactical Radio	9.832	9.861	9.861	9.861	9.861	4.546
Brigade Analysis, Integration and Evaluation, DY3: NIE Test & Evaluation, Non ATEC Support Cost	24.785	12.215	12.215	12.215	12.215	12.215
Joint Tactical Network Center (JTNC), MUOS Waveform	8.440	13.357	13.357	13.357	13.357	13.357
Joint Tactical Network (JTN)	17.999	18.055	18.055	18.055	18.055	18.055
ARMY, Management Support						
Army Kwajalein Atoll	176.041	205.145	205.145	205.145	205.145	205.145
ARMY, Operational Systems Development						
Joint Tactical Ground System	10.209	20.515	20.515	20.515	20.515	20.515
SATCOM Ground Environment	11.011	9.355	9.355	9.355	9.355	9.355
NAVY, Basic Research						
Defense Research Sciences, Atmosphere and Space Sciences	25.053[††††††]	24.867	24.867	24.867	24.867	24.867[‡‡‡‡‡‡]
NAVY, Applied Research						
Common Picture Applied Research, Tactical Space Exploitation	6.265	5.782	5.782	5.782	5.782	5.782
Electromagnetic Systems Applied Research, Navigation Technology	5.014	4.451	4.451	4.451	4.451	4.451
NAVY, Advanced Technology Development						
Electromagnetic Systems Applied Technology, Global Positioning System (GPS) & Navigation Technology	64.623	34.899	34.899	34.899	34.899	34.899
NAVY, Advanced Component Development & Prototypes						
Air/Ocean Tactical Applications, METOC Data Assimilation and Mod, Meteorological and Oceanic Space-Based Sensing Capabilities	0.642	2.278	2.278	2.278	2.278	2.278
Air/Ocean Tactical Applications, Precise Time and Astronomy	8.954	4.977	4.977	4.977	4.977	4.977

[††††††] The President requested $443.697 million for Navy Defense Research Sciences in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional $53.448 million. It is unclear what effect, if any, the additional appropriation would have on Atmosphere and Space Sciences.
[‡‡‡‡‡‡] The President requested $63.409 million Military Engineering Technology in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $10 million. It is unclear what effect, if any, the additional appropriation would have on Topographical, Image Intel & Space.

Space and Electronic Warfare (SEW) Architecture/Engineering Support	18.798	29.581	29.581	29.581	24.581	25.246
NAVY, System Development & Demonstration						
Air/Ocean Equipment Engineering, Fleet METOC Equipment, Environmental Satellite Receiver Processor (ESRP)	0.240	0.290	0.290	0.290	0.290	0.290
Navigation/Id System, NAVSTAR GPS Equipment	18.011	17.159	17.159	17.159	17.159	17.159
NAVY, Management Support						
Navy Space & Electronic Warfare (SEW) Support, Base	2.505	5.316	5.316	5.316	5.316	5.316
Space & Electronic Warfare Surveillance/Reconnaissance Support, TAC SAT Recon Office	8.325	6.519	6.519	6.519	6.519	6.519
NAVY, Operational Systems Development						
Marine Corps Communications System, Joint Tactical Radio System	4.036§§§§§§	3.384	3.384	3.384	2.033	3.384
Satellite Communications	41.829	53.239	53.239	53.239	53.239	47.439
Navy Meteorological & Ocean Sensors-Space (METOC)	0.359	0.599	0.599	0.599	0.599	0.599
AIR FORCE, Basic Research						
Defense Research Sciences, Physics and Electronics	18.492	19.321	19.321	19.321*******	19.321	19.321†††††††
Defense Research Sciences, Aerospace, Chemical and Material Sciences	35.935	37.916	37.916	37.916‡‡‡‡‡‡‡	37.916	37.916§§§§§§§
AIR FORCE, Applied Research						
Aerospace Propulsion, Advanced Propulsion Technology	17.646	19.670	19.670********	19.670	19.670	19.670 †††††††††
Aerospace Propulsion, Rocket Propulsion Technology	51.287	54.232	54.232‡‡‡‡‡‡‡‡	54.232	54.232	54.232 §§§§§§§§

§§§§§§ The President requested $77.398 million for Marine Corps Communications Systems in FY 2015. The Defense Appropriations Bill in the omnibus appropriates $74.258 million. It is unclear what effect, if any, the $3.14 million reduction would have on the Joint Tactical Radio System.

******* The President requested $329.721 million for Defense Research Sciences in FY 2016. The House-passed version of the NDAA authorizes $374.721 million. It is unclear exactly what effect the $45,000 Defense Research Sciences increase would have on Physics and Electronics.

††††††† The President requested $329.721 million for Defense Research Sciences in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $55 million. It is unclear what effect, if any, the additional appropriation would have on Physics and Electronics.

‡‡‡‡‡‡‡ The President requested $329.721 million for Defense Research Sciences in FY 2016. The House-passed version of the NDAA authorizes $374.721 million. It is unclear exactly what effect the $45,000 Defense Research Sciences increase would have on Aerospace, Chemical and Material Sciences.

§§§§§§§ The President requested $329.721 million for Defense Research Sciences in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $55 million. It is unclear what effect, if any, the additional appropriation would have on Aerospace, Chemical and Material Sciences.

******** The President requested $182.326 million for Aerospace Propulsion in FY 2016. The House-passed version of the NDAA authorizes $177.326 million. It is unclear exactly what effect the $5,000 Aerospace Propulsion program decrease would have on Advanced Propulsion Technology.

††††††††† The President requested $182.326 million for Aerospace Propulsion in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $5 million. It is unclear what effect, if any, the additional appropriation would have on Advanced Propulsion Technology.

‡‡‡‡‡‡‡‡ The President requested $182.326 million for Aerospace Propulsion in FY 2016. The House-passed version of the NDAA authorizes $177.326 million. It is unclear exactly what effect the $5,000 Aerospace Propulsion program decrease would have on Rocket Propulsion Technology.

Aerospace Sensors, EO Component Technology, Antennas	4.763	5.417	5.417	5.417	5.417*********	5.417
Aerospace Sensors, EO Sensors & Countermeasures Tech, Trusted Systems for ISR and Avionics Systems	5.250	6.190	6.190	6.190	6.190††††††††††	6.190
Aerospace Sensors, RF Sensors & Countermeasures Tech, Hybrid Sensor Technologies	7.939	12.082	12.082	12.082	12.082 ‡‡‡‡‡‡‡‡‡	12.082
Space Technology	98.229	116.122	116.122	116.122	109.122	116.122
Directed Energy Technology, Lasers & Imaging Technology, Optical Space Situational Awareness and Satellite Vulnerability	25.127	24.400	24.400	24.400	24.400	24.400
AIR FORCE, Advanced Technology Development						
Advanced Aerospace Sensors, Advanced Aerospace Sensors Technology, Integrated Navigation Technologies	4.910	4.484	4.484	4.484	4.484	4.484
Aerospace Propulsion & Power Technology, Space & Missile Rocket Propulsion	26.552 §§§§§§§§§	31.280	31.280	31.280	31.280	31.280**********
Advanced Spacecraft Technology	69.026	54.897	54.897	54.897	54.897	64.867
Maui Space Surveillance System (MSSS)	14.031	12.853	12.853	12.853	12.853	12.853
AIR FORCE, Advanced Component Development & Prototypes						
NAVSTAR Global Positioning System (User Equipment)	156.659	142.288	142.288	142.288	142.288	142.288
Space Control Technology	6.075	4.070	4.070	4.070	4.070	4.070
Space Security & Defense Program	31.613	30.771	30.771	30.771	30.771	30.771
Weather System Follow-on	39.901	76.108	56.108	76.108	56.108	21.108
Operationally Responsive Space	20.000	6.457	20.457	13.500	6.457	19.957
AIR FORCE, System						

§§§§§§§§ The President requested $182.326 million for Aerospace Propulsion in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $5 million. It is unclear what effect, if any, the additional appropriation would have on Rocket Propulsion Technology.

********* The President requested $147.291 million for Aerospace Sensors in FY 2016. The House-passed Defense Approps bill would appropriate $152.291 million. It is unclear exactly what effect the $5 million Aerospace Sensors increase would have on EO Component Technology, Antennas.

†††††††††† The President requested $147.291 million for Aerospace Sensors in FY 2016. The House-passed Defense Approps bill would appropriate $152.291 million. It is unclear exactly what effect the $5 million Aerospace Sensors increase would have on EO Sensors & Countermeasures Tech, Trusted Systems for ISR and Avionics Systems.

‡‡‡‡‡‡‡‡‡ The President requested $147.291 million for Aerospace Sensors in FY 2016. The House-passed Defense Approps bill would appropriate $152.291 million. It is unclear exactly what effect the $5 million Aerospace Sensors increase would have on RF Sensors & Countermeasures Tech, Hybrid Sensor Technologies.

§§§§§§§§§ The President requested $124.236 million for Aerospace Propulsion & Power Technology in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional $8.5 million for "silicon carbine research." It is unclear what effect, if any, the additional appropriation would have on Space & Missile Rocket Propulsion.

********** The President requested $168.861 million for Aerospace Propulsion and Power Technology in FY 2016. The SAC-passed Defense Approps bill would appropriate an additional $10 million. It is unclear what effect, if any, the additional appropriation would have on Space & Missile Rocket Propulsion.

Development & Demonstration						
Counterspace Systems	23.476	24.208	24.208	24.208	24.208	24.208
Space Situation Awareness Systems	9.462	32.374	32.374	32.374	29.374	32.374
Space Fence	200.131	243.909	243.909	243.909	238.909	243.909
Spaced Based Infrared Systems High (SBIRS High EMD)	309.501	292.235	302.235	292.235	241.235 ††††††††††	292.235
Next Generation Liquid Rocket Engine Development	220.000	84.438	184.438	84.438	84.438	228.038
Advanced EHF MILSATCOM	308.578	228.230	228.230	228.230	88.230	253.230
Polar MILSATCOM	103.552	72.084	72.084	72.084	72.084	72.084
Wideband Global SATCOM	31.425	56.343	52.343	56.343	52.343	56.343
Air & Space Ops Center	85.938	47.629	47.629	47.629	47.629	47.629
AIR FORCE, Management Support						
Rocket Systems Launch Program	34.364	21.858	21.858	21.858	21.858	21.858
Space Test Program	21.161	28.228	28.228	28.228	28.228	28.228
Space Test and Training Range Development	19.512	18.997	18.997	18.997	18.997	18.997
Space and Missile Center (SMC) Civilian Workforce	176.727	185.305	185.305	185.305	176.727	180.305
AIR FORCE, Operational Systems Development						
Service Support to STRATCOM-Space Activities, Joint NavWar Center	3.134	2.527	2.527	2.527	2.527	2.527
Air & Space Operations Center	26.666	21.193	21.193	21.193	21.193	21.193
Space Superiority Intelligence	12.218	13.815	13.815	13.815	10.815	13.815
Information Systems Security Program, Cryptographic Modernization, Space Telemetry Tracking & Commanding (TT&C)	8.156	5.321	5.321	5.321	5.321	5.321
Information Systems Security Program, Cryptographic Modernization, Space Modular Common Crypto (SMCC)	28.107	5.328	5.328	5.328	5.328	5.328
MILSATCOM Terminals	55.208	-	-	-	-	-
Satellite Control Network	20.806	7.879	5.879	7.879	7.879	7.879
Space & Missile Test & Evaluation Center	3.674	3.162	3.162	3.162	3.162	3.162
Space Warfare Center (Space Innovation, Integration and Rapid Technology Development)						

†††††††††† The house-passed Defense Approps bill moves SBIRS High EMD funds to Title IX, the Global War on Terror (GWOT) account.

	2.071	1.543	1.543	1.543	1.543	1.543
Spacelift Range System (SPACE)	13.462	6.902	6.902	6.902	6.902	6.902
GPS III Space Segment	212.571	180.902	180.902	180.902	180.902	180.902
JSPOC Mission System	73.779	81.911	81.911	81.911	81.911	79.911
NUDET Detection System (SPACE)	20.468	14.447	14.447	14.447	14.447	14.447
Space Situation Awareness Operations	11.596	20.077	20.077	20.077	20.077	20.077
Global Positioning System III-Operational Control Segment	299.760	350.232	350.232	350.232	350.232	350.232
DARPA, Applied Research						
DARPA, Tactical Technology, International Space Station SPHERES Integrated Research Experiments	3.200	-	-	-	-	-
DARPA, Advanced Technology Development						
DARPA, Space Programs & Technology	179.883	126.692	126.692	126.692	126.692	126.692
MDA, Advanced Component Development & Prototypes						
Space Tracking & Surveillance System	31.346	31.632	31.632	31.632	27.605	31.632
Ballistic Missile Defense System Space Programs	6.389	23.289	23.289	23.289	11.217	23.289
DISA, Operations Systems Development						
Long-Haul Communications, Presidential and National Voice Conferencing, National Emergency Action Decision Network	5.866	22.630	22.630	22.630	22.630	22.630
Teleport	2.697	1.736	1.736	1.736	1.736	1.736
OPERATION & MAINTENANCE						
Army Space Activities, Operation & Maintenance						
Servicewide Communications, Air Defense Contracts and Space Support	0.827	0.840	0.840	0.840	0.840	0.840
NAVY, Operating Forces						
Space Systems & Surveillance	207.038	192.198	192.198	192.198	192.198	192.198
NAVY, Administration & Servicewide Activities						
Space and Electronic Warfare Systems	73.159	72.768	72.768	72.768	72.768	72.768
AIR FORCE, Operating Forces						
Launch Operations/Facilities	282.710	271.177	271.177	271.177	271.177	271.177
Space Control Systems	397.818	382.824	382.824	382.824	382.824	382.824
Defense-Wide, Defense Information Systems Agency (DISA)						
Standardized Tactical Entry	1.108	1.064	1.064	1.064	1.064	1.064

Point (STEP)						
DoD Teleport Program	14.097	19.628	19.628	19.628	19.628	19.628
Defense Information Systems Network (DISN) Enterprise Activities (EA)	110.812	19.337	19.337	19.337	19.337	19.337
DEFENSE WORKING CAPITAL FUND						
Defense-Wide Working Capital Fund (DWWCF) Capital Fund						
Commercial Satellite Services	522.6	535.0	535.0	535.0	535.0	535.0
Enhanced Mobile Satellite Services (Iridium)	120.8	138.1	138.1	138.1	138.1	138.1
Overseas Contingency Operations						
AIR FORCE, Other Procurement						
Space Programs, MILSATCOM Space	19.547	35.495	35.495	35.495	35.495 ‡‡‡‡‡‡‡‡‡‡	35.495
Special Support Projects, Defense Space Reconnaissance Program	6.100	28.070	28.070	28.070	28.070	28.070
AIR FORCE, Operations and Maintenance						
Operating Forces, Space Control Systems	4.942	5.008	5.008	5.008	5.008	5.008
Operating Forces, Launch Facilities	0.852	0.869	0.869	0.869	0.869	0.869
DISA, Major Equipment, Procurement						
Teleport	4.330	1.940	1.940	1.940	1.940	1.940

About the Space Foundation

Founded in 1983, the Space Foundation is the foremost advocate for all sectors of space, and is a global, nonprofit leader in space awareness activities, educational programs and major industry events, including the annual Space Symposium, in support of its mission "to advance space-related endeavors to inspire, enable and propel humanity." Space Foundation World Headquarters in Colorado Springs, Colo., USA, has a public Discovery Center, including El Pomar Space Gallery, Northrop Grumman Science Center featuring Science On a Sphere® and the Lockheed Martin Space Education Center. The Space Foundation has a field office in Houston and conducts government affairs from its Washington, D.C., office. It annually publishes *The Space Report: The Authoritative Guide to Global Space Activity*, and through its Space Certification™ and Space Technology Hall of Fame® programs, recognizes space-based innovations that have been adapted to improve life on Earth. Visit www.SpaceFoundation.org, follow us on Facebook, Instagram,LinkedIn, Pinterest, Twitter and YouTube, and read our e-newsletter *Space Watch*.

Space Foundation research products can be found at www.SpaceFoundation.org/research

‡‡‡‡‡‡‡‡‡‡ The original budget request included $3,859.964 million for Air Force Other Procurement as part of OCO in FY 2016. The House-passed Defense Approps bill would appropriate an additional $2,994.701 million. It is unclear what effect, if any, the additional appropriation would have on MILSATCOM Space.