OFFICE OF THE UNDER SECRETARY OF DEFENSE (COMPTROLLER)/CHIEF FINANCIAL OFFICER

MAY 2021

Program Acquisition Cost By Weapon System

UNITED STATES DEPARTMENT OF DEFENSE FISCAL YEAR 2022 BUDGET REQUEST

The estimated cost of this report or study for the Department of Defense is approximately $26,000 for the 2021 Fiscal Year. This includes $8,890 in expenses and $17,000 in DoD labor.

Generated on 2021May19 RefID: B-6DF03B0

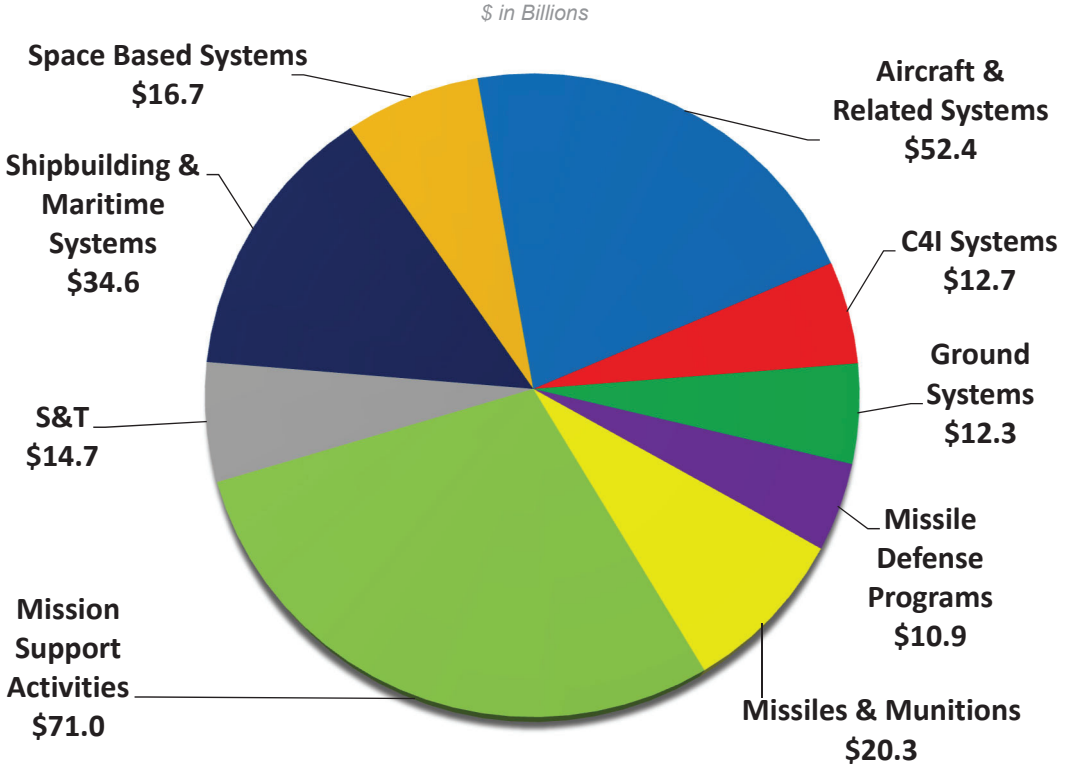
Major Weapon Systems

Overview

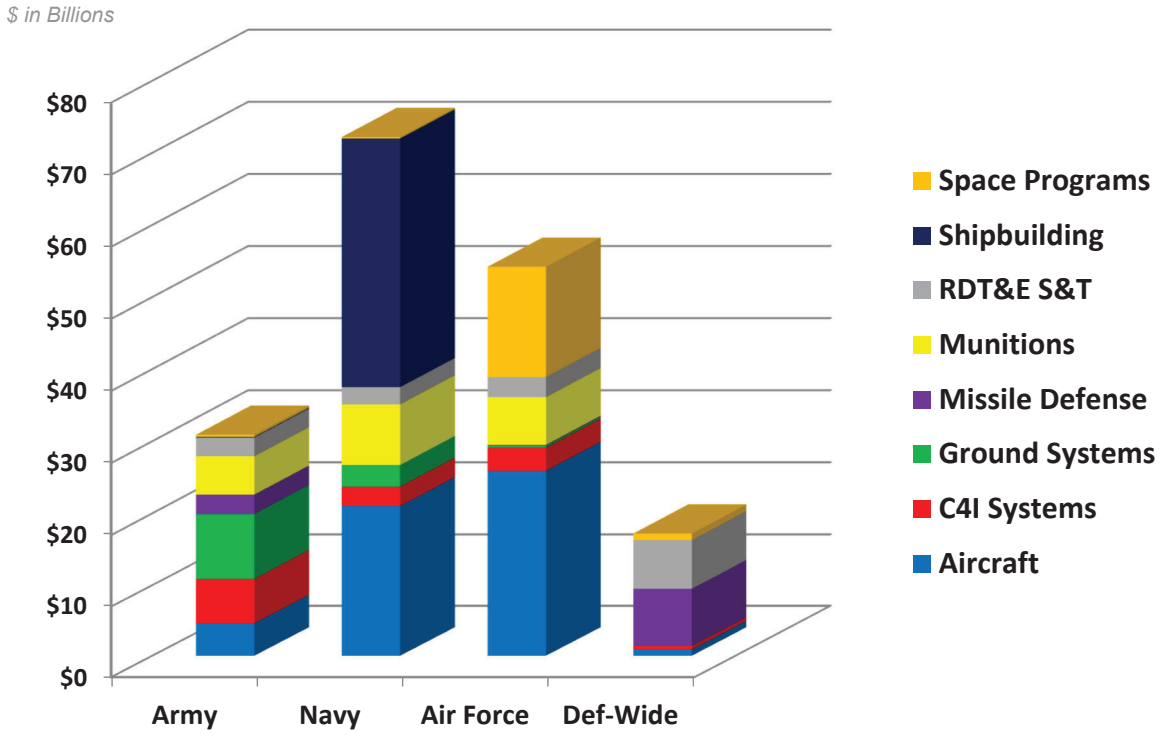
The performance of United States (U.S.) weapon systems are unmatched, ensuring that U.S. military forces have a tactical combat advantage over any adversary in any environmental situation. The Fiscal Year (FY) 2022 acquisition (Procurement and Research, Development, Test, and Evaluation (RDT&E)) funding requested by the Department of Defense (DoD) totals $245.6 billion, which includes funding totaling $133.6 billion for Procurement and $112.0 billion for RDT&E. The funding in the budget request represents a balanced portfolio approach to implement the Interim National Security Strategic Guidance. Of the $245.6 billion in the request, $73.3 billion finances Major Defense Acquisition Programs (MDAPs), which are acquisition programs that exceed a cost threshold established by the Under Secretary of Defense for Acquisition and Sustainment. To simplify the display of the various weapon systems, this book is organized by the following mission area categories:

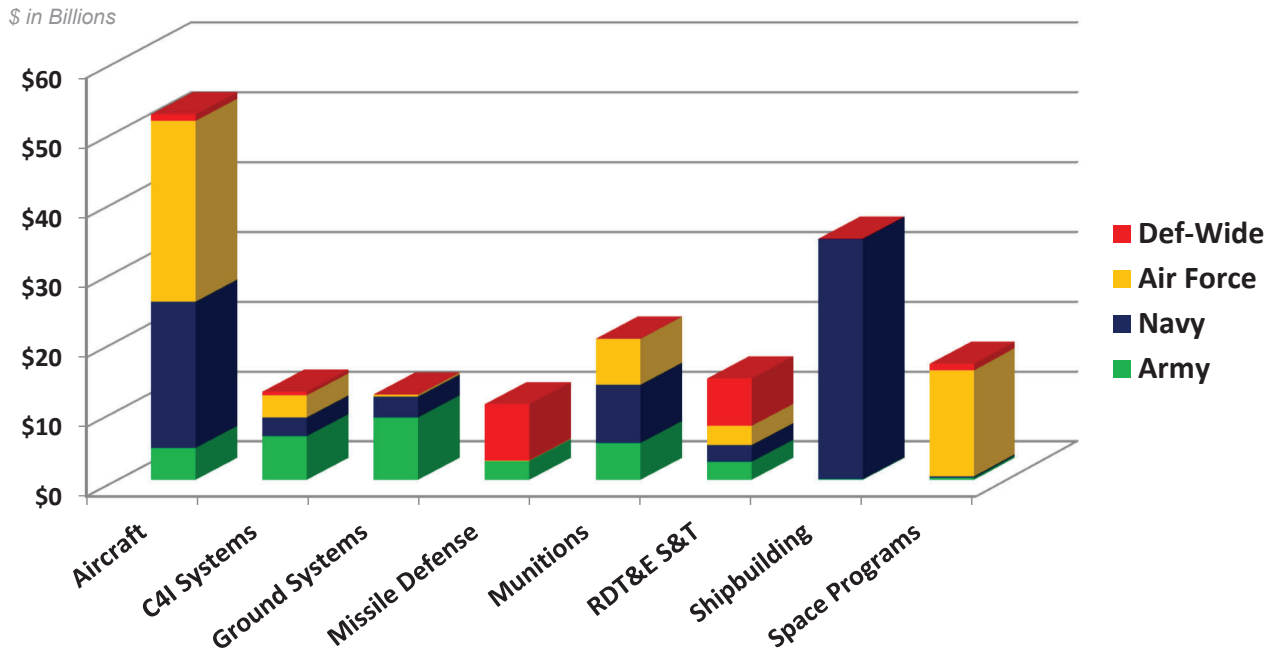
- Aircraft and Related Systems
- Command, Control, Communications, Computers, and Intelligence (C4I) Systems
- Ground Systems
- Missile Defeat and Defense Programs
- Missiles and Munitions
- Shipbuilding and Maritime Systems
- Space Based Systems
- Science and Technology
- Mission Support Activities

FY 2022 Investment Total: $245.6 Billion



The Distribution of Funding in FY 2022 for Procurement and RDT&E by Component and Category*

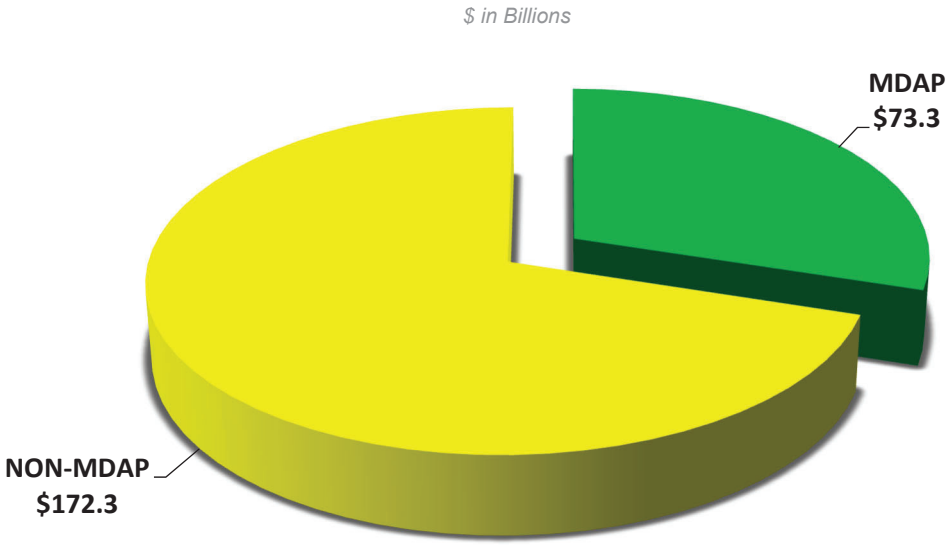




** Funding in Mission Support activities are not represented in the above displays.*

Numbers may not add due to rounding

Total Requested Procurement and RDT&E Funding During FY 2022, for MDAP* and Non-MDAP Programs



The FY 2022 President's Budget request for modernization in the RDT&E and Procurement titles is comprised of 3,960 Program, Project, and Activity (PPA) line items. Within these lines, there are 85 Major Defense Acquisition Programs (MDAPs), of which 82 are under the Military Departments – 15 with the Army, 39 with the Navy, and 28 with the Air Force. The remaining 3 (F-35, Missile Defense, Chemical Demilitarization - Assembled Chemical Weapons Alternatives (ACWA)) programs are Joint or under the Office of the Secretary of Defense.

Not all MDAPs (Acquisition Category (ACAT) I) are represented in this book because they fall below reporting criteria.

While non-MDAP individual programs are smaller in dollar value when compared to MDAPs, these ACAT II and ACAT III programs account for 70 percent of the total Investment accounts and are essential to development of future technologies and procuring a wide assortment of equipment, munitions, vehicles, and weapons needed by combat forces. The MDAPs consume approximately $73.3 billion, or 30 percent, of the FY 2022 modernization funding ($245.6 billion).

** A MDAP is an acquisition program that is designated by the Under Secretary of Defense for Acquisition and Sustainment (USD (A&S)); or is estimated to require an eventual total expenditure for Research, Development, Test, and Evaluation (RDT&E), including all planned increments, of more than $480 million in Fiscal Year (FY) 2014 constant dollars or, for Procurement, including all planned increments, of more than $2.79 billion in FY 2014 constant dollars.*

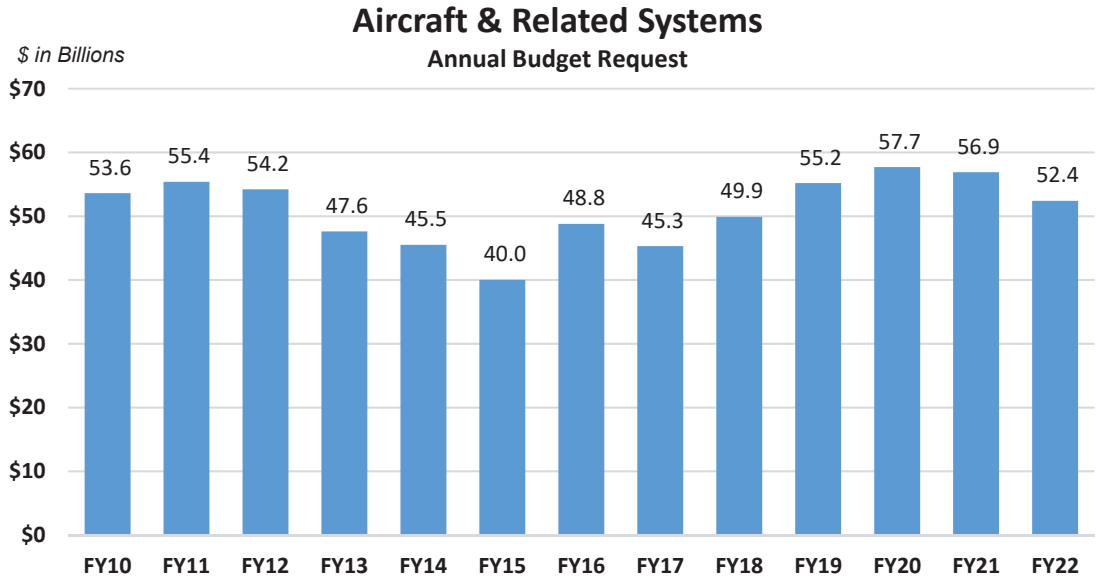
Mission Area Categories

This book shows the major weapon systems funded in the FY 2022 President's Budget, organized by Mission Support Activities. Each Mission Area Category chapter heading further breaks out the funding allocation in FY 2022 by subgroups, and provides summary programmatic and financial details of the major weapon systems within each portfolio. The bar charts in the respective mission areas, display the relative change in annual funding requested for every fiscal year since FY 2010 for the mission area.

Aircraft and Related Systems

$52.4 billion – 21 percent of the Investment budget request

Includes funding for aircraft research and development, aircraft procurement, initial spares, and aircraft support equipment. The single largest defense program, the 5th generation F-35 Joint Strike Fighter (JSF), request of $12.0 billion for 85 aircraft for the Navy (F-35C), Marine Corps (F-35B & C) and Air Force (F-35A), which also includes the Continuous Capability Development and Delivery (C2D2) Block IV modification program which aims to bring aircraft procured in prior fiscal years to the Block IV configuration. Also in the FY 2022 request are 12 - 4th generation F-15EX aircraft to supplement the Air Force Tactical Aviation (TACAIR) strike capability. The FY 2022 PB program also reflects the Department's strategy to layer capability to address different threats; 5th generation F-35 jet fighters to address advance technology aircraft being deployed by Russia and China; a modernized 4th generation F-15EX aircraft, which nominally have lower operating costs when compared to 5th generation combat jets such as the F-22 and the F-35 to supplement the 5th generation systems. Also in this category is the funding for attack and utility helicopters; Unmanned Aircraft Systems (UAS); manned reconnaissance platforms and systems; the incremental cost for the VC-25B Presidential Aircraft Recapitalization (PAR) aircraft; the KC-46A Pegasus tanker; as well as future platforms such as the B-21 Long Range Strike Bomber and the Next Generation Air Dominance (6th generation fighter).



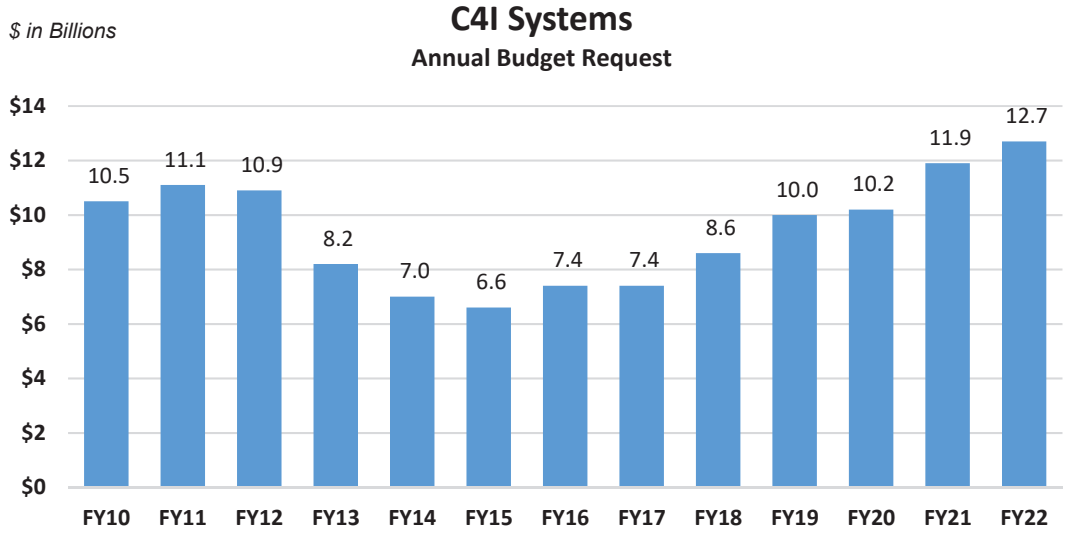
For display purposes, the aircraft and related systems category includes the following subgroups:

- Combat Aircraft ($20.4 billion)
- Cargo Aircraft ($5.8 billion)
- Support Aircraft ($1.4 billion)
- Unmanned Aircraft System ($1.6 billion)
- Aircraft Support ($8.4 billion)
- Technology Development ($6.8 billion)
- Aircraft Modifications ($8.0 billion)

Command, Control, Communications, Computers, and Intelligence (C4I) Systems

$12.7 billion – 5 percent of the Investment budget request

Includes funding for various C4I systems, to include command centers; communications gear; air traffic control; night vision equipment; cyberspace activities (cybersecurity, cyberspace operations, and supporting research and development); data processing equipment; fire control systems; other information technology; and related systems. This category includes funding for a far-reaching number of programs such as Tactical Network Transport (TNT), Handheld Manpack Small Form Fit (HMS) radio, Joint Regional Security Stacks (JRSS), Information Systems Security Program (ISSP), Crypto devices and key management infrastructure, Nuclear Command and Control, equipping the Cyber Mission Forces, the Air Force National Airborne Operations Center (NAOC) Recapitalization program, the Navy's Consolidated Afloat Networks and Enterprise Services (CANES), and the Integrated Personnel and Pay System-Army (IPPS-A). The FY 2022 funding increases by 7 percent from the amount requested in FY 2021, emphasizing the increase awareness of Cyberspace, Spectrum, Artificial Intelligence (AI), 5G, and other emerging technologies.



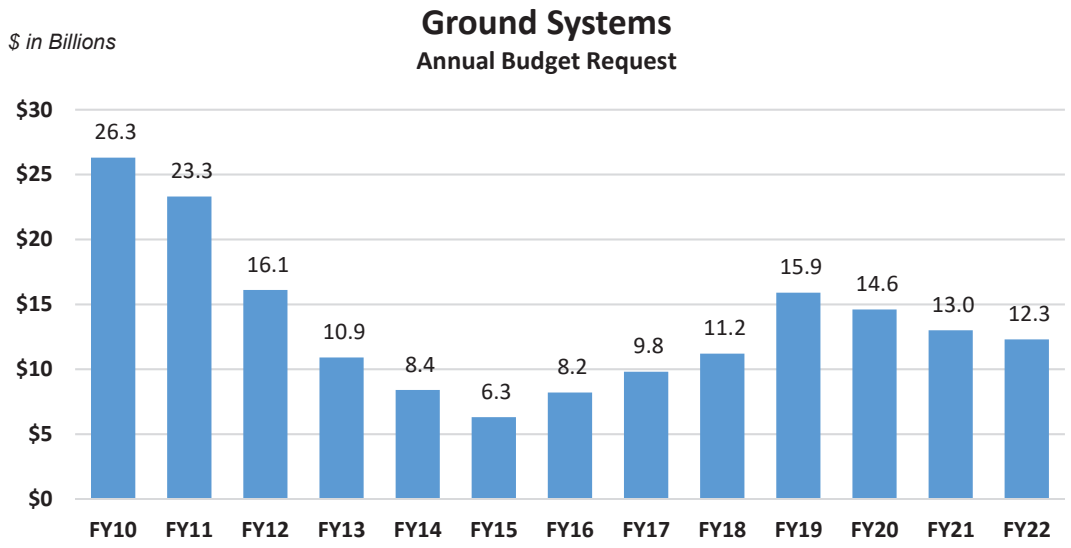
For display purposes, the C4I System category includes the following subgroups:

- Automation ($0.6 billion)
- Base Communications ($0.9 billion)
- Information Security & Assurance ($1.6 billion)
- Technology Development ($3.0 billion)
- Theater Combat Command, Control, Computers & Services ($6.6 billion)

Ground Systems

$12.3 billion – 5 percent of the Investment budget request

Includes funding for combat vehicles, artillery, infantry support weapons, tactical radar systems, tactical and non-tactical vehicles of all types, physical security equipment, logistics and engineering equipment, and research and development of various weapons equipment. This category includes funding for new tactical vehicles such as the Army's new Armored Multi-Purpose Vehicle (AMPV) which will replace the M-113 personnel carrier, the Optionally Manned Fighting Vehicle (OMFV) which will replace the M2 Bradley Fighting Vehicle, and the Marine Corps' Amphibious Combat Vehicle (ACV) which will replace the Amphibious Assault Vehicle (AAV). The category also includes funding for upgrades to the M1A2 Abrams main battle tank to begin bringing the force up to the M1A2C (System Enhancement Package (SEP) V3) configuration and upgrades to the M109A7 155mm Paladin Integrated Management (PIM) self-propelled artillery vehicle for improved force protection, survivability, and mobility. In addition, the Army is modernizing the tactical wheeled vehicle fleet through new procurement Joint Light Tactical Vehicles (JLTV), engineering changes to Family of Medium Tactical Vehicles (FMTVs), and recapitalizing the Family of Heavy Tactical Vehicles (FHTVs) to continue affordability initiatives. The FY 2022 funding decreases compared to the FY 2021 requested level due to restructure of a combat vehicle program and adjustments within the Army's and Marine Corps budgets.



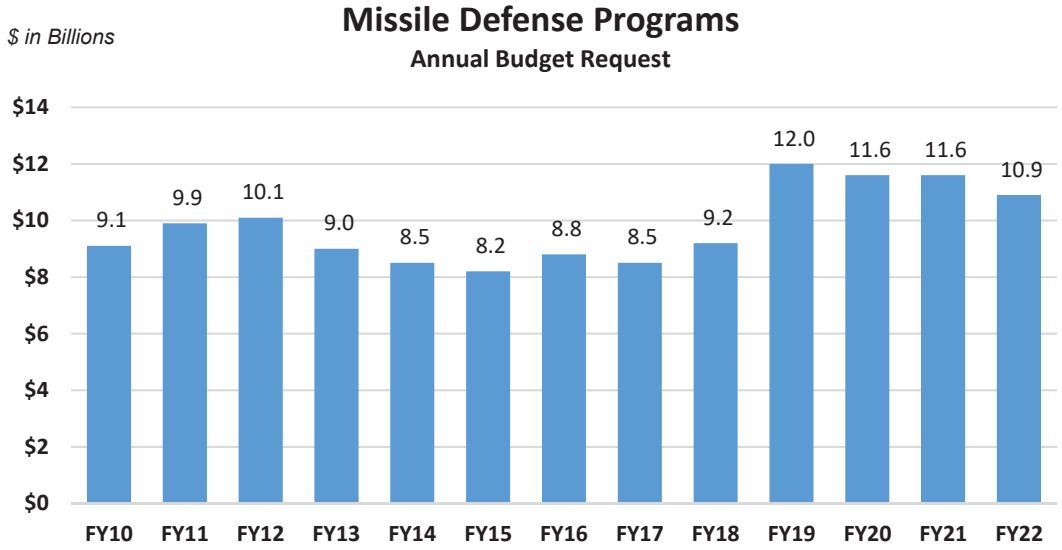
For display purposes, the Ground Systems category includes the following subgroups:

- Combat Vehicles ($3.9 billion)
- Heavy Tactical Vehicles ($1.1 billion)
- Light Tactical Vehicles ($0.9 billion)
- Medium Tactical Vehicles ($0.1 billion)
- Support Equipment ($5.4 billion)
- Weapons ($0.9 billion)

Missile Defense Programs

$10.9 billion – 4 percent of the Investment budget request

Includes funding for the development and procurement of tactical and strategic ballistic missile defense weapons and systems. This category includes a funding initiative to improve ballistic missile capabilities against existing and future threats. The FY 2022 budget request includes the procurement of additional Standard Missile 3 Block IB and IIA missiles, and the Terminal High Altitude Area Defense (THAAD) interceptors, as well as efforts to mature technologies and capabilities to address missile threats to the United States. The FY 2022 request fully funds the continuation of the development of the Next Generation Interceptor (NGI) to supplement the 44 Ground Based Interceptors (GBI) force deployed at Fort Greeley, Alaska. In FY 2022 the Department is requesting a total of $8.9 billion for the Missile Defense Agency, and $2.0 billion in other Missile Defense activities funded by other DoD Components, including dual use technologies and programs that serve to mitigate the ballistic missile threat beyond those funded by the Missile Defense Agency (MDA). The $10.9 billion represented in this display includes only those programs that are funded in the Procurement or RDT&E appropriations and are missile defense related such as tactical ballistic missile interceptors and counter-missile programs within each of the Services. The FY 2022 budget request continues the MDA longstanding support of U.S.-Israeli Cooperative Programs, to include the co-development and co-production of the David's Sling Weapon System and Upper Tier Interceptor, improvements to the Arrow Weapon System and Iron Dome.



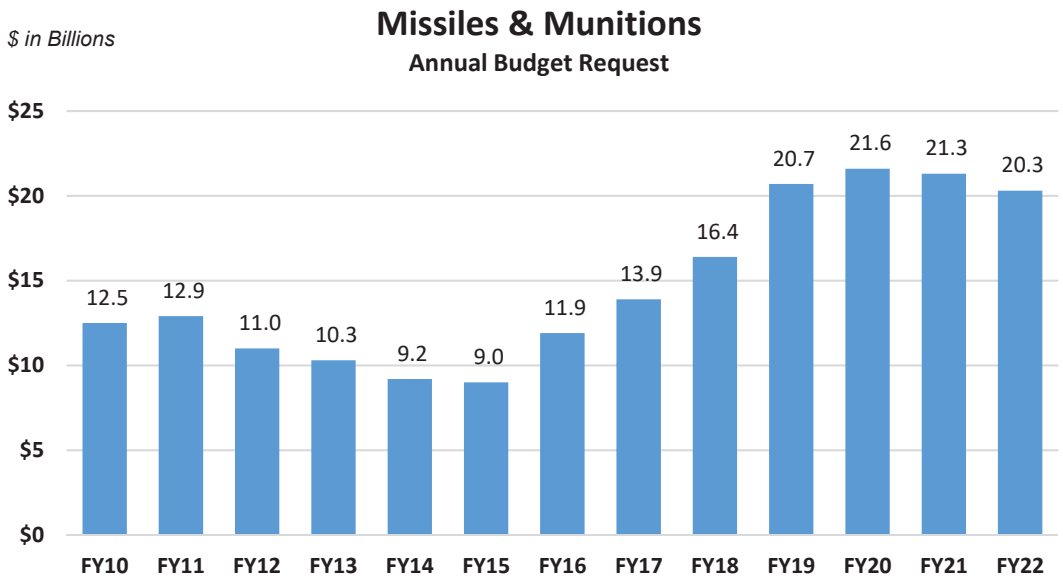
For display purposes, the Missile Defense Programs category includes the following subgroups:

- Ballistic Missile Defense System ($7.3 billion)
- Tactical Ballistic Missile Defense ($1.7 billion)
- Tactical Missile Defense ($1.9 billion)

Missiles and Munitions

$20.3 billion – 8 percent of the Investment budget request

This category includes funding for all types of conventional ammunition and Precision Guided Munitions (PGM). The ammunition portfolio includes bullets, cartridges, mortars, explosives, and artillery projectiles needed mostly by ground forces. The PGM portfolio includes weapons which have applicability in both a contested and permissive environment, and includes an assortment of air-to-air, air-to-ground, ground-to-ground, and ground-to-air weapons. The FY 2022 request reflects the Department's objective to increase the overall lethality of the force by procuring at high rates of production, thus fully utilizing the available industrial capacity for high demand weapons that are essential for the high-end fight. The FY 2022 request includes procurement for the Joint Air-to-Surface Missile (JASSM), Long Range Anti-Ship Missile (LRASM), Standard Missile (SM)-6, Joint Direct Attack Munition (JDAM), Hellfire missiles and Small Diameter Bomb (SDB) I, SDB II, and Guided Multiple Launch Rocket System (GMLRS). Also included in this category is the modernization of nuclear weapon delivery systems, such as the existing Trident II D5 Submarine Launch Ballistic Missile (SLBM), the Ground Based Strategic Deterrent (GBSD) ballistic missiles, the B61-12 Tail Kit gravity weapon, and the Long Range Standoff (LRSO) weapon programs, which will replace the AGM-86B Air Launched Cruise Missile (ALCM) as it approaches the end of its service life. The FY 2022 request of $20.3 billion is $1.0 billion lower than the amount requested in FY 2021, primarily due to a reduction in conventional ammunition requirements, which is predominantly driven by reduction in ground combat operations in Iraq and Afghanistan.



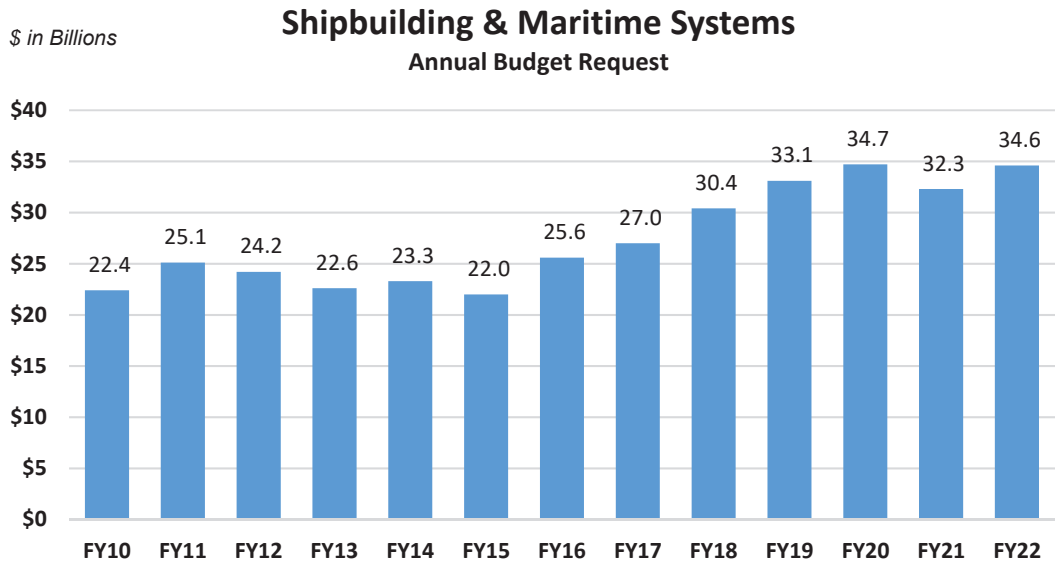
For display purposes, the Missiles and Munitions category includes the following subgroups:

- Conventional Ammunition ($4.6 billion)
- Strategic Missiles ($5.5 billion)
- Tactical Missiles ($10.2 billion)

Shipbuilding and Maritime Systems

$34.6 billion – 14 percent of the Investment budget request

Includes RDT&E and Procurement funding for shipbuilding and maritime systems. The FY 2022 budget request provides for the construction of eight Battle Force Ships (BFS) plus the development of unmanned surface vessels. The FY 2022 request includes incremental funding for two FORD class nuclear aircraft carriers: U.S.S. ENTERPRISE (CVN-80) and U.S.S. MILLER (CVN-81). The budget request also includes: two surface combatants (one DDG-51 Flight III; one CONSTELLATION class FFG-62 frigate); two fast attack Virginia class submarines equipped with the Virginia Payload Module (VPM); one TAO Fleet Oiler; two rescue ships, and one TAGOS Surtass Ship. Also in this category are the development and construction of the first U.S.S. COLUMBIA class ballistic-missile submarine (SSBN), ongoing costs for the U.S.S. STENNIS Refueling and Complex Overhaul (RCOH), and funding for various requirements such as surface and shallow water mine countermeasures; surface training equipment; shipboard air traffic control systems, and diving and salvage equipment. The funding in FY 2022 increases by $2.3 billion from the FY 2021 requested level mainly due to the procurement of two VIRGINIA class fast attack submarines, up from one requested in the FY 2021 PB which offsets decreases in funding for DDG-51 Flight III AEGIS destroyers.



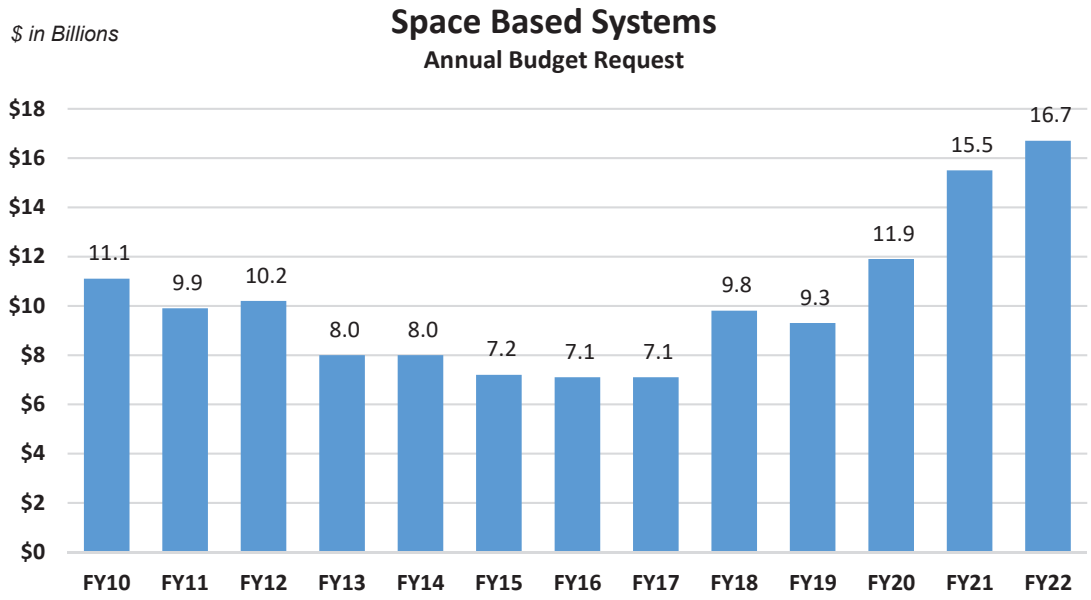
For display purposes, Shipbuilding and Maritime Systems is further categorized by the following subgroups:

- Surface Combatant ($10.7 billion)
- Submarine Combatant ($13.5 billion)
- Support Ships ($2.4 billion)
- Support ($4.4 billion)
- Outfitting & Post Delivery ($1.3 billion)
- Technology Development ($2.3 billion)

Space Based Systems

$16.7 billion – 7 percent of the Investment budget request

This category funds development and procurement of space based spacecraft; launch vehicles; space command and control systems; and terrestrial satellite terminals and equipment. The FY 2022 funding; in our second year, we are aggressively integrating the Space Force into the fabric of national and international security by collaborating across the Department of Defense, interagency, commercial industry, and our allies and partners. Space is a warfighting domain critical to the Nation's security, economic prosperity, and scientific knowledge. The FY 2022 request includes the development of a new generation of secure communication and tactical warning and attack assessment satellite constellations. Also included in this category are space situation awareness requirements, the space test program, and classified programs. The budget continues to refine the composition of the Space portfolio, Major Force Program – 12 (MFP-12), to accommodate refinements and definition changes. The funding for Space systems increased by 8 percent from the amount requested in the FY 2021 PB in recognition of the mounting importance of space based assets to military capabilities.



For display purposes, Space Based Systems is further categorized by the following subgroups:

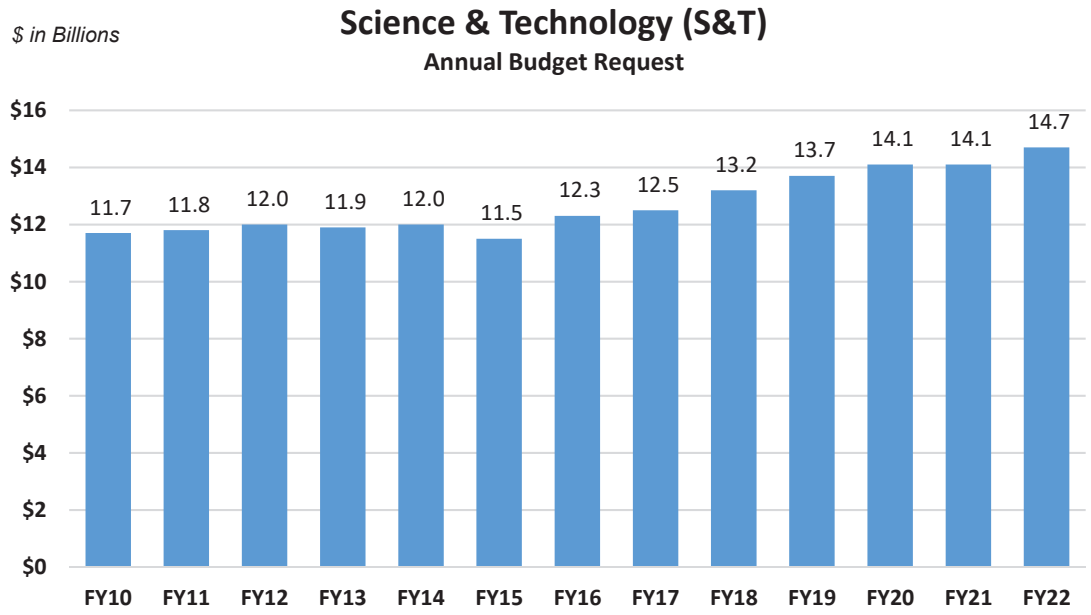
- Launch ($1.7 billion)
- Technology Development ($4.7 billion)
- Support ($8.7 billion)
- Satellites ($1.6 billion)

Science and Technology

$14.7 billion – 6 percent of the Investment budget request

Investing in Science and Technology (S&T), is investing in the future. Given today's globalized access to knowledge and the rapid pace of technology development, innovation, and agility have

taken on a greater importance. The FY 2022 funding in this category fosters innovation and develops cutting-edge, state-of-the-art technologies to protect the United States, its allies, and American forces worldwide. These S&T projects aim to develop technologies that will be essential in a future battlefield, include specific scientific and engineering efforts in Artificial Intelligence (AI), Machine Learning applications, Hypersonics (offensive and defensive), Directed Energy (lasers, partial beams, etc.), Microelectronics, Biological Technology, Cyber, Fifth Generation communications (5G), Autonomy, Space, and Quantum sciences. Transitioning these technologies to operational systems will bring vital cutting-edge capabilities to the warfighter. The FY 2022 PB request represents the highest funding for advance research in the history of the DoD. This comes after the Congress increased the FY 2021 funding to $16.8 billion, reflecting the strong congressional support for the development of advance technologies to maintain the U.S. technology edge.



For display purposes, RDT&E S&T, is further categorized by the following subgroups:

- Basic Research ($2.3 billion)
- Applied Research ($5.5 billion)
- Advanced Technology Development ($6.9 billion)

Mission Support Activities

$71.0 billion – 29 percent of the Investment budget request

This category includes RDT&E and Procurement funding for various miscellaneous equipment used by combat and non-combat forces, cross departmental capabilities such as live fire test and evaluation (such as testing ranges), chemical demilitarization, and the Defense Production Act (DPA) industrial base support. Also included in this category are classified programs and capabilities not reflected in the other categories previously identified.

Summary of Account History

FY 2020 Program (Dollars in Billions)	RDT&E	PROCUREMENT
President's Budget Request	104.3	143.1
Appropriated by the Congress (enacted)	105.4	147.1
Current Funding (actuals)	106.1	144.1

FY 2021 Program (Dollars in Billions)	RDT&E	PROCUREMENT
President's Budget Request	106.6	136.9
Appropriated by the Congress (enacted)	107.5	144.1

FY 2022 Program (Dollars in Billions)	RDT&E	PROCUREMENT
President's Budget Request	112.0	133.6

Display Criteria of Weapon System Funding

The funding amount represents the direct program costs for the development and the acquisition of the Programs, Projects, and Activities (PPA). Not included are the costs associated with initial and replenishment spare parts.

FY 2020 amounts reflect the actual execution amount as of September 30, 2020, does not include congressional rescissions, and combines both Base and Overseas Contingency Operations (OCO) funding.

FY 2021 amounts reflect congressionally enacted amount reflected in the Department of Defense Appropriations Act, 2021, Division C of Public Law 116-260, and combines both Base and OCO funding. Does not include congressional rescissions.

FY 2022 amounts reflect the funding requested in the FY 2022 PB by the Department of Defense.

Major Weapon Systems Summary

($ in Millions)		FY 2020	FY 2021	FY 2022	Page
Aircraft and Related Systems – Joint Service					
F-35	Joint Strike Fighter	12,187.1	12,885.6	12,024.3	1-2
V-22	Osprey	1,742.3	2,145.0	1,396.6	1-3
C-130J	Hercules	2,039.4	2,252.7	1,434.5	1-4
MQ-1B / MQ-1C	Predator/Gray Eagle	194.7	189.7	11.6	1-5
MQ-9	Reaper	789.1	697.0	300.6	1-6
MQ-4C / RQ-4	Triton/Global Hawk/NATO AGS	964.3	599.9	445.0	1-7
	Armed Overwatch / Targeting	-	46.0	193.0	1-8
Aircraft and Related Systems – US Army (USA)					
AH-64E	Apache: Remanufacture/New Build	1,073.4	1,183.0	825.0	1-9
CH-47	Chinook	378.7	483.6	226.1	1-10
UH-60	Black Hawk	1,708.0	1,123.0	947.3	1-11
Aircraft and Related Systems – US Navy (USN) / US Marine Corps (USMC)					
MQ-25	Stingray	628.2	257.0	316.4	1-12
F/A-18	Super Hornet	1,873.0	1,907.0	275.5	1-13
E-2D	Advanced Hawkeye	1,481.5	1,185.1	1,271.7	1-14
P-8A	Poseidon	1,646.0	1,784.4	245.7	1-15
VH-92A	Presidential Helicopter	811.4	674.3	91.2	1-16
CH-53K	Heavy Lift Replacement Helicopter	1,552.3	1,715.2	1,726.1	1-17
H-1	AH-1Z Viper/ UH-1Y Venom	217.6	195.4	175.3	1-18
Aircraft and Related Systems – US Air Force (USAF)					
B-21	Raider	2,878.8	2,843.2	2,980.6	1-19
B-1, B-2, B-52	Bombers	715.1	799.4	1,070.5	1-20
KC-46A	Tanker	2,197.5	2,745.4	2,455.8	1-21
PAR	Presidential Aircraft Recapitalization	730.2	799.4	680.7	1-22
F-22	Raptor	746.5	1,027.3	1,072.0	1-23
F-15	Eagle	1,872.6	2,189.3	2,188.7	1-24
CRH	Combat Rescue Helicopter	1,089.0	1,147.0	919.8	1-25
T-7A	Advanced Pilot Training	328.4	248.2	199.3	1-26
C4I Systems – USA					
TNT	Tactical Network Technology	530.1	411.2	436.5	2-2
C4I Systems – Joint Service					
HMS	Handheld, Manpack, and Small Form Fit Radios	495.3	567.7	803.9	2-3
Cyberspace	Cyberspace Activities	3,094.6	3,124.5	3,004.3	2-4
Ground Systems – Joint Service					
JLTV	Joint Light Tactical Vehicle	1,716.5	1,401.9	1,055.3	3-2
Ground Systems – USA					
M-1	Abrams Tank Modification/Upgrades	2,186.0	1,404.2	1,031.7	3-3
AMPV	Armored Multi-Purpose Vehicle	525.2	139.1	140.3	3-4
NGSW	Next Generation Squad Weapon	86.2	124.4	165.0	3-5
PIM	Paladin Integrated Management	744.5	681.4	659.7	3-6
FMTV	Family of Medium Tactical Vehicles	141.4	207.8	54.1	3-7
FHTV	Family of Heavy Tactical Vehicles	50.8	28.8	95.9	3-8
Stryker	Stryker	953.2	1,186.3	1,036.0	3-9
Ground Systems – USMC					
ACV	Amphibious Combat Vehicle	349.3	478.6	613.1	3-10
Missile Defense Programs – Joint Service					
GMD	Ground-based Midcourse Defense	2,171.7	2,296.7	1,732.7	4-2
THAAD	Terminal High Altitude Area Defense	727.3	891.6	562.2	4-3
Aegis	Aegis Ballistic Missile Defense	1,722.4	1,826.9	1,622.0	4-4
Missile Defense Programs – USA					
Patriot / PAC–3	Patriot Advanced Capability	726.7	765.9	659.1	4-5
PAC-3 / MSE	PAC-3/Missile Segment Enhancement Missile	702.4	678.1	776.7	4-6
Missiles and Munitions – Joint Service					
JDAM	Joint Direct Attack Munition	1,109.5	546.7	198.2	5-2
Hellfire	Hellfire Missiles	726.7	516.6	230.0	5-3
SDB I	Small Diameter Bomb I	273.3	95.8	82.8	5-4

Major Weapon Systems Summary

($ in Millions)		FY 2020	FY 2021	FY 2022	Page
SDB II	Small Diameter Bomb II	384.5	339.6	409.4	5-5
JASSM	Joint Air-to-Surface Standoff Missile	556.0	570.7	827.9	5-6
AIM-9X	Air Intercept Missile - 9X	333.7	303.7	250.8	5-7
AMRAAM	Advanced Medium Range Air-to-Air Missile	610.5	609.4	297.9	5-8
Chem-Demil	Chemical Demilitarization	992.1	1,049.8	1,094.3	5-9
JAGM	Joint Air-to-Ground Missile	304.8	260.5	204.4	5-10
LRASM	Long Range Anti-Ship Missile	185.1	200.6	289.0	5-11
AMMO	Ammunition	6,302.9	5,099.9	3,941.3	5-12
Missiles and Munitions – USA					
GMLRS	Guided Multiple Launch Rocket System	1,294.0	1,137.0	1,098.2	5-13
Javelin	Javelin Advanced Anti-Tank Weapon System	177.4	207.2	128.9	5-14
PrSM	Precision Strike Missile	149.5	150.1	354.6	5-15
Missiles and Munitions – USN					
Trident II	Trident II Ballistic Missile Modifications	1,543.0	1,535.5	1,599.4	5-16
Standard	Standard Missile-6	698.1	795.1	910.7	5-17
RAM	Rolling Airframe Missile	127.9	96.7	101.3	5-18
Tomahawk	Tactical Tomahawk Cruise Missile	702.3	645.3	551.7	5-19
Missiles and Munitions – USAF					
GBSD	Ground Based Strategic Deterrent	538.6	1,447.1	2,564.4	5-20
B61	B61 Tail Kit Assembly	66.0	45.3	2.7	5-21
LRSO	Long Range Stand-Off Missile	701.9	384.7	609.0	5-22
Shipbuilding and Maritime Systems – USN					
CVN 78	*Gerald R. Ford* Class Nuclear Aircraft Carrier	2,537.8	2,904.4	2,869.8	6-2
SSBN 826	*Columbia* Class Ballistic Missile Submarine	2,346.4	4,518.7	5,027.3	6-3
SSN 774	*Virginia* Class Submarine	8,791.4	7,164.8	6,946.9	6-4
DDG 51	*Arleigh Burke* Class Destroyer	6,127.2	3,802.7	2,437.4	6-5
FFG(X)	*Constellation* Class Guided Missile Frigate	1,338.1	1,135.1	1,266.5	6-6
CVN	Refueling Complex Overhaul	651.5	1,548.5	2,522.3	6-7
T-AO 205	*John Lewis* Class Fleet Replenishment Oiler	1,074.4	111.8	853.3	6-8
T-ATS	Towing, Salvage, and Rescue Ship	150.3	157.8	183.8	6-9
USV	Unmanned Surface Vehicle	388.0	139.3	202.9	6-10
LPD	*San Antonio* Class Amphibious Transport Dock	554.8	1,190.0	175.9	6-11
Space Based Systems – USSF					
Launch Vehicles	Launch Vehicles	1,701.3	1,628.1	1,661.2	7-2
GPS III & Projects	Global Positioning System Enterprise	1,677.9	1,795.5	1,810.1	7-3
OPIR	Space Based Overhead Persistent Infrared (OPIR) Systems	1,703.2	2,464.8	2,605.8	7-4
SATCOM	Satellite Communications Projects	1,017.1	800.6	848.0	7-5

Aircraft and Related Systems

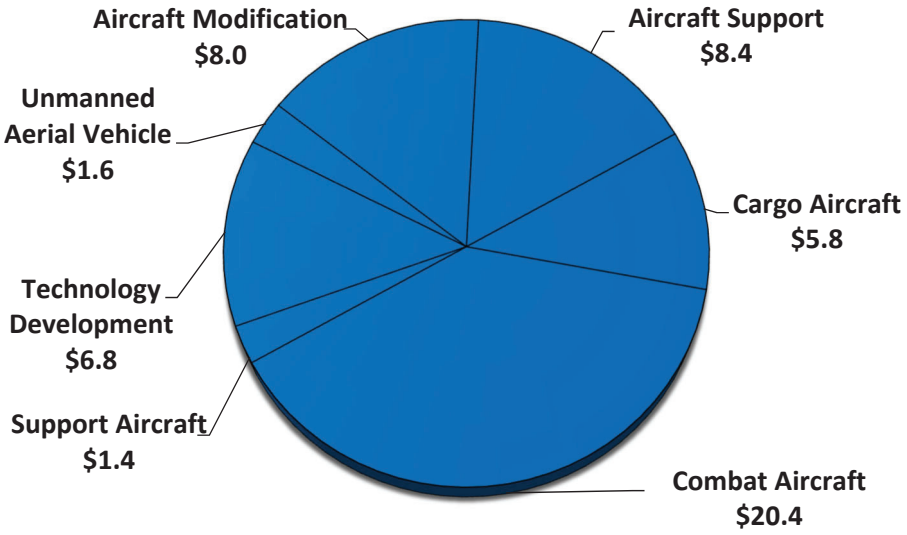
Aviation forces - including fighters, bombers, mobility (cargo/tanker), specialized support aircrafts, and Unmanned Aerial Vehicles/Unmanned Aircraft Systems (UAV/UAS) — which provide a versatile strike force capable of rapid deployment worldwide. These forces can quickly gain and sustain air dominance over regional aggressors, permitting rapid attacks on enemy targets while providing security to exploit the air for logistics, command and control, intelligence, and other functions. Fighter/attack aircraft operate from both land bases and aircraft carriers to provide air superiority to combat enemy fighters and attack ground and ship targets. Bombers provide an intercontinental capability to rapidly strike surface targets. The specialized aircraft supporting conventional operations perform functions such as intelligence, surveillance, and reconnaissance; airborne warning and control; air battle management; suppression of enemy air defenses; and combat search and rescue. In addition to these forces, the U.S. military operates a variety of air mobility forces including cargo, aerial-refueling aircraft, helicopters, and support aircraft.

Continued in the FY 2022 request, is the Department's Tactical Air (TACAIR) strategy to supplement 5th generation fighters like the F-22 and F-35 with 4th generation capability, to more economically address threats that do not require state-of-the-art 5th generation combat jets.

The FY 2022 funding provides for the procurement of 85 F-35A/B/C, 12 F-15EX, 73 logistics and support aircraft, 115 rotary wing aircraft, and 6 UAV/UAS. In addition, the funding in this category provides for the development of aircraft related technology, the procurement of aerospace equipment and systems, various modifications to existing aircraft, and the procurement of initial spares.

FY 2022 Aircraft and Related Systems Total: $52.4 Billion

$ in Billions



Numbers may not add due to rounding

F-35 Joint Strike Fighter

DOD - JOINT

The F-35 Joint Strike Fighter (JSF) is a fifth-generation strike fighter for the Navy, Marine Corps, Air Force, and U.S. Allies. The F-35 consists of three variants: F-35A Conventional Take-Off and Landing (CTOL), the F-35B Short Take-Off and Vertical Landing (STOVL), and the F-35C Carrier variant (CV). The F-35A CTOL replaces the Air Force F-16 and A-10 aircraft and complements the F-22 aircraft; the F-35B STOVL aircraft replaces the Marine Corps AV-8B aircraft and F/A-18A/C/D aircraft; the F-35C CV aircraft complements the F/A-18E/F aircraft for the Navy, and will also be flown by the Marine Corps. The F-35 program is a joint, multi-national program among the United States and seven cooperative international partners, as well as seven current and future Foreign Military Sales (FMS) countries. The Marine Corps, Air Force, and Navy have all declared Initial Operational Capability (IOC) in 2015, 2016, and 2019, respectively.

Mission: Provides all–weather, precision, stealthy, ground strike and air-to-air capability, including direct attack on the most lethal surface–to–air missiles and air defenses.

FY 2022 Program: Continues systems engineering, development and operational testing, and supports Continuous Capability Development and Delivery (C2D2) to provide incremental warfighting capability improvements to maintain joint air dominance against evolving threats. Procures 85 aircraft in FY 2022: 48 CTOL for the Air Force, 17 STOVL for the Marine Corps, and 20 CV for the Department of the Navy (15 Navy and 5 Marine Corps). Continues laying down the ground and squadron support and site stand-up infrastructure required to support U.S. Services F-35 air systems. Accelerates an organic depot maintenance capability to reduce depot repair cycle times to improve air vehicle availability rates.

Prime Contractor(s): Lockheed Martin Corporation; Fort Worth, TX (airframe)
Pratt & Whitney; Hartford, CT (engine)

F-35 Joint Strike Fighter						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
USN	-	726.3	-	720.9	-	998.5
USAF	-	727.1	-	815.9	-	1,054.8
Subtotal	-	1,453.4	-	1,536.8	-	2,053.3
Procurement						
USN	34	4,419.6	36	4,576.8	37	4,831.3
USAF	62	5,903.6	60	6,217.6	48	4,520.2
Subtotal	96	10,323.1	96	10,794.4	85	9,351.6
Mods	-	410.5	-	554.4	-	619.5
Total	96	12,187.1	96	12,885.6	85	12,024.3

Note: Includes Modification Program *Numbers may not add due to rounding*

V-22 Osprey

DOD - JOINT

The V-22 Osprey is a tilt-rotor, vertical takeoff and landing aircraft designed to meet the amphibious/vertical assault needs of the Marine Corps, the strike rescue and Carrier Onboard Delivery (COD) needs of the Navy, and the long range special operations forces (SOF) missions for U.S. Special Operations Command (SOCOM). The aircraft is designed to fly 2,100 miles with one in-flight refueling, giving the Services the advantage of a vertical and/or short takeoff and landing aircraft that can rapidly self-deploy to any location in the world.

Mission: Conducts airborne assault, vertical lift, combat search and rescue, and special operations missions. The new CMV-22 variant replaces the Navy's C-2A Greyhound for the COD mission.

FY 2022 Program: Funds production in the fifth and final year of the FY 2018 – FY 2022 multiyear procurement contract. 5 MV-22 and 3 CMV-22 are being procured. Modification program continues the Common Configuration – Readiness and Modernization (CC-RAM) effort to improve missional capability rates. CV-22 is pursuing additional reliability via the Nacelle Improvements modification program which is projected to increase Aircraft Availability.

Prime Contractor(s): Bell Helicopter Textron, Incorporated; Fort Worth, TX, The Boeing Company; Philadelphia, PA.

V–22 Osprey						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
USN	-	184.4	-	132.4	-	108.0
USAF	-	41.3	-	35.2	-	24.1
Subtotal	-	225.7	-	167.6	-	132.1
Procurement						
USN	12	1,433.9	13	1,597.8	8	1,064.6
USAF	-	82.6	2	379.7	-	199.9
Subtotal	12	1,516.5	15	1,977.5	8	1,264.5
USN Subtotal	12	1,618.4	13	1,730.2	8	1,172.5
USAF Subtotal	-	123.9	2	414.9	-	224.0
Total	12	1,742.3	15	2,145.1	8	1,396.6

Note: Includes Modification Program *Numbers may not add due to rounding*

C-130J Hercules

DOD - JOINT


USAF Photo

The C–130J Hercules is a medium-sized tactical transport airlift aircraft that is modernizing the U.S. tactical airlift capability. It is capable of performing a variety of combat delivery (tactical airlift) operations across a broad range of mission environments including deployment and redeployment of troops and/or supplies within/between command areas in a theater of operation, aeromedical evacuation, air logistics support, air refueling, special operations, firefighting, weather reconnaissance, and augmentation of strategic airlift forces. The C-130J aircraft, with its extended fuselage, provides an additional 15 feet of cargo carrying capacity for the Air Force combat delivery mission compared to the C-130E/H and the C-130J (short) aircraft. This translates into 30% more useable volume for increased seating, litters, pallets, or airdrop platforms; thus, providing a significant advantage in the reduction of sorties necessary for mission completion. Special mission variants of the C-130J conduct airborne Military Information Support operations (EC-130J), weather reconnaissance (WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J). The KC-130J provides the Marine Corps with air-to-air refueling/tactical transport capability; airborne radio relay; intelligence, surveillance, and reconnaissance; and close air support to replace the KC-130 F/R/T aircraft.

Mission: Provide responsive air movement and delivery of combat troops/supplies directly into objective areas through air landing, extraction, and airdrop, and the air logistic support of theater forces.

FY 2022 Program: Continues the multiyear procurement (MYP) C-130J contract (FY 2019 to FY 2023).

Prime Contractor(s): Lockheed Martin Corporation; Marietta, GA

C-130J Hercules						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
HC/MC-130J	-	16.5	-	19.5	-	46.8
C-130J	-	6.9	-	10.7	-	14.1
Subtotal	-	23.4	-	30.1	-	60.9
Procurement						
C-130J	4	377.2	8	797.1	1	128.9
MC-130J	8	890.6	4	385.1	3	220.0
KC-130J	3	306.9	5	442.6	6	588.9
Subtotal	15	1,574.7	17	1,624.8	10	937.8
Mods	-	441.2	-	597.7	-	435.7
Total	15	2,039.4	17	2,252.7	10	1,434.5

Note: Includes Modification Program *Numbers may not add due to rounding*

MQ-1B Predator / MQ-1C Gray Eagle

DOD - JOINT

US Army Photo

The U.S. Air Force (USAF) MQ-1B Predator and the Army MQ-1C Gray Eagle Unmanned Aircraft Systems (UAS) are comprised of aircraft configured with multi-spectral targeting systems (electro-optical, infrared (IR), laser designator, and IR illuminator) providing real-time full motion video, weapons, data links; and ground control stations with communications equipment providing line-of-sight and beyond-line-of-sight control. Both systems include single-engine, propeller-driven unmanned aircraft. The Air Force is in the process of divesting the MQ-1 and replacing all aircraft with MQ-9 Reapers. The MQ-1C Gray Eagle also includes the Gray Eagle Extended Range Engineering Change Proposal, which extends the aircraft's range and endurance.

Mission: Operates over-the-horizon at medium altitude for long endurance and provides real-time intelligence, surveillance, reconnaissance (ISR), target acquisition, and strike capability to aggressively prosecute time-sensitive targets. The Army MQ-1C Gray Eagle also adds a Synthetic Aperture Radar (SAR) Ground Moving Target Indicator (GMTI), a communications relay capability, a heavy fuel engine, encrypted tactical common data link, and greater weapons capability.

FY 2022 Program: Continues development of advanced MQ-1 Payload sensors and communication upgrades.

Prime Contractor(s): General Atomics–Aeronautical Systems Incorporated; San Diego, CA

MQ–1B Predator / MQ-1C Gray Eagle						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
Gray Eagle USA	-	36.0	-	49.4	-	8.4
Procurement						
Gray Eagle USA	9	158.7	1	140.3	-	3.1
Total	9	194.7	1	189.7	-	11.6

Note: Includes Modification Program *Numbers may not add due to rounding*

MQ-9 Reaper

DOD - JOINT

USAF Photo

The U.S. Air Force MQ-9 Reaper Unmanned Aircraft System (UAS) program is comprised of an aircraft segment configured with an array of sensors to include day/night Full Motion Video (FMV), Signals Intelligence (SIGINT), and Synthetic Aperture Radar (SAR) sensor payloads, avionics, data links and weapons; a Ground control segment consisting of a Launch and Recovery Element, and a Mission Control Element with embedded Line-of-Sight and Beyond-Line-of-Sight communications equipment. The Reaper is a single-engine, turbo-prop, remotely piloted armed reconnaissance aircraft designed to operate over-the-horizon at medium altitude for long endurance. Funding for U.S. Special Operations Command (USSOCOM) procures Special Operations Force (SOF) peculiar kits, payloads and modifications.

Mission: Provides reconnaissance and embedded strike capability against time-critical targets.

FY 2022 Program: Funds the continued development, testing, and integration of SOF-peculiar emerging technology mission kits, weapons, and modifications on platforms, Ground Control Stations, and training systems. Request also funds support equipment, primary satellite link equipment, and production shutdown.

Prime Contractor(s): General Atomics–Aeronautical Systems Incorporated; San Diego, CA

MQ–9 Reaper						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
USAF	-	122.9	-	106.9	-	85.1
SOCOM	-	20.0	-	21.3	-	19.1
Subtotal	-	142.9	-	128.2	-	104.2
Procurement						
USAF	24	582.8	16	562.1	-	188.4
USN	2	56.1	-	-	-	-
SOCOM	-	7.3	-	6.7	-	8.0
Subtotal	26	646.3	16	568.9	-	196.4
Total	26	789.1	16	697.0	-	300.6

Note: Includes Modification Program *Numbers may not add due to rounding*

MQ-4C Triton/RQ-4 Global Hawk/NATO AGS

DOD - JOINT

US Navy Photo

The Navy MQ-4C Triton, U.S. Air Force (USAF) RQ-4 Global Hawk, and NATO Alliance Ground Surveillance (AGS) Unmanned Aircraft Systems (UAS) provide high altitude long endurance Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. The MQ-4C provides the Navy with a persistent maritime ISR capability. Mission systems include inverse Synthetic Aperture Radar (SAR), Electro-optical/Infra-red Full Motion Video (FMV), maritime moving target detection, Electronic Support Measures (ESM), Automatic Identification System (AIS), a basic communications relay capability, and Link-16. The RQ-4 Block 30 includes a multi-intelligence suite for imagery and signals intelligence collection, and the Block 40 includes multi-platform radar technology for synthetic aperture radar (SAR) imaging and moving target detection. All RQ-4 aircraft have been delivered.

Mission: The Navy MQ-4C provides persistent maritime ISR, while the USAF and NATO AGS RQ-4 systems perform high-altitude, near-real-time, high-resolution ISR collection. Both systems support Combatant Commander requirements while the MQ-4C also supports the numbered Fleet commanders from five worldwide sites.

FY 2022 Program: MQ-4C: Pauses FY 2022 procurement to focus on development of the Multi-INT configuration. RQ-4: Funds support modernization efforts, including the MS-177 multi-spectral sensor, ground segment modernization program, communications system modernization program and additional efforts; and the U.S. contribution to the NATO AGS.

Prime Contractor(s): Northrop Grumman; Rancho Bernardo, CA

MQ-4C Triton / RQ-4 Global Hawk / NATO AGS						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
RQ-4, USAF	-	191.7	-	163.3	-	83.1
RQ-4, NATO	-	32.6	-	36.7	-	19.5
MQ-4, USN	-	207.2	-	140.3	-	147.4
Subtotal	-	431.5	-	340.2	-	249.9
Procurement						
RQ-4, USAF	-	49.0	-	5.1	-	27.8
MQ-4, USN	2	483.9	1	254.6	-	167.3
Subtotal	2	532.8	1	259.7	-	195.0
Total	2	964.3	1	599.9	-	445.0

Note: Includes Modification Program *Numbers may not add due to rounding*

Armed Overwatch / Targeting

DOD - JOINT

Armed Overwatch provides Special Operations Forces (SOF) deployable and sustainable aircraft systems fulfilling Close Air Support, Precision Strike, and SOF Intelligence, Surveillance & Reconnaissance (ISR) requirements in austere and permissive environments for the Countering-Violent Extremist Organizations.

Mission: Missions include: Armed Reconnaissance, Strike Coordination & Reconnaissance, and Airborne Forward Air Control.

FY 2022 Program: Supports the production and fielding of six Armed Overwatch aircraft, initial spares, required support equipment, training devices, and mission planning devices. Funds will also support aircraft certification, testing, and integration of Special Operation Forces-unique weapons.

Prime Contractor(s): TBD

Armed Overwatch / Targeting						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	25.0	-	23.0
Procurement	-	-	1	21.0	6	170.0
Total	-	-	1	46.0	6	193.0

Numbers may not add due to rounding

AH-64E Apache

US Army Photo

The AH-64E Apache program is a parallel new build and remanufacture effort (Apache Block IIIB New Build and Apache Block IIIA Remanufacture or Reman), which integrates a mast-mounted fire control radar into an upgraded and enhanced AH–64 airframe. The remanufacture effort results in a zero-time Longbow Apache, which restarts its service life and modernizes the aircraft with updated technologies and performance enhancements to keep the Apache viable throughout its lifecycle. The AH-64E program incorporates a new power train system that restores the aircraft to its previous flight performance capabilities that have been reduced over years due to added weight. The AH-64E has all new open architecture computer systems, including an all-digital cockpit flight control. The aircraft also has manned/unmanned teaming capability with the Army's Unmanned Aerial Systems giving the system far greater targeting distances. Additionally, the AH-64E has the ability to share targeting data with Joint Forces via its onboard Link 16 system. FY 2022 is the first year of the AH-64E Apache's new 5-year Multiyear Procurement (MYP) contract.

Mission: Conducts armed reconnaissance, close combat, mobile strike, and vertical maneuver missions in day, night, obscured battlefield, and adverse weather conditions.

FY 2022 Program: Funds technologies and material solutions to address known capability gaps that were identified during real-world combat missions and associated with current, emerging threats. These technologies and solutions will be integrated and implemented in the AH-64E fleet to increase combat capability. Funds the procurement of 30 AH-64E Remanufactured aircraft.

Prime Contractor(s): Apache: The Boeing Company; Mesa, AZ
Integration: Northrop Grumman Corporation; Baltimore, MD,
Lockheed Martin Corporation; Owego, NY

AH–64E Apache						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	5.2	-	52.5	-	10.1
Procurement						
AH-64E New Build	-	-	2	69.2	-	-
AH-64E Reman	49	1,010.0	50	961.5	30	696.4
Modifications	-	58.2	-	99.8	-	118.6
Total	49	1,073.4	52	1,183.0	30	825.0

Numbers may not add due to rounding

CH-47 Chinook

US Army Photo

The CH-47F Improved Cargo Helicopter program procures new and remanufactured Service Life Extension Program (SLEP) CH-47F helicopters. The aircraft includes an upgraded digital cockpit and modifications to the airframe to reduce vibration. The upgraded cockpit includes a digital data bus that permits installation of enhanced communications and navigation equipment for improved situational awareness, mission performance, and survivability. The new aircraft uses more powerful T55-GA-714A engines that improve fuel efficiency and enhance lift performance. These aircraft are fielded to heavy helicopter companies (CH-47F) and Special Operations Aviation (MH-47G). The CH-47F is expected to remain the Army's heavy lift helicopter until the late 2030s. The recapitalization of the MH-47G airframes is required to extend the useful life of legacy aircraft. The CH-47F Block II development effort is in Engineering and Manufacturing Development (EMD). Improvements include increased lift, improved engine control, upgraded drive train components, and advanced flight controls. New Build CH-47Fs will continue at a low rate until production of the CH-47F Block II in FY 2021.

Mission: Transports ground forces, supplies, ammunition, and other battle-critical cargo in support of worldwide combat and contingency operations.

FY 2022 Program: Funds the continued modernization of the Army's only heavy lift helicopter, including integration and improvements through the program of record; continues development work on the Block II F variant. Funds also procure 6 MH-47G variants.

Prime Contractor(s): The Boeing Company; Philadelphia, PA.

CH–47 Chinook						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	164.8	-	49.4	-	52.4
Procurement	9	213.9	12	434.1	6	173.7
Total	9	378.7	12	483.6	6	226.1

Includes modification programs

Numbers may not add due to rounding

UH-60 Black Hawk

US Army Photo

The UH-60 Black Hawk is a twin engine, single-rotor, four bladed utility Helicopter that is designed to carry a crew of 4 and a combat equipped squad of 11 or an external load up to 9,000 lbs. The UH-60 comes in many variants and with many different modifications and capabilities to fulfill different roles. The Army variants can be fitted with stub wings to carry additional fuel tanks or weapons. The UH-60M Black Hawk is a digital networked platform with greater range and lift to support operational Commanders through air assault, general support command and control, and aeromedical evacuation. A HH-60M is a UH-60M Black Hawk integrated with the Medical Evacuation (MEDEVAC) Mission Equipment Package (MEP) kit, which provides day/night and adverse weather emergency evacuation of casualties. FY 2022 is the first year of a 5-year multi-year procurement contract for the UH-60 series.

Mission: Provides a highly maneuverable, air transportable, troop carrying helicopter for all intensities of conflict, without regard to geographical location or environmental conditions. It moves troops, equipment, and supplies into combat and performs aeromedical evacuation and multiple functions in support of the Army's air mobility doctrine for employment of ground forces.

FY 2022 Program: Funds procurement of 48 aircraft (9 UH-60M, 15 HH-60M, and 24 UH-60V), Government Furnished Equipment (GFE), and related installations.

Prime Contractor(s): UH-60M: Sikorsky, A Lockheed Martin Company; Stratford, CT
UH-60V: Redstone Defense Systems, Huntsville, AL

UH-60 Black Hawk						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	22.5	-	8.3	-	4.8
Procurement						
UH-60M	74	1,516.2	42	949.5	24	776.3
UH-60V	25	169.3	24	165.2	24	166.2
Total	99	1,708.0	66	1,123.0	48	947.3

Numbers may not add due to rounding

MQ-25 Stingray

The U.S. Navy MQ-25 Stingray Unmanned Carrier Aviation (UCA) program is rapidly developing an unmanned capability to embark as part of the Carrier Air Wing (CVW) to conduct aerial refueling and provide Intelligence, Surveillance, and Reconnaissance (ISR) capability. The MQ-25 will extend CVW mission effectiveness range and partially mitigate the current Carrier Strike Group (CSG) organic ISR shortfall. As the first carrier-based Group 5 Unmanned Aircraft System (UAS), the MQ-25 will pioneer the integration of manned and unmanned operations, demonstrate complex sea-based UAS technologies and pave the way for future multi-mission UAS to pace emerging threats. The MQ-25 was previously funded under the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) program. The program entered into Engineering and Manufacturing Development (EMD) in the fourth quarter of FY 2018 and is expected to provide an Initial Operational Capability (IOC) to the fleet by FY 2025.

Mission: Conducts aerial refueling as a primary mission and provides ISR as a secondary mission.

FY 2022 Program: Funds continuation of product development and integration and interface development activities, including EMD studies and analysis and build of three System Demonstration Test Articles (SDTAs); first flight preparations such as test and evaluation investments supporting the development and implementation of test facilities, range, and lab test requirements; and procurement of Initial Operational Test and Evaluation (IOT&E) hardware. Funds support advanced procurement in FY 2022 to begin low rate initial production in FY 2023.

Prime Contractor(s): Boeing; St. Louis, MO

MQ-25 Stingray						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	628.2	-	257.0	-	268.9
Procurement	-	-	-	-	-	47.5
Total	-	628.2	-	257.0	-	316.4

Numbers may not add due to rounding

F/A-18 Super Hornet

US Navy Photo

The F/A-18 E/F Super Hornet is a carrier-based multi-role tactical fighter and attack aircraft. Two versions are in production: the single-seat E model and the two-seat F model. The Super Hornet is an attack aircraft as well as a fighter through selected use of external equipment and advanced networking capabilities to accomplish specific missions. This "force multiplier" capability gives the operational commander more flexibility in employing tactical aircraft in a rapidly changing battle scenario. In its fighter mode, the aircraft serves as escort and fleet air defense. In its attack mode, the aircraft provides force projection, interdiction, and close and deep air support.

Mission: Provides multi-role attack and strike fighter capability, which includes the traditional applications, such as fighter escort and fleet air defense, combined with the attack applications, such as interdiction and close air support.

FY 2022 Program: Begins Production Line Shutdown as FY 2021 is the last year of the E/F model multiyear procurement (MYP) contract (FY 2019 - FY 2021). Continues to fund spares, repair parts, and the Service Life Extension Program (SLEP) to maintain sufficient aircraft inventory to meet fleet operational requirements through FY 2046. Development and integration of critical aircraft systems, like the Infrared Search and Track (IRST) pod, continues to ensure the F/A-18 E/F can meet the advanced threats expected in 2025 and beyond.

Prime Contractor(s): Airframe: Boeing; St. Louis, MO
Engine: General Electric Company; Lynn, MA

F/A-18 E/F Super Hornet						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	111.1	-	84.2	-	48.8
Procurement	24	1,762.0	24	1,822.8	-	226.7
Total	24	1,873.0	24	1,907.0	-	275.5

Numbers may not add due to rounding

E-2D Advanced Hawkeye

The E-2D Advanced Hawkeye is an airborne early warning, all weather, twin-engine, carrier-based aircraft designed to extend task force defense perimeters. The Advanced Hawkeye provides improved battlespace target detection and situational awareness, especially in the littorals; supports the Theater Air and Missile Defense operations; and improves operational availability for the radar system. Relative to the E-2C aircraft, the E-2D aircraft provides increased electrical power, a strengthened fuselage, and upgraded radar system, communications suite, and mission computer.

Mission: Provides theater air and missile sensing and early warning; battlefield management command and control; acquisition tracking and targeting of surface warfare contacts; surveillance of littoral area objectives and targets; and tracking of strike warfare assets.

FY 2022 Program: Funds five E-2D aircraft as part of a multiyear procurement (MYP) contract (FY 2019 – FY 2023), associated support, continued development of systems, and advance procurement for an additional five aircraft in FY 2023.

Prime Contractor(s): Airframe: Northrop Grumman Corporation; Bethpage, NY (Engineering) and St. Augustine, FL (Manufacturing)
Engine: Rolls-Royce Corporation; Indianapolis, IN
Radar: Lockheed Martin Corporation; Syracuse, NY

E-2D Advanced Hawkeye						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	221.1	-	275.8	-	386.9
Procurement	6	1,260.4	5	909.3	5	884.9
Total	6	1,481.5	5	1,185.1	5	1,271.7

Numbers may not add due to rounding

P-8A Poseidon

The P–8A Poseidon is a multi-mission platform designed to replace the P-3C Orion propeller driven aircraft. This derivative of the Boeing 737 aircraft is an all-weather, twin engine, maritime patrol aircraft designed to sustain and improve armed maritime and littoral capabilities in traditional, joint, and combined roles to counter changing and emerging threats. All sensors onboard contribute to a single fused tactical situation display, which is shared over both military standard and internet protocol data links, allowing for seamless delivery of information between U.S. and allied forces. The P-8A carries a new radar array, which is a modernized version of the Raytheon APS-149 Littoral Surveillance Radar System.

Mission: Provides Maritime Patrol Anti-Submarine Warfare (ASW), Anti-Surface Warfare (ASuW), and Intelligence, Surveillance and Reconnaissance (ISR) capabilities in maritime and littoral areas above, on, and below the surface of the ocean.

FY 2022 Program: Procures support equipment, spares and repair parts. Continues research and development on aircraft systems. FY 2021 is the last year of production for this aircraft.

Prime Contractor(s): Airframe: Boeing; Seattle, WA
Engine: CFM International; Cincinnati, OH

P-8A Poseidon						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	158.0	-	209.4	-	201.1
Procurement	8	1,488.1	9	1,575.0	-	44.6
Total	8	1,646.0	9	1,784.4	-	245.7

Numbers may not add due to rounding

VH-92A Presidential Helicopter

The VH-92A replaces the legacy Presidential Helicopter fleet, the VH-3D and the VH-60N, which were fielded in 1974 and 1989. The VH-92A is based on Sikorsky's commercial S-92A helicopter. The VH-92A's acquisition strategy involves the integration of mature government-defined mission systems and an executive interior into an existing air vehicle. The program entered the Engineering and Manufacturing Development (EMD) phase in FY 2014, which is expected to conclude in FY 2021, and received Milestone C approval in the third quarter of FY 2019. A total of 21 operational aircraft will be procured. Two EMD and four System Demonstration Test Article (SDTA) aircraft have been delivered in EMD.

Mission: Provide safe, reliable and timely transportation for the President, Vice President, Foreign Heads of State, and other official parties as directed by the Director of the White House Military Office. Mission tasking includes administrative lift and contingency operations.

FY 2022 Program: Funds modification for the VH-92A improvement program for sustainment and operations.

Prime Contractor(s): Sikorsky Aircraft Corporation; Stratford, CT

VH-92A Presidential Helicopter						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	170.4	-	96.7	-	45.9
Procurement	6	641.0	5	577.6	-	45.3
Total	6	811.4	5	674.3	-	91.2

Numbers may not add due to rounding

CH-53K Heavy Lift Replacement Helicopter

The CH-53K King Stallion is the only marinized heavy-lift helicopter and replaces the U.S. Marine Corps CH-53E Super Stallion, which was introduced in 1980. The CH-53K provides improved lift and range capabilities, payload, performance, cargo handling, reliability and maintainability, interoperability, survivability, ship integration, and force protection. The CH-53K is designed to support Marine Air-Ground Task Force (MAGTF) heavy-lift requirements in the 21st century joint environment, and is the only heavy-lift platform that can lift the MAGTF ashore. The CH-53K provides an unparalleled high-altitude lift capability with nearly three times the external lift capacity of the CH-53E. Total CH-53K program of record quantity is 200 aircraft with 4 System Demonstration Test Articles (SDTAs) and 196 to be funded with Aircraft Procurement, Navy. The program is currently in Low Rate Initial Production (LRIP). First flight occurred in October 2015 and Initial Operational Capability (IOC) is scheduled for FY 2021.

Mission: Conducts expeditionary heavy-lift assault transport of armored vehicles, equipment, and personnel to support distributed operations deep inland from a sea-based center of operations.

FY 2022 Program: Funds continuing development, including System Development and Demonstration (SDD) activities, such as additional ground and flight testing of 1 Ground Test Vehicle, 4 Engineering Development Models (EDMs), 4 System Demonstration Test Articles (SDTAs), and related subsystems and components. The program also funds the procurement of 9 aircraft.

Prime Contractor(s): Sikorsky Aircraft Corporation; Stratford, CT

CH-53K Heavy Lift Replacement Helicopter						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	489.7	-	406.4	-	256.9
Procurement	6	1,062.6	9	1,308.8	9	1,469.2
Total	6	1,552.3	9	1,715.2	9	1,726.1

Numbers may not add due to rounding

AH-1Z Viper/UH-1Y Venom

The H–1 program replaces the AH–1W Super Cobra and the UH–1N Huey helicopters with the AH–1Z Viper and UH–1Y Venom, the next generation of Marine Corps Attack and Utility aircraft. Speed, range, and payload have been increased significantly while supportability demands, training timelines, and total ownership cost have decreased. The advanced cockpit is common to both aircraft, reduces operator workload, improves situational awareness, and provides growth potential for future weapons and joint digital interoperability enhancements. The cockpit systems integrate onboard planning, communications, digital fire control, all weather navigation, day/night targeting, and weapons systems in mirror-imaged crew stations. The procurement strategy converted 37 AH-1W helicopters into AH-1Zs (complete), built 152 new AH-1Zs, remanufactured 10 H-1N helicopters into UH-1Ys (complete), and built 150 new UH-1Y models. The UH-1Y production completed in FY 2016 and AH-1Z completed full rate production in FY 2019.

Mission: AH-1Z: Provides close air support, air interdiction, armed reconnaissance, strike coordination and reconnaissance, forward air control (airborne), and aerial escort during day/night operations in support of naval expeditionary operations or joint and combined operations. UH-1Y: Provides combat assault transport, close air support, armed reconnaissance, strike coordination and reconnaissance, forward air control (airborne), air delivery, airborne command and control, aerial escort and air evacuation during day/night and reduced weather conditions.

FY 2022 Program: Funds modifications for avionics improvements, sensors and weapons, and air vehicle improvements. Continues funding AH-1Z production support until the final aircraft delivery in 2022.

Prime Contractor(s): Airframe: Bell Helicopter Textron, Incorporated; Fort Worth, TX;
Engines: General Electric Company; Lynn, MA.

H-1 Program: AH-1Z Viper / UH-1Y Venom						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	59.6	-	57.1	-	50.2
Procurement	-	158.0	-	138.3	-	125.1
Total	-	217.6	-	195.4	-	175.3

Numbers may not add due to rounding

B-21 Raider

The B-21 Raider, previously referred to as the Long Range Strike-Bomber (LRS-B), is a new, high-tech long range bomber that will eventually replace a portion of the Air Force's bomber fleet. The B-21 will be a key component of the joint portfolio of conventional and nuclear capable deep-strike capabilities. The B-21 conventional initial operational capability (IOC) will be fielded in the mid-2020's. The B-21 is being designed as a dual capable aircraft, with the ability to employ nuclear weapons, per congressional direction, not later than 2 years after conventional IOC. The B-21 program is exploring opportunities to achieve nuclear certification at the earliest opportunity. Highly survivable, the B-21 Raider will have the ability to penetrate modern air defenses. The Air Force plans to procure a minimum of 100 aircraft. Manufacturing of the initial test aircraft is underway at Northrop Grumman's Palmdale California facility. The 420th Flight Test Squadron at Edwards Air Force Base (AFB) was reactivated on October 4, 2019 to prepare for B-21 flight test. Additionally, on March 27, 2019, the Secretary of the Air Force announced that Ellsworth AFB, South Dakota, Whiteman AFB, Missouri and Dyess AFB, Texas are the preferred Main Operating Base locations. The final basing decision is expected in 2021, following compliance with the National Environmental Policy Act (NEPA) and other regulatory and planning processes.

Mission: Destroys strategic targets to debilitate an adversary's capacity to wage war. The B-21 will maintain the capability to operate in contested environments, counter emerging threats, and support the nuclear triad by providing a visible and flexible nuclear deterrent capability. Additional details of the B-21 are currently classified.

FY 2022 Program: Continues Engineering and Manufacturing Development of the B-21. FY 2022 is the first year of advance procurement funding.

Prime Contractor(s): Northrup Grumman Corporation; Falls Church, VA

B-21 Raider						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	2,878.8	-	2,843.2	-	2,872.6
Procurement	-	-	-	-	-	108.0
Total	-	2,878.8	-	2,843.2	-	2,980.6

Numbers may not add due to rounding

Bombers

Bombers provide an intercontinental capability to rapidly strike surface targets. The Air Force legacy bomber fleet includes the B-1B, B-2, and B-52H aircraft. The B-1B Lancer is a swing-wing, supersonic, long-range conventional bomber and carries the largest payload of both guided and unguided weapons in the Air Force inventory. The multi-mission B-1B is the backbone of the U.S. long-range conventional bomber force and can rapidly deliver massive quantities of precision (and non-precision) weapons against any adversary, any place in the world, at any time. The B-2 Spirit is a multi-engine, long range conventional and nuclear bomber incorporating low-observable technology that enables the B-2 to penetrate enemy air defenses and strike high-value targets. The B-52H Stratofortress is a long range, subsonic, strategic bomber that maintains nuclear and conventional missions.

Mission: Fly into enemy territory to destroy strategic targets such as major military installations, factories, and ports to debilitate an adversary's capacity to wage war. The B-1B bomber can perform a variety of missions, including that of conventional carrier for theater operations and can rapidly deliver massive quantities of precision and non-precision weapons against any adversary, worldwide, at any time. The B-2 aircraft delivers both conventional and nuclear munitions, capable of massive firepower in short time anywhere, is the only aircraft capable of penetrating enemy defenses to bomb heavily defended targets, and is the only aircraft to carry the 30,000 pound GBU-57 Massive Ordnance Penetrator. The B-52H aircraft maintains nuclear or conventional missions and carries the widest variety of weapons of all the bombers, including the only aircraft to carry the AGM-86 Air Launched Cruise Missile (ALCM) nuclear cruise missile.

FY 2022 Program: Continues upgrades to modernize legacy bombers.

Prime Contractor(s): B-2: Northrop Grumman Aerospace Systems; Palmdale, CA
B-1B, B-52H: Boeing Defense; Oklahoma City, OK

Bombers						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	618.8	-	679.5	-	889.0
Procurement	-	96.3	-	119.9	-	181.5
Total	-	715.1	-	799.4	-	1,070.5

Note: Includes Modification Program *Numbers may not add due to rounding*

KC-46A Tanker

USAF Photo

The KC-46 Pegasus, an aerial refueling tanker, will provide aerial refueling support to the Air Force, Navy, and Marine Corps aircraft. The aircraft provides increased refueling capacity, improved efficiency, and increased cargo and aeromedical evacuation capability over the current KC-135 Stratotanker which is more than 50 years old. The first phase of aerial refueling tanker recapitalization will procure 179 aircraft, approximately one-third of the current legacy tanker fleet. Follow-on programs will ultimately recapitalize the entire tanker fleet over a period of more than 30 years. The KC-46 aircraft is assembled on the existing commercial 767 production line and militarized in the Everett Modification Center, both of which are located in Everett, Washington.

Mission: Provides the capability to refuel joint and coalition receivers via a boom or drogue system and will augment the airlift fleet with cargo, passenger and aeromedical evacuation capabilities. Tanker aircraft are used to support these missions at the strategic, operational, and tactical level across the entire spectrum of military operations. The KC-46 aircraft will operate in day/night and adverse weather to enable deployment, employment, and redeployment of U.S. and Coalition forces.

FY 2022 Program: Procures 14 aircraft and continues the Air Force's development efforts of a militarized variant of the Boeing 767-2C aircraft, the integration of military capabilities into four development aircraft and the developmental and operational testing. Supports the development of technical manuals, training systems, and collection of simulator and maintenance data.

Prime Contractor(s): The Boeing Company; Seattle, WA

KC–46A Tanker						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	52.6	-	76.0	-	73.5
Procurement	12	2,139.7	15	2,665.3	14	2,380.3
Mods	-	5.2	-	4.1	-	2.0
Total	12	2,197.5	15	2,745.4	14	2,455.8

Note: Includes Modification Program *Numbers may not add due to rounding*

VC-25B Presidential Aircraft Recapitalization

The VC-25B Presidential Aircraft Recapitalization program will replace the current VC-25A (Boeing 747-200) "Air Force One" aircraft with a new, modified 747-8. The VC-25B will provide the President, staff, and guests with safe and reliable air transportation at the same level of security and communications capability available in the White House. Due to its advancing age, the VC-25A is experiencing increasing out of service times – currently well over a year for heavy maintenance to maintain compliance with Federal Aviation Administration air worthiness standards.

Mission: Provides safe, secure, worldwide transport to ensure the President can execute the constitutional roles of Commander-in-Chief, Head of State, and Chief Executive.

FY 2022 Program: Funds continues the Engineering and Manufacturing Development phase of the acquisition and modifications to the commercial aircraft to field the capability by 2025.

Prime Contractor(s): The Boeing Company; Seattle, WA

VC-25B Presidential Aircraft Recapitalization						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	730.2	-	799.4	-	680.7
Procurement	-	-	-	-	-	-
Total	-	730.2	-	799.4	-	680.7

Numbers may not add due to rounding

F-22 Raptor

The F-22 Raptor is a fifth-generation air superiority fighter aircraft. The Raptor is designed to penetrate enemy airspace and achieve first-look, first-kill capability against multiple targets. It has unprecedented survivability and lethality, ensuring the Joint Forces have freedom from attack, freedom to maneuver, and freedom to attack.

Mission: Provides the U.S. enhanced air superiority/global strike capability to counter and defeat air-air and air-ground threats in a highly contested environment by conducting counter air, Destruction of Enemy Air Defenses (DEAD) and cruise missile defense missions.

FY 2022 Program: Continues critical planned modernization for F-22 aircraft via incremental capability upgrades, incremental development efforts, and key reliability and maintainability improvements that will enhance the F-22 Air Superiority and Global Strike capabilities in a contested environment. With the completion of Increment 3.2B modernization, the F-22 Capabilities Pipeline program will continue to field upgraded Communications Systems, Navigation Systems, and critical Sensor Enhancement for the F-22 to meet advanced threats expected in 2025 and beyond.

Prime Contractor(s): Airframe: Lockheed Martin; Marietta, GA and Fort Worth, TX
Engine: Pratt & Whitney; Hartford, CT

F-22 Raptor						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	537.2	-	663.8	-	647.3
Procurement	-	209.3	-	363.5	-	424.7
Total	-	746.5	-	1,027.3	-	1,072.0

Note: Includes Modification Program

Numbers may not add due to rounding

F-15 Eagle

The F-15C/D is a twin engine (F-15C single seat; F-15D dual seat), supersonic, all-weather, day/night, air superiority fourth-generation fighter aircraft. The F-15E is a twin engine, dual seat, supersonic dual-role, day/night, all-weather, deep interdiction fighter with multi-role air-to-air/air-to-ground capabilities.

Mission: Supports the fifth-generation fighter fleet to gain and maintain air superiority and provide global precision attack over the battlefield.

FY 2022 Program: Continues procurement of the F-15EX, which will initially refresh the F-15C/D fleet with a planned total buy of 144 aircraft, with the potential to refresh the remainder of the F-15C/D fleet and the F-15E fleet. Continues the F-15E Radar Modernization Program (RMP), seeking to replace the legacy radar using existing technology from other aviation platforms and solve parts obsolescence problems to improve reliability and performance, which will include increased synthetic aperture radar range, resolution, and air-to-air and air-to-ground modes. Continues engineering and manufacturing development efforts for the Eagle Passive/Active Warning Survivability System (EPAWSS) to improve F-15E survivability by enhancing the ability to detect, deny, or defeat air and ground threats. Ends F-15C/D modernization efforts, except the safety-of-flight longeron upgrade program, in anticipation of F-15C/D fleet retirement by the end of FY 2026.

Prime Contractor(s): Boeing; St. Louis, MO

F-15EX Eagle II / F-15E Eagle						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
F-15EX						
RDT&E	2	431.8	-	159.5	-	118.1
Procurement	6	621.1	12	1,367.1	12	1,334.8
Subtotal	8	1,052.9	12	1,526.6	12	1,452.9
F-15E Mods						
RDT&E	-	254.4	-	458.7	-	351.6
Procurement	-	565.4	-	203.9	-	384.1
Subtotal	-	819.7	-	662.7	-	735.8
Total	8	1,872.6	12	2,189.3	12	2,188.7

Note: Includes Modification Program

Numbers may not add due to rounding

HH-60W Combat Rescue Helicopter


USAF Photo

The HH-60W Program, formerly referred to as the Combat Rescue Helicopter (CRH) and the HH-60 Recapitalization, replaces the aging HH-60G Pave Hawk helicopter. The HH-60W Jolly Green II design is based on the U.S. Army's UH-60M Black Hawk, tailored for Combat Search and Rescue (CSAR) in all-weather situations. The HH-60W program leverages in-service air vehicle designs and training systems and integrates existing technologies and missions systems to build and acquire a new system. Onboard defensive capabilities and planned upgrades will permit the HH-60W to operate in an increased threat environment. An in-flight refueling capability will provide an airborne ready alert capability and extend its combat mission range. The HH-60W program plans to procure 105 aircraft.

Mission: Conducts day and night marginal weather CSAR in order to recover downed aircrew and isolated personnel in hostile environments. The HH-60W will perform a wide array of collateral missions, including casualty evacuation (CASEVAC), medical evacuation (MEDEVAC), non-combat evacuation operations, civil search and rescue, international aid, disaster humanitarian relief, and insertion/extraction of combat forces.

FY 2022 Program: Continues procurement of 14 HH-60Ws and funds modifications for the Distributed Aperture Infrared Counter Measure and other various system upgrades.

Prime Contractor(s): Sikorsky Aircraft Corporation (a Lockheed Martin Company); Stratford, CT

HH-60W Combat Rescue Helicopter						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	238.5	-	63.1		66.4
Procurement	12	850.5	19	1,083.9	14	853.4
Total	12	1,089.0	19	1,147.0	14	919.8

Numbers may not add due to rounding

Advanced Pilot Training (T-7A)

The Advanced Pilot Training (APT) System, T-7A, will replace the Air Education and Training Command's fleet of T-38C aircraft, currently based in Mississippi, Oklahoma, and Texas. The APT program will provide aircraft, simulators, and advanced training capabilities needed to train future Air Force pilots to fly fourth and fifth-generation fighter aircraft. The aircraft, with modern simulators, will enable a pilot training process that produces pilots at a rate that meets the needs of the Air Force for the next several decades.

Mission: Provides student pilots, in the Specialized Undergraduate Pilot Training advanced phase and Introduction to Fighter Fundamentals, the skills and competencies required to more effectively transition into fourth and fifth-generation fighter and bomber aircraft. The aircraft and maintenance simulators will encompass a full range of physical devices and instructional techniques (e.g., traditional classroom, online training, and virtual training).

FY 2022 Program: Accepts delivery of five engineering manufacturing test aircraft and ground training devices. Continues development, test, and evaluation efforts for the program.

Prime Contractor(s): The Boeing Company; St. Louis, MO

Advanced Pilot Training (T-7A)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	328.4	-	248.2	-	188.9
Procurement	-	-	-	-	-	10.4
Total	-	328.4	-	248.2	-	199.3

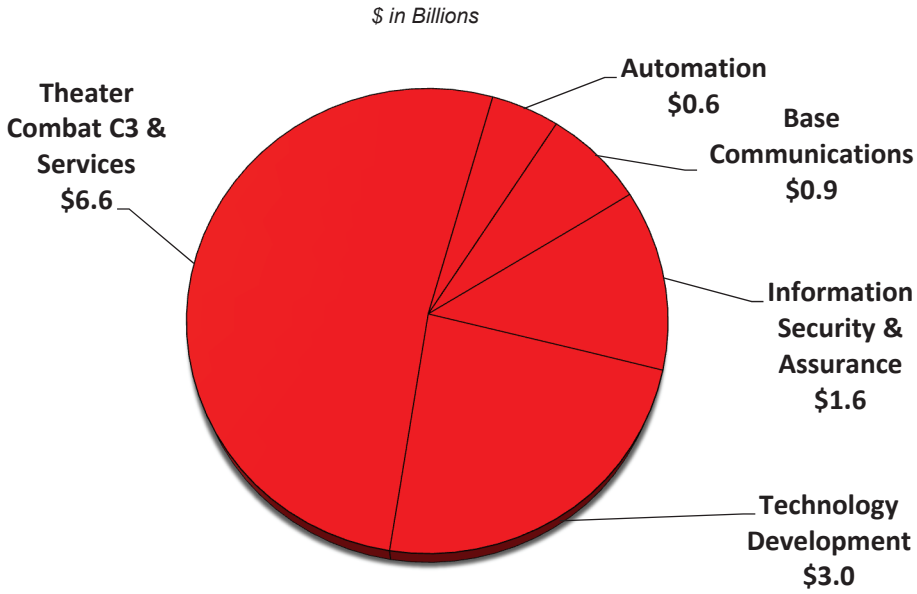
Numbers may not add due to rounding

Command, Control, Communications, Computers, and Intelligence (C4I) Systems

The Department is well underway in transforming and developing new concepts for the conduct of future joint military operations to achieve full spectrum dominance. This overarching goal to defeat any adversary or control any situation across the full range of military operations is achieved through a broad array of capabilities enabled by an interconnected network of sensors, shooters, command, control, and intelligence. Net-centricity transformed the way information is managed to accelerate decision making, improve joint warfighting, and create intelligence advantages. U.S. forces are heavily-networked and require reliable, secure, and trusted access to information and depend on network-based interconnectivity for increased operational effectiveness. By enhancing information sharing, dispersed forces are able to communicate, maneuver, share a common user-defined operating picture, and successfully complete assigned missions more efficiently.

The FY 2022 budget request supports the net-centricity service-based architecture pattern for information sharing. It is being implemented by the C4I community via building joint architectures and roadmaps for integrating joint airborne networking capabilities with the evolving ground, maritime, and space networks. It encompasses the development of technologies like gateways, waveforms, network management, and information assurance.

FY 2022 C4I Systems Total: $12.7 Billion



Numbers may not add due to rounding

Tactical Network Technology

Tactical Network Technology (TNT) Modernization in Service (MIS) provides the Army's operational formations with modernized At-the-Halt (ATH) and On-the-Move (OTM) satellite and line of sight network connectivity through technological improvement of the fielded tactical network baseline. This ATH and OTM TNT capability keeps highly mobile and dispersed forces connected to one another from theater down to select company roles. The TNT backbone allows forces to leverage Army and Joint resources through the Department of Defense Information Network (DoDIN), providing tactical formations with reliable, secure, and seamless video, data, imagery, and voice services which enable multi-domain operations.

TNT MIS supports the near-term objectives of the Army Network Modernization Strategy by replacing over time, non-sustainable/end of life equipment (switches, routers, servers, etc.) with technology that meets cyber and electronic warfare resiliency requirements of the expeditionary Army. This modernization reduces life cycle costs by reducing size, weight, and power; consolidating capabilities that previously resided on individual hardware components; and by leveraging common commercial information technology solutions across various programs.

Mission: Modernizes the Tactical Network as one the Army's top six modernization priorities for multi-domain operations.

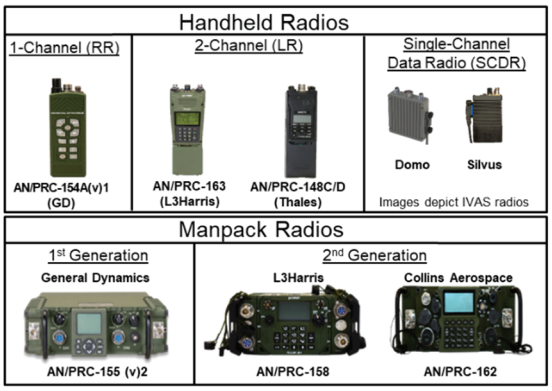
FY 2022 Program: Addresses four Expeditionary Signal Battalion-Enhanced units and upgrades 40 units within the Corps through Battalions across the Army, Army Reserve, and Army National Guard by modernizing their network transport systems and regional hub nodes.

Prime Contractor(s): General Dynamics Mission Systems, Taunton, MA
Envistacom, Atlanta, GA
L3Harris, Rochester, NY

Tactical Network Technology						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	-	-	-
Procurement	-	530.1	-	411.2	-	436.5
Total	-	530.1	-	411.2	-	436.5

Numbers may not add due to rounding

Handheld, Manpack, and Small Form Fit Radio DOD - JOINT



The Handheld, Manpack, and Small Form Fit (HMS) radio program is a single Acquisition Category IC program encompassing: handheld radios (one-channel Rifleman Radio (RR), two-channel Leader Radio (LR), and Single-Channel Data Radio (SCDR)) and Manpack (MP) radios (Generation 1 and Generation 2 radios). The HMS provides voice and data communication to the expeditionary Warfighter with an On-the-Move (OTM), At-the-Halt (ATH), and stationary Line of Sight (LOS) / Beyond Line of Sight (BLOS) capability for both dismounted personnel and platforms. The radio systems are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communication. The radios will support a variety of other platforms, including tactical end user device voice and data needs. The HMS provides tailorable and scalable software-defined radio systems to meet the communication needs of the U.S. Army, Air Force, Navy, Marine Corps, and Special Operations Command.

Mission: Provide voice and data communications to the tactical edge and the expeditionary Warfighter with an OTM, ATH, and stationary LOS / BLOS capability for both dismounted personnel and mounted platforms.

FY 2022 Program: Funds the procurement of the LR, SCDR, and MP radios for five Brigade Combat Teams, support equipment, fielding, non-recurring engineering, and platform vehicle integration. Provides for follow - on testing of the LR and MP products to demonstrate compliance with program requirements to assess effectiveness, suitability, and survivability. Supports safety, spectrum supportability, and certifications necessary to prepare products for fielding.

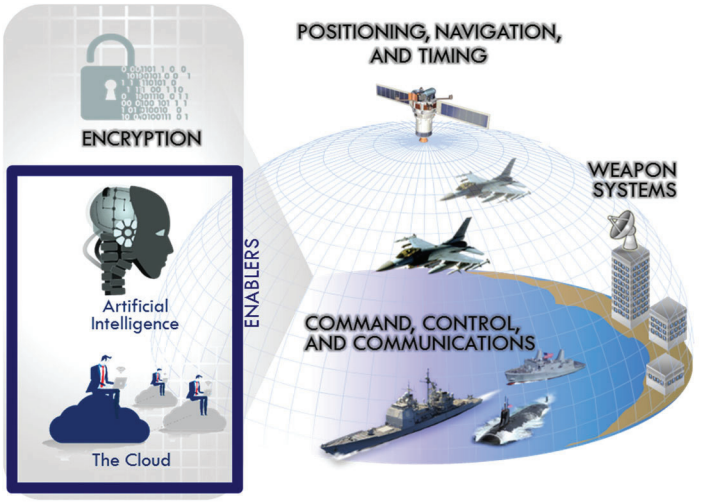
Prime Contractor(s): L3Harris Radio Corporation; Rochester, NY
Thales Communications Incorporated; Clarksburg, MD
Collins Aerospace; Cedar Rapids, IA

Handheld, Manpack, and Small Form Fit Radio						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	27.2	-	20.5	-	28.8
Procurement	-	468.0	-	547.1	-	775.1
Total	-	495.3	-	567.7	-	803.9

Numbers may not add due to rounding

Cyberspace Activities

DOD - JOINT



The Department of Defense (DoD) released a new DoD Cyber Strategy in September 2018 that articulates how the Department will implement priorities of the National Defense Strategy in and through cyberspace. The central challenge identified in the Strategy acknowledges that the U.S. prosperity and security depend on open and reliable access to information. Nations deterred from directly confronting U.S. military strength are using cyberspace operations in day-to-day competition to exploit a perceived advantage and harm our interests. China, Russia, Iran, North Korea, as well as cyber criminals, are engaging in persistent, aggressive cyberspace campaigns that pose strategic, long-term risks to the Nation, our allies, and partners. In response to the growing cybersecurity threats, the Department conducted a DoD Cyber Posture Review that provided a comprehensive assessment of the Department's ability to successfully execute the Strategy and identifying key gaps.

Mission: Ensure the Joint Force can achieve its missions in a contested cyberspace domain; enhance Joint Force military advantages through the integration of cyber capabilities into planning and operations; deter, preempt, and defeat malicious cyber activity targeting U.S. critical infrastructure; secure DoD information and systems; and expand DoD cyber cooperation with allies, partners, and private sector entities.

FY 2022 Program: Focus on the implementation of the 2018 DoD Cyber Strategy; continuing to reduce risk to networks, systems, and information; and growing the cyber warfighting capabilities. The FY 2022 program funds investment in cybersecurity; cyberspace operations (including the Cyber Mission Force); and cyber science and technology.

Cyberspace Activities						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	2,304.4	-	2,328.5	-	2,291.0
Procurement	-	790.1	-	780.4	-	713.2
Total	-	3,094.6	-	3,108.9	-	3,004.3

Numbers may not add due to rounding

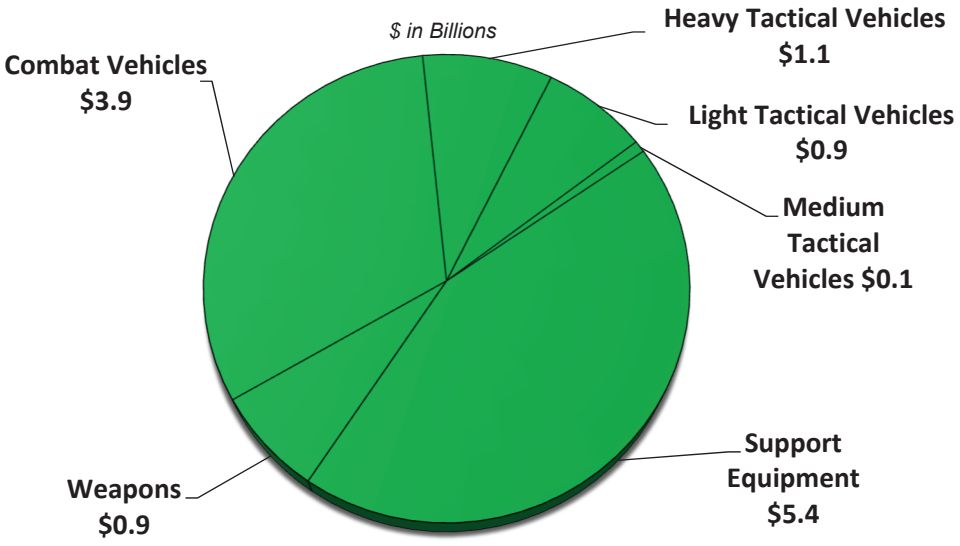
Ground Systems

The Department is modernizing its ground force capabilities to ensure the United States remains a dominant force capable of operating in all environments across the full spectrum of conflict. The Army and Marine Corps equip each soldier and Marine with the best equipment available to succeed in both today's and tomorrow's operations. Ongoing technology research and concept exploration will benefit future Army and Marine Corps combat portfolios.

The ground forces modernization plan addresses the challenges of the future operational environment. In addition to upgrades to legacy equipment, the overall strategy embraces new capability, like the Armored Multi-Purpose Vehicle (AMPV) and the Amphibious Combat Vehicle (ACV), as well as development of the Optionally Manned Fighting Vehicle (OMFV). The OMFV will comprise of a fleet of vehicles with enhanced capabilities and a greater commonality of parts and components to simplify logistics and maintenance.

The Army continues to modernize and upgrade select Major Defense Acquisition Programs in its FY 2022 request, including Stryker vehicles, upgrading the Abrams Main Battle Tank to the M1A2C System Enhancement Package (SEP) V3 configuration, the M2 Bradley Fighting Vehicles, the M109A7 Paladin 155mm howitzers, and the Armored Multi-Purpose Vehicle (AMPV). The Marine's ground force focus, in FY 2022, is on the Amphibious Combat Vehicle (ACV). The ACV will deliver shore and sea-based infantry to the battlefield in vehicles designed for future operational environments. All the Services will procure the Joint Light Tactical Vehicle (JLTV) as part of the Low Rate Initial Production (LRIP).

FY 2022 Ground Systems Total: $12.3 Billion



Numbers may not add due to rounding

Joint Light Tactical Vehicle

DOD - JOINT

The Joint Light Tactical Vehicle (JLTV) is a joint program currently in development for the Army and Marine Corps with procurements for the Navy and Air Force. The JLTV replaces the High Mobility Multipurpose Wheeled Vehicle (HMMWV), which is the current light tactical vehicle. The JLTV concept includes a 3.5 ton Combat Support Vehicle and a 5.1 ton Combat Tactical Vehicle and is based on a family of vehicles focused on scalable armor protection, vehicle agility, and mobility required of the light tactical vehicle fleet. The JLTV provides defensive measures to protect troops in transport, increase payload capability, and achieve commonality of parts and components to reduce the vehicle's overall life cycle costs. The JLTV program optimizes performance, payload, and protection of the crew and vehicle while ensuring a design that is transportable by CH-47, CH-53, and C-130 aircraft. The program completed Low Rate Initial Production (LRIP) and began Full Rate Production (FRP) as of May 30, 2019.

Mission: Provide a light tactical vehicle capable of performing multiple mission roles, and providing protected, sustained, networked mobility for personnel and payloads across the full range of military operations.

FY 2022 Program: Procures more than 3,700 JLTV vehicles and trailers of various configurations across the Department for the Army, Navy, Marine Corps, and Air Force to fulfill multiple mission roles and requirements and minimize ownership costs for the light tactical vehicle fleet.

Prime Contractor(s): Oshkosh Defense, LLC; Oshkosh, WI

Joint Light Tactical Vehicle						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E USA	-	7.1	-	1.7	-	2.6
RDT&E USMC	-	2.1	-	2.5	-	2.0
Procurement USA	3,740	1,046.0	3,015	940.5	2,744	603.9
Procurement USMC	1,328	555.6	775	368.7	883	322.0
Procurement USAF	133	73.4	141	57.0	158	97.4
Procurement Navy	29	32.3	28	31.5	14	27.4
Total	5,230	1,716.5	3,959	1,401.9	3,799	1,055.3

Numbers may not add due to rounding

M-1 Abrams Tank Modification/Upgrades

US Army Photo

The M1A2 Abrams is the Army's main battle tank, which first entered service in 1980. Since ending production in 1994, the Army has modernized the Abrams with a series of capabilities upgrades collectively known as the System Enhancement Package (SEP) and Engineering Change Proposals (ECPs). Current modifications to the M1 Abrams include an updated Armor suite; Ammunition Data Link; Commander's Remote Operated Weapon Station - Low Profile, Under Armor Auxiliary Power Unit; Electronics Upgrades; Power Train Improvement & Integration Optimization, which provide more reliability, durability and fuel efficiency; and survivability enhancements such as Active Protection System upgrades.

Mission: Provide mobility, protected firepower, and shock effect for battlefield superiority against heavy armor forces.

FY 2022 Program: Continues funding for two Engineering Change Proposals (ECPs): production of the M1A2 System Enhancement Package (SEPv3) (ECP 1A - Power) tank and fields one brigade of the M1A2 SEPv3 tanks to the Active Component (fourth quarter of FY 2021 and fourth quarter of FY 2022); and the M1A2 SEPv4 (ECP IB - lethality improvements) continue development. The FY 2022 request also funds the upgrade of 70 M1A2 vehicle variants to the M1A2 SEPv3 tank. The request funds continuing multiple field modifications to include Ammunition Data Link (ADL), Commander's Remote Operating Weapon Station – Low Profile (CROWS-LP), Trophy Active Protection System (APS) capable, and Trophy logistics support.

Prime Contractor(s): General Dynamics Corporation; Lima, OH

M-1 Abrams Tank Modification/Upgrades						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	114.7	-	61.0	-	50.3
Procurement	171	2,071.3	102	1,343.2	70	981.3
Total	171	2,186.0	102	1,404.2	70	1,031.7

Numbers may not add due to rounding

Armored Multi-Purpose Vehicle

The Armored Multi-Purpose Vehicle (AMPV) will replace the M113 Armored Personnel Carrier program that was terminated in 2007. The AMPV has five mission roles: General Purpose, Medical Treatment, Medical Evacuation, Mortar Carrier, and Mission Command. The current M113 Armored Personnel Carrier Mission Equipment Packages (MEPs) will be integrated with a new hull structure based on the Bradley Fighting Vehicle design to give the Army its required capability at an affordable cost. The program is in the Production and Deployment (PD) phase with current efforts including the procurement of Live Fire Assets, Low Rate Initial Production (LRIP), and Product Qualification Testing.

Mission: Enables the Armored Brigade Combat Team (ABCT) commander to control a relentless Optempo that overwhelms the threat with synchronized and integrated assaults that transition rapidly to the next engagement.

FY 2022 Program: Continues funding for Initial Operational Test & Evaluation, Logistic/Product Support, and Engineering Change Orders, and general program support.

Prime Contractor(s): BAE Systems; York, PA

Armored Multi-Purpose Vehicle (AMPV)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	80.4	-	76.1	-	35.6
Procurement	86	444.8	-	63.0	-	104.7
Total	86	525.2	-	139.1	-	140.3

Numbers may not add due to rounding

Next Generation Squad Weapon

The Next Generation Squad Weapon (NGSW) Middle Tier Acquisition (MTA) Rapid Prototyping effort is developing a new rifle (NGSW-R) and automatic rifle (NGSW-AR) with a common 6.8mm cartridge in a variety of ammunition types (General Purpose (GP), Special Purpose (SP), Reduced Range (RR), and blank) intended to replace the M16, M4A1 Carbines and the M249 Squad Automatic Weapon in the Close Combat Force. This MTA Rapid Prototyping initiative supports Army Modernization priorities (Build a More Lethal Force) through enhancement of Joint Lethality in contested environments like Multi-Domain Operations (MDO) by eliminating erosion of close combat capability relative to peer competitors in complex terrain as outlined in the National Defense Strategy (NDS).

Mission: Provides the new more lethal carbine and Squad Automatic Weapon (SAW) provides Brigade Combat Teams with additional capability when engaging an adversaries ground forces.

FY 2022 Program: Transitions the Fire Control Line of Effort from Rapid Prototyping to Rapid Fielding, leveraging an Other Transaction Authority (OTA) Production Award and the selected vendor(s) will be scaling up production. The Weapons and Ammunition Line of effort are scheduled to transition to Rapid Fielding in the first quarter of FY 2022. The Army will select the weapons and ammunition and intends on awarding a ten year, Indefinite Delivery/Indefinite Quantity (IDIQ), Federal Acquisition Regulation based contract. The selected vendor will load, assemble, and pack the Army provided projectiles into their 6.8mm cartridge, and manufacture a blank cartridge with associated weapon adaption kit. The rifle, automatic rifle, common cartridge and fire control are required to support the fielding and training of the close combat force. The First Unit Equipped is planned for the fourth quarter of FY 2022.

Prime Contractor(s): To be determined during evaluations.

Next Generation Squad Weapon						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	86.2	-	88.6	-	67.9
Procurement	-	-	-	35.8	-	97.1
Total	-	86.2	-	124.4	-	165.0

Numbers may not add due to rounding

Paladin Integrated Management (PIM) USA

The Paladin Integrated Management (PIM) replaces the current fleet of M109 Family of Vehicles (FOV), the M109A6 Paladin 155mm Howitzer and the Field M992A2 Artillery Ammunition Support Vehicle (FAASV), with more robust platforms: the M109A7 Self Propelled Howitzer (SPH) and the M992A3 Carrier Ammunition Tracked (CAT). The Army is using a two increment approach to upgrade and modernize the existing M109 fleet to fill the capability gap left by the 2009 cancellation of the Non-Line of Sight Cannon (NLOS-C): mobility improvements and later lethality, range, and reliability improvements. The Army plans to procure 689 PIM sets and sustain them through 2050. The PIM Low Rate Initial Production (LRIP) was extended in FY 2018 with a successful Full Rate Production (FRP) decision in FY 2020.

Mission: Provide the primary indirect fire support for Armored Brigade Combat Teams, armored and mechanized infantry divisions, and the full spectrum of operations.

FY 2022 Program: Funds the continuation of Full Rate Production or FRP with the procurement of 25 system sets.

Prime Contractor(s): BAE Systems; York, PA

Paladin Integrated Management (PIM)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	191.1	-	218.0	-	213.3
Procurement	96	553.4	31	463.4	25	446.4
Total	96	744.5	31	681.4	25	659.7

Numbers may not add due to rounding

Family of Medium Tactical Vehicles

USA

The FMTV is a complete series or family of vehicles based on a common chassis with automatic transmission and that vary based on different payload and mission requirements. The FMTV operate throughout the theater as multipurpose transportation and unit mobility vehicles by Combat, Combat Support, and Sustainment Units. The FMTV variants consist of: the Light Medium Tactical Vehicle 2.5 ton Cargo, Van, and Low Velocity Air Drop (LVAD) models; Medium Tactical Vehicle 5 ton Cargo Standard Wheelbase; Long Wheelbase, Tractor, LVAD Cargo, Expansible Van; 5 ton Dump; 5 ton LVAD Dump; Wrecker; 10 ton Dump; 8.8 ton Load Handling System (LHS); and three types of companion trailers. Eighty percent of the FMTV's parts are common with similar engines, transmissions, drivelines, power trains, tires, and cabs.

Mission: Provides unit mobility and resupply of equipment and personnel for rapidly deployable worldwide operations on primary and secondary roads, trails, cross-country terrain, and all climatic conditions.

FY 2022 Program: Funds the procurement of 83 Armor Capable Medium Tactical Vehicle Trucks and Trailers. The various Medium Tactical Vehicles fill the 8-ton truck requirement, fulfill Army modularity requirements and modernize the medium fleet, reduce operating and support costs, resolve potential operational deficiencies, and operate throughout the theater as a multi-purpose transportation vehicle used by combat, combat support, and combat support units.

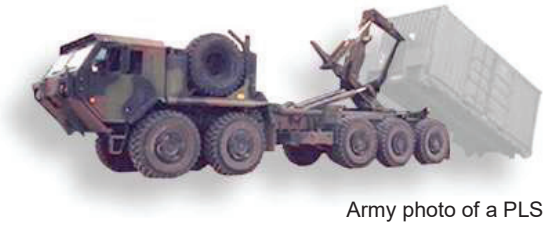
The A2 program, an evolution of the FMTV's A1P2 vehicle program, incorporates new technologies to rebalance the iron triangle of payload, performance, and protection. The vehicle is capable of transporting a heavier payload over more difficult terrain in a shorter amount of time with greater protection than its predecessor. The A2 program modernizes all A1P2 variants with the exception of LVAD Standard Cargo trucks

Prime Contractor(s): Oshkosh Defense, LLC; Oshkosh, WI

Family of Medium Tactical Vehicles (FMTV)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	8.2	-	11.4
Procurement USA	351	138.1	442	181.1	83	36.9
Procurement USAF	-	3.3	-	18.5	-	5.8
Total	351	141.4	442	207.8	83	54.1

Numbers may not add due to rounding

Family of Heavy Tactical Vehicles



Army photo of a PLS

The Family of Heavy Tactical Vehicles (FHTV) consists of the Palletized Load System (PLS), the Heavy Expanded Mobility Tactical Truck (HEMTT), the Modular Catastrophic Recovery System (MCRS), the Heavy Equipment Transporter System (HETS), and the Medium Equipment Transporter System (METS). The PLS is a 16.5 ton, 10 wheel tactical truck with self-load/unload capability. The PLS carries its payload on flat rack cargo bed, trailer, or International Standards Organization (ISO) containers. The HEMTT is a 10 ton, 8 wheel (8x8) truck that comes in several configurations: Tanker to refuel tactical vehicles and helicopters, Tractor to tow the Patriot missile system and the Multi-Launch Rocket System (MLRS), Wrecker to recover vehicles, and Cargo truck with a material handling crane. The MCRS is comprised of the Prime Mover (M983A4 LET), Fifth Wheel Towing Recovery Device (FWTRD), and the Tilt Deck Recovery Trailer (TDRT). Coupled with the Prime Mover, the MCRS is capable of recovering all Stryker variants and an estimated 95 percent of Mine Resistant Ambush Protected (MRAP) vehicles currently in theater. The HETS is comprised of the M1070A1 Tractor and M1000 Trailer.

Mission: Provide transportation of heavy cargo to supply and re-supply combat vehicles and weapons systems. The PLS is fielded to transportation units, ammunition units, and forward support battalions with the capability to self-load and transport a 20 foot container. The upgraded HEMTT A4 transports logistics behind quick-moving forces such as the M-1 Abrams and Stryker. The HEMTT family carries all types of cargo, especially ammunition and fuel, for line haul, local haul, unit resupply, and other missions in the tactical environment to support modern, highly mobile combat units. The MCRS recovers large wheeled vehicle platforms in severe off-road conditions either in lift/toe or transport mode. The HETS is used to transport, recover, and evacuate a combat loaded M1 Series main battle tank, an M88, or similar heavy loads.

FY 2022 Program: Funds the procurement of 73 vehicles to modernize the heavy tactical vehicle fleet for Active, National Guard, and Reserve units and to fill urgent theater requirements. Funds also resource the next generation of tactical trucks to meet the Army's Tactical Wheeled Vehicle modernization strategy, and cover test costs for a follow-on production award.

Prime Contractor(s): Oshkosh Corporation; Oshkosh, WI

Family of Heavy Tactical Vehicles						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	12.1	-	22.3	-	31.6
Procurement	292	38.7	-	6.5	73	64.3
Total	292	50.8	-	28.8	73	95.9

Numbers may not add due to rounding

Stryker Family of Armored Vehicles

USA

US Army Photo

The Stryker is a 19-ton wheeled armored vehicle that provides the Army with a family of 24 different platforms (10 flat bottom, 7 Double V-Hull, 7 Double V-Hull A1). The Stryker family provides a lethal, versatile, tactically agile joint force capable of operational maneuver in a dynamic, asymmetric threat, and operational environment. The Stryker is deployable by C-130 (flat bottom only), C-17, and C-5 aircraft and can be combat-capable upon arrival in any contingency area. There are two basic versions: the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS); and eight different configurations: the Reconnaissance Vehicle (RV); Anti-Tank Guided Missile (ATGM); Nuclear, Biological, Chemical, and Radiological Vehicle (NBCRV); Medical Evacuation Vehicle (MEV); Commander's Vehicle (CV); Fire Support Vehicle (FSV); Mortar Carrier (MC); and Engineer Squad Vehicle (ESV).

Mission: Provides rapid protected transport to the Infantry and Scouts of the Stryker Brigade Combat Team (SBCT) allowing them to maneuver in open and urban terrain across the full spectrum of operations. Achieves the Army's goal to equip a strategically deployable brigade using a C-17 or C-5 aircraft and an operationally deployable brigade using a C-130 that is capable of global, rapid movement, enabling the Army to respond immediately to urgent operational requirements.

FY 2022 Program: Continues Stryker DVHA1 procurement; integration of 30mm Medium Caliber Weapon System (MCWS) on DVHA1 vehicles; procurement of Common Remote Operated Weapon System – Javelin (CROWS-J); modification of the Anti-Tank Guided Missile (ATGM) vehicle with the upgraded Modified Improved Target Acquisition System (MITAS); fielding of 1 Stryker Brigade Combat Team of CROWS-J (87 per SBCT); and fielding of 2 Stryker Brigade Combat Teams (10 per SBCT) with modified ATGM that have the MITAS upgrade. The request also funds the integration of the Fire Direction Control Mission Equipment Package on DVHA1 and survivability enhancements for the Stryker platform.

Prime Contractor(s): General Dynamics Corporation; Sterling Heights, MI

Stryker Family of Armored Vehicles						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	41.7	-	22.1	-	31.0
Procurement	143	911.5	254	1,164.2	187	1,005.0
Total	143	953.2	254	1,186.3	187	1,036.0

Numbers may not add due to rounding

Amphibious Combat Vehicle

The Amphibious Combat Vehicle (ACV) is an armored personnel carrier that replaces the aging Amphibious Assault Vehicle. The Marine Corps has refined its ACV strategy based on several factors including: knowledge gained through multiyear analysis and ongoing development of its Ground Combat Tactical Vehicle Strategy. The ACV acquisition strategy competitively awarded two vendors with Engineering, Manufacturing, and Development (EMD) contracts to build 16 test vehicles each (32 total) in November 2015. The ACV 1.1 completed Milestone C in June 2018 and down selected to one vendor, BAE Systems, and awarded that vendor with the Low Rate Initial Production (LRIP) contract. In a third quarter FY 2019 acquisition decision memorandum (ADM), the Navy departed from the program's PB20 acquisition strategy to authorize a third LRIP Lot consisting of 56 vehicles. The program began Full Rate Production (FRP) in FY 2021 with the procurement of 72 vehicles.

Mission: Provide an armored personnel carrier with a swim capability that is balanced in performance, protection, and payload and employable with the Ground Combat Element across the range of military operations. The program provides a phased, incremental capability with Increment 1.1 delivering combat ready Marines from ship-to-shore connector craft to mass forces at littoral penetration points and continue to maneuver to inland objectives. The ACV Increment 1.2 delivers additional ACV 1.1 Personnel Variants (currently in production) as well as Command and Control (ACV-C), Recovery (ACV-R), and 30-mm (ACV-30) Mission Role Variants (MRVs).

FY 2022 Program: Procures the second full-rate production lot of 92 vehicles and procurement of related items such as production support, systems engineering, program management, Engineering Change Orders (ECOs), and integrated logistics support.

Prime Contractor(s): BAE Systems; York, PA

Amphibious Combat Vehicle						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	48.4	-	41.8	-	80.7
Procurement	56	300.9	72	436.8	92	532.4
Total	56	349.3	72	478.6	92	613.1

Numbers may not add due to rounding

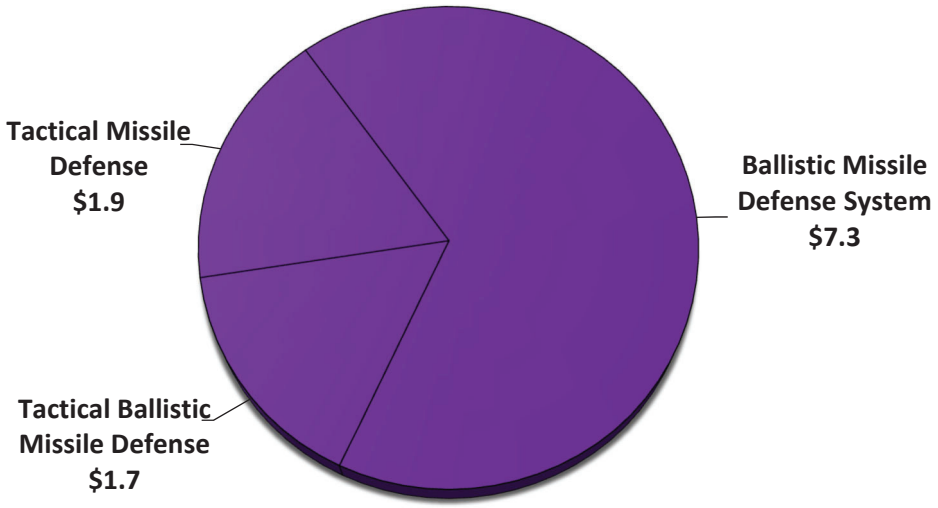
Missile Defense Programs

This category includes development and procurement of weapon systems to counter adversary's offensive missile systems to include ballistic missiles, cruise missiles and hypersonic weapons. The Missile Defense Agency (MDA) is specifically tasked to lead the Department's missile defense system (MDS) mission, however, the five Military Services have acquisition and operational roles in missile defeat and defense (MDD). A missile defense system includes ground and sea-based interceptor missiles; associated land, sea and space-based sensors; command, control, battle management, and communications; and development of advanced technologies designed to meet emerging threats. Other significant investments include construction, targets and countermeasures, and associated testing activities. Encompassed in this category are all programs that are either critical to the functionality of the ballistic missile defense system, tactical ballistic missile interceptor programs or support missile defense as a primary mission. The funded program is consistent with the 2019 Missile Defense Review, which calls for the development and fielding of a multi-layered defense of the homeland and forward-deployed forces.

The FY 2022 budget request continues funding for projects designed to increase the capability and capacity of the United States to detect, disrupt/defeat (left-of-launch), and defend against any North Korean use of ballistic missiles against the United States, its deployed forces, allies, and partners, to include current and projected threats to the U.S. Homeland, Guam, South Korea, and Japan. The FY 2022 budget request also increases tactical air and missile defense interceptor inventories for the Patriot Advanced Capability-3 (PAC-3) Missile Segment Enhancement (MSE), Standard Missile-3 (SM-3) variants, and Terminal High Altitude Area Defense (THAAD) programs. In addition, the FY 2022 request includes funding for studies into the implementation of a space layer consisting of sensors and interceptors; continues development of next generation interceptors and long-range discrimination radar; and invests in development efforts for future non-traditional missile defense capabilities such as cruise missile defense and unmanned aircraft.

FY 2022 Missile Defense Programs: $10.9 Billion

$ in Billions



Note: Total FY 2022 Missile Defeat and Defense (MDD) request is $20.4 billion. The Missile Defense total shown does not include non-traditional Missile Defeat programs. The $10.9 billion includes the MDA FY 2022 request, and Service tactical missile defense investments, but does not include the Department's Science and Technology funding or the Missile Defense Agency's Operation and Maintenance funding. There is no MDD Military Construction funding requested for FY 2022.

Numbers may not add due to rounding

Ground-based Midcourse Defense

DOD - JOINT

The Ground Based Midcourse Defense (GMD) element is a Missile Defense Agency program and a key component of the Missile Defense System (MDS), providing Combatant Commanders with the capability to engage missiles in the midcourse phase of flight. This phase, compared to boost or terminal, allows significant time for sensor viewing from multiple platforms and provides multiple engagement opportunities for hit-to-kill interceptors. The Ground Based Interceptor (GBI) is made up of a three-stage, solid fuel booster, and an exoatmospheric kill vehicle. When launched, the multi-stage, solid fuel booster missile carries the kill vehicle toward the target's predicted location in space. Once released from the booster, the kill vehicle uses data received in-flight from ground-based radars and its own on-board sensors to defeat the incoming missile by ramming the warhead with a closing speed of approximately 15,000 miles per hour. Interceptors are currently emplaced at Fort Greely, Alaska (AK) and Vandenberg Air Force Base (AFB), California (CA). The GMD fire control centers are established in Colorado and Alaska.

Mission: Provides the Combatant Commanders with the capability to defend the United States, including Hawaii and Alaska, against long-range ballistic missiles during the midcourse phase of flight**.**

FY 2022 Program: Strengthens Homeland Missile Defense by developing and delivering a new Improved Homeland Defense Interceptor (IHDI), the Next Generation Interceptor (NGI). NGI acquisition covers the development, integration and testing of an All Up Round (AUR) boost vehicle/ kill vehicle system capable of surviving both the natural and hostile environments while countering the evolving threats to the Homeland. Upgrades and replaces ground system infrastructure and fire control/kill vehicle (KV) software to improve the reliability, capability, and cybersecurity resiliency of the GMD weapon system.

Prime Contractor: GBI: Boeing Defense and Space; St. Louis, MO
NGI: Northrup Grumman/Raytheon and Lockheed-Martin

Ground-based Midcourse Defense and Improved Homeland Defense Interceptors

	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	1,886.2	-	2,146.7	-	1,732.7
Procurement		285.5	-	150.0	-	-
Total	-	2,171.7	-	2,296.7	-	1,732.7

Numbers may not add due to rounding

Terminal High Altitude Area Defense

DOD - JOINT

The Terminal High Altitude Area Defense (THAAD) is a key element of the Missile Defense System. The THAAD Battery provides transportable interceptors, using "Hit-To-Kill" technology to destroy missiles inside and outside the atmosphere. A Battery nominally consists of 6 truck-mounted launchers, 48 interceptors (8 per launcher), 1 AN/TPY-2 radar, a Tactical Fire Control/Communications component, and the Heavy Expanded Mobility Tactical Trucks (HEMTTs). New THAAD Layered Homeland Defense efforts are investigating concepts to provide greater depth of defense to the homeland consistent with the approach of fielding a layered Missile Defense System. MDA will pursue the development and demonstration of a new THAAD interceptor prototype to support homeland defense.

Mission: Provides Combatant Commanders with a globally-transportable, rapidly-deployable capability against short-range, medium-range, and limited intermediate-range ballistic missile threats inside or outside the atmosphere during terminal phase of flight.

FY 2022 Program: Procures 18 additional THAAD interceptors, obsolescence mitigation, production and training support, the THAAD stockpile reliability program, and the initial procurement of required THAAD Battery Ground Component enhancement modifications to meet growing cyber threats. Completes USINDOPACOM Joint Emergent Operational Need (JEON) development requirements. Provides THAAD software upgrades to address the evolving threat, defense planning, and improved capability to engage Short Range Ballistic Missile, Medium Range Ballistic Missile, and limited Intermediate Range Ballistic Missile threats. Funds the initiation of the development for the THAAD Layered Homeland Defense Prototype.

Prime Contractor: Lockheed Martin Corporation; Dallas, TX and Sunnyvale, CA

Terminal High Altitude Area Defense (THAAD)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	320.1	-	313.3	-	310.6
Procurement	39	407.2	39	578.3	18	251.5
Total	39	727.3	39	891.6	18	562.2

Numbers may not add due to rounding

Aegis Ballistic Missile Defense

DOD - JOINT

Sea-based Weapons System (Aegis Ballistic Missile Defense (BMD)) is the naval element of the Missile Defense System (MDS) and provides an enduring, operationally effective and supportable missile defense capability on Aegis cruisers, destroyers, and Ashore to defend U.S. deployed forces and our allies. Aegis Sea-Based Weapon Systems build upon the existing Navy Aegis Weapons System (AWS) and Standard Missile-3 (SM-3) design. Upgrades are being made to the weapon system and SM-3 designs which expand capability through a series of incremental, evolutionary improvements to counter ever more sophisticated and longer range threats. New Aegis Layered Homeland Defense efforts plan to provide greater depth of defense to the homeland consistent with the approach of fielding a layered Missile Defense System. MDA is assessing whether the Aegis Weapon System can be upgraded to augment homeland defenses by supplementing the GMD system to defeat Intercontinental ballistic missile (ICBM) threats. Aegis Missile Defense will also begin activities required to evolve the MDS to address cruise missile and hypersonic threats.

Mission: Provides a forward-deployable, mobile and Ashore capability to detect and track missiles of all ranges in all phases of flight with the ability to destroy missiles in the midcourse and terminal phases.

FY 2022 Program: Procures 40 SM-3 Block IB's and 8 SM-3 Block IIA's. Further integrates SM-3 Block IIA into the AWS. Funds capability upgrades of the Aegis Baseline 9 (BMD 5.x) Weapon Systems and the development of Aegis BL 10 (BMD 6). Supports procurement of 5 BMD 4.x/5.x shipsets, 2 weapon system software upgrades, 3 BMD Diminishing Manufacturing Sources (DMS) procurements and 4 installations of BMD 4.x/5.x equipment. Funds the development for the Aegis Layered Homeland Defense. Funds Ground and Flight testing in support of the Integrated Master Test Plan (IMTP) requirements.

Prime Contractors: Aegis Weapon System: Lockheed Martin Corporation; Moorestown, NJ
SM-3 Interceptor: Raytheon Company; Tucson, AZ and Huntsville, AL

Aegis Ballistic Missile Defense						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	926.9	-	1,005.5	-	892.7
Procurement (Interceptors)	39	671.4	49	717.1	48	647.4
Procurement (HW/SW Installs)	36	124.2	49	104.2	14	81.8
Total	75	1,722.4	98	1,826.9	62	1,622.0

Numbers may not add due to rounding

Patriot Advanced Capability

The Army's Patriot system is an extremely capable, long-range air defense guided missile system, which provides protection of ground combat forces and high-value assets. The Patriot air and missile defense system, which includes the Advanced Capability (PAC-3) missile, provides defense against tactical ballistic missiles, cruise missiles, and air-breathing threats worldwide. The Patriot system is deployed by a Fire Unit organized within a Battalion. Each Fire Unit consists of the Engagement Control Station, a Radar Set, an Electric Power Plant, Launching Stations, and the Battery Command Post and includes ancillary support equipment. The Patriot Battalion is organized by a Headquarters and Headquarters Battery, exercising command and control through the Information and Coordination Central shelter, with communications support enabled through the Communications Relay Group and Antenna Mast Group. Both the Fire Unit and the Battalion have dedicated support, communications, and maintenance vehicles, with limited missile reload and transport capability via the Guided Missile Transporter. The PAC-3 units are the Combatant Commanders' most capable asset to protect forward deployed forces.

Mission: Contributes to the Ballistic Missile Defense System overall situational awareness for short-range terminal ballistic missile and unmanned system threats. It can cue other systems while protecting Joint assets. The Patriot force is 15 battalions, many remain forward stationed in multiple theaters of operation.

FY 2022 Program: Continues improvements in software for improved combat identification, improved communications, interoperability, supportability, electronic warfare capabilities; and supports transition to the Integrated Air and Missile Defense architecture.

Prime Contractor(s): Raytheon Integrated Defense Systems; Tewksbury, MA
Lockheed Martin Missiles and Fire Control; Dallas, TX

Patriot/PAC-3						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	448.0	-	487.8	-	453.6
Procurement	-	278.7	-	278.1	-	205.5
Total	-	726.7	-	765.9	-	659.1

Numbers may not add due to rounding

PAC-3/Missile Segment Enhancement

The Missile Segment Enhancement (MSE) is a performance improvement to the existing Patriot Advanced Capability-3 (PAC-3) missile. The MSE's improved capability is achieved through a higher performance solid rocket motor, modified lethality enhancer, more responsive control surfaces, upgraded guidance software, and insensitive munitions improvements. The PAC-3 MSE employs kinetic energy to destroy targets through a hit-to-kill capability and provides the range, accuracy, and lethality to effectively intercept and destroy tactical ballistic missiles, air-breathing threats, cruise missiles, and unmanned aerial systems. This missile engages maneuvering and advanced threats earlier, expanding operational battlespace performance against complex threats. These improvements result in a more agile, lethal interceptor missile with enhanced Insensitive Munitions (IM) compliance. The PAC-3 MSE is the latest generation interceptor fired from the Patriot system.

Mission: Provide the Combatant Commanders with a hit-to-kill, surface-to-air missile that can intercept tactical ballistic missiles, cruise missiles, and air-breathing threats that have chemical, biological, radiological, nuclear, and conventional high explosive warheads. The MSE extends the PAC-3 range, filling a critical performance gap, and affords greater protection for deployed U.S. and allied forces.

FY 2022 Program: Funds the production of 180 Missile Segment Enhancement (MSE) missiles, Field Surveillance Program (FSP), PAC-3 Missile Support Center (P3MSC), Obsolescence, System Engineering/Program Management (SE/PM), and Government/Software Engineering.

Prime Contractor(s): Lockheed Martin Missiles and Fire Control; Dallas, TX

PAC-3/MSE						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	-	-	-
Procurement	156	702.4	177	678.1	180	776.7
Total	156	702.4	177	678.1	180	776.7

Numbers may not add due to rounding

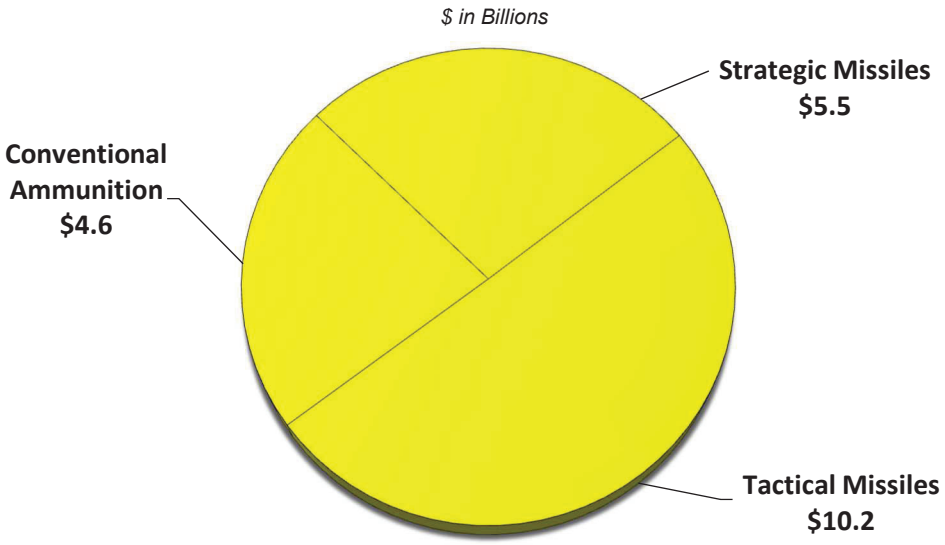
Missiles and Munitions

Munitions is a general term for ammunition and missiles. Ammunition consists of bombs, grenades, rockets, mines, projectiles, and other similar devices. There are conventional and nuclear missiles used for both tactical and strategic purposes. Most missiles are precision guided, with the technical sophistication to allow guidance corrections during flight-to-target. Some programs include non-explosive articles that enhance the performance of other munitions. For example, the Joint Direct Attack Munitions (JDAM) adds guidance capability when attached to a gravity bomb, making it a "smart" precision-guided bomb.

In FY 2022, the Department focused on critical high performance, standoff and precision strike weapons to increase the lethality of the Department of Defense. Improvements to these weapons increase range and precision effects in contested environments against high-value land attack targets. This requires munitions with farther standoff, multi-mode seekers, robust guidance systems, and less time for target selection. The Long Range Anti-Ship Missile (LRASM) is the next generation of anti-ship cruise missile with the ability to engage heavily defended maritime targets at standoff ranges and increased survivability.

The Department has made investments to expand production capacity, procure munitions at favorable economic rates, and strengthen the industrial base. Precision guided munitions are manufactured on fully utilized production lines, so pricing economies are secured at economically feasible rates. The Department is also increasing investments in the next generation nuclear cruise missile, the Long Range Stand-off weapon, as well as the Ground Based Strategic Deterrent ballistic missile system.

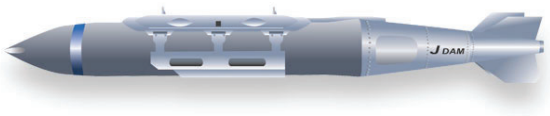
FY 2022 Missiles and Munitions Total: $20.3 Billion



Numbers may not add due to rounding
Numbers do not include Operation and Maintenance (O&M)

Joint Direct Attack Munition

DOD - JOINT



USAF Image

The Joint Direct Attack Munition (JDAM) is a joint Air Force and Navy program led by the Air Force. The JDAM improves the existing inventory of general purpose gravity bombs by integrating a Global Positioning System (GPS)/inertial navigation guidance capability that improves accuracy and adverse weather capability. A Laser JDAM (LJDAM) variant increases operational flexibility for an expanded target set. The laser sensor kit added to the JDAM weapon kit provides the ability to attack targets of opportunity, including moving land and maritime targets, when designated by an airborne or ground laser. JDAM tail kit procurement has transitioned to use the Strategic Anti-jam Beam-forming Receiver (SABR) GPS receiver and antenna, which provide enhanced resistance to GPS jamming over earlier production variants.

Mission: Enhances DoD conventional strike system capabilities by providing the ability to precisely attack time-critical, high value fixed or maritime targets under adverse environmental conditions and from all altitudes.

FY 2022 Program: Continues production of JDAM tail kits to include the SABR-Y upgraded GPS receiver and the JDAM tail kit hardback design used for the BLU-137 penetrator warhead. FY 2022 minimum sustainment rate will be achieved.

Prime Contractor(s): The Boeing Company; St. Charles, MO

Joint Direct Attack Munition						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	6.8	-	-
Procurement						
Air Force	24,794	1,034.2	16,800	459.7	1,919	124.1
Navy	3,228	75.2	3,271	80.2	2,971	74.1
Subtotal	28,022	1,109.5	20,071	539.9	4,890	198.2
Total	28,022	1,109.5	20,071	546.7	4,890	198.2

Numbers may not add due to rounding

HELLFIRE Missiles

DOD - JOINT

The HELLFIRE II AGM-114R is a precision strike, Semi-Active Laser (SAL)-guided missile and is the principal air-to-ground weapon for the Army AH-64 Apache, Army MQ-1C Gray Eagle Unmanned Aircraft System (UAS), Special Operations aircraft, Marine Corps AH-1 Super Cobra, and Air Force Predator and Reaper UAS. The HELLFIRE II AGM-114R employs a multipurpose warhead variant allowing selection of warhead effects corresponding to a specific target/engagement type and replacing all previous HELLFIRE II variants (K/N/M/P). The AGM-114R is approximately 7 inches in diameter, weighs 107 pounds, and is 69 inches in length. The weapon range is up to 8 kilometers from rotary-wing and 12+ kilometers from UAS.

Mission: Provides the warfighter with an air-to-ground, point-target precision strike capability to defeat advanced armor and an array of traditional and non-traditional targets.

FY 2022 Program: Continues production of the HELLFIRE.

Prime Contractor(s): Lockheed Martin Missiles and Fire Control; Orlando, FL

Hellfire Missiles						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
Procurement						
Army	4,581	425.5	3,518	327.5	802	118.8
Air Force	3,859	299.6	4,517	183.5	1,176	103.7
Navy	29	1.5	95	5.6	120	7.6
Total	8,469	726.7	8,130	516.6	2,098	230.0

Numbers may not add due to rounding

Small Diameter Bomb (SDB) I

The Small Diameter Bomb Increment I (SDB I) is an Air Force program providing increased kills per sortie on current and future aircraft platforms. The SDB I is a conventional 250 lb. small sized, precision guided air-to-ground weapon that can be delivered from both fighter and bomber aircraft from standoff or Close Air Support. The SDB I is a fixed and stationary target attack weapon.

Mission: Destroys targets from a medium-range Standoff Close Air Support position deliverable by both fighter and bomber aircraft, with higher load-out and less collateral damage compared to other weapons.

FY 2022 Program: Continues production with the weapons integrated with the Strategic Anti-Jam Beam-forming Receiver (SABR-Y).

Prime Contractor(s): Boeing Company; St. Charles, MO

Small Diameter Bomb I						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	-	-	-
Procurement	7,078	273.3	2,462	95.8	998	82.8
Total	7,078	273.3	2,462	95.8	998	82.8

Numbers may not add due to rounding

Small Diameter Bomb (SDB) II

DOD - JOINT

The Small Diameter Bomb (SDB) II is a joint Air Force and Navy program led by the Air Force to provide a conventional small sized, precision guided air-to-ground weapon that can be delivered from both fighter and bomber aircraft to attack mobile and fixed targets through adverse weather from standoff. The SDB II incorporates a tri-mode seeker and data link, which expands the use to moving targets.

USAF Image

Mission: Destroys targets from a medium-range standoff position deliverable by both fighter and bomber aircraft, with higher load-out and less collateral damage compared to other weapons.

FY 2022 Program: Continues production and integration on the F-35B/C. Continues development and integration of a military code GPS receiver and an enhanced cryptographic datalink.

Prime Contractor(s): Raytheon Missile & Defense; Tucson, AZ

Small Diameter Bomb II						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
Air Force	-	44.5	-	20.8	-	27.1
Navy	-	48.3	-	51.1	-	46.8
Subtotal	-	92.8	-	71.9	-	73.9
Procurement						
Air Force	727	183.3	743	210.0	985	294.6
Navy	482	108.5	248	57.8	180	40.9
Subtotal	1,209	291.7	991	267.7	1,165	335.5
Total	1,209	384.5	991	339.6	1,165	409.4

Numbers may not add due to rounding

Joint Air-to-Surface Standoff Missile

DOD - JOINT

USAF Image

The Joint Air-to-Surface Standoff Missile (JASSM) provides a survivable, precision cruise missile to kill hard, medium, and soft targets. It is a 2,000-pound class weapon with a multi-purpose, hardened blast frag penetrator warhead. The JASSM can cruise autonomously in adverse weather, day or night, to defeat high value targets even when protected by next generation defenses. The JASSM navigates to a pre-planned target using a Global Positioning System-aided Inertial Navigation System and transitions to automatic target correlation using an imaging infrared seeker in the terminal phase of flight. The range for the JASSM-Baseline (BL) variant (AGM-158A) is greater than 200 nautical miles. The JASSM-BL is integrated on the F-15E, F-16, B-52, B-1, and B-2 aircraft and concluded procurement in FY 2016.

The JASSM-Extended Range (ER) variant has two configurations, AGM-158B and AGM-158D, which have a more fuel-efficient engine, greater fuel capacity, and adds 2.5 times the standoff range at greater than 500nm. The JASSM-ER maintains the same outer mold line and low-observable properties as JASSM-BL, but replaces the turbojet engine with a higher thrust, more fuel efficient turbofan engine. The AGM-158B is currently integrated on the F-15E, F-16, B-1 and B-52 aircraft with integration on the B-2 by FY 2022. The AGM-158D is in development with the goal of enhancing performance and incorporating multiple initiatives via a single system level update including new wing and chine designs and software updates for increased range and survivability. The threshold aircraft for AGM-158D is the B-1.

Mission: Destroys high value targets from a long-range standoff position deliverable by fighter and bomber aircraft.

FY 2022 Program: Continues production of the AGM-158B and procures low rate initial production of the AGM-158D. Facilitization costs procure specialized equipment required to support production of missile capabilities in future years.

Prime Contractor(s): Lockheed Martin Missiles and Fire Control; Orlando, FL

Joint Air-to-Surface Standoff Missile						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	73.5	-	70.7	-	117.3
Procurement	390	482.5	400	500.0	525	710.6
Total	390	556.0	400	570.7	525	827.9

Numbers may not add due to rounding

Air Intercept Missile – 9X

DOD - JOINT

USAF Image

The Air Intercept Missile-9X (AIM-9X), also known as Next Generation SIDEWINDER, is a short range air-to-air missile that provides launch-and-leave warfighting capability. The AIM-9X Block II is an infrared missile with a staring focal plane array imaging infrared (IR) seeker and high-angle off-boresight capability. It is mounted on a highly maneuverable (thrust vectored) airframe, along with digital guidance and IR signal processing that results in enhanced acquisition ranges, improved IR counter-countermeasures capability, and robust engagement zones for first shot/first kill air-to-air performance. The AIM-9X is a joint Navy/Air Force program led by the Navy.

Mission: Destroys low and high altitude, high-speed enemy targets in an electronic countermeasures environment.

FY 2022 Program: Funds continued production of Block II, system improvements to sensors, electronic development, and software upgrades.

Prime Contractor(s): Raytheon Missile & Defense; Tucson, AZ

Air Intercept Missile – 9X						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
Air Force	-	10.0	-	19.4	-	33.0
Navy	-	19.1	-	5.9	-	23.9
Subtotal	-	29.1	-	25.2	-	56.9
Procurement						
Air Force	444	155.3	331	164.8	243	107.6
Navy	402	149.2	294	113.7	178	86.4
Subtotal	846	304.5	625	278.4	421	194.0
Total	846	333.7	625	303.7	421	250.8

Numbers may not add due to rounding

Advanced Medium Range Air-to-Air Missile

DOD - JOINT

USAF Image

The Advanced Medium Range Air-to-Air Missile (AMRAAM) is an all-weather, all-environment radar guided missile developed to improve capabilities against very low-altitude and high-altitude, high-speed targets in an electronic countermeasures environment. The AMRAAM is a joint Navy/Air Force program led by the Air Force.

Mission: Destroys low and high altitude, high-speed enemy targets in an electronic countermeasures environment. The AMRAAM is a fire-and-forget air-to-air missile is the primary U.S. beyond visual range intercept missile. The missile has undergone various service life improvements. The current generation, AIM-120D, has a two-way data link, Global Position System-enhanced Inertial Measurement Unit, an expanded no-escape envelope, improved high-angle off-boresight capability, and increased range over previous variants.

FY 2022 Program: Continues production as well as addresses component parts obsolescence and future warfighting improvements.

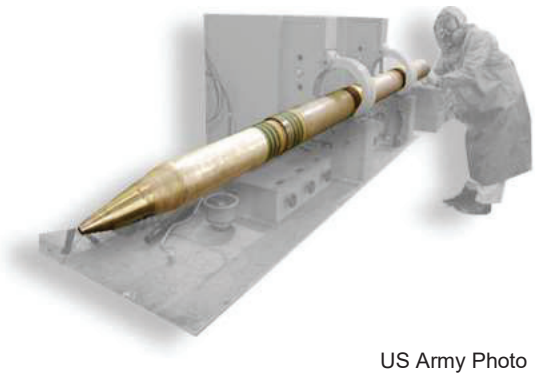
Prime Contractor(s): Raytheon Missile & Defense; Tucson, AZ

Advanced Medium Range Air-to-Air Missile						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
Air Force	-	53.7	-	51.7	-	51.3
Navy	-	33.3	-	40.3	-	32.6
Subtotal	-	87.0	-	92.0	-	83.9
Procurement						
Air Force	220	311.7	268	313.2	168	214.0
Navy	183	211.8	122	204.3	-	-
Subtotal	403	523.6	390	517.5	168	214.0
Total	389	610.5	390	609.4	168	297.9

Numbers may not add due to rounding

Chemical Demilitarization

DOD - JOINT



US Army Photo

The Chemical Demilitarization Program (CDP) is composed of two Major Defense Acquisition Programs, which are the Assembled Chemical Weapons Alternatives (ACWA) Program and the U.S. Army Chemical Materials Activity. The goal of both programs is to destroy a variety of United States chemical agents and weapons, including the destruction of former chemical weapon production facilities. The CDP is designed to eliminate the existing U.S. chemical weapons stockpile in compliance with the Chemical Weapons Convention signed in 1997 and the congressionally mandated destruction deadline of December 31, 2023 - while ensuring the safety and security of the workers, the public, and the environment.

Mission: There are three mission areas within the Chemical Demilitarization Program:

- Destroy the remaining 3.8 percent of the U.S. chemical weapons stockpile at the ACWA Program sites (Colorado and Kentucky), as of March 29, 2021.
- Support the Chemical Stockpile Emergency Preparedness Project (CSEPP) to include emergency response planning and capabilities for communities surrounding chemical weapons stockpile storage sites.
- Support the Recovered Chemical Warfare Material (RCWM) Program within the United States, which includes technical expertise, project management, and sustaining and maintaining crews and equipment required to assess and destroy the RCWM for explosives and munitions emergencies.

FY 2022 Program: Continue destruction operations at Colorado and Kentucky. Continue the CSEPP efforts for emergency response planning and capabilities at Colorado and Kentucky. Sustain and maintain the crews and equipment, and provide the technical expertise and project management to assess and destroy the RCWM in the United States for explosives and munitions emergencies.

Prime Contractor(s): Bechtel National Incorporated; Pueblo, CO Bechtel Parsons, Joint Venture; Richmond, KY

Chemical Demilitarization						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
Chemical Agents and Munitions Destruction	-	992.1	-	1,049.8	-	1,094.3
Total	-	992.1	-	1,049.8	-	1,094.3

Numbers may not add due to rounding

Joint Air-to-Ground Missile

DOD - JOINT

The Joint Air-to-Ground Missile (JAGM) system provides an improved air-to-ground missile capability for rotary-wing aircraft and unmanned aircraft systems. The JAGM is an aviation-launched, precision-guided munition for use against high-value stationary, moving, and relocatable land and naval targets. The JAGM is different than the HELLFIRE missile in that it utilizes a multi-mode seeker to provide precision point and fire-and-forget targeting day or night in adverse weather, battlefield obscured conditions, and against a variety of countermeasures. A multi-purpose warhead provides lethal effects against a range of target types, from armored vehicles, thin-skinned vehicles and maritime patrol craft, to urban structures and field fortifications. The JAGM delivers the Joint services a single air-to-ground missile with improved lethality, operational flexibility, and a reduced logistics footprint.

Mission: Engages and defeats high value stationary, moving, and relocatable land and naval targets with precision point and fire-and-forget targeting day or night, in adverse weather, battlefield obscured conditions, and against a variety of countermeasures.

FY 2022 Program: Continues production and enters into Full Rate Production for Joint Services.

Prime Contractor(s): Lockheed Martin Missiles and Fire Control; Orlando, FL

Joint Air-to-Ground Missile (JAGM)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E						
Army	-	6.3	-	7.6	-	2.1
Navy	-	13.4	-	12.7	-	0.4
Subtotal	-	19.7	-	20.3	-	2.5
Procurement						
Army	1,067	199.3	537	196.5	386	152.2
Navy	307	75.7	150	43.6	164	49.7
Air Force	40	10.0	-	-	-	-
Subtotal	1,414	285.0	687	240.2	550	201.9
Total	1,414	304.8	687	260.5	550	204.4

Numbers may not add due to rounding

Long Range Anti-Ship Missile (LRASM) DOD - JOINT

The Long Range Anti-Ship Missile (LRASM) is a Navy-lead joint interest (Navy/Air Force) program that provides Combatant Commanders the ability to conduct anti-surface warfare operations against high-value surface combatants protected by an Integrated Air Defense System with long-range surface-to-air missiles and deny adversaries the sanctuary of maneuver. LRASM is a precision guided anti-ship missile with semi-autonomous guidance, day/night and all-weather capability, which integrates a multi-modal sensor suite, a weapons data-link, enhanced digital anti-jam Global Positioning System capabilities and a 1,000 lb. penetrator/blast fragmentation warhead. LRASM achieved Early Operational Capability (EOC) on the Air Force B-1 bomber in December 2018 and on the Navy F/A-18E/F in November 2019. The Navy is developing LRASM 1.1, which will deliver incremental upgrades to keep pace with emerging threat capabilities and is expected to begin fielding in fiscal year (FY) 2022.

Mission: Provide robust anti-surface warfare capability to ensure freedom of maneuver, maintain sea lines-of-communication, and extend joint warfighter combat reach in contested maritime environments.

FY 2022 Program: Funds development, integration and test phase of the air-launched LRASM 1.1 program and procures 48 LRASM and funds telemetry kit installations. The factory will operate on the same production line as the Joint Air-to-Surface Standoff Missile (JASSM).

Prime Contractor(s): Lockheed Martin Missiles and Fire Control; Orlando, FL

Long Range Anti-Ship Missile (LRASM)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	112.6	-	46.8	-	127.8
Procurement						
Navy	17	72.5	43	134.1	48	161.2
Air Force	-	-	5	19.8	-	-
Subtotal	17	72.5	48	153.9	48	161.2
Total	17	185.1	48	200.6	48	289.0

Numbers may not add due to rounding

Ammunition

DOD - JOINT

The Military Departments procure and develop a variety of small and medium caliber ammunition.

Mission: Provide for the production of small and medium caliber ammunition.

FY 2022 Program: Procures various ammunition cartridges for use by the Department for the Army, Navy, Marine Corps, and Air Force to fulfill combat and training mission requirements.

Production Facilities:

- Holston Army Ammunition Plant, Kingsport, Tennessee: Production and development of Insensitive Munitions Explosives (IMX); synthesis and manufacture of high explosive; Research Department Explosive (RDX) and High Melting Explosive (HMX).
- Iowa Army Ammunition Plant, Middletown, Iowa: Assembles, and Packs and medium - and large-caliber ammunition; large ammunition; High explosive artillery; Medium - and - large caliber mortars; Insensitive munitions; Smart munitions mines/scatterable mines; Missile assembly/missile warheads; Rocket-assisted projectiles;
- Lake City Army Ammunition Plant, Independence, Missouri: Production of upgraded small caliber ammunition (5.56mm, 7.62mm, .50 Cal, and 20mm) and development of the Next Generation Squad Weapon
- Radford Army Ammunition Plant, Radford, Virginia; Production of propellants, energetics and munitions.
- Scranton Army Ammunition Plant, Scranton, Pennsylvania: Manufactures large caliber metal projectiles and mortar projectiles
- Rock Island Arsenal, Illinois: Foundry, and manufactures ordnance and equipment, including artillery, gun mounts, recoil mechanisms, small arms, aircraft weapons sub-systems, grenade launchers, weapons simulators, and a host of associated components. Provide logistical and manufacturing support for the United States Armed Services.

Procurement of Ammunition						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
Procurement						
Army	-	2,727.3	-	2,894.0	-	2,158.1
Navy	-	1,040.2	-	869.4	-	988.0
Air Force	-	2,535.4	-	1,336.5	-	795.2
Total	-	6,302.9	-	5,099.9	-	3,941.3

Numbers may not add due to rounding

Guided Multiple Launch Rocket System

USA

The Guided Multiple Launch Rocket System (GMLRS) is a series of surface-to-surface artillery missile variants which can be fired from the M142 High Mobility Artillery Rocket System (HIMARS) and the M270A1/A2 Multiple Launch Rocket System (MLRS) launchers. They provide a responsive, all-weather, rapidly-deployable precision strike capability. The GMLRS uses an on-board Inertial Measurement Unit in combination with a Global Positioning System guidance set to provide a high level of accuracy and effects against a variety of target sets. Production of the first variant, the M30 GMLRS Dual Purpose Improved Conventional Munition (DPICM) a cluster munition (CM) warhead was terminated in response to the June 2008 Department of Defense (DoD) Policy on CM and Unintended Harm to Civilians. The GMLRS program now produces two separate variants both with a range of 15-70+ kilometers. The M31/M31A1 GMLRS Unitary can engage precisely located point targets utilizing a single 200-pound low collateral damage high-explosive warhead and the M30A1 GMLRS Alternative Warhead (AW), a non-cluster munition used to engage area and imprecisely located targets. The GMLRS Unitary and AW variants are in compliance with the requirements outlined in the November 2017 update to DoD Policy on CM. The Army is currently executing an Extended Range (ER) GMLRS product improvement program extending the maximum range.

Mission: Neutralizes or suppresses enemy field artillery and air defense systems and complements cannon artillery fires.

FY 2022 Program: Continues production as well as develops product improvements such as insensitive munition propulsion and extending the range.

Prime Contractor(s): Lockheed Martin Corporation; Dallas, TX and Camden, AR

Guided Multiple Launch Rocket System						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	112.5	-	72.8	-	63.9
Procurement						
Army	7,878	1,136.8	5,502	913.0	5,817	935.9
Navy	312	44.8	1,022	151.1	654	98.3
Subtotal	8,190	1,181.6	6,524	1,064.1	6,471	1,034.2
Total	8,190	1,294.0	6,524	1,137.0	6,471	1,098.2

Numbers may not add due to rounding

Javelin Advanced Anti-Tank Weapon System

USA

USMC Photo

The Javelin is highly effective against a variety of targets at extended ranges under day/night, battlefield obscurants, adverse weather, and multiple counter-measure conditions. The system's soft-launch feature permits firing from enclosures commonly found in complex urban terrain. The system consists of a reusable command launch unit (CLU) and a modular missile encased in a disposable launch tube assembly. The CLU provides stand-alone all-weather and day/night surveillance capability. Javelin provides precision effects in either a top-attack or direct-attack mode to defeat armored vehicles, fortifications and soft targets in full spectrum operations. It uses an imaging infrared two-dimensional staring focal plane array seeker and a tandem warhead with two shaped charges; a precursor warhead to defeat reactive armor, and a primary warhead to penetrate base armor and other structures. It is effective against stationary and moving targets.

Mission: Provides the dismounted soldier with the only man-portable, fire-and-forget system that is highly lethal against targets ranging from main battle tanks to fleeting targets of opportunity found in current threat environments.

FY 2022 Program: Continues production of the JAVELIN FGM-148F (F model) and begins LRIP for the G model.

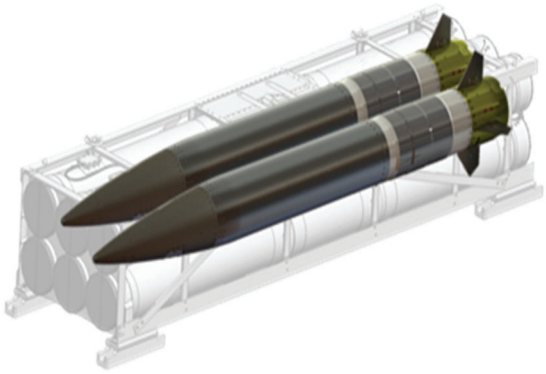
Prime Contractor(s): Raytheon Missile & Defense/Lockheed Martin Javelin Joint Venture
Tucson, AZ and Orlando, FL

Javelin Advanced Anti-Tank Weapon System - Medium						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	14.4	-	6.0	-	7.1
Procurement						
Army	697	142.8	768	181.3	376	120.8
Navy	97	20.2	98	19.9	1	0.9
Subtotal	794	163.0	866	201.2	377	121.8
Total	794	177.4	866	207.2	377	128.9

Numbers may not add due to rounding

Precision Strike Missile

USA



The Precision Strike Missile (PrSM) is the Army's next generation surface-to-surface ballistic missile that replaces and improves upon the Army Tactical Missile System (ATACMS). PrSM will provide Joint Force Commanders with a 24/7, all weather capability to attack critical and time sensitive area and point targets including threat air defense, missile launchers, command and control centers, assembly/staging areas and high payoff targets at all depths of the multi-domain battlefield. PrSM provides Field Artillery units with long range and deep strike capability while supporting brigade, division, corps, Army, theater, Joint/Coalition Forces and Marine Air-Ground Task Forces in full, limited, or expeditionary operations.

Mission: Destroy/neutralize/suppress targets at ranges from 60-499 km using missile-delivered indirect precision fires.

FY 2022 Program: Procures 110 Urgent Material Release missiles with Launch Pod Missile Containers and funds facilitization costs for increase production in the future.

Prime Contractor(s): Lockheed Martin; Grand Prairie, TX

Precision Strike Missile						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	149.5	-	100.1	-	188.5
Procurement	-	-	30	49.9	110	166.1
Total	-	149.5	30	150.1	110	354.6

Numbers may not add due to rounding

Trident II Ballistic Missile Modifications

The Trident II (D5) is a submarine launched ballistic missile. It provides the most survivable, second-strike capability in our nation's nuclear Triad. The Trident II missile is carried on the OHIO-class Fleet Ballistic Missile Submarine. The ongoing Life Extension Program (LEP) ensures viability of a highly survivable strategic deterrent through 2042, providing the ability to precisely attack time-critical, high value, fixed targets. The LEP includes the procurement of missile electronic and guidance Supportability Mods/Strategic Programs Alteration (SPALT) kits. The importance of this program as a key component to the sea-based leg of the nuclear triad was re-confirmed by the President and Congress with the ratification of the New START Treaty in 2011.

US Navy Photo

Mission: Aboard a virtually undetectable platform, the submarine launched fleet ballistic missile deters nuclear war by means of assured second-strike capability in response to a major attack on the United States or its allies.

FY 2022 Program: Supports the production of the redesigned guidance system and missile electronics packages, which must be replaced to support the extended service life of the Ohio Class Submarines. Funds also support procurement of Trident II D5 missile LEP, to include missile motors, guidance, fuzing, arming and firing systems, and other critical components.

Prime Contractor(s): Lockheed Martin Corporation; Sunnyvale, CA

Trident II Ballistic Missile Modifications						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	118.4	-	123.0	-	173.7
Procurement	-	1,424.6	-	1,412.5	-	1,425.7
Total	-	1,543.0	-	1,535.5	-	1,599.4

Numbers may not add due to rounding

Standard Missile-6

US Navy Photo

The Standard Missile-6 (SM-6) is a surface Navy Anti-Air Warfare (AAW) missile that provides area and ship self-defense. The missile is intended to project power and contribute to raid annihilation by destroying manned fixed and rotary wing aircraft, Unmanned Aerial Vehicles (UAV), Land Attack Cruise Missiles (LACM), and Anti-Ship Cruise Missiles (ASCM) in flight. It was designed to fulfill the need for a vertically launched, extended range missile compatible with the Aegis Weapon System (AWS) to be used against extended range threats at-sea, near land, and overland. The SM-6 combines the tested legacy of STANDARD Missile-2 (SM-2) propulsion and ordnance with an active Radio Frequency (RF) seeker modified from the AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM), allowing for over-the-horizon engagements, enhanced capability at extended ranges, and increased firepower.

Mission: Provides all-weather, anti-aircraft armament for cruisers and destroyers. The most recent variant of Standard Missile is SM-6, which incorporates an AMRAAM seeker for increased performance, including overland capability.

FY 2022 Program: Continues a 5-year multiyear procurement (MYP) contract (FY 2019 – FY 2023), which continues production of the SM-6 Blk 1/1A variants. The factory will operate at the maximum production rate.

Prime Contractor(s): Raytheon Missiles & Defense; Tucson, AZ

Standard Missile-6						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	196.1	-	305.8	-	343.5
Procurement	125	502.0	125	489.3	125	567.2
Total	125	698.1	125	795.1	125	910.7

Does not include modifications

Numbers may not add due to rounding

Rolling Airframe Missile

The Rolling Airframe Missile (RAM) is a high firepower, lightweight complementary self-defense system to engage anti-ship cruise missiles. The systems design is based upon the infrared (IR) seeker of the Stinger (FIM-92) missile, and the warhead, rocket motor, and fuse from the Sidewinder (AIM-9) missile. The missile uses Radio Frequency (RF) for midcourse guidance, and transitions to IR guidance for terminal engagement. The current RM-116 configuration is Block II (RIM-116C).

Mission: Provides high firepower close-in defense of combatant and auxiliary ships by utilizing a dual mode, passive radio frequency/infrared missile in a compact 21 missile launcher.

FY 2022 Program: Continues Full Rate Production (FRP) for the Block II (RIM-116C) missile.

Prime Contractor(s): Raytheon Missiles & Defense; Tucson, AZ

Rolling Airframe Missile						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	21.1	-	6.1	-	8.3
Procurement	120	106.8	100	90.5	100	93.0
Total	120	127.9	100	96.7	100	101.3

Numbers may not add due to rounding

Tactical Tomahawk Cruise Missile

US Navy Photo

Tomahawk is a combat-proven, long-range strike weapon that delivers a 1,000 lb. class warhead at ranges greater than 900 nm. There have been more than 2,000 Tomahawk combat expenditures to-date due to the weapon providing a high precision, all-weather, deep-strike attack capability against fixed and mobile targets. Tomahawk is launched from U.S. Navy surface combatants and submarines. Key weapon features include: precision navigation/guidance; robust anti-jam Global Positioning System (GPS) capabilities; high responsiveness and mission flexibility due to an in-flight re-targeting capability; and the ability to transmit Battle Damage Indication (BDI) reports prior to weapon impact.

Mission: Provides precision strike against long and medium range tactical targets.

FY 2022 Program: Continues the procurement of Tomahawk missiles and mid-life recertification phase to increase the service life of the missile. Continues funding the development of a maritime strike variant to engage surface target and the Joint Multi-Effects Warhead System for optimal lethality.

Prime Contractor(s): Raytheon Missiles & Defense; Tucson, AZ

Tactical Tomahawk Cruise Missile						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E		256.7	-	199.7	-	132.2
Procurement						
Navy	90	445.6	122	445.6	60	419.5
Marine Corps	-	-	-	-	-	-
Subtotal	90	445.6	122	445.6	60	419.5
Total	90	702.3	122	645.3	60	551.7

Includes modification programs

Numbers may not add due to rounding

Ground Based Strategic Deterrent

The Ground Based Strategic Deterrent (GBSD) program is the Air Force effort to replace the aging LGM-30 Minuteman III intercontinental ballistic missile (ICBM) weapon system. The Minuteman III missile fleet was fielded in the 1970s with an initial 10-year service life and its launch and command and control systems date back to the 1960s. The new GBSD weapon system will meet existing user requirements, while having the adaptability and flexibility to address changing technology and threat environments through 2075. As a critical part of the nuclear triad, the GBSD will continue to maintain strategic stability, while hedging against vulnerabilities in other portions of the triad. The program entered the Engineering and Manufacturing Development (EMD) phase in September 2020. Deployment is projected to begin in the late 2020s. Should deterrence fail, the GBSD will decisively defeat adversary targets and retaliatory capabilities as authorized and directed by the President.

Mission: Provide land-based strategic nuclear deterrence, assurance, and stability by providing a responsive and resilient capability that assures allies they do not need to expand their own capability, dissuades proliferation, deters adversaries.

FY 2022 Program: Funds activities in support of EMD to include: systems engineering activities, information technology, data management, and analytical capabilities to deliver a flexible, integrated weapon system critical design.

Prime Contractor: Northrop Grumman Corporation; Roy, UT

Ground Based Strategic Deterrent (GBSD)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	538.6	-	1,447.1	-	2,553.5
Procurement	-	-	-	-	-	10.9
Total	-	538.6	-	1,447.1	-	2,564.4

Numbers may not add due to rounding

B61 Tail Kit Assembly (TKA)

The B61 is a nuclear gravity bomb developed by the Department of Energy's National Nuclear Security Administration (DOE/NNSA) for the Department of Defense. Current versions in the inventory were fielded between 1978 and 1990 and require component refurbishment and replacement to maintain a safe, secure and effective capability. To extend the life of this weapon, DOE/NNSA and the Air Force are jointly implementing a Life Extension Program (LEP) to refurbish the B61. The First Production Unit was delivered in 2020 and the Full rate production decision was approved in October 2020.. The Air Force portion of the LEP is to provide the development, acquisition and delivery of a guided tail kit assembly (TKA) and all up round technical integration, system qualification and fielding of the B61-12 variant.

Mission: Provides the strategic weapons for the airborne leg of the nuclear triad and are carried on the F-15E, the B-2, and NATO dual-use aircraft today. The new variants will be carried by the B-2 and North Atlantic Treaty Organization (NATO) aircraft as well as the F-35 and the B-21 bomber.

FY 2022 Program: Continues full rate production. TKA deliveries will meet NNSA production schedule requirements.

Prime Contractor(s): The Boeing Company; St. Charles, MO

B61 Tail Kit Assembly (TKA)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	10.2	-	9.7	-	-
Procurement	593	55.8	-	35.6	-	2.7
Total	593	66.0	-	45.3	-	2.7

Numbers may not add due to rounding

Long Range Stand-Off Weapon

Long Range Stand-Off (LRSO) Weapon is a nuclear cruise missile capable of penetrating and surviving complex advanced integrated air defense systems and GPS-denied environments from significant standoff ranges. The LRSO replaces the Air Launched Cruise Missile (ALCM) which entered service in1982 and is well past its original 10-year service life design. LRSO details are classified to protect critical program information.

Mission: Retains penetrating and survivable capabilities in advanced Integrated Air Defense Systems and GPS-denied environments from significant standoff ranges, ensuring we maintain a credible deterrent. Combined with nuclear capable bombers, LRSO provides the nuclear triad with a clear, visible, and tailorable deterrent providing the President and U.S. Forces the ability to project power and hold at risk any target at any location on the globe. LRSO provides a hedge against future technological and geopolitical uncertainties. LRSO provides a reliable cost-effective force multiplier for the B-52 and the B-21 bomber.

FY 2022 Program: Funds continue to design, develop, integrate and test the LRSO system.

Prime Contractor: Raytheon Company; Tucson, AZ

Long Range Stand-Off (LRSO) Weapon						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	701.9	-	384.7	-	609.0
Procurement	-	-	-	-	-	-
Total	-	701.9	-	384.7	-	609.0

Numbers may not add due to rounding

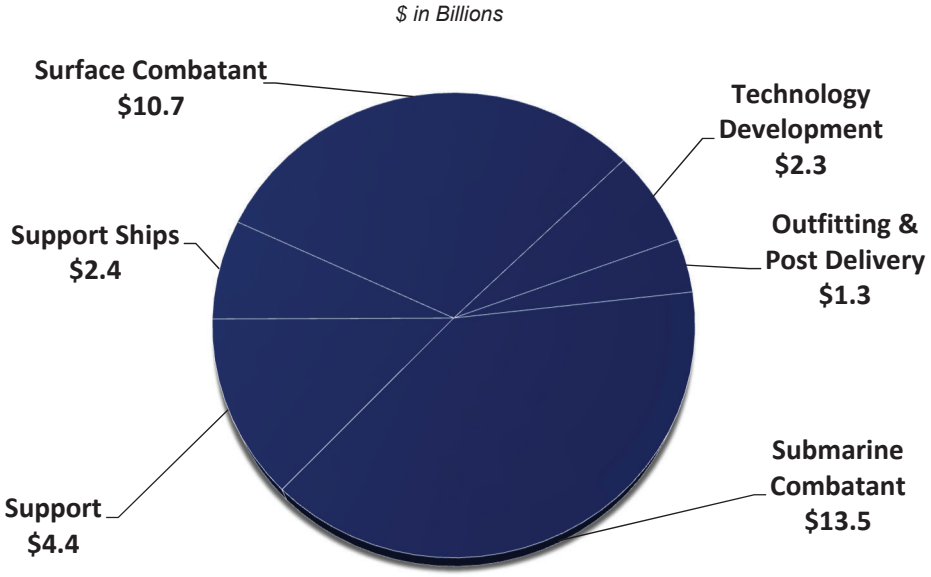
Shipbuilding and Maritime Systems

A central principle to the United States Maritime Strategy is forward presence, which promotes conflict deterrence by ensuring forces are in a position to expeditiously respond to conflict. Therefore, sea services must procure, build, and maintain maritime systems in accordance with mission needs.

The funding in this category finances developmental efforts, equipment procurements, and construction of ships that will allow the U.S. Navy to maintain maritime dominance and superiority well into the 21st century.

The FY 2022 Shipbuilding Portfolio includes funding for the construction and service life extension of 16 vessels and procurement of five used sealift vessels. Eight battle force fleet ships will begin construction: 2 SSN 774 *Virginia* Class nuclear attack submarines, equipped with the Virginia Payload Module; 1 DDG 51 *Arleigh Burke* Class Flight III destroyer; 1 *Constellation* Class Frigate; 1 *John Lewis* Class Fleet Oiler; 2 Towing, Salvage and Rescue Ships (T-ATS); and 1 T-AGOS(X) Surveillance ship; additionally, 2 LCAC Landing Craft will begin Service Life Extension programs and 4 LCU Landing Craft, Utility vessels as well as 2 Ship to Shore Connectors will begin construction.

FY 2022 Shipbuilding and Maritime Systems Total: $34.6 Billion



Numbers may not add due to rounding

CVN 78 *Gerald R. Ford* Class Nuclear Aircraft Carrier

Aircraft carriers are the centerpiece of U.S. Naval forces. The CVN 78 class ships include new technologies and improvements that improve efficiency and operating costs as well as reduced crew requirements. This new class brings improved warfighting capability, quality-of-life improvements for Sailors, and reduced total ownership costs. USS *Gerald R. Ford* is the first aircraft carrier designed with all electric utilities, eliminating steam service lines from the ship, reducing maintenance requirements and improving corrosion control. The new A1B reactor, Electromagnetic Aircraft Launch System (EMALS), Advanced Arresting Gear (AAG) and Dual Band Radar (DBR) all offer enhanced capability with reduced manning. The ship's systems and configuration are optimized to maximize the sortie generation rate (SGR) of attached strike aircraft.

Mission: Provides the United States with the core capabilities for forward presence, deterrence, sea control, power projection, maritime security and humanitarian assistance. The *Gerald R. Ford* class will be the premier forward asset for crisis response and early decisive striking power in a major combat operation.

FY 2022 Program: Funds continued construction for 3 carriers USS *John F. Kennedy* (CVN 79), USS *Enterprise* (CVN 80) and USS *Doris Miller* (CVN 81). Additional funding includes outfitting, training equipment, and continued development of ship systems.

Prime Contractor(s): Huntington Ingalls Industries; Newport News, VA

CVN 78 Gerald R. Ford Class Nuclear Aircraft Carrier						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	147.3	-	146.3	-	165.8
Procurement	1	2,390.5	-	2,758.2	-	2,703.9
Total	1	2,537.8	-	2,904.4	-	2,869.8

Numbers may not add due to rounding

SSBN 826 *Columbia* Class Ballistic Missile Submarine

The *Columbia* Class Ballistic Missile Submarine (SSBN) will replace the current *Ohio* class of Fleet Ballistic Missile Submarine. The USS *Columbia* program will deliver 12 SSBNs with the necessary capability and capacity to meet the sea based strategic deterrence mission beyond retirement of the current submarine force and with sufficient mission capability to counter credible threats through 2080.


Artist conception courtesy of the U.S. Navy

Construction began in FY 2021 for FY 2028 delivery when the first *Ohio* class ships begin decommissioning. The nuclear propulsion systems will be acquired from the nuclear industrial base under the direction of Naval Reactors. The program includes the development and construction of a Common Missile Compartment (CMC) capable of hosting the existing TRIDENT II missile system, which is conducted jointly with the United Kingdom to support the *Dreadnought* class SSBN.

Mission: Provides a sea-based strategic nuclear force. Maintains an appropriate state of readiness to assist in deterring nuclear attack on the United States and its allies. Launches missiles against targets should deterrence fail. Performs extended strategic deterrent patrols without requiring assistance or replenishment.

FY 2022 Program: Funds the second increment of full funding for the lead ship, SSBN 826, and supports detail design and construction of Contractor Furnished Equipment and Government Furnished Equipment. Continues funding for research and development of nuclear technologies and ship systems such as the propulsion system, combat systems technology, and the common missile compartment. Funding also supports continuous production of missile tubes, Economic Order Quantity for multi-program procurement, continuous production of shipyard manufactured items, and supplier development.

Prime Contractor(s): General Dynamics; Groton, CT
Huntington Ingalls Industries, Newport News, VA

Columbia Class Ballistic Missile Submarine Program						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	525.4	-	396.5	-	356.4
Procurement	-	1,820.9	1	4,122.2	-	4,671.0
Total	-	2,346.4	1	4,518.7	-	5,027.3

Numbers may not add due to rounding

SSN 774 *Virginia* Class Submarine

The *Virginia* Class Submarine is a multi-mission nuclear-powered attack submarine that provides the Navy with the capabilities to maintain undersea supremacy in the 21st century. Characterized by advanced stealth and enhanced features for Special Operations Forces, this submarine is able to operate in deep water and littoral environments. Equipped with vertical launchers and torpedo tubes, the submarine is able to launch Tomahawk cruise missiles as well as heavyweight torpedoes. Block V variants will incorporate Acoustic Superiority and the Virginia Payload Module, which is an 84-foot hull section with four additional payload tubes, each capable of carrying seven Tomahawk cruise missiles or various other payloads. The Virginia Payload Module helps mitigate the loss of undersea strike capability with the retirement of the Service's four guided missile submarines (SSGNs) in the mid-2020s.

Mission: Seeks and destroys enemy ships and submarines across a wide spectrum of scenarios, working independently and in concert with a battle group, separate ships, and independent units. Provides theater commanders with time sensitive critical information for accurate knowledge of the battlefield.

FY 2022 Program: Funds two ships in the fourth year of multiyear procurement (MYP) contract from FY 2019 to FY 2023 - Congress added an additional submarine in FY 2021 to make it a ten ship multi-year procurement, Economic Order Quantity (EOQ), advance procurement for two ships in future years, and outfitting and support equipment. Continues funding the development of the Virginia Payload Module, technology, prototype components, and systems engineering required for design and construction. The FY 2021 ship included the Virginia Payload Module, which will be subsequently fielded on all follow-on *Virginia* class submarines.

Prime Contractor(s): General Dynamics Corporation; Groton, CT
Huntington Ingalls Industries; Newport News, VA

SSN 774 Virginia Class Submarine						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	306.2	-	239.3	-	495.6
Procurement	2	8,485.2	2	6,925.4	2	6,451.2
Total	2	8,791.4	2	7,164.8	2	6,946.9

Numbers may not add due to rounding

DDG 51 *Arleigh Burke* Class Destroyer

US Navy Photo

The DDG 51 class guided missile destroyers provide a wide range of war fighting capabilities in multi-threat air, surface, and subsurface environments. The DDG 51 class ship is armed with a vertical launching system, which accommodates 96 missiles, and a 5-inch gun that provides Naval Surface Fire Support to forces ashore and anti-ship gunnery capability against other ships. This is the first class of destroyers with a ballistic missile defense capability. The *Arleigh Burke* class is comprised of four separate variants; DDG 51-71 represent the original design, designated Flight I ships, and are being modernized to current capability standards; DDG 72-78 are Flight II ships; DDG 79-124 and DDG 127 ships are Flight IIA ships; DDG 125, DDG 126, and DDG 128 – DDG 142 will be constructed as Flight III ships with the Air and Missile Defense Radar (AMDR) capability.

Mission: Provides multi-mission offensive and defensive capabilities and can operate as part of a carrier strike group or independently. Conducts Anti-Air Warfare, Anti-Submarine Warfare, and Anti-Surface Warfare.

FY 2022 Program: Funds one Flight III DDG 51 class destroyer as part of a multiyear procurement (MYP) contract for up to ten ships from FY 2018 – FY 2022 (with potential options for additional ships), outfitting costs, completion costs and continued development of ship systems. Starting in FY 2021, Bridge System Upgrades were incorporated for improved navigation capability.

Prime Contractor(s): General Dynamics Corporation; Bath, ME
Huntington Ingalls Industries; Pascagoula, MS

DDG 51 Arleigh Burke Class Destroyer						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	231.5	-	281.6	-	245.2
Procurement	3	5,895.7	2	3,521.1	1	2,192.1
Total	3	6,127.2	2	3,802.7	1	2,437.4

Numbers may not add due to rounding

Constellation Class Guided Missile Frigate

The *Constellation* class Guided Missile Frigate (FFG-62) is a lethal and survivable multi-mission small surface combatant. With the *Constellation* class, the Navy will maximize the small surface combatant survivability and capabilities in the anti-surface warfare, anti-submarine warfare, electromagnetic maneuver warfare, air warfare mission areas, while keeping the ship affordable as a part of a "high-low" mix of surface ships. The *Constellation* class will form into strike groups and Large Surface Combatant action groups while maintaining the ability to operate independently. The ships in this class will have a MK48 Mod 2 Gun Weapon System, a MK41 Vertical Launch System, and a Rolling Airframe Missile (RAM) Guided Missile Weapon System (GMWS).

Mission: Provides the Fleet with escort mission capabilities, performs naval-presence missions and conducts offensive operations.

FY 2022 Program: Funds the third FFG in the *Constellation* class and continues research and development of ship systems and design.

Prime Contractor(s): Fincantieri Marinette Marine; Marinette, WI

Constellation Class Guided Missile Frigate						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	56.9	-	81.9	-	109.5
Procurement	1	1,281.2	1	1,053.1	1	1,157.0
Total	1	1,338.1	1	1,135.1	1	1,266.5

Numbers may not add due to rounding

CVN Refueling Complex Overhaul

The CVN Refueling Complex Overhaul (RCOH) life extension program involves refueling and modernizing the nuclear powered fleet aircraft carriers. During the RCOH, the nuclear fuel is replaced, major system are modernized; obsolete parts are replaced, and corrosion damage is repaired. *Nimitz* class aircraft carriers are designed for a 50-year life span and the RCOH is performed approximately midway through the ship's lifespan.

Mission: Refuel and upgrade the *Nimitz* class aircraft carriers at mid-life to ensure reliable operations during the remaining 25 plus years of ship life using only the normal maintenance cycle.

FY 2022 Program: Funds the third year and final year of incremental funding for refueling and modernization efforts for USS *John C Stennis* (CVN 74), Advance Procurement for USS *Harry S Truman* (CVN 75), and completion costs for USS *George Washington* (CVN 73).

Prime Contractor(s): Huntington Ingalls Industries; Newport News, VA

CVN Refueling Complex Overhaul						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	-	-	-
Procurement	1	651.5	-	1,548.5	-	2,522.3
Total	1	651.5	-	1,548.5	-	2,522.3

Numbers may not add due to rounding

T-AO 205 *John Lewis* Class Fleet Replenishment Oiler

The Fleet Replenishment Oiler (T-AO) program is building a new class of fleet oilers for the Navy. The lead ship in the class is USNS John Lewis (T-AO 205). The T-AO provides fuel and cargo delivery to support fleet operations. As compared to the previous class of oilers, this class has increased space for dry cargo and a helicopter refueling capability. The John Lewis class are built with a double-hull to guard against oil spills and to comply with international agreements concerning pollution from ships.

Mission: Transfers fuel and lubricants to Navy surface ships operating at sea to extend at-sea time for the ships and embarked aircraft. The T-AO Class operates as shuttle ships from resupply posts to customer ships. Additionally, in conjunction with a T-AKE, they will accompany and stay on-station with a Carrier Strike Group (CSG) to provide fuel as required to customer ships.

FY 2022 Program: Funds procurement of one T-AO Class Oiler and continued development of ship systems, outfitting costs, and cost-to-complete for prior year ships.

Prime Contractor(s): General Dynamics, National Steel and Shipbuilding Co.; San Diego, CA

John Lewis Class Fleet Replenishment Oiler						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	1.6	-	2.1	-	1.2
Procurement	2	1,072.7	-	109.7	1	852.0
Total	2	1,074.4	-	111.8	1	853.3

Numbers may not add due to rounding

T-ATS Towing, Salvage, and Rescue Ship

The T-ATS is a new class of towing, salvage, and rescue ship that will replace the Navy's current Fleet Ocean Tugs (T-ATF) and Rescue and Salvage Ships (T-ARS). The lead ship in the class is USNS Navajo (T-ATS 6). The new T-ATS will recapitalize the existing T-ATF and T-ARS fleet with a common hull that will be capable of performing the existing missions. The current *Powhatan* class of Fleet tugs are used to tow ships, barges and targets for gunnery exercises. They are also used as platforms for salvage and diving work, as participants in naval exercises, to conduct search and rescue missions, to aid in the cleanup of oil spills and ocean accidents, and to provide firefighting assistance. Delivered in 1981, USNS Apache (T-ATF 172) is the last of the *Powhatan* class of ocean tugs. The current Safeguard class of Rescue and Salvage ships have a four-fold mission: to debeach stranded vessels, provide heavy lift capability from ocean depths, to tow other vessels, and provide manned diving operations. For rescue missions, these ships are equipped with fire monitors, which can deliver either firefighting foam or sea water. The salvage holds of these ships are outfitted to provide assistance to other vessels in dewatering, patching, supply of electrical power and other essential service required to return a disabled ship to an operating condition. Delivered in 1986, USNS Salvor (T-ARS 52) is the last of the Safeguard class.

Mission: Supports a diverse set of missions including submarine rescue, deep ocean search and recovery, and expeditionary diving.

FY 2022 Program: Funds construction of two Towing, Salvage, and Rescue Ships. These are are the sixth and seventh of eight ships to be built.

Prime Contractor(s): Gulf Island Shipyard; Houma, LA

T-ATS Towing, Salvage, and Rescue Ship						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	-	-	-	-	-
Procurement	2	150.3	2	157.8	2	183.8
Total	2	150.3	2	157.8	2	183.8

Numbers may not add due to rounding

USV Unmanned Surface Vessels

The Unmanned Surface Vessel (USV) is a reconfigurable, multi-mission vessel designed to provide low cost, high endurance, reconfigurable ships able to accommodate various payloads for unmanned missions and augment the Navy's manned surface force. Future missions and payloads will be informed as the concept of operations is developed. While unmanned surface vehicles are new additions to fleet units, they are intended to be relatively low developmental technologies that combine robust and proven commercial vessel designs with existing military payloads to rapidly and affordably expand the capacity and capability of the surface fleet. The program benefits from years of investment and full scale demonstration efforts in autonomy, endurance, command and control, payloads and testing from the Defense Advanced Research Projects Agency (DARPA) Anti-Submarine Warfare Continuous Trail Unmanned Vessel (ACTUV) and Office of Naval Research (ONR) Medium Displacement Unmanned Surface Vessel (MDUSV)/Sea Hunter and Office of the Secretary of Defense Strategic Capabilities Office (OSD SCO) Ghost Fleet Overlord Large USV experimentation efforts.

Mission: Supports combatant ships by providing additional Anti-Surface Warfare and Strike capacity.

FY 2022 Program: Funds continued development and testing of Unmanned Surface Vessels and continues research and development of payload systems.

Prime Contractor(s): TBD

Unmanned Surface Vessels (USV)						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	388.0	-	139.3	-	202.9
Procurement	-	-	-	-	-	-
Total	-	388.0	-	139.3	-	202.9

Numbers may not add due to rounding

LPD 17 *San Antonio* Class Amphibious Transport Dock

The LPD Flight II is a new variant of the *San Antonio* class Amphibious Transport Dock ship. This flight II variant is designed to be adaptable and will be used across the range of military operations, from major combat operations to humanitarian assistance and disaster relief. Utilizing the LPD 17 class' proven hull, the Flight II ships will feature a fully capable flight deck and hangar, a well deck, and the vehicle and cargo capacities to support and sustain more than 500 combat-equipped marines for up to 30 days. The ship will feature a Rolling Airframe Missile (RAM) Block 2 system; the MK 46 Gun system, and the AN/SPQ-9B radar. The LPD 17 Flight II functionally replaces LSD 41 class ships and LSD 49 class ships.

Mission: Transports and lands Marines, their equipment, and supplies by embarked Landing Craft Air Cushion (LCAC) or conventional landing craft and amphibious assault vehicles (AAV) augmented by helicopters or vertical take-off and landing aircraft (MV 22). These ships support amphibious assault, special operations, or expeditionary warfare missions and serve as secondary aviation platforms for amphibious operations.

FY 2022 Program: Provides incremental funding for LPD-31; continued development of ship systems, outfitting costs and cost-to-complete for prior year ships including LPD Flight I ships.

Prime Contractor(s): Huntington Ingalls Industries; Newport News, VA

LPD Flight II						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	12.0	-	10.2	-	3.3
Procurement	-	542.8	1	1,179.8	-	172.6
Total	-	554.8	1	1,190.0	-	175.9

Numbers may not add due to rounding

This page intentionally left blank

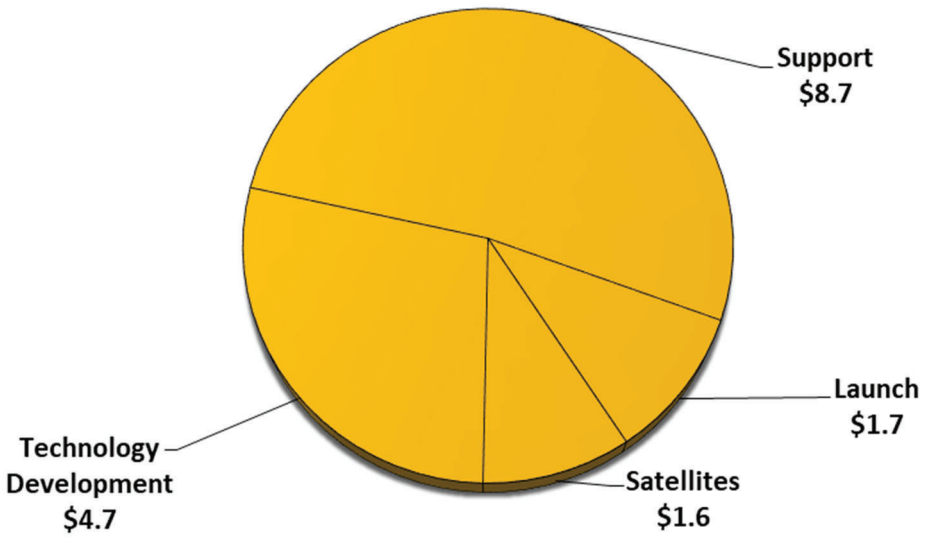
Space Based Systems

Space assets support deployed U.S. forces by providing communications services, navigation capabilities, and information collected by remote sensors such as weather satellites and intelligence collection systems. Space forces contribute to the overall effectiveness of U.S. military forces by acting as a force multiplier that enhances combat power. This investment addresses growing threats, complicating an adversary's ability to counter U.S. space superiority, while enhancing the Department's ability to identify, characterize, and attribute all threatening actions in space. The capability to control space contributes to achieving information superiority and battle space dominance. Procurement of launch vehicles and launch services are typically funded 2 years prior to launch. Under existing budget policy, the first two satellites of a new system are financed with Research, Development, Test and Evaluation (RDT&E) funding and the remainder follow-on satellites are fully funded with Procurement funding.

The FY 2022 budget highlights include funding for development of the Next Generation Overhead Persistent Infrared (NG OPIR) satellites; continues funding for the Evolved Strategic SATCOM (ESS) and Enhanced Polar System-Recapitalization (EPS-R) hosted payloads; and continues the Space Modernization Initiative RDT&E activities. The budget funds the procurement of National Security Space Launch (NSSL) launch services for medium and heavy lift class satellites; specifically, the NSSL program funds launch services for five Space Force launches under the Phase 2 contract.

FY 2022 Space Based Systems Total: $16.7 Billion

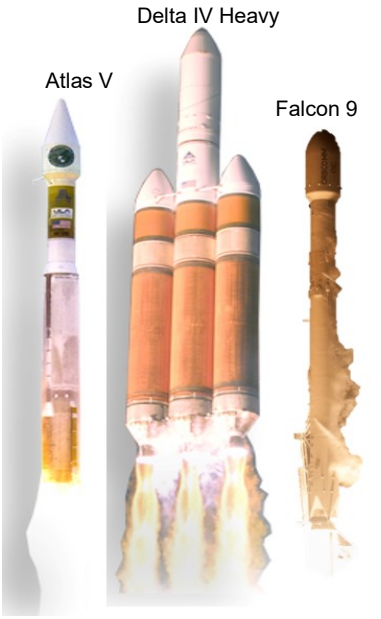
$ in Billions



Numbers may not add due to rounding

Launch Vehicles

USSF



Photos courtesy of ULA and SpaceX

The National Security Space Launch (NSSL) program, formerly known as the Evolved Expendable Launch Vehicle (EELV), provides launch services for medium and heavy lift class satellites to the Space Force, Air Force, Navy, the National Reconnaissance Office (NRO), Space Development Agency (SDA), and other government agencies. Additionally, launch vehicles includes the Rocket System Launch Program (RSLP) procurement of small launch and rideshare services and restoral of excess ballistic missiles assets for reuse.

Mission: Provides launch services and support to DoD, Intelligence Community, and other government medium to heavy satellite requirements. This mission includes flightworthiness certification, Government Mission Assurance, systems integration and tests, booster-to-satellite mission integration, launch site and launch day operations, and other related support activities. The program maintains assured-access to space for the nation, which includes a robust industrial base and two affordable and reliable families of launch vehicles capable of launching any national security payload.

FY 2022 Program: Competitively procures five Space Force Launch Services (LS) through the Phase 2 requirements contract. Launches are usually ordered not-later-than 24 months prior to the planned mission unless additional first-time integration is needed. Funds Launch Service Support (LSS) effort, which are non-discrete tasks necessary to support a sustained national security space readiness posture. Continues launch service investment in public private partnerships to ensure two commercially-viable, domestic space launch service providers. Continues tests on stored solid rocket motors as they age and refurbishes them to flight-worthy condition.

Prime Contractor(s): SpaceX; Hawthorne, CA
United Launch Alliance (ULA); Centennial, CO
Northrop Grumman; Corinee, UT
Arctic Slope Regional Corp; Beltsville, MD
Pacific Scientific Energetic Materials; Hollister, CA

Launch Vehicles						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	452.2	-	584.0	-	239.3
Procurement	5	1,249.1	3	1,044.1	5	1,421.9
Total	5	1,701.3	3	1,628.1	5	1,661.2

Numbers may not add due to rounding

Global Positioning System Enterprise

USSF

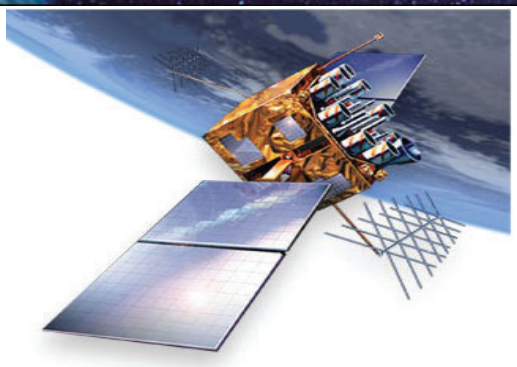


Image courtesy of Lockheed Martin

The Global Positioning System (GPS) provides world-wide, 24-hour a day, all-weather 3-dimensional positioning, navigation, and precise timing (PNT) information for military and civilian users. The GPS III space vehicles will be fully backward compatible with legacy signals while delivering new capabilities and enhancements to include a new Galileo-compatible signal (civilian), and a more powerful M-code (military) signal. The GPS Next Generation Operational Control System (OCX) will provide command, control and mission support for the GPS constellation, including GPS III and all legacy satellites. Military GPS User Equipment (MGUE) provides secure and accurate PNT capabilities to warfighters for ground, aircraft, ships, and weapons systems, enabling continued operations in the most contested environments.

Mission: Provides worldwide PNT to military and civilian users.

FY 2022 Program: Funds independent, technical, systems engineering and integration support critical to managing Space Vehicles (SVs) 05-10 production milestones. Funds continued development of the GPS III Follow-On satellites (SV 11 and 12) and fully funds two production satellites (SV 16 and 17). Continues the integration and testing activities of GPS OCX Blocks 1 and 2, and enhancements to the legacy Operational Control System prior to OCX delivery. Funds the testing and lead platform integration of MGUE Increment 1. Funds development efforts for MGUE Increment 2 and design activities to address MGUE Increment 1 obsolescence. Funds the GPS Program Office's responsibility as the Prime Integrator (Enterprise Integration) to synchronize space, control, and user segment programs and to manage civil/military specifications and requirements.

Prime Contractor(s): Lockheed Martin Corporation; Denver, CO
Raytheon Company; Aurora, CO
L3Harris; Anaheim, CA
BAE Systems; Cedar Rapids, IA
Raytheon Company; El Segundo, CA

Global Positioning System Enterprise						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	1,222.2	-	1,161.0	-	1,121.4
Procurement	1	455.8	2	634.5	2	688.7
Total	1	1,677.9	2	1,795.5	2	1,810.1

Numbers may not add due to rounding

Space Based Overhead Persistent Infrared (OPIR) Systems

USSF

Image courtesy of Lockheed Martin

Next Generation OPIR is the follow-on system to the Space Based Infrared System (SBIRS) that will notionally field three satellites in Geosynchronous Earth Orbit (GEO), two Polar satellite payloads in Highly Elliptical Orbit (HEO), and an integrated centralized ground station. Next-Gen OPIR will rapidly deliver strategically survivable missile warning capabilities which detect advances made in adversarial missile technology and addresses counter-space systems with added resiliency features.

- The SBIRS HEO 01-04 payloads and GEO space vehicles (SV) 01-04 are on orbit and operationally accepted.
- The SBIRS GEO SVs 05 launched successfully May 2021 and 06 is scheduled to launch in 2022 as replenishment satellites.
- The Next-Gen OPIR Block 0 will incrementally launch five satellites: 3 GEO with target launch dates of 2025, 2027, and 2028; and 2 Polar free-flyer satellites in HEO with target launch dates of 2028 and 2030.
- Future Operationally Resilient Ground Evolution (FORGE) program delivers a cyber-resilient, government owned ground system that supports SBIRS and Next-Gen OPIR.
- SBIRS Survivable Endurable Evolution (S2E2) upgrades Defense Support Program mobile ground systems to SBIRS GEO capability to meet survivable and endurable requirements for missile warning.

Mission: Provides initial warning of strategic missile attack on the United States, its deployed forces, and its allies. Supports missile defense, battlespace awareness, and technical intelligence.

FY 2022 Program: Funds continue development of Next-Gen OPIR (GEO and HEO) satellites and funds the Future Operationally Resilient Ground Evolution (FORGE) ground system development. Funds continue the Space Modernization Initiative (SMI), which consists of three thrust areas: technical maturation, data exploitation, and demonstrations.

Prime Contractor(s): Lockheed Martin; Sunnyvale, CA
Northrop Grumman; Redondo Beach, CA
Raytheon; El Segundo, CA

Space Based Overhead Persistent Infrared (OPIR) Systems						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	1,470.3	-	2,318.9	-	2,451.3
Procurement	-	232.9	-	145.9	-	154.5
Total	-	1,703.2	-	2,464.8	-	2,605.8

Numbers may not add due to rounding

Satellite Communications (SATCOM) Projects

USSF

The Space Force views Satellite SATCOM in three capability sets: strategic for Nuclear Command, Control, and Communications (NC3); protected to enable tactical communications in contested environments; and wideband/narrowband to provide large throughput in less contested environments.

Image courtesy of Lockheed Martin

1. Strategic

- Advanced Extremely High Frequency (AEHF) System - Provides strategic and protected tactical SATCOM. AEHF 1-6 are in orbit and operational.
- Evolved Strategic SATCOM (ESS) - Plans prototypes for next-generation constellation.
- Strategic SATCOM Terminals – Provides survivable and jam-resistant capabilities.

2. Protected Tactical

- Enhanced Polar System-Recapitalization (EPS-R) - Plans two hosted payloads for SATCOM in the North Polar Region as part of a partnership with Norway.
- Protected Tactical Enterprise Service (PTES) - Provides improved anti-jam SATCOM over existing wideband satellites and enables future tactical SATCOM systems.
- Protected Tactical SATCOM (PTS) - Develops prototypes to demo new technologies on-orbit, informing the acquisition approach and architecture for robust anti-jam SATCOM.

3. Wideband and Narrowband

- Wideband Global SATCOM (WGS) - WGS 1-10 are operational. WGS-11+, with twice the operational capacity of WGS-10, is projected available for launch in FY 2024.
- The Mobile User Objective System (MUOS) provides UHF voice and data communications.

Mission: Provides survivable, anti-jam, low probability of detection/interception, and worldwide secure and survivable communications for tactical and strategic users.

FY 2022 Program: Funds continue selected SATCOM development activities. Initiates MUOS Service Life Extension, which includes two satellites and ground system upgrades.

Prime Contractor(s): Lockheed Martin Corporation; Sunnyvale, CA
Boeing Satellite Systems; El Segundo, CA
Northrop Grumman; Redondo Beach, CA
Raytheon; Largo, FL

Satellite Communications (SATCOM) Projects						
	FY 2020		FY 2021		FY 2022	
	Qty	$M	Qty	$M	Qty	$M
RDT&E	-	935.5	-	740.4	-	848.0
Procurement	-	81.6	-	60.2	-	-
Total	-	1,017.1	-	800.6	-	848.0

Numbers may not add due to rounding

This page intentionally left blank


DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA