

**OFFICE OF THE UNDER SECRETARY OF DEFENSE
(COMPTROLLER)/CHIEF FINANCIAL OFFICER
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**Program Acquisition
Cost By
Weapon System**

**UNITED STATES DEPARTMENT OF DEFENSE
FISCAL YEAR 2019 BUDGET REQUEST**

The estimated cost of this report or study for the Department of Defense is approximately \$34,000 for the 2018 Fiscal Year. This includes \$11,000 in expenses and \$23,000 in DoD labor.

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Major Weapon Systems

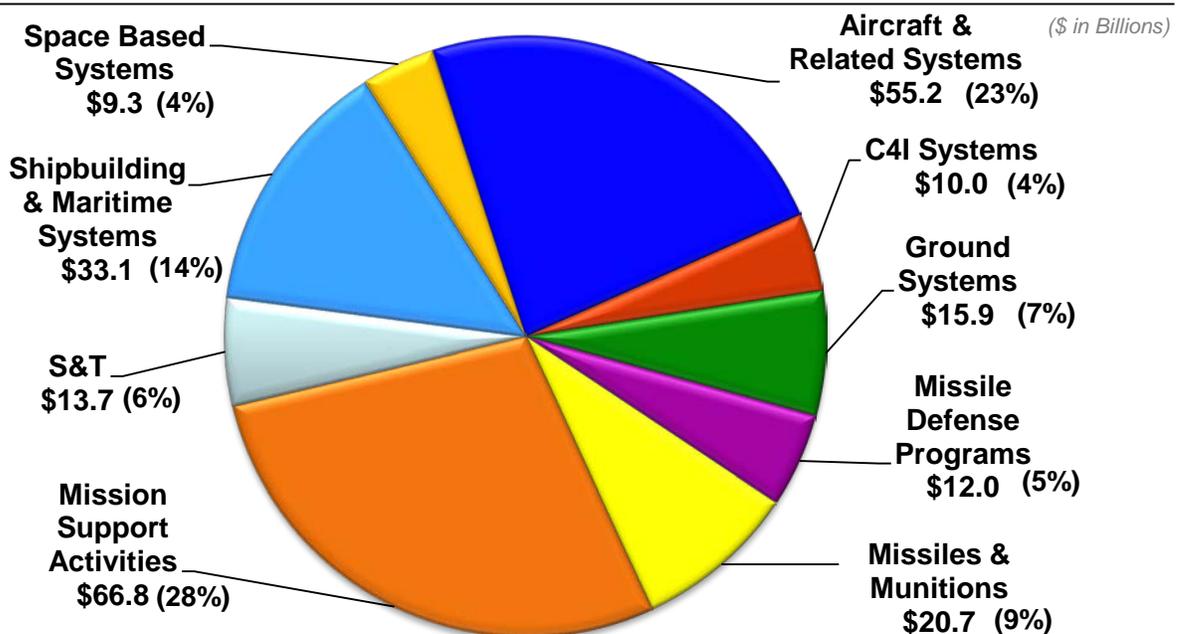
OVERVIEW

The combined capabilities and performance of United States (U.S.) weapon systems are unmatched throughout the world, ensuring that U.S. military forces have the advantage over any adversary. The Fiscal Year (FY) 2019 acquisition (Procurement and Research, Development, Test, and Evaluation (RDT&E) funding request for the Department of Defense (DoD) budget totals \$236.7 billion, which includes base and Overseas Contingency Operations (OCO) funding; \$144.3 billion for Procurement funded programs and \$92.4 billion for RDT&E funded programs. Of the \$236.7 billion, \$92.3 billion is for programs that have been designated as Major Defense Acquisition Programs (MDAPs). This book focuses on all funding for the key acquisition programs. To simplify the display of the various weapon systems, this book is organized by the following mission area categories:

Mission Area Categories

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

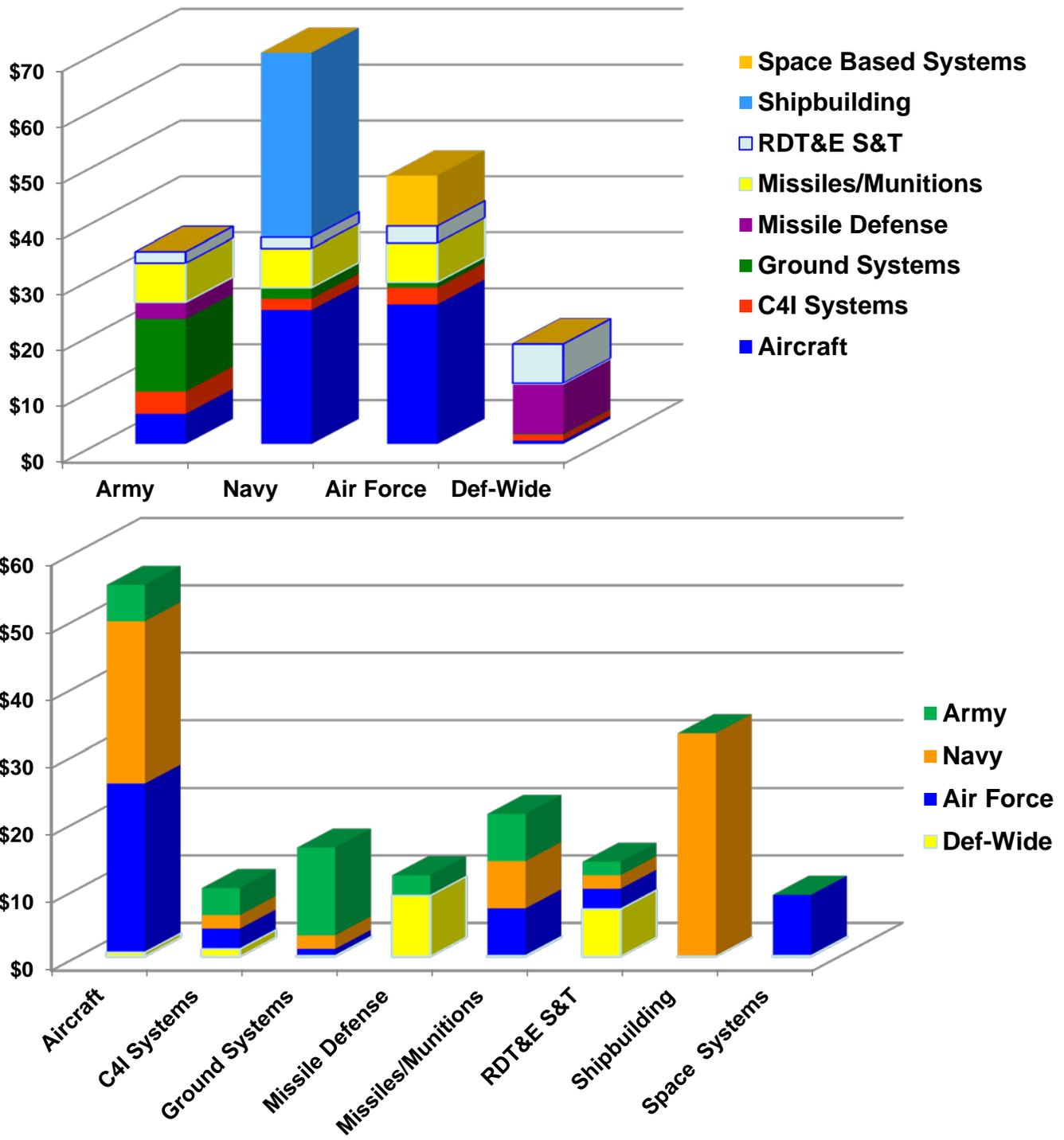
FY 2019 Modernization – Total: \$236.7 Billion



Numbers may not add due to rounding

FY 2019 Program Acquisition Costs by Weapon System

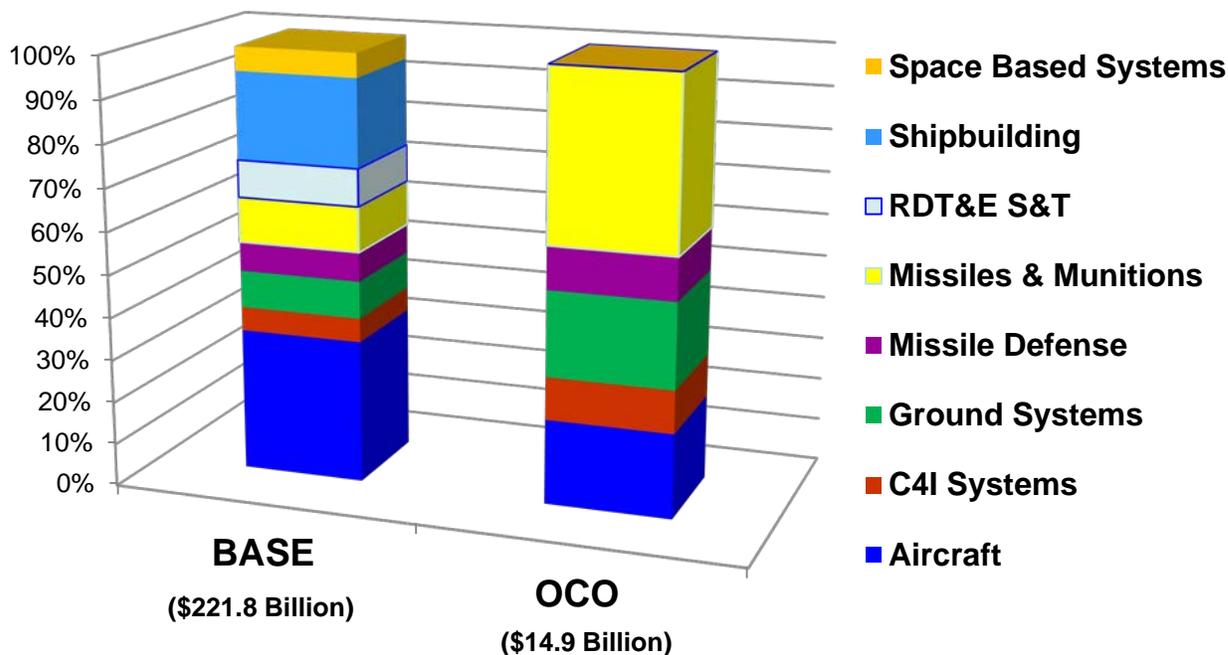
THE DISTRIBUTION OF FUNDING IN FY 2019 FOR PROCUREMENT AND RDT&E, BY COMPONENT AND BY CATEGORY *
(Dollars in Billions)



* Does not include Mission Support costs

FY 2019 Program Acquisition Costs by Weapon System

FY 2019 FUNDING REQUEST FOR BASE BUDGET & OVERSEAS CONTINGENCY OPERATIONS (OCO) (Dollars Represented by Percent)

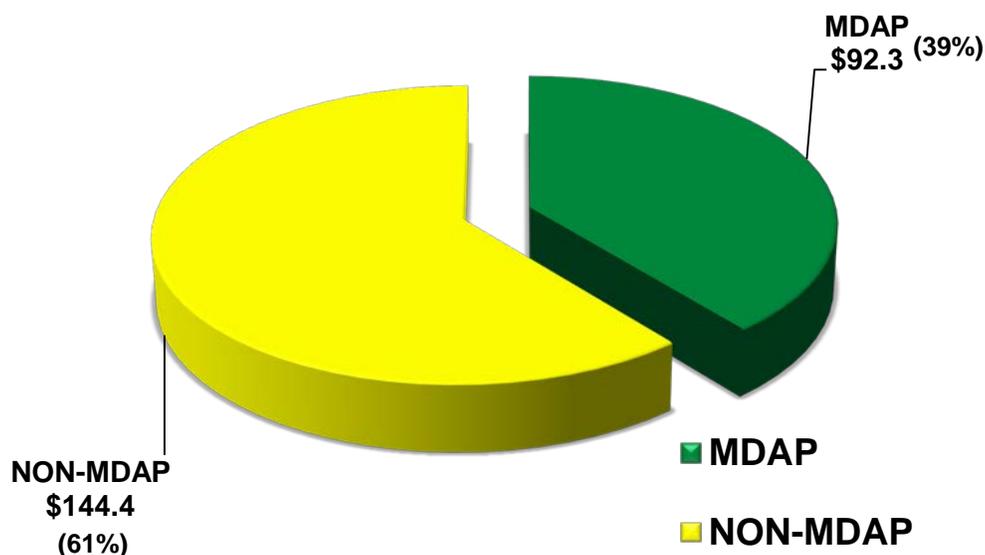


The FY 2019 President’s Budget for Investment accounts (Research, Development, Test, and Evaluation (RDT&E) and Procurement) totals \$236.7 billion, of which \$221.8 billion is requested in the Base budget, and \$14.9 billion is requested in the OCO.

The above graph illustrates the differences in content between the Base and OCO budget requests as a percent of funding in each of these two categories. Not surprisingly a larger percent of the OCO request is for ground systems and munitions. These OCO funds will be used to replenish munitions stocks that were expended in combat operations or for training in preparation for combat, or to replace military equipment that, due to combat operations in Iraq or Afghanistan, were damaged the point where it is no longer economical to repair. Also these funds procure critical preferred munitions, which are required to increase inventories that have been depleted due to sustained combat operations.

In the OCO budget the Department is requesting \$1.6 billion for the procurement of aircraft and related equipment that were lost or damaged beyond repair in combat operations; \$4.1 billion to replenish inventories of munitions that were consumed during combat; and \$2.2 billion for vehicles and associated ground forces equipment.

**TOTAL REQUESTED PROCUREMENT AND RDT&E FUNDING DURING
FY 2019, FOR MDAP AND NON-MDAP PROGRAMS
(Dollars in Billions)**



The FY 2019 President’s Budget request for modernization in the RDT&E and Procurement titles is comprised of 2,327 Program, Project, and Activity (PPA) line items. Within in figure, there are 87 Major Defense Acquisition Programs (MDAPs). Of these, 73 are under direct oversight by the Military Departments – 18 with the Army, 34 with the Navy, and 21 with the Air Force. The balance of 14 programs are currently under the oversight of the Under Secretary of Defense (Acquisition and Sustainment).

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

While non-MDAP individual programs are smaller in dollar value, they are essential to developing future technologies and procuring a wide assortment of equipment, munitions, vehicles, and weapons. The MDAPs consume approximately \$92.3 billion, or 39 percent of the FY 2019 modernization funding (\$236.7 billion). The FY 2019 modernization request is \$14.9 billion higher than the amount requested for modernization in the FY 2018 President’s Budget.

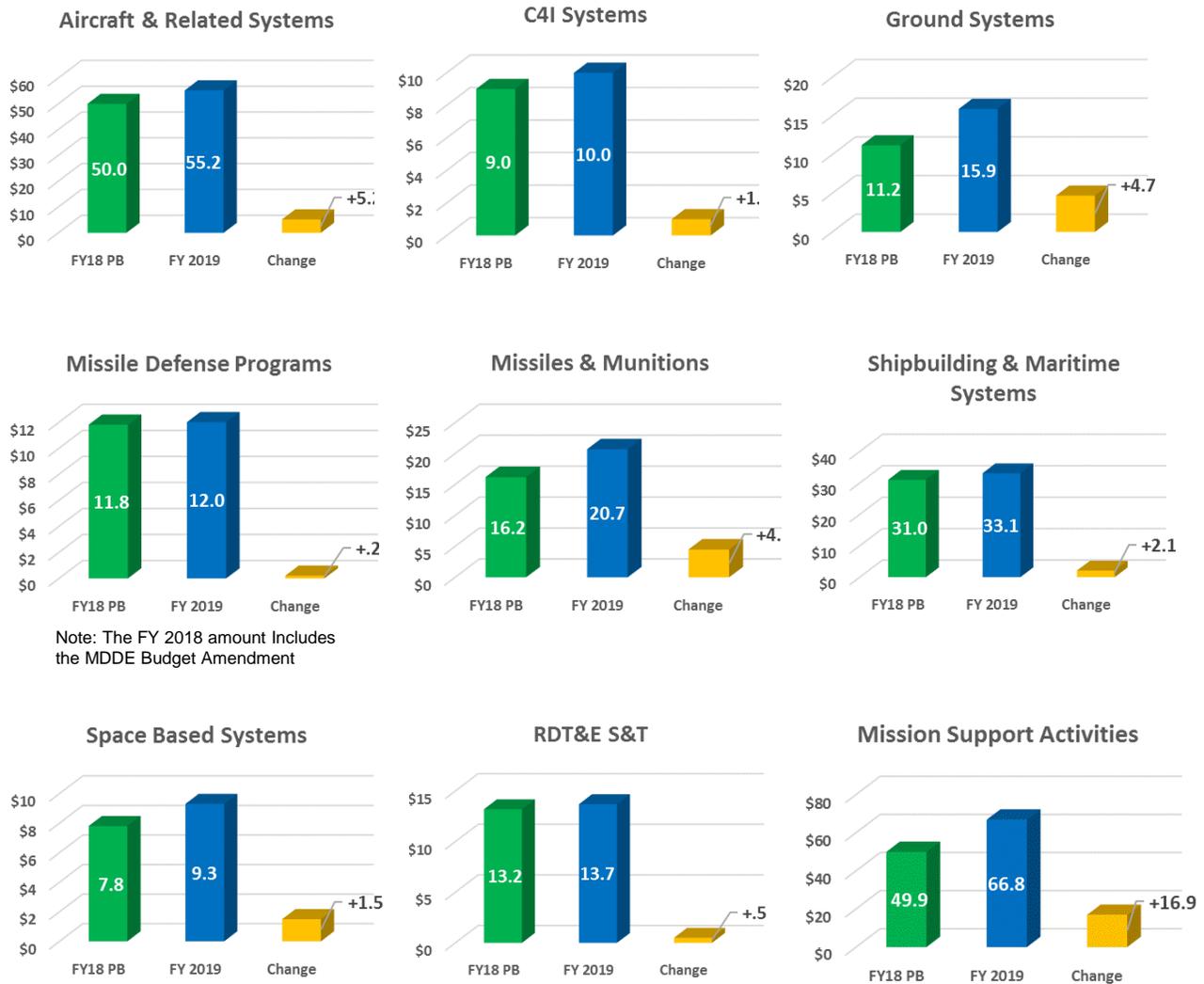
This book shows the major weapon systems funded in the FY 2019 President’s Budget, organized by the Mission Support Activities. Each Mission Area Category chapter heading further breaks out the funding allocation in FY 2019 by subgroups, and provides a summary programmatic and financial description of the major weapon systems within each portfolio.

FY 2019 Program Acquisition Costs by Weapon System

MISSION AREA CATEGORIES

Consistent with the National Defense Strategy (NDS), the funding for Investment activities (Research, Development, Test and Evaluation (RDT&E) and Procurement accounts) have increased since the FY 2018 President’s budget (PB) and subsequent ballistic missile defense Budget Amendment requests (total of \$211.0 billion). The following charts illustrates the relative funding and the amount changed by Mission Area Categories between FY 2018 and FY 2019.

(Dollars in Billions)



Note: The FY 2018 amount Includes the MDDE Budget Amendment

Note: The FY 2018 amount is different from the amount reflected in the FY 2018 PB due to a revision in category allocation.

FY 2019 Program Acquisition Costs by Weapon System

Mission Area Categories

Aircraft & Related Systems

\$55.2 billion – 23 percent of the Investment budget request

Includes funding for aircraft research and development, aircraft procurement, and aircraft support equipment. The single largest defense program, the F-35 Joint Strike Fighter (FY 2019 request, \$10.7 billion) resides in this category. Aircraft and Related Systems also include funding for attack and utility helicopters; Unmanned Aerial System (UAS); manned reconnaissance platforms and systems; the incremental cost for the Presidential Aircraft Recapitalization (PAR) aircraft; as well as future platforms, the Next Generation Air Dominance (6th generation fighter) and the Long Range Strike – Bomber (B-21). For display purposes, the Aircraft and Related Systems category includes the following subgroups:

- Combat Aircraft
- Cargo Aircraft
- Support Aircraft
- Unmanned Aerial Vehicle
- Aircraft Modifications
- Aircraft Support
- Technology Development

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

\$10.0 billion – 4 percent of the Investment budget request

Includes funding for various C4I system, to include command centers; communications gear; air traffic control; night vision equipment; cyber space operations and requirements; data processing equipment; fire control systems, other information technology, and other related systems. This category includes funding for an far-reaching number of programs such as Warfighter Information Network-Tactical (WIN-T), Joint Regional Security Stacks (JRSS), and Integrated Personnel and Pay System-Army (IPPS-A). For display purposes, the C4I System category includes the following subgroups:

- Automation
- Base Communications
- Information Security & Assurance
- Technology Development
- Theater Combat Command, Control, Computers & Services

FY 2019 Program Acquisition Costs by Weapon System

Ground Systems

\$15.9 billion – 7 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 engineer equipment, research and development of various weapons equipment. This category includes funding for new and upgrades to tactical vehicles, such as the new Armored Multi-Purpose Vehicle (AMPV) for the Army and the Amphibious Combat Vehicle I.1 for the Marine Corps. It also includes upgrades to the Abrams main battle tank to start bringing the force up to the M1A2 System Enhancement Package (SEP) V3 configuration and the upgrades to the M109A7 155mm Paladin Integrated Management (PIM) self-propelled artillery vehicle. For display purposes, the Ground Systems category includes the following subgroups:

- Combat Vehicles
- Heavy Tactical Vehicles
- Light Tactical Vehicles
- Medium Tactical Vehicles
- Support Equipment
- Weapons

Missile Defense Programs

\$12.0 billion – 5 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 increased funding to continue the Missile Defeat and Defense Engagement (MDDE) initiative, which was included in the FY 2018 Budget Amendment (Division B, P. L. 115-96) mitigate the offensive nuclear ballistic missile threat from North Korea. Key increases since the FY 2018 budget request is the procurement of additional Standard Missile Block 3 IB missiles; Terminal High Altitude Area Defense (THAAD) interceptors, and the start of construction of 22 additional missile silos at Fort Greely, Alaska, along with 20 additional Ground Based Interceptors (GBI). Also in this category, is the funding for the Israeli ballistic missile defense programs. For display purposes, the Missile Defense Programs category includes the following subgroups:

- Ballistic Missile Defense System
- Tactical Ballistic Missile Defense
- Tactical Missile Defense

FY 2019 Program Acquisition Costs by Weapon System

Missiles and Munitions

\$20.7 billion – 9 percent of the Investment budget request

This category includes funding for both conventional ammunition of all types and Precision Guided Munitions (PGM). The ammunition portfolio includes bullets, cartridges, mortars, explosives and artillery projectiles. The PGM portfolio includes air-to-air, air-to-ground, ground-to-ground, and ground-to-air weapons. Also included in this category is the development and procurement funding associated with nuclear weapon delivery systems, such as the Trident II and Minuteman III missiles, and the non-warhead section of nuclear weapons (maintenance and sustainment of warheads is funded in the budget request of the Department of Energy National Nuclear Security Administration (NNSA)). For display purposes, the Missiles and Munitions category includes the following subgroups:

- Conventional Ammunition
- Strategic Missiles
- Tactical Missiles

Shipbuilding and Maritime Systems

\$33.1 billion – 14 percent of the Investment budget request

Includes research and development and procurement funding for shipbuilding and maritime systems. The FY 2019 budget request provides for the service life extension, incremental funding of previous years' ships and construction of 10 ships: four surface combatants, two fast attack Virginia class submarines, incremental funding for the U.S.S. ENTERPRISE (CVN-80), the refueling and overhaul of the U.S.S. STENNIS (CVN-74); two fleet replenishment oiler; one rescue ship; and one Expeditionary Sea Based ship, and five Ship to Shore Connectors. Also in this category is the development and construction of the first U.S.S. COLUMBIA class ballistic-missile submarine (SSBN) 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. For display purposes, Shipbuilding and Maritime Systems, is further categorized by the following subgroups:

- Surface Combatant
- Submarine Combatant
- Support Ships
- Support
- Outfitting & Post Delivery
- Basic Research
- Technology Development

FY 2019 Program Acquisition Costs by Weapon System

Space Based Systems

\$9.3 billion – 4 percent of the Investment budget request

This category induces funding for development and procurement of space based spacecraft, launch vehicles, space command and control systems, and terrestrial satellite terminals and equipment. Also included in this category are space situation awareness requirements, the space test program, and classified programs. For display purposes, Space Based Systems, is further categorized by the following subgroups:

- Launch
- Satellites
- Support

Science & Technology

\$13.7 billion – 6 percent of the Investment budget request

Given today's globalized access to knowledge and the rapid pace of technology development, innovation, speed, and agility have taken on a greater importance. The funding in this category serves to foster innovation and develop advanced state-of-the-art technology to protect the United States, its allies, and American forces worldwide. For display purposes, RDT&E Science and Technology, is further categorized by the following subgroups:

- Basic Research
- Applied Research
- Advanced Technology Development

Mission Support Activities

\$66.8 billion – 28 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, Defense Production Act (DPA) purchases; funding for Joint Urgent Operational Needs; and funding for Joint Improvised-Threat Defeat Organization (JIDO). Also included in this category are classified special program and capabilities not reflected in the other categories identified previously.

Major Weapon Systems Summary (\$ in Millions)		FY 2017	FY 2018	2019			Page
				Base Budget	OCO Budget	Total Request	
Aircraft and Related Systems – Joint Service							
F-35	Joint Strike Fighter	11,448.3	10,837.9	10,692.5	-	10,692.5	1-2
V-22	Osprey	1,839.5	961.8	1,280.1	-	1,280.1	1-3
C-130J	Hercules	1,434.2	886.1	1,471.9	100.0	1,571.9	1-4
MQ-1B / MQ-1C	Predator/Gray Eagle	528.6	174.4	43.3	71.4	114.7	1-5
MQ-9	Reaper	984.2	1,009.9	551.5	360.2	911.7	1-6
MQ-4C / RQ-4	Triton/Global Hawk/NATO AGS	1,081.4	1,225.3	1,161.6	-	1,161.6	1-7
MQ-25	Stingray	76.4	222.2	683.9	-	683.9	1-8
Aircraft and Related Systems – US Army (USA)							
AH-64E	Apache: Remanufacture/New Build	1,363.6	1,441.9	1,271.3	-	1,271.3	1-9
CH-47	Chinook	653.8	415.0	283.0	25.0	308.0	1-10
UH-60	Black Hawk	1,305.9	1,059.0	1,398.9	21.2	1,420.1	1-11
Aircraft and Related Systems – US Navy (USN) / US Marine Corps (USMC)							
F/A-18	Super Hornet	1,146.9	1,253.1	1,996.4	-	1,996.4	1-12
E-2D	Advanced Hawkeye	1,390.2	1,116.4	1,188.8	-	1,188.8	1-13
P-8A	Poseidon	2,154.7	1,609.4	2,218.9	-	2,218.9	1-14
VH-92A	Presidential Helicopter	338.3	451.9	894.1	-	894.1	1-15
CH-53K	Heavy Lift Replacement Helicopter	755.6	1,055.5	1,601.8	-	1,601.8	1-16
H-1	AH-1Z Viper/ UH-1Y Venom	882.0	781.8	878.9	-	878.9	1-17
Aircraft and Related Systems – US Air Force (USAF)							
B-21	Raider	1,290.3	2,003.6	2,314.2	-	2,314.2	1-18
B-1, B-2, B-52	Bombers	793.9	940.9	941.0	4.0	945.0	1-19
KC-46A	Tanker	3,101.1	3,052.9	3,013.1	-	3,013.1	1-20
PAR	Presidential Aircraft Recapitalization	311.3	434.1	673.0	-	673.0	1-21
F-22	Raptor	662.0	915.5	867.0	-	867.0	1-22
F-15	Eagle	780.6	963.1	1,067.1	-	1,067.1	1-23
CRH	Combat Rescue Helicopter	273.3	354.5	1,137.9	-	1,137.9	1-24
C4I Systems – USA							
WIN-T	Warfighter Information Network – Tactical	461.9	449.1	531.8	-	531.8	2-2
HMS	Handheld, Manpack, and Small Form Fit Radios	292.4	375.5	355.4	-	355.4	2-3
Ground Systems – Joint Service							
JLTV	Joint Light Tactical Vehicle	710.5	1,142.7	1,961.5	-	1,961.5	3-2
Ground Systems – USA							
M1A2	Abrams Tank Modification/Upgrades	886.6	1,213.9	2,168.4	489.0	2,657.4	3-3
AMPV	Armored Multi-Purpose Vehicle	177.1	647.4	598.0	230.4	828.4	3-4
PIM	Paladin Integrated Management	624.0	778.2	351.8	67.0	418.8	3-5
FMTV	Family of Medium Tactical Vehicles	352.8	84.7	136.6	-	136.6	3-6
FHTV	Family Of Heavy Tactical Vehicles	50.7	118.0	150.1	115.4	265.5	3-7
Stryker	Stryker	687.9	178.2	368.3	-	368.3	3-8
Ground Systems – USMC							
ACV	Amphibious Combat Vehicle	131.3	340.5	265.7	-	265.7	3-9
Missile Defense Programs – Joint Service							
GMD	Ground-based Midcourse Defense	1,440.6	1,944.8	2,101.8	-	2,101.8	4-2
THAAD	Terminal High Altitude Area Defense	821.2	1,289.2	1,149.3	-	1,149.3	4-3
Aegis	Aegis Ballistic Missile Defense	1,597.5	2,073.7	1,669.1	-	1,669.1	4-4
Missile Defense Programs – USA							
Patriot / PAC-3	Patriot Advanced Capability	313.0	681.8	526.6	-	526.6	4-5
PAC-3 / MSE	PAC-3/Missile Segment Enhancement Missile	809.0	1,106.0	871.3	260.0	1,131.3	4-6

Major Weapon Systems Summary (\$ in Millions)		FY 2017	FY 2018	2019			Page
				Base Budget	OCO Budget	Total Request	
Missiles and Munitions – Joint Service							
JDAM	Joint Direct Attack Munition	790.4	874.3	337.9	831.5	1,169.4	5-2
Hellfire	Hellfire Missiles	681.7	711.1	113.8	511.5	625.3	5-3
SDB I	Small Diameter Bomb I	160.1	283.9	113.0	140.7	253.7	5-4
SDB II	Small Diameter Bomb II	225.0	255.7	369.8	-	369.8	5-5
JASSM	Joint Air-to-Surface Standoff Missile	455.0	471.7	491.2	61.6	552.8	5-6
AIM-9X	Air Intercept Missile - 9X	320.8	296.2	293.5	0.4	293.9	5-7
AMRAAM	Advanced Medium Range Air-to-Air Missile	614.0	594.4	648.2	3.8	652.0	5-8
Chem-Demil	Chemical Demilitarization	650.7	961.7	993.8	-	993.8	5-9
JAGM	Joint Air-to-Ground Missile	186.1	232.3	319.2	-	319.2	5-10
LRASM	Long Range Anti-Ship Missile	427.3	432.5	268.8	-	268.8	5-11
Missiles and Munitions – USA							
GMLRS	Guided Multiple Launch Rocket System	474.3	948.5	543.2	624.5	1,167.7	5-12
Javelin	Javelin Advanced Anti-Tank Weapon	290.4	183.3	317.3	31.1	348.4	5-13
Missiles and Munitions – USN							
Trident II	Trident II Ballistic Missile Modification	1,229.5	1,270.0	1,236.5	-	1,236.5	5-14
Standard	Standard Missile-6	586.7	669.5	692.4	-	692.4	5-15
RAM	Rolling Airframe Missile	113.0	99.8	122.5	-	122.5	5-16
Missiles and Munitions – USAF							
GBSD	Ground Based Strategic Deterrent	109.0	215.7	345.0	-	345.0	5-17
B61	B61 Tail Kit Assembly	131.0	179.5	253.9	-	253.9	5-18
LRSO	Long Range Stand-Off Missile	102.0	451.3	615.0	-	615.0	5-19
Shipbuilding and Maritime Systems – USN							
CVN 78	<i>Gerald R. Ford</i> Class Nuclear Aircraft Carrier	2,752.1	4,638.1	1,765.9	-	1,765.9	6-2
SSBN 826	<i>Columbia</i> Class Submarine	1,844.6	1,884.5	3,710.3	-	3,710.3	6-3
SSN 774	<i>Virginia</i> Class Submarine	5,394.6	5,546.3	7,446.4	-	7,446.4	6-4
DDG 51	<i>Arleigh Burke</i> Class Destroyer	3,894.1	4,013.7	5,985.6	-	5,985.6	6-5
LCS	Littoral Combat Ship	2,004.4	1,653.8	1,254.4	-	1,254.4	6-6
CVN	Refueling Complex Overhaul	1,932.3	1,680.8	449.5	-	449.5	6-7
SSC	Ship to Shore Connector	140.7	245.1	362.4	-	362.4	6-8
T-AO 205	<i>John Lewis</i> Class Fleet Replenishment Oiler	74.1	543.1	1,086.6	-	1,086.6	6-9
ESB	Expeditionary Sea Base	-	-	650.0	-	650.0	6-10
T-ATS	Towing, Salvage, and Rescue Ship	-	76.2	80.5	-	80.5	6-11
Space Based Systems – USAF							
EELV	Evolved Expendable Launch Vehicle	1,634.8	1,861.5	1,950.0	-	1,950.0	7-2
GPS	Global Positioning System	894.8	1,120.5	1,490.7	-	1,490.7	7-3
SBIRS	Space Based Infrared System	517.1	1,505.3	842.1	-	842.1	7-4
AEHF	Advanced Extremely High Frequency and SATCOM Projects	1,034.0	453.0	768.0	-	768.0	7-5



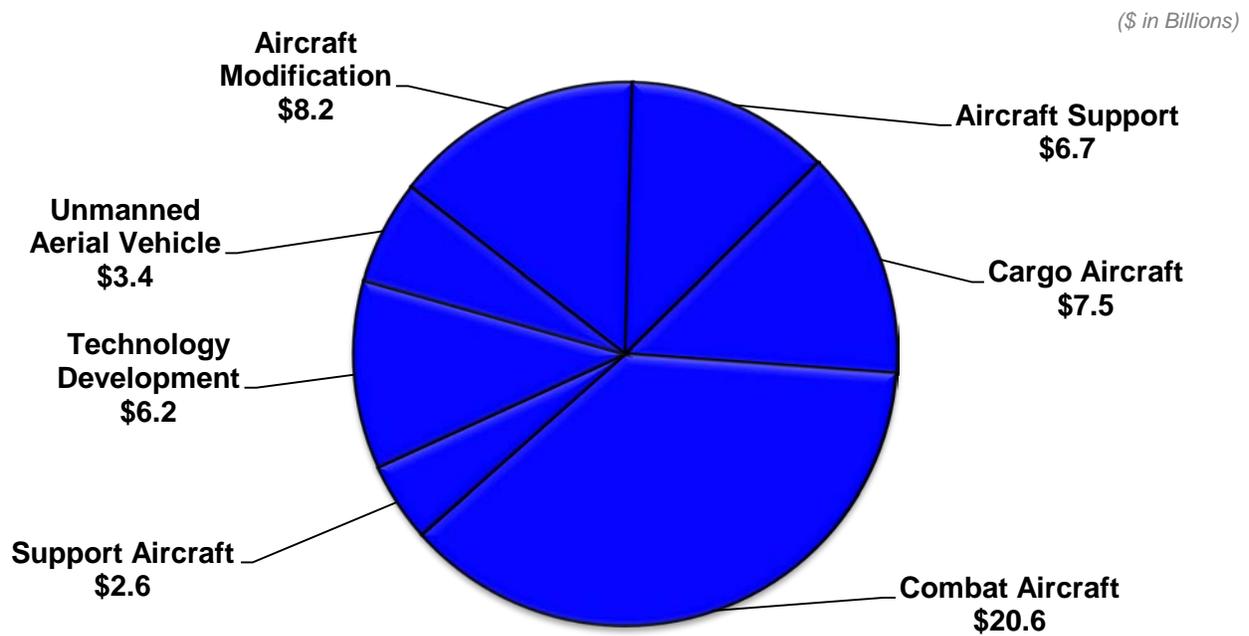
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Aircraft & Related Systems

Aviation forces - including fighter/attack, bomber, mobility (cargo/tanker), specialized support aircraft, and unmanned aircraft systems — 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.

The FY 2019 Base and OCO funding provides for the procurement of 77 F-35, 24 F/A18E/F jets, 39 logistics and support aircraft, 191 rotary wing aircraft, and 66 Unmanned Aerial Vehicles (UAV). 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 2019 Aircraft & Related Systems – Total: \$55.2 Billion



Numbers may not add due to rounding

FY 2019 Program Acquisition Costs by Weapon System

F-35 Joint Strike Fighter

DOD - JOINT

The F-35 Joint Strike Fighter (JSF) is the next-generation strike fighter for the Navy, Marine Corps, Air Force, and U.S. Allies. The F-35 consists of three variants: the 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 eight cooperative international partners, as well as three Foreign Military Sales (FMS) countries. The Marine Corps and the Air Force declared Initial Operational Capability in July 2015 and August 2016, respectively.



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

FY 2019 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 77 aircraft in FY 2019: 48 CTOL for the Air Force, 20 STOVL for the Marine Corps, and 9 CV for the Navy.

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

F-35 Joint Strike Fighter										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
USN	1,086.8	-	550.7	-	643.5	-	-	-	643.5	-
USAF	507.8	-	627.5	-	618.5	-	-	-	618.5	-
Subtotal	1,594.6	-	1,178.2	-	1,262	-	-	-	1,262.0	-
Procurement										
USN	3,974.8	26	3,723.7	24	3,884.2	29	-	-	3,884.2	29
USAF	5,198.2	48	5,393.3	46	4,914.3	48	-	-	4,914.3	48
Subtotal	9,173.0	74	9,116.9	70	8,798	77	-	-	8,798.5	77
Spares	680.8	-	542.8	-	632.0	-	-	-	632.0	-
Total	11,448.3	74	10,837.9	70	10,692.5	77	-	-	10,692.5	77

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

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 will replace the Navy's C-2A Greyhound for the COD mission.

FY 2019 Program: Funds the second year of a follow-on 7-year multiyear procurement (MYP) contract (FY 2018 to 2024), procuring seven CMV-22 aircraft for the Navy.

Prime Contractors: Bell Helicopter Textron, Incorporated; Fort Worth, TX
The Boeing Company; Philadelphia, PA

V-22 Osprey										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
USN	154.2	-	171.4	-	143.1	-	-	-	143.1	-
USAF	27.7	-	22.5	-	18.5	-	-	-	18.5	-
Subtotal	181.9	-	193.9	-	161.6	-	-	-	161.6	-
Procurement										
USN	1,497.2	19	706.7	6	1,058.1	7	-	-	1,058.1	7
USAF	160.4	1	61.2	-	60.4	-	-	-	60.4	-
Subtotal	1,657.6	20	767.9	6	1,118.5	7	-	-	1,118.5	7
USN Subtotal	1,651.4	19	878.1	6	1,201.2	7	-	-	1,201.2	7
USAF Subtotal	188.1	1	83.7	-	78.9	-	-	-	78.9	-
Total	1,839.5	20	961.8	6	1,280.1	7	-	-	1,280.1	7

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

C-130J Hercules

DOD - JOINT

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, and augmentation of strategic airlift forces. The C-130J aircraft, with its extended fuselage, provides additional cargo carrying capacity for the Air Force combat delivery mission compared to the legacy C-130E/H and the C-130J (short) aircraft. Special mission variants of the C-130J conduct airborne psychological 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: Provides 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 2019 Program: Begins a follow-on multiyear procurement (MYP) C-130J contract (FY 2019 to FY 2023).

Prime Contractor: Lockheed Martin Corporation; Marietta, GA

C-130J Hercules										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
HC/MC-130	8.7	-	38.6	-	32.6	-	-	-	32.6	-
C-130J	16.2	-	26.8	-	15.4	-	-	-	15.4	-
Subtotal	24.9	-	65.4	-	48.0	-	-	-	48.0	-
Procurement										
C-130J	378.7	5	57.7	-	35.9	-	-	-	35.9	-
HC-130J	337.6	4	198.5	2	129.4	1	100.0	1	229.4	2
MC-130	549.4	6	409.4	5	988.2	6			988.2	6
Subtotal	1,265.6	15	665.6	7	1,153.5	7	100.0	1	1,253.5	8
Procurement										
KC-130J	143.7	2	155.1	2	270.4	2	-	-	270.4	2
Subtotal	143.7	2	155.1	2	270.4	2	-	-	270.4	2
Total	1,434.2	17	886.1	9	1,471.9	9	100.0	1	1,571.9	10

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

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

DOD - JOINT

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, infra-red (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. Special Operations Command (SOCOM) divested the MQ-1 UAS in FY 2015, and 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 includes the Gray Eagle Extended Range Engineering Change Proposal, which extends the range and endurance of the aircraft.



US Army Photo

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 2019 Program: Continues development of advanced MQ-1 Payload sensors. Procures four Gray Eagle UAS in FY 2019 Base funding and six Gray Eagle UAS in Overseas Contingency Operations (OCO) funding to replace three combat losses and three UAS in anticipation of future losses.

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

MQ-1B Predator / MQ-1C Gray Eagle										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
Gray Eagle USA	13.5	-	9.6	-	-	-	-	-	-	-
Procurement										
Gray Eagle USA	515.1	20	164.8	11	43.3	4	71.4	6	114.7	10
Subtotal	515.1	20	164.8	11	43.3	4	71.4	6	114.7	10
Total	528.6	20	174.4	11	43.3	4	71.4	6	114.7	10

Note: Funding includes air vehicles and payloads

Numbers may not add due to rounding

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

**FY 2018 reflects the President's Budget Base request + includes \$128.7 million OCO funds

FY 2019 Program Acquisition Costs by Weapon System

MQ-9 Reaper

DOD - JOINT

The U.S. Air Force MQ-9 Reaper Unmanned Aircraft System (UAS) program is comprised of an aircraft segment consisting of aircraft 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)-unique kits, payloads and modifications.



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

FY 2019 Program: Funds the continued development, transformation, and fielding of Reaper aircraft and ground stations. The base request includes the procurement of eight UAS, nine dual ground control stations, and continues the modification of MQ-9s to the extended range configuration. The OCO request includes the procurement of 21 additional aircraft, updated multi-spectral sensors, and payload modifications to replace eight combat losses and 13 anticipated losses.

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

MQ-9 Reaper										
	FY 2017*		FY 2018**		FY 2019					
	(\$M)	Qty	(\$M)	Qty	Base Budget		OCO Budget		Total Request	
					(\$M)	Qty	(\$M)	Qty	(\$M)	Qty
RDT&E										
USAF	167.2	-	201.4	-	115.3	-	4.5	-	119.8	-
SOCOM	17.1	-	37.9	-	18.4	-	-	-	18.4	-
Subtotal	184.3	-	239.3	-	133.7	-	4.5	-	138.2	-
Procurement										
USAF	715.2	24	709.4	16	393.2	8	355.7	21	748.9	29
SOCOM	84.7	-	61.2	-	24.6	-	-	-	24.6	-
Subtotal	799.9	24	770.6	16	417.8	8	355.7	21	773.5	29
Total	984.2	24	1,009.9	16	551.5	8	360.2	21	911.7	29

Note: Procurement funding includes mods, spares and other production support

Numbers may not add due to rounding

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

**FY 2018 reflects the President's Budget Base request + includes \$347.3 million OCO funds

FY 2019 Program Acquisition Costs by Weapon System

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

The Navy MQ-4C Triton, U.S. Air Force (USAF) RQ-4 Global Hawk, and NATO Alliance Ground Surveillance (AGS) Unmanned Aircraft System programs provide high altitude long endurance Intelligence, Surveillance, and Reconnaissance (ISR)



capabilities. The MQ-4C will provide the Navy with a persistent maritime ISR capability. Mission systems include inverse 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. The final RQ-4 Block 30 aircraft will be delivered in December 2018. Five NATO AGS aircraft are being procured with development funding. Deliveries will complete in FY 2018.

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 2019 Program: MQ-4C: Funds the procurement of three systems, and continues to fund development activities associated with software upgrades and the multi-intelligence effort.

RQ-4: Funds the development and modification efforts for the Block 30, Block 40, Airborne Signals Intelligence Payload (ASIP) Increment II, various sensor enhancements; and the U.S. contribution to the NATO AGS.

Prime Contractor: Northrop Grumman; Rancho Bernardo, CA

MQ-4C Triton / RQ-4 Global Hawk / NATO AGS										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
RQ-4, USAF	244.8	-	214.8	-	221.7	-	-	-	221.7	-
RQ-4, NATO	38.9	-	44.7	-	51.5	-	-	-	51.5	-
MQ-4, USN	258.1	-	313.5	-	234.3	-	-	-	234.3	-
Subtotal	541.8	-	573.0	-	507.5	-	-	-	507.5	-
Procurement										
RQ-4, USAF	39.7	-	72.9	-	25.8	-	-	-	25.8	-
MQ-4, USN	499.9	2	579.4	3	628.3	3	-	-	628.3	3
Subtotal	539.6	2	652.3	3	654.1	3	-	-	654.1	3
Total	1,081.4	2	1,225.3	3	1,161.6	3	-	-	1,161.6	3

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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 is expected to enter into Engineering and Manufacturing Development (EMD) in the fourth quarter of FY 2018. The President's Budget request accelerates Initial Operating Capability (IOC) two years to FY 2026.



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

FY 2019 Program: Begins to ramp-up efforts on the airframe, propulsion, avionics and payload. Efforts include design, development, integration, fabrication, and testing. Begin long-lead procurement of hardware for four flying and two structural test air vehicles, and significantly increase System Engineering on the air vehicle.

Prime Contractor: TBD

MQ-25 Stingray										
	FY 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	76.4	-	222.2	-	683.9	-	-	-	683.9	-
Procurement	-	-	-	-	-	-	-	-	-	-
Total	76.4	-	222.2	-	683.9	-	-	-	683.9	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

AH-64E Apache

The AH-64E Apache program is a parallel new build and remanufacture effort, 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 upgrades the aircraft with updated technologies and performance enhancements to keep the Apache viable throughout its lifecycle. The AH-64E program also installs the Target Acquisition



US Army Photo

Designation Sight and Pilot Night Vision Sensors, plus other safety and reliability enhancements.

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

FY 2019 Program: Funds the remanufacture of 48 AH-64D aircraft to the AH-64E configuration and 12 New Build AH-64Es in the third year of a 5-year multiyear procurement (MYP) contract (FY 2017 – FY 2021) and continued development of upgrades to enhance operational capabilities.

Prime Contractors: Apache: The Boeing Company; Mesa, AZ
 Integration: Northrop Grumman Corporation; Baltimore, MD
 Lockheed Martin Corporation; Oswego, NY

AH-64E Apache										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	64.4	-	60.0	-	0.2	-	-	-	0.2	-
Procurement										
AH-64E New Build	261.9	8	446.0	13	343.3	12	-	-	343.3	12
AH-64E Reman	1,037.3	52	935.9	50	927.8	48	-	-	927.8	48
Total	1,363.6	60	1,441.9	63	1,271.3	60	-	-	1,271.3	60

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$39.0 million OCO funds

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

CH-47 Chinook

USA

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. 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. 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 2019 Program: Funds the procurement of six ReNew/SLEP MH-47G helicopters in Base and replaces one combat loss MH-47G in OCO.

Prime Contractor: The Boeing Company; Philadelphia, PA

CH-47 Chinook										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	91.8	-	194.6	-	159.5	-	-	-	159.5	-
Procurement	562.0	22	220.4	6	123.5	6	25.0	1	148.5	7
Total	653.8	22	415.0	6	283.0	6	25.0	1	308.0	7

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

UH-60 Black Hawk

USA

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.

Variants may have different capabilities and equipment in order 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. An 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 2019 is the first year of production upgrades for the UH-60A to UH-60L Digital, recently designated as the UH-60V. This conversion provides an integrated digital map, integrated performance planning, common functionality and commonality of training with the UH-60M.



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 2019 Program: Funds procurement of 49 UH-60M aircraft in Base and 1 combat loss in OCO, in the third year of a follow-on 5-year multiyear procurement (MYP) contract (FY 2017- FY 2021). Also funds procurement of 18 upgrades of UH-60A helicopters to UH-60V.

Prime Contractor: Sikorsky Aircraft; Stratford, CT

UH-60 Black Hawk										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	46.7	-	34.4	-	157.8	-	-	-	157.8	-
Procurement										
UH-60M	1,259.2	61	1,024.6	48	1,095.0	49	21.2	1	1,116.2	50
UH-60V	-	-	-	-	146.1	18	-	-	146.1	18
Total	1,305.9	61	1,059.0	48	1,398.9	67	21.2	1	1,420.1	68

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

F/A-18 E/F Super Hornet



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.



Image courtesy of US Navy



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 2019 Program: Procures 24 E/F model aircraft and advance procurement for future aircraft as part of multiyear procurement (MYP) contract (FY 2019 - FY 2021).

Prime Contractors: Airframe: Boeing; St. Louis, MO
Engine: General Electric Company; Lynn, MA

F/A-18 E/F Super Hornet										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	1,146.9	14	1,253.1	14	1,996.4	24	-	-	1,996.4	24
Total	1,146.9	14	1,253.1	14	1,996.4	24	-	-	1,996.4	24

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

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 2019 Program: Funds four E-2D aircraft in the first year of a multiyear procurement (MYP) contract (FY 2019 – FY 2023), associated support, continued development of systems, and advance procurement for additional aircraft in FY 2020.

Prime Contractors: 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 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	354.4	-	292.5	-	223.6	-	-	-	223.6	-
Procurement	1,015.5	6	809.5	5	952.7	4	-	-	952.7	4
Spares	20.4	-	14.3	-	12.5	-	-	-	12.5	-
Total	1,390.2	6	1,116.4	5	1,188.8	4	-	-	1,188.8	4

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

P-8A Poseidon

The P-8A Poseidon is an 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 will carry 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 2019 Program: Procures ten P-8A aircraft, support equipment, spares, and advance procurement for FY 2020 aircraft. Continues research and development on the P-8A capabilities to meet the ASW, ASuW, and ISR objectives that will be delivered incrementally while full rate production continues for the baseline aircraft.

Prime Contractors: Airframe: Boeing; Seattle, WA
Engine: CFM International; Cincinnati, OH

P-8A Poseidon										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	171.8	-	190.7	-	197.7	-	-	-	197.7	-
Procurement	1,943.4	11	1,385.6	7	1,983.8	10	-	-	1,983.8	10
Spares	39.6	-	33.1	-	37.4	-	-	-	37.4	-
Total	2,154.7	11	1,609.4	7	2,218.9	10	-	-	2,218.9	10

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

VH-92A Presidential Helicopter



The VH-92A replaces the legacy Presidential Helicopter fleet – the VH-3D, which was fielded in 1974, and the VH-60N, which was fielded in 1989. The VH-92A will be 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. A total of 21 operational aircraft will be

procured. Two Engineering Development Model (EDM) 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 2019 Program: Funds the Low Rate Initial Production (LRIP) of six VH-92 helicopters. Funds the continuing EMD effort and preparation for a Milestone C (Production and Deployment) decision in second quarter of FY 2019.

Prime Contractor: Sikorsky Aircraft Corporation; Stratford, CT

VH-92A Presidential Helicopter										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	338.3	-	451.9	-	245.1	-	-	-	245.1	-
Procurement	-	-	-	-	649.0	6	-	-	649.0	6
Total	338.3	-	451.9	-	894.1	6	-	-	894.1	6

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President’s Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

CH-53K Heavy Lift Replacement Helicopter



The CH-53K King Stallion is a marinized heavy-lift helicopter that replaces the U. S. Marine Corps CH-53E, which was introduced in 1980.



The CH-53K will provide improved lift and range capabilities, performance, commonality, cargo-handling, reliability, maintainability, interoperability, ship integration, survivability, 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. It will provide an unparalleled high-altitude lift capability with nearly three times the external lift capacity of the CH-53E. A total of 194 aircraft are planned for procurement. The program began Low Rate Initial Production (LRIP) in FY 2017.

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 2019 Program: Funds the procurement of eight Low-Rate Initial Production (LRIP) aircraft. Development flight tests of System Demonstration Test Article (SDTA) aircraft continues.

Prime Contractor: Sikorsky Aircraft Corporation; Stratford, CT

CH-53K Heavy Lift Replacement Helicopter										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	339.1	-	340.8	-	326.9	-	-	-	326.9	-
Procurement	416.5	2	714.7	4	1,274.9	8	-	-	1,274.9	8
Total	755.6	2	1,055.5	4	1,601.8	8	-	-	1,601.8	8

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

H-I Program: AH-IZ Viper / UH-IY Venom



The H-I program replaces the AH-1W Super Cobra and the UH-1N Huey helicopters with the AH-IZ Viper and UH-IY Venom, the next generation of USMC 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 assimilate onboard planning, communications, digital fire control, all weather navigation, day/night targeting, and weapons systems in mirror-imaged crew stations. The procurement strategy converts 37 AH-1W helicopters into AH-IZs and builds 152 new AH-IZs. The AH-IZ is in full rate production; UH-IY production completed in FY 2016.

Mission: AH-IZ: 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-IY: 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 2019 Program: Funds the procurement of 25 new build AH-IZ aircraft. Funds developmental efforts to support follow-on improvements to sensors and weapons integration, avionics, and air vehicle components that will address deficiencies, systems safety, obsolescence, and reliability issues for both the AH-IZ and UH-IY helicopters.

Prime Contractor: Bell Helicopter Textron, Incorporated; Fort Worth, TX

H-I Program (AH-IZ Viper / UH-IY Venom)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	27.0	-	61.3	-	58.1	-	-	-	58.1	-
Procurement	855.0	26	720.5	22	820.8	25	-	-	820.8	25
Total	882.0	26	781.8	22	878.9	25	-	-	878.9	25

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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 initial capability will be fielded in the mid-2020’s and the aircraft will be dual capable – conventional at Initial Operational Capability (IOC), with a projected nuclear capability within 2 years of IOC. 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.

In early 2017, the program successfully completed Preliminary Design Review and the next major design review is scheduled for FY 2019.

Mission: Flies into enemy territory to destroy 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 2019 Program: Continues Engineering and Manufacturing Development of the B-21.

Prime Contractor: Northrup Grumman Corporation; Falls Church, VA

B-21 Raider										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	1,290.3	-	2,003.6	-	2,314.2	-	-	-	2,314.2	-
Procurement	-	-	-	-	-	-	-	-	-	-
Total	1,290.3	-	2,003.6	-	2,314.2	-	-	-	2,314.2	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President’s Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

Bombers



Bombers provide a intercontinental capability to rapidly strike surface targets. The Air Force legacy bomber fleet includes the B-1, B-2, and B-52 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, anywhere in the world, at any time. The B-2 Spirit is a multi-engine, long range bomber incorporating low-observable technology that enables the B-2 to penetrate enemy air defenses and strike high-value targets. The B-52 Stratofortress is a long range, subsonic, jet-powered strategic bomber that maintains nuclear and conventional missions.



Mission: Flies 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. The B-52 aircraft maintains nuclear or conventional missions.

FY 2019 Program: Continues upgrades to modernize legacy bombers.

Prime Contractors: Northrop Grumman Aerospace Systems; Palmdale, CA

Bombers										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	480.5	-	561.1	-	723.8	-	-	-	723.8	-
Procurement	298.3	-	361.7	-	217.1	-	4.0	-	221.1	-
Spares	15.1	-	18.1	-	0.2	-	-	-	0.2	-
Total	793.9	-	940.9	-	941.0	-	4.0	-	945.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

KC-46A Tanker

The KC-46, 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 KC-135 tanker fleet. Envisioned KC-Y and KC-Z 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. Aerial refueling forces perform 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, sustainment, and redeployment of U.S. and Coalition forces.

FY 2019 Program: Continues the Air Force's development efforts of a militarized variant of the Boeing 767-2C aircraft, the building and integration of military capabilities into four development aircraft, and developmental and operational testing. Supports the development of technical manuals, continued Type I training, and collection of simulator and maintenance data and continues Low Rate Initial Production (LRIP) by procuring 15 aircraft in FY 2019.

Prime Contractor: The Boeing Company; Seattle, WA

KC-46A Tanker										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	211.5	-	93.8	-	88.2	-	-	-	88.2	-
Procurement	2,567.2	15	2,545.7	15	2,559.9	15	-	-	2,559.9	15
Spares	322.4	-	413.4	-	365.0	-	-	-	365.0	-
Total	3,101.1	15	3,052.9	15	3,013.1	15	-	-	3,013.1	15

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Presidential Aircraft Recapitalization (PAR)



The Presidential Aircraft Recapitalization (PAR) program will replace the current VC-25A (Boeing 747-200) “Air Force One” aircraft with a new, modified 747-8, designated VC-25B, to 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 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 Aeronautics 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 2019 Program: Continues Engineering and Manufacturing Development of the PAR modifications to the commercial aircraft and required test activities.

Prime Contractor: The Boeing Company; Seattle, WA

Presidential Aircraft Recapitalization (PAR)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	311.3	2	434.1	-	673.0	-	-	-	673.0	-
Procurement	-	-	-	-	-	-	-	-	-	-
Total	311.3	2	434.1	-	673.0	-	-	-	673.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

AIRCRAFT & RELATED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

F-22 Raptor

The F-22 Raptor is a fifth generation air superiority aircraft fighter. 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 2019 Program: Continues critical planned modernization for F-22 aircraft via incremental capability upgrades and key reliability and maintainability improvements. Continues the evolutionary modernization effort through incremental development phases that enhance the F-22 anti-access/area denial, Air Superiority and Global Strike capabilities. Continues Increment 3.2B modernization, to include integration of AIM-120D and AIM-9X, additional electronic protection, and improved geolocation. Begins the Sensor Enhancement new start program to upgrade various F-22 sensors to meet advanced threats in 2025 and beyond.

Prime Contractors: Lockheed Martin; Marietta, GA and Fort Worth, TX (airframe)
Pratt & Whitney; Hartford, CT (engine)

F-22 Raptor										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	432.4	-	624.5	-	603.6	-	-	-	603.6	-
Procurement	224.4	-	282.4	-	259.7	-	-	-	259.7	-
Spares	5.2	-	8.5	-	3.7	-	-	-	3.7	-
Total	662.0	-	915.5	-	867.0	-	-	-	867.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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 fighter. The F-15E is a twin engine, two seat, supersonic dual-role, day/night, all-weather, deep interdiction fighter with multi-role air-to-air capabilities.



Mission: Provides the Air Force with the capability to gain and maintain air supremacy over the battlefield.

FY 2019 Program: Continues the F-15E Radar Modernization Program (RMP), which replaces the legacy radar using existing technology from other aviation platforms and solves parts obsolescence problems to provide improved reliability and performance (increased synthetic aperture radar range and resolution), including air-to-air and air-to-ground modes. Continues the F-15 C/D radar upgrade program, which replaces the mechanically-scanned antenna on F-15C/D aircraft with an active electronically scanned array (AESA) and technology maturation efforts for the Eagle Passive/Active Warning Survivability System (EPAWSS) which is intended to improve F-15E survivability by enhancing the ability to detect, deny, or defeat air and ground threats. Continues the development of an Infrared Search and Track System intended to provide an air-to-air targeting capability in a radar denied environment.

Prime Contractor: Boeing; St. Louis, MO

F-15 Eagle										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	585.7	-	530.1	-	330.0	-	-	-	330.0	-
Procurement	145.4	-	417.2	-	695.8	-	-	-	695.8	-
Spares	49.5	-	15.8	-	41.3	-	-	-	41.3	-
Total	780.6	-	963.1	-	1,067.1	-	-	-	1,067.1	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

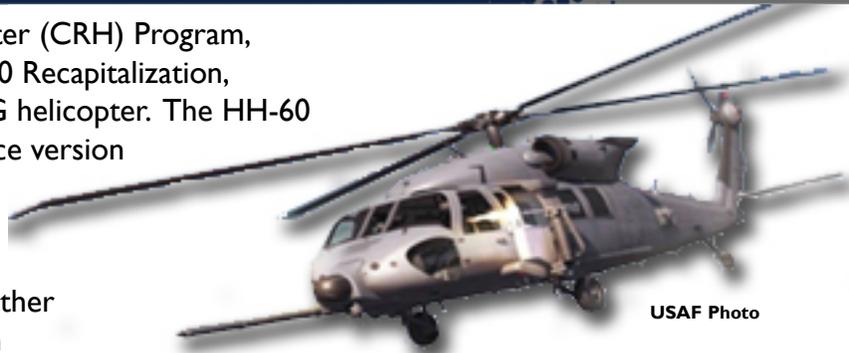
Combat Rescue Helicopter (CRH)



The Combat Rescue Helicopter (CRH) Program, formerly referred to as HH-60 Recapitalization, will replace the aging HH-60G helicopter. The HH-60 Pave Hawk is the U.S. Air Force version

of the U.S. Army's UH-60 Black Hawk, modified for Combat Search and Rescue (CSAR) in all weather situations. The CRH program

will leverage in-service production air vehicles and training systems and then integrate existing technologies and missions systems to acquire a new system. Onboard defensive capabilities will permit the CRH system 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 CRH program plans to procure a total of 112 aircraft.



Mission: Conduct day and night marginal weather CSAR in order to recover downed aircrew and isolated personnel in hostile environments. The CRH 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 2019 Program: Funds the Low Rate Initial Production (LRIP) of ten CRH helicopters. Funds Engineering and Manufacturing Development (EMD) activities, including preparation for a Milestone C (Production and Deployment) decision in third quarter of FY 2019.

Prime Contractor: Sikorsky Aircraft Corporation; Stratford, CT

Combat Rescue Helicopter										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	273.3	-	354.5	-	457.7	-	-	-	457.7	-
Procurement	-	-	-	-	680.2	10	-	-	680.2	10
Total	273.3	-	354.5	-	1,137.9	10	-	-	1,137.9	10

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

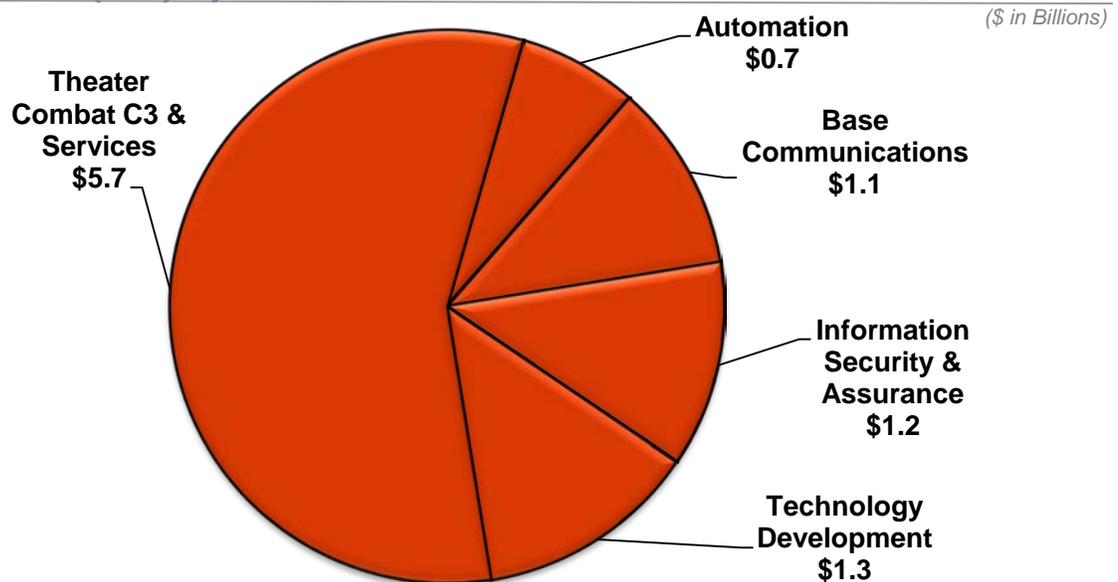
AIRCRAFT & RELATED SYSTEMS

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 that information is managed to accelerate decision making, improve joint warfighting, and create intelligence advantages. U.S. forces are heavily-networked and require reliable secure trusted access to information and depend upon 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 2019 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 2019 Command, Control, Communications, Computers, and Intelligence (C4I) Systems – Total: \$10.0 Billion



Numbers may not add due to rounding

C4I SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Warfighter Information Network - Tactical

The Warfighter Information Network-Tactical (WIN-T) is the cornerstone for Army's high speed, high capability backbone communications network, linking Warfighters in the battlefield with the Department of Defense Information Network (DoDIN). The network is intended to provide command, control, communications, computers, intelligence, surveillance, and reconnaissance. The system is developed as a network for reliable, secure, and seamless video, data, imagery, and voice services for the Warfighters in theater to enable decisive combat actions. Increment 1 provides "networking at the halt" by upgrading the Joint Network Node satellite capability to access the Wideband Global Satellite constellation. Increment 2 (Inc 2) provides networking On-The-Move (OTM) to the company level.



Mission: Provide the Army with a transformational modernized network. Using satellite and ground layers, it delivers fully mobile, flexible, dynamic networking capability enabling Joint land forces to engage enemy forces deeper and more effectively. The WIN-T Inc 2 introduces a mobile, ad-hoc, self-configuring, self-healing network using satellite OTM capabilities, robust network management, and high-bandwidth radio systems to keep mobile forces connected, communicating, and synchronized.

FY 2019 Program: Funds the fielding of WIN-T Inc 2 OTM capability to two active component Infantry Brigade Combat Teams (IBCTs). Provides modernization of four previously fielded IBCTs and one Light Division with Tactical Communications Node-Lite / Network Operations and Security Center-Lite.

Prime Contractors: General Dynamics Corporation; Taunton, MA
Lockheed Martin Corporation; Gaithersburg, MD

Warfighter Information Network-Tactical										
	FY 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	4.9	-	4.7	-	-	-	-	-	-	-
Procurement	437.2	-	420.5	-	531.8	-	-	-	531.8	-
Spares	19.8	-	23.9	-	-	-	-	-	-	-
Total	461.9	-	449.1	-	531.8	-	-	-	531.8	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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

The Handheld, Manpack, and Small Form Fit (HMS) program procures radios that are software reprogrammable, networkable, multi-mode systems capable of simultaneous voice and data communications. The HMS program encompasses the one-channel Rifleman Radio (RR), two-channel Leader Radio (LR), Manpack Radio (MP), and Small Form Fit (SFF) radio.



The LR is a handheld radio that connects Soldiers at the lowest echelon of the Army network by providing one-channel secure voice and data communications using Soldier Radio Waveform (SRW). The LR will simultaneously support Single Channel Ground and Airborne Radio System (SINCGARS) voice interoperability and Soldier Radio Waveform (SRW) data and voice communications in one radio with both dismounted and mounted configurations.

The MP radio is a certified Type I radio used for transmission of up to Secret information. The MP is capable of providing two simultaneous channels of secure voice and data communications using SINCGARS, SRW, Demand Assigned Multiple Access Satellite Communication, and future Army networking waveforms.

Mission: Provide voice and data communications to the tactical edge and the expeditionary Warfighter with an on-the-move, at-the-halt, and stationary Line of Sight/Beyond Line of Sight capability for both dismounted personnel and mounted platforms. The LR and MP extend the network down to the Squad/Team leader. These networking tactical radio systems are interoperable with specified radios in the current force.

FY 2019 Program: Funds the required full and open competition contract strategy for the LR and MP radios. Conducts testing for the LR and the MP candidate products to demonstrate compliance with program requirements to assess effectiveness, suitability, and survivability and to obtain material release for Full Rate Production. Provides support safety, spectrum supportability, and additional certifications necessary to prepare the products for fielding. Procures up to four Brigade Combat Team (BCT) LR and MP radios, support equipment, fielding, non-recurring engineering, and platform vehicle integration.

Prime Contractors: Harris Radio Corporation; Rochester, NY
 Thales Communications Incorporated; Clarksburg, MD
 Rockwell Collins; Cedar Rapids, IA

Handheld, Manpack, and Small Form Fit										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	18.8	-	20.1	-	3.8	-	-	-	3.8	-
Procurement	273.6	5,656	355.4	-	351.6	-	-	-	351.6	-
Total	292.4	5,656	375.5	-	355.4	-	-	-	355.4	-

*FY 2017 includes actuals for Base

**FY 2018 reflects the President's Budget Base request

Numbers may not add due to rounding



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FY 2019 Program Acquisition Costs by Weapon System

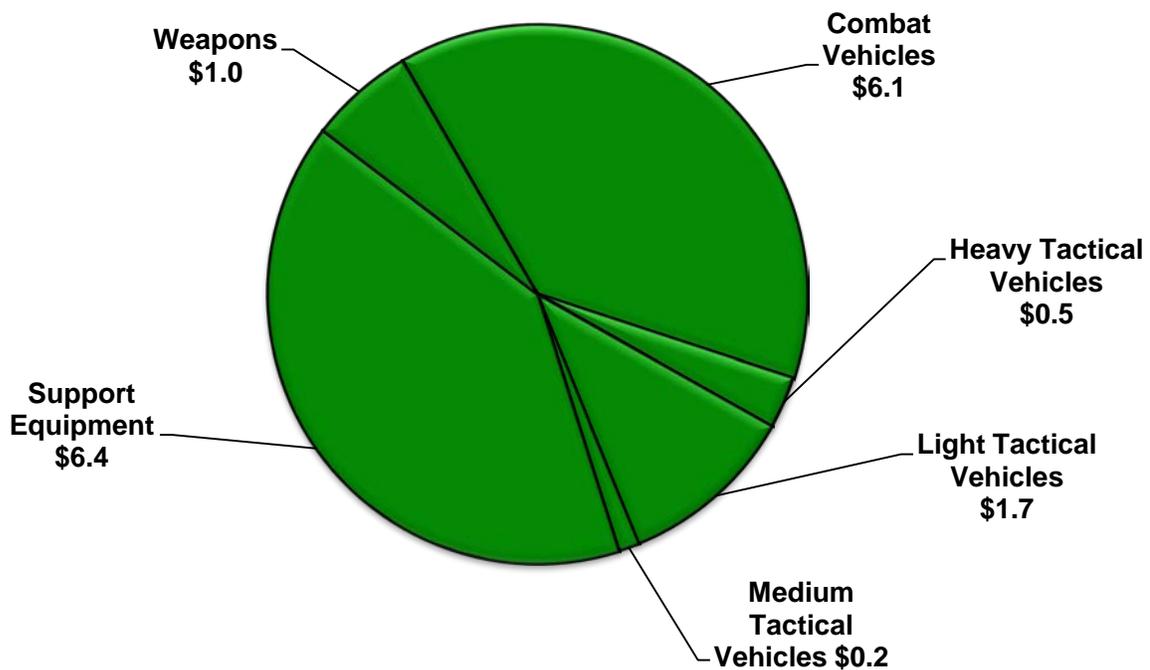
Ground Systems

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 Army continues to modernize and upgrade select Major Defense Acquisition Programs in FY 2019 request, including Stryker vehicles, upgrading the Abrams Main Battle Tank to the M1A2 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 2019 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 2019 Ground Systems – Total: \$15.9 Billion

(\$ in Billions)



Numbers may not add due to rounding

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

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. The JLTV is intended to replace the High Mobility Multipurpose Wheeled Vehicle (HMMWV), which is the current light tactical vehicle. The JLTV concept is based on a family of vehicles focused on scalable armor protection and vehicle agility, and mobility required of the light tactical vehicle fleet. The JLTV will provide defensive measures to protect troops while in transport, increase payload capability, and achieve commonality of parts and components to reduce the overall life cycle cost of the vehicle. The JLTV project seeks to optimize 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 achieved Milestone C in October 2015.



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. There are two variants planned: Combat Support Vehicles (3,500 lb) and Combat Tactical Vehicles (5,100 lb).

FY 2019 Program: Procures over 5,000 JLTVs of various configurations to fulfill the requirements of multiple mission roles and minimize ownership costs for the Light Tactical Vehicle fleet.

Prime Contractor: Oshkosh Corporation; Oshkosh, WI

Joint Light Tactical Vehicle										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E USA	11.1	-	23.5	-	2.7	-	-	-	2.7	-
RDT&E USMC	7.7	-	20.7	-	2.3	-	-	-	2.3	-
Procurement USA	587.5	1,591	804.4	2,110	1,319.4	3,390	-	-	1,319.4	3,390
Procurement USAF	-	-	60.5	140	30.1	81	-	-	30.1	81
Procurement USMC	104.2	212	233.6	527	607.0	1,642	-	-	607.0	1,642
Total	710.5	1,803	1,142.7	2,777	1,961.5	5,113	-	-	1,961.5	5,113

*FY 2017 includes actual for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$1.1 million Overseas Contingency Operations funds

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

M-I Abrams Tank Modification/Upgrades

USA

The M1A2 Abrams is the Army's main battle tank, which first entered service in 1980.

It was produced from 1978 until 1994.

Since then, the Army has modernized it with a series of upgrades to improve its capabilities, 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, and Power Train Improvement & Integration Optimization, which provide more reliability, durability and fuel efficiency. Survivability enhancements include Active Protection System upgrades.

US Army Photo



Mission: Provide mobile and protected firepower for battlefield superiority against heavy armor forces.

FY 2019 Program: Funds continuation of M1A2 SEpv3 (ECP IA - Power) testing, continues M1A2 SEpv4 (ECP IB - lethality improvements) development, and continues the testing of the Trophy Active Protective System (APS) Non-Development Item (NDI) effort leading to an Urgent Material Release (UMR) in the first quarter of FY 2019. Provides the upgrade of 135 M1A1 vehicle variants to the M1A2SEpv3 variant. Begins procurement of an additional three brigades of Trophy APS and funds numerous approved modifications to fielded M1A2 Abrams tanks; (e.g., Ammunition Data Link (ADL) to enable firing of the Army's new smart 120mm ammunition and Commander's Remote Operating Weapon Station – Low Profile (CROWS-LP)).

Prime Contractor: General Dynamics Corporation; Lima, OH

M-I Abrams Tank Modification/Upgrades										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	117.7	-	108.6	-	164.8	-	-	-	164.8	-
Procurement	768.9	24	1,105.3	56	2,003.6	95	489.0	40	2,492.6	135
Total	886.6	24	1,213.9	56	2,168.4	95	489.0	40	2,657.4	135

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + \$581.5 million OCO funds

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Armored Multi-Purpose Vehicle (AMPV)

USA

The Armored Multi-Purpose Vehicle (AMPV) will replace the M113 Armored Personnel Carrier program that was terminated in 2007. The AMPV will have 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 onto a new hull structure based on the Bradley Fighting Vehicle design to give the Army its required capability at an affordable cost.



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

FY 2019 Program: Funds the completion of the AMPV Engineering and Manufacturing Development (EMD) phase and testing, system live fire testing of prototypes, completion of a System Verification Review / Production Readiness Review (SVR/PRR) and procurement of 197 Low Rate Initial Production vehicles.

Prime Contractor: BAE Systems; York, PA

Armored Multi-Purpose Vehicle (AMPV)										
	FY 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	177.1	-	199.8	-	118.2	-	-	-	118.2	-
Procurement	-	-	447.6	107	479.8	131	230.4	66	710.2	197
Total	177.1	-	647.4	107	598.0	131	230.4	66	828.4	197

*FY 2017 includes actual for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + \$253.9 million Overseas Contingency Operations (OCO) funds

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Paladin Integrated Management (PIM)

The M109 Family of Vehicles (FOV) consists of the M109A6 Paladin 155mm Howitzer, which is the most advanced self-propelled cannon system in the Army, and the Field M992A2 Artillery Ammunition Support Vehicle (FAASV), an armored resupply vehicle. The Paladin Integrated Management (PIM) program addresses obsolescence, space, weight, and power concerns and ensures sustainment of the M109 FOV through 2050. The PIM replaces the current M109A6 Paladin and M992A2 FAASV vehicles with a more robust platform, incorporating the M2 Bradley common drive train and suspension components. The PIM fills the capability gap created by cancellation of the Non-Line of Sight Cannon (NLOS-C), a component of the Future Combat System program in 2009. Began Full Rate Production (FRP) in FY 2018.



Mission: Provide the primary indirect fire support for Armored Brigade Combat Teams, armored and mechanized infantry divisions as well as an armored resupply vehicle.

FY 2019 Program: Funds the System Technical Support, training, and procures 36 PIM systems.

Prime Contractor: BAE Systems; York, PA

Paladin Integrated Management (PIM)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	39.9	-	6.1	-	-	-	-	-	-	-
Procurement	584.1	48	772.1	71	351.8	30	67.0	6	418.8	36
Total	624.0	48	778.2	71	351.8	30	67.0	6	418.8	36

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + \$125.7 million OCO funds

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Family of Medium Tactical Vehicles

USA

The Family of Medium Tactical Vehicles (FMTV) is a family of diesel powered trucks in the 2½-ton and 5-ton payload class. The vehicle first went into service in 1996. It capitalizes on the current state of automotive technology including a diesel engine, automatic transmission, and central tire inflation system (CTIS). The family of vehicles significantly reduces logistics burden and operating costs, taking advantage of over 80 percent parts commonality. Numerous models perform a wide variety of missions including cargo transport (cargo model), vehicle recovery operations (wrecker), construction (dump), line haul (tractor), airdrop missions, and civil disaster relief. The FMTV also serves as the platform for the High Mobility Artillery Rocket System (HIMARS) and support vehicle for the Patriot missile. It is strategically deployable in C-5, C-17, and C-130 aircraft. Incorporating Engineering Change Proposal in FY 2019 to increase suspension capacity, improved ride quality and mobility when inserting underbody protection.



DoD Photo

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 in all climatic conditions.

FY 2019 Program: Funds the procurement of 391 Medium Tactical Vehicles to support the Army modular transformation effort to modernize the tactical wheeled vehicle fleet for medium size trucks.

Prime Contractor: Oshkosh Defense, LLC; Oshkosh, WI

Family of Medium Tactical Vehicles (FMTV)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	6.0	-	3.7	-	-	-	3.7	-
Procurement	352.8	1,156	78.7	37	132.9	426	-	-	132.9	426
Total	352.8	1,156	84.7	37	136.6	426	-	-	136.6	426

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Family of Heavy Tactical Vehicles

USA

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), and the Heavy Equipment Transporter System (HETS). 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 materiel 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 to forward support battalions with the capability to self-load and transport a 20 ft. ISO container. The upgraded HEMTT A4 is an important truck to transport 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, and is used for line haul, local haul, unit resupply, and other missions throughout the tactical environment to support modern and highly mobile combat units. The MCRS is designed to recover 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 2019 Program: Funds the procurement of 1,134 vehicles within the FHTVs; which includes, trailers to modernize the heavy tactical vehicle fleet for the Active, National Guard, and Reserve units and to fill urgent theater requirements.

Prime Contractor: Oshkosh Corporation; Oshkosh, WI

Family of Heavy Tactical Vehicles										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	11.0	-	10.5	-	12.0	-	-	-	12.0	-
Procurement	39.7	481	107.5	621	138.1	533	115.4	601	253.5	1,134
Total	50.7	481	118.0	621	150.1	533	115.4	601	265.5	1,134

*FY 2017 includes actual for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + \$25.9 million Overseas Contingency Operations (OCO) funds

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Stryker Family of Armored Vehicles

Stryker is a 19-ton wheeled armored vehicle that provides the Army with a family of 17 different vehicles (10 flat bottom and 7 Double V-Hull). The Stryker can be deployed by C-130 (flat bottom only), C-17, and C-5 aircraft and be combat-capable upon arrival in any contingency area. There are two basic versions, which include the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS) with eight different configurations, which include 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: Enable the Stryker Brigade Combat Team (SBCT) to maneuver more easily in close and urban terrain while providing protection in open terrain. Achieve the Army's current transformation 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 rapid movement anywhere on the globe in a combat ready configuration. The Stryker enables the Army to respond immediately to urgent operational requirements.

FY 2019 Program: Funds Engineering Change Proposal (ECP) 1 testing, ECP 2 lethality upgrade, and continues support of the application of multiple fleet-wide modifications. Modifications address the following areas: Training Devices; Command, Control, Communications, Computers, Intelligence (C4I) obsolescence; reliability, capability and performance degradation; safety; and operational-related issues. Provides for the logistical support of a 30mm weapon system. Procures the ECP of three Stryker Flat Bottom vehicles configured as Double V Hull vehicles.

Prime Contractor: General Dynamics Corporation; Sterling Heights, MI

Stryker										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	115.0	-	80.6	-	58.9	-	-	-	58.9	-
Procurement	572.9	70	97.6	-	309.4	3	-	-	309.4	3
Total	687.9	70	178.2	-	368.3	3	-	-	368.3	3

*FY 2017 includes actual for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

GROUND SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Amphibious Combat Vehicle (ACV)



The Amphibious Combat Vehicle (ACV) will replace 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 program achieved entry into the Engineering and Manufacturing Development phase in November 2015 and will down-select to one vendor in FY 2018 at approved entry into the Production and Deployment phase.



Mission: Provide an armored personnel carrier balanced in performance, protection, and payload for employment with the Ground Combat Element across the range of military operations, including a swim capability. The program has been structured to provide a phased, incremental capability. The ACV Program Increment 1.2 will improve personnel carrier capabilities over Increment 1.1 and will deliver Command and Control (C2) and Recovery Mission Role Variants (MRVs).

FY 2019 Program: Funds the ACV 1.1 corrective actions, advanced capability improvements, Operational Test & Evaluation (OT&E) and Live Fire Test & Evaluation (LFT&E) support for the down-selected contractor. Provides the design and development of the new Command and Control (C2) and Recovery variants and to modify the ACV 1.1 Personnel test vehicles into the ACV 1.2 configurations. Procures the Low Rate Initial Production (LRIP) of 30 vehicles, plus procurement of related items such as production support, systems engineering/program management, Engineering Change Orders (ECOs), Government Furnished Equipment (GFE), and integrated logistics support, and Initial Spares, which support the ACV Increment 1.1 program.

Prime Contractors: BAE Systems; York, PA
Science Applications International Corporation (SAIC); McClean, VA

Amphibious Combat Vehicle (ACV)										
	FY 2017*		FY 2018**		FY 2019					
	Base Budget \$M	Qty	Base Budget \$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	131.3	-	179.0	-	98.2	-	-	-	98.2	-
Procurement	-	-	161.5	26	167.5	30	-	-	167.5	30
Total	131.3	-	340.5	26	265.7	30	-	-	265.7	30

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

GROUND SYSTEMS



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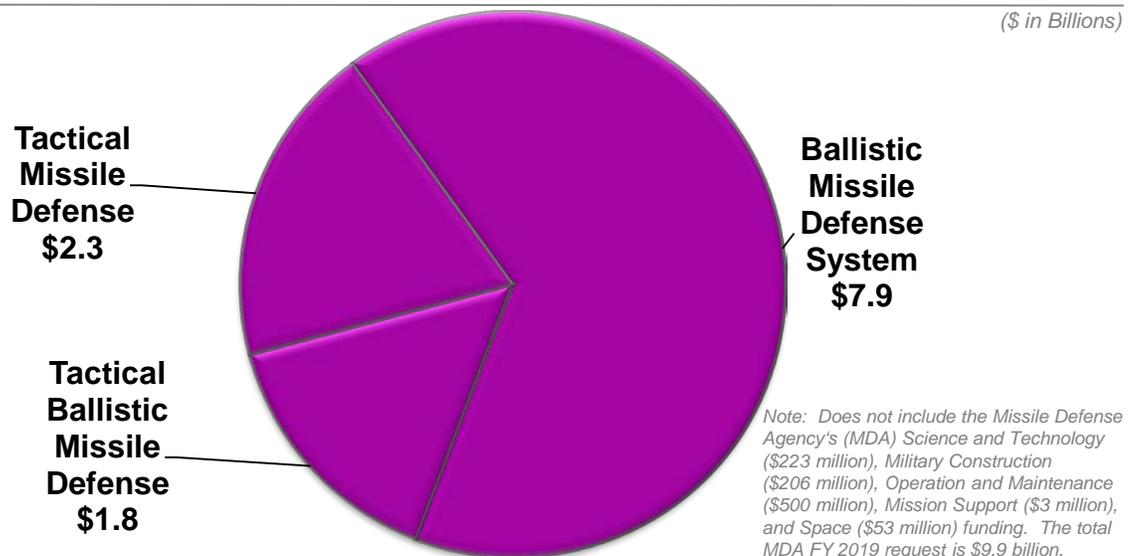
FY 2019 Program Acquisition Costs by Weapon System

Missile Defense Programs

Missile Defense is a general term for air and missile defense. This category includes development and procurement of cruise missiles, and air and ballistic missile defense systems. The Missile Defense Agency, Army, and the Navy are the program developers. Missile Defense includes all components designed to defeat hostile ballistic missiles of various ranges. A missile defense system includes interceptor missiles, as well as the associated sensors and command, control, battle management, and communications. Other significant investments include construction, targets and countermeasures, and the RDT&E activities. Encompassed in this category are all programs that are either critical to the functionality of missile defense or support missile defense as a primary mission. The Aegis is the naval element of the Ballistic Missile Defense System (BMDS) and provides an enduring, operationally effective and supportable Ballistic Missile Defense (BMD) capability on Aegis cruisers, destroyers, and Ashore.

In November 2017, the President submitted, and the Congress approved in December 2017, the Missile Defeat and Defense Enhancements (MDDE) Act (P. L. 115-96) 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 2019 budget request continues the MDDE programs and efforts to counter the threat from North Korea that were funded in the FY 2018 emergency appropriations. It also increases air and missile defense interceptor inventories for the Patriot Advanced Capability-3 (PAC-3) Missile Segment Enhancement (MSE), Standard Missile-3 (SM-3), and Terminal High Altitude Area Defense (THAAD) programs, and it invests in development efforts for future capabilities.

FY 2019 Missile Defense Programs – Total: \$12.0 Billion



Numbers may not add due to rounding

FY 2019 Program Acquisition Costs by Weapon System

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 Ballistic Missile Defense System (BMDS), providing Combatant Commanders with the capability to engage ballistic missiles in the midcourse phase of flight. This phase, compared to boost or terminal, allows significant time for sensor viewing from multiple platforms, which 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 exo-atmospheric kill vehicle. When launched, the multistage, 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, and Vandenberg Air Force Base, California, with the GMD fire control centers located in Colorado and Alaska.



DoD Missile Defense Agency Photo

Mission: Provide 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 2019 Program: Continues the development and expansion of long-range GMD capabilities. In November 2017, MDA completed the emplacement of 44 GBIs. The MDA will strengthen and expand homeland missile defense by adding a new missile field and deploying 20 additional GBIs at Ft. Greely, Alaska, bringing the total deployed GBIs from 44 to 64 in the 2023 timeframe. Funds ground and flight testing in support of the Integrated Master Test Plan requirements. Continues the development of the GMD Redesigned Kill Vehicle and testing in support of component and system level Critical Design Review. Replaces aging ground system infrastructure and upgrades fire control and kill vehicle software to improve discrimination capabilities.

Prime Contractor: Boeing Defense and Space; St. Louis, MO

Ground-based Midcourse Defense										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	1,343.6	-	1,676.8	-	1,577.8	-	-	-	1,577.8	-
Procurement	97.0	-	268.0	10	524.0	14	-	-	524.0	14
	-	-	<i>GBIs</i>	-	-	4	-	-	-	4
	-	-	<i>Silos</i>	10	-	10	-	-	-	10
Total	1,440.6	-	1,944.8	10	2,101.8	14	-	-	2,101.8	14

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement Act (Division B, Public Law 115-96)

MISSILE DEFENSE PROGRAMS

FY 2019 Program Acquisition Costs by Weapon System

THAAD Ballistic Missile Defense

DOD - JOINT

The Terminal High Altitude Area Defense (THAAD) is a key element of the Ballistic Missile Defense System. The THAAD Battery will provide transportable interceptors, using “Hit-To-Kill” technology to destroy ballistic missiles inside and outside the atmosphere. A Battery consists of 6 truck-mounted launchers, 48 interceptors (8 per launcher), one Army Navy/Transportable Radar Surveillance-2 (AN/TPY-2), and one Tactical Fire Control/Communications component.



Mission: Provide the Combatant Commanders with a deployable, ground-based missile defense capability against short and medium-range ballistic missiles and asymmetric threats inside and outside the atmosphere.

FY 2019 Program: Supports the procurement of 82 interceptors and associated components, as well as obsolescence, production support and stockpile reliability requirements. Maintains fielding and sustainment activities for seven THAAD Batteries. Extends development of THAAD software upgrades to address threat packages; defense planning; and improved capability to engage short-range ballistic missiles, medium-range ballistic missile, and limited intermediate-range ballistic missile threats. Provides limited integration of the THAAD battery capability into the Integrated Air and Missile Defense Battle Command System (IBCS) planning process. Maintains schedule for the United States Pacific Command Joint Emergent Operational Need to provide a more efficient and effective use of the systems available in theater and improve the Ballistic Missile Defense System capability on the Korean Peninsula.

Prime Contractor: Lockheed Martin Corporation; Sunnyvale, CA

Terminal High Altitude Area Defense (THAAD)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	254.7	-	328.5	-	275.2	-	-	-	275.2	-
Procurement	566.5	36	960.7	84	874.1	82	-	-	874.1	82
Total	821.2	36	1,289.2	84	1,149.3	82	-	-	1,149.3	82

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement Act (Division B, Public Law 115-96)

MISSILE DEFENSE PROGRAMS

FY 2019 Program Acquisition Costs by Weapon System

Aegis Ballistic Missile Defense

DOD - JOINT

The Aegis Ballistic Missile Defense (BMD) is the naval element of the Ballistic Missile Defense System (BMDS) and provides an enduring, operationally effective and supportable BMD capability on Aegis cruisers, destroyers, and Ashore. The Aegis BMD builds upon the existing Navy Aegis Weapons System (AWS) and Standard Missile-3 (SM-3) design. Upgrades are being made to the weapon system and Standard Missile designs to expand capability through a series of incremental, evolutionary improvements to counter ever more sophisticated and longer range threats.



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

FY 2019 Program: Begins a 5-year multiyear procurement (MYP) contract (FY2019-FY2023) for the SM-3 Block IB missile, procuring 37 in the first year. Supports procurement of six SM-3 Block IIA missiles. Integrates SM-3 Block IIA into the BMD Weapon Systems. Continues development of the Aegis BMD 5.1 and Aegis BMD 6 Weapon Systems. Supports procurement of 14 Inline/Backfit shipsets and 14 installs of the BMD 4.x/5.x equipment.

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 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	1,020.5	-	998.6	4	863.3	-	-	-	863.3	-
Procurement	577.0	35	1,075.1	50	805.8	43	-	-	805.8	43
Total	1,597.5	41	2,073.7	54	1,669.1	43	-	-	1,669.1	43

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement Act (Division B, Public Law 115-96)

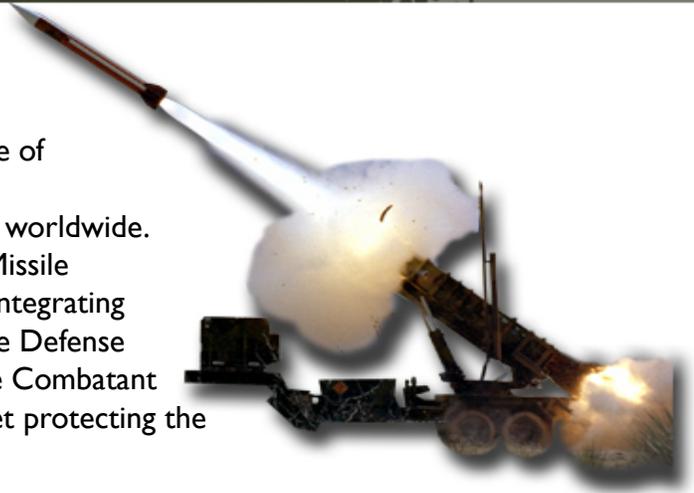
MISSILE DEFENSE PROGRAMS

FY 2019 Program Acquisition Costs by Weapon System

Patriot/PAC-3

USA

The Army's Patriot air and missile defense system, which includes the Advanced Capability (PAC-3) missile, is the only combat-proven system capable of defeating Tactical Ballistic Missiles, Cruise Missiles, and Air-Breathing threats worldwide. Joint efforts between the Army and the Missile Defense Agency have been successful in integrating PAC-3 capabilities into the Ballistic Missile Defense System (BMDS). The PAC-3 units are the Combatant Commanders' most capable forward asset protecting the deployed forces.



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

FY 2019 Program: Continues improvements in software for improved combat identification, improved communications, interoperability, supportability, electronic warfare capabilities; and support transition to the Integrated Air and Missile Defense architecture.

Prime Contractors: Raytheon Integrated Defense Systems; Tewksbury, MA
Lockheed Martin Missiles and Fire Control; Dallas, TX

Patriot/PAC-3										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	81.9	-	166.9	-	185.7	-	-	-	185.7	-
Procurement	197.1	-	496.0	-	313.2	-	-	-	313.2	-
Spares	34.0	-	18.9	-	27.7	-	-	-	27.7	-
Total	313.0	-	681.8	-	526.6	-	-	-	526.6	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement Act (Division B, Public Law 115-96)

MISSILE DEFENSE PROGRAMS

FY 2019 Program Acquisition Costs by Weapon System

PAC-3/MSE Missile



The Missile Segment Enhancement (MSE) is a performance improvement to the existing Patriot Advanced Capability (PAC-3) missile.

The MSE upgrade enhances the PAC-3 missile by adding a dual pulse, 11-inch diameter Solid Rocket Motor (SRM), improved lethality enhancer, a thermally hardened front-end, upgraded batteries, enlarged fixed fins, more responsive control surfaces, and upgraded guidance software. These improvements result in a more agile, lethal interceptor missile with enhanced Insensitive Munitions (IM) compliance. The PAC-3 MSE can be fired from a 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 2019 Program: Procures 240 MSE new interceptors to increase range and altitude capability, meeting the ever-changing threat.

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

PAC-3/MSE										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	809.0	169	1,106.0	240	871.3	179	260.0	61	1,131.3	240
Total	809.0	169	1,106.0	240	871.3	179	260.0	61	1,131.3	240

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement Act (Division B, Public Law 115-96)

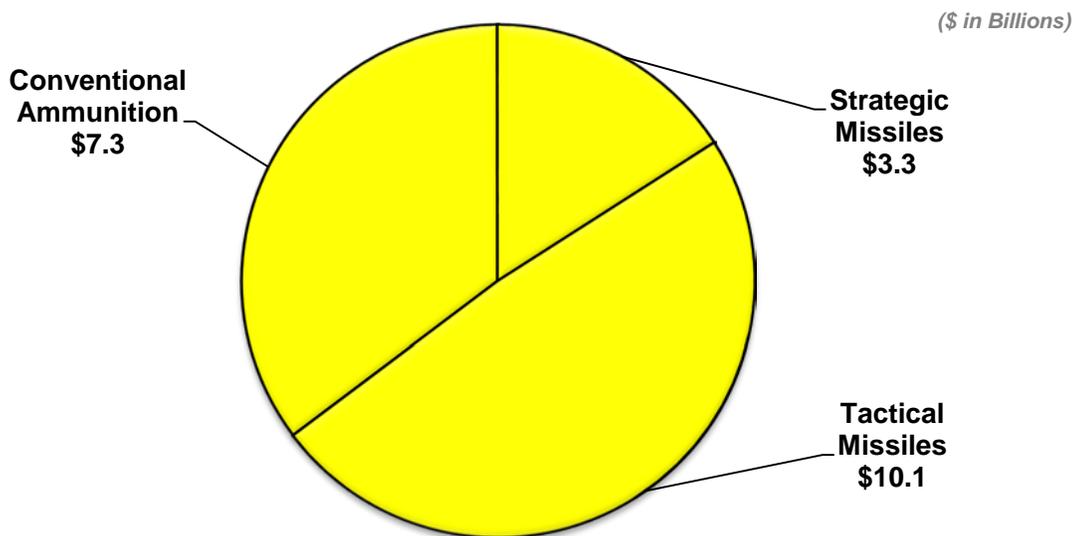
MISSILE DEFENSE PROGRAMS

Missiles and Munitions

Munitions is a general term for ammunition and missiles. Ammunition are explosives consisting of all kinds of bombs, grenades, rockets, mines, projectiles, and other similar devices. There are conventional and nuclear missiles used for both tactical and strategic purposes. Many 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” bomb.

In FY 2019, the Department continues to execute a balanced munitions procurement strategy in response to both current operations and advanced, long-term threats. The Department is increasing procurement of JDAM, Advanced Precision Kill Weapon System (APKWS), Small Diameter Bomb I and II, Guided Multi-Launch Rocket System, and the Hellfire missile to ensure sufficiency for today’s warfighter, while expanding industrial capacity to meet increasing demands. In parallel, the Department continues to accelerate inventories of the next generation of standoff weapons for high value land attack targets such as the Joint Air-to-Surface Standoff Missile-Extended Range. Procurement of the Small Diameter Bomb II provides an all-weather capability against moving targets. 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. Investment also continues in shipboard air defense missiles such as the Standard Missile-6 to enhance the ships survivability.

FY 2019 Missiles and Munitions – Total: \$20.7 Billion



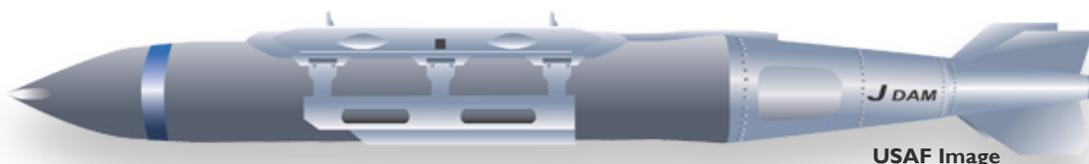
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MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Joint Direct Attack Munition

DOD - JOINT



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 land-moving and maritime targets, when designated by an airborne or ground laser.

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 2019 Program: Continues full-rate production of the system. The factory will operate at the maximum rate of production.

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

Joint Direct Attack Munition										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	9.9	-	-	-	15.8	-	-	-	15.8	-
Procurement										
Air Force	682.1	28,596	710.1	27,320	234.2	7,899	738.5	28,101	972.7	36,000
Navy	98.4	4,643	164.2	7,209	87.9	3,688	93.0	3,906	180.9	7,594
Subtotal	780.5	33,239	874.3	34,529	322.1	11,587	831.5	32,007	1,153.6	43,594
Total	790.4	33,239	874.3	34,529	337.9	11,587	831.5	32,007	1,169.4	43,594

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$497.5 million OCO funds

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Hellfire Missiles

DOD - JOINT

The Laser HELLFIRE II system family of air-to-ground missiles (all variants) provides attack helicopters and unmanned aircraft systems (UAS) with point-target precision strike capability to defeat heavy, advanced armor, individual hard point and non-traditional targets. HELLFIRE II missiles use a semi-active laser terminal guidance and are the primary armament of the AH-64 Apache, Army UAS and Special Operations aircraft. The HELLFIRE II AGM-114R is 64 inches in length and weighs 108 lbs. Weapons range is approximately 8 kilometers.



The HELLFIRE II missile includes Electro-Optical Countermeasure capability, warhead improvements and an updated electronic fuse.

The AGM-114R HELLFIRE II missile will be the single variant that replaces all other HELLFIRE II missile configurations (K/N/M/P).

Mission: Engages and defeats individual moving or stationary ground targets such as armor, mechanized, or vehicular targets, building, or bunkers.

FY 2019 Program: Continues at full-rate production. The factory will operate at the maximum rate of production.

Prime Contractor: Lockheed Martin; Orlando, FL

Hellfire Missiles										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement										
Army	497.8	4,478	372.9	3,925	-	-	255.0	2,684	255.0	2,684
Air Force	175.3	2,219	329.4	3,629	113.8	1,338	255.0	3,000	368.8	4,338
Navy	8.6	100	8.8	110	-	-	1.5	23	1.5	23
Total	681.7	6,797	711.1	7,664	113.8	1,338	511.5	5,707	625.3	7,045

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$581.4 million OCO funds

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

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 (<40nm) / GPS Anti-Jam or Close Air Support position deliverable by both fighter and bomber aircraft, with higher load-out and less collateral damage compared to other weapons.

FY 2019 Program: The factory will operate at the maximum rate of production for SDB I.

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

Small Diameter Bomb I										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	151.0	4,195	274.1	6,852	105.0	2,917	140.7	3,909	245.7	6,826
Spares	9.1	-	9.8	-	8.0	-	-	-	8.0	-
Total	160.1	4,195	283.9	6,852	113.0	2,917	140.7	3,909	253.7	6,826

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$90.9 million OCO funds

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

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 seeker and data link, which expands the use to moving targets.



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. Integration and testing activities continue on the F-15E aircraft.

FY 2019 Program: Completes Engineering and Manufacturing Development (EMD) and Low Rate Initial Production of SDB II weapons for use against moving, relocatable, and fixed targets. Continues development and integration of a Military code GPS receiver and an enhanced cryptographic datalink.

Prime Contractor: Raytheon Missile Systems; Tucson, AZ

Small Diameter Bomb II										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
Air Force	37.6	-	39.0	-	73.2	-	-	-	73.2	-
Navy	87.0	-	112.8	-	104.4	-	-	-	104.4	-
Subtotal	124.6	-	151.8	-	177.6	-	-	-	177.6	-
Procurement										
Air Force	100.4	312	82.9	460	100.9	510	-	-	100.9	510
Navy	-	-	21.0	90	91.3	750	-	-	91.3	750
Subtotal	100.4	312	103.9	550	192.2	1,260	-	-	192.2	1,260
Total	225.0	312	255.7	550	369.8	1,260	-	-	369.8	1,260

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Joint Air-to-Surface Standoff Missile

DOD - JOINT



USAF Image

The Joint Air-to-Surface Standoff Missile (JASSM) Baseline 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 range for the baseline JASSM variant is greater than 200 nautical miles. 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 JASSM is integrated on the F-15E, F-16, B-52, B-1, and B-2 aircraft. Production of JASSM Baseline concluded in FY 2016.

The JASSM-Extended Range (ER) increment is has 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 Baseline, but replaces the turbojet engine (Teledyne) with higher thrust, more fuel efficient turbofan engine (Williams International). The JASSM-ER is currently only integrated on the B-1 and B-52 aircraft with integration on the F-15E, F-16, and B-2 aircraft by FY 2020.

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

FY 2019 Program: Continues full rate production for JASSM-ER.

Prime Contractor: Lockheed Martin Corporation; Troy, AL

Joint Air to Surface Standoff Missile										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	23.1	-	29.9	-	60.1	-	-	-	60.1	-
Procurement	431.6	360	441.4	360	430.7	312	61.6	48	492.3	360
Spares	0.3	-	0.4	-	0.4	-	-	-	0.4	-
Total	455.0	360	471.7	360	491.2	312	61.6	48	552.8	360

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Air Intercept Missile – 9X

DOD - JOINT



USAF Image

The Air Intercept Missile-9X (AIM-9X), also known as SIDEWINDER, is a short range air-to-air missile that provides launch-and-leave warfighting capability. The AIM-9X/Block II features a fifth generation staring focal plane array imaging infrared seeker with high off boresight capability. It is mounted on a highly maneuverable (thrust vectored) airframe, along with digital guidance and Infrared 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 2019 Program: Continues AIM-9X Block II full rate production and planning/research for future warfighting improvements.

Prime Contractor: Raytheon Missile Systems; Tucson, AZ

Air Intercept Missile – 9X										
	FY 2017*		FY 2018**		FY 2019					
	FY 2017*	Qty	FY 2018**	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
Air Force	51.5	-	35.0	-	37.2	-	-	-	37.2	-
Navy	54.7	-	42.9	-	40.1	-	-	-	40.1	-
Subtotal	106.2	-	77.9	-	77.3	-	-	-	77.3	-
Procurement										
Air Force	127.4	287	125.4	310	121.3	256	-	-	121.3	256
Navy	70.9	147	79.7	185	77.9	191	0.4	1	78.3	192
Subtotal	198.3	434	205.1	495	199.2	447	0.4	1	199.6	448
Spares										
	16.3	-	13.2	-	17.0	-	-	-	17.0	-
Total	320.8	434	296.2	495	293.5	447	0.4	1	293.9	448

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

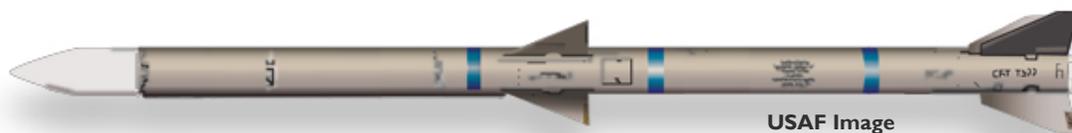
**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Advanced Medium Range Air-to-Air Missile

DOD - JOINT



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, and has replaced the AIM-7 Sparrow as the U.S. military's standard 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 2019 Program: Continues production as well as product improvements such as fuzing, guidance, and kinematics.

Prime Contractor: Raytheon Company; Tucson, AZ

Advanced Medium Range Air-to-Air Missile										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
Air Force	53.3	-	61.3	-	61.4	-	-	-	61.4	-
Navy	34.0	-	25.4	-	32.5	-	-	-	32.5	-
Subtotal	87.3	-	86.7	-	93.9	-	-	-	93.9	-
Procurement										
Air Force	325.9	256	304.3	205	337.9	220	2.6	2	340.5	222
Navy	197.2	163	197.1	120	211.1	140	1.2	1	212.3	141
Subtotal	523.1	419	501.4	325	549.0	360	3.8	3	552.8	363
Spares	3.6	-	6.3	-	5.3	-	-	-	5.3	-
Total	614.0	419	594.4	325	648.2	360	3.8	3	652.0	363

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

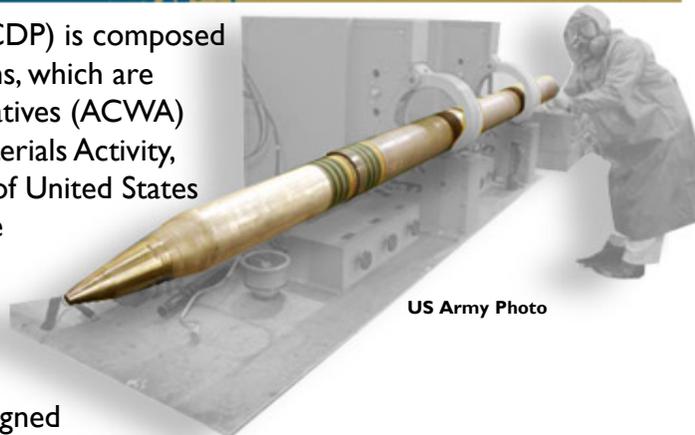
MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Chemical Demilitarization

DOD - JOINT

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, both with the goal of destroying 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:

1. Destroy the remaining 9.5 percent of the U.S. chemical weapons stockpile at the ACWA Program sites (Colorado and Kentucky);
2. Implement the Chemical Stockpile Emergency Preparedness Project (CSEPP) including emergency response planning;
3. Support the Recovered Chemical Warfare Material (RCWM) Program within the United States, which provides technical expertise, project management and maintains crews and equipment required for the assessment and destruction of RCWM.

FY 2019 Program: Continues systemization activities and destruction operations at the ACWA Program sites. Continues the CSEPP efforts and the emergency response planning at Colorado and Kentucky. Sustains the crews, equipment, and management structure required to ensure that the Department of Defense retains emergency response capability to assess and destroy the RCWM in the United States.

Prime Contractors: Bechtel National Incorporated; Pueblo, CO
Bechtel Parsons, Joint Venture; Richmond, KY

Chemical Demilitarization										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
Chemical Agents and Munitions Destruction	650.7	-	961.7	-	993.8	-	-	-	993.8	-
Total	650.7	-	961.7	-	993.8	-	-	-	993.8	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Joint Air-to-Ground Missile

DOD - JOINT

The Joint Air-to-Ground Missile (JAGM) 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 utilizes a multi-mode seeker to provide precision point 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 2019 Program: Continues at low rate initial production (LRIP)

Prime Contractor: Lockheed Martin; Orlando, FL

Joint Air-to-Ground Missile (JAGM)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E										
Army	47.4	-	34.6	-	11.8	-	-	-	11.8	-
Navy	17.8	-	15.5	-	6.8	-	-	-	6.8	-
Subtotal	65.2	-	50.1	-	18.6	-	-	-	18.6	-
Procurement										
Army	99.0	373	178.4	824	276.5	1,046	-	-	276.5	1,046
Navy	21.9	96	3.8	-	24.1	75	-	-	24.1	75
Subtotal	120.9	469	182.2	824	300.6	1,121	-	-	300.6	1,121
Total	186.1	469	232.3	824	319.2	1,121	-	-	319.2	1,121

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

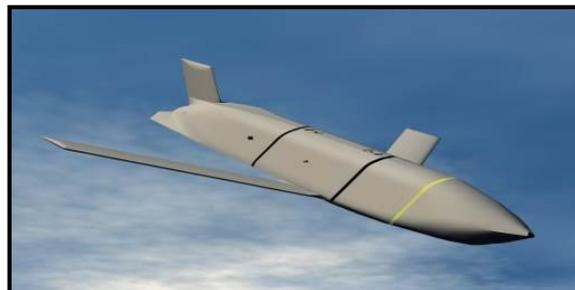
**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Long Range Anti-Ship Missile (LRASM)

DOD - JOINT



The Long Range Anti-Ship Missile (LRASM) is an accelerated acquisition designed to fill the Offensive Anti-Ship Warfare (OASuW) Increment I requirement. The 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 1,000lb penetrator/blast fragmentation warhead providing Combatant Commanders the ability to conduct Anti-Ship Warfare operations against high value surface combatants protected by Integrated Air Defense System with long range surface-to-air missiles and denies the adversary sanctuary of maneuver. The LRASM has completed transition from Defense Advanced Research Projects Agency to Navy leadership and is scheduled to field on the Air Force B-1 Bomber by the end of FY 2018 and F/A-18E/F aircraft by the end of FY 2019. The LRASM is a joint Navy/Air Force program led by the Navy.

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 2019 Program: Continue low rate production, integration, and test phase of the air-launched LRASM program.

Prime Contractor: Lockheed Martin Missiles and Fire Control Strike Weapons; Orlando, FL

Long Range Anti-Ship Missile (LRASM)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	301.6	-	313.1	-	143.1	-	-	-	143.1	-
Procurement										
Navy	54.3	17	74.7	25	81.2	25	-	-	81.2	25
Air Force	71.4	19	44.7	15	44.2	12	-	-	44.2	12
Subtotal	125.7	36	119.4	40	125.4	37	-	-	125.4	37
Spares	-	-	-	-	0.3	-	-	-	0.3	-
Total	427.3	36	432.5	40	268.8	37	-	-	268.8	37

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Guided Multiple Launch Rocket System

The Guided Multiple Launch Rocket System (GMLRS) is a surface-to-surface artillery missile fired from the M142 High Mobility Artillery Rocket System (HIMARS) and the M270A1 Multiple Launch Rocket System (MLRS) launchers. It provides a responsive, all-weather, rapidly-deployable precision strike capability.



The GMLRS uses an on-board Inertial

Measurement Unit (IMU) in combination with a Global

Positioning System (GPS) guidance set to provide a high level of accuracy and effects against a variety of target sets. The GMLRS program consists of three separate increments, all with a range of 15-70+ kilometers. The M30 GMLRS Dual Purpose Improved Conventional Munition missile was the first increment. It has a cluster munition (CM) warhead and replaced the shorter range M26/M26A2 MLRS rockets used to engage area or imprecisely located targets. GMLRS DPICM production was terminated in response to the June 2008 Department of Defense (DoD) Policy on CM and Unintended Harm to Civilians. The M31/M31A1 GMLRS Unitary is the second increment that can engage precisely located point targets utilizing a single 200-pound low collateral damage high-explosive warhead. The third increment, the M30A1 GMLRS Alternative Warhead (AW), was developed as a non-cluster munition used to engage area and imprecisely located targets. The GMLRS AW and Unitary variants are in compliance with the requirements outlined in the November 2017 update to DoD Policy on CM.

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

FY 2019 Program: Continues at full rate production of GMLRS (AW/Unitary) as well as product improvements such as insensitive munition propulsion. The factory will operate at the maximum rate of production.

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

Guided Multiple Launch Rocket System										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	21.2	-	102.8	-	154.1	-	-	-	154.1	-
Procurement										
Army	408.9	3,360	786.7	6,000	359.6	3,267	624.5	6,183	984.1	9,450
Navy	44.2	360	59.0	474	29.5	283	-	-	29.5	283
Subtotal	453.1	3,720	845.7	6,474	389.1	3,550	624.5	6,183	1,013.6	9,733
Total	474.3	3,720	948.5	6,474	543.2	3,550	624.5	6,183	1,167.7	9,733

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$197.0 million OCO funds

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Javelin Advanced Anti-Tank Weapon System - Medium

USA

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.



USMC Photo

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 a 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 2019 Program: Continues procurement of FGM-148F (F model) Javelin missiles with a the Multi-Purpose Warhead, which improves lethality against exposed personnel. Continues development of a lightweight CLU to reduce soldier burden and bulk.

Prime Contractor: Raytheon Missile Systems/Lockheed Martin Javelin Joint Venture; Tucson, AZ and Orlando, FL

Javelin Advanced Anti-Tank Weapon System - Medium										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	19.2	-	21.1	-	10.6	-	-	-	10.6	-
Procurement										
Army	191.6	1,129	118.2	572	303.7	709	31.1	75	334.8	784
Navy	79.6	524	44.0	233	3.0	5	-	-	3.0	5
Subtotal	271.2	1,653	162.2	805	306.7	714	31.1	75	337.8	789
Total	290.4	1,653	183.3	805	317.3	714	31.1	75	348.4	789

*FY 2017 includes actuals for Base + Overseas Contingency Operations (OCO)

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$10.9 million OCO funds

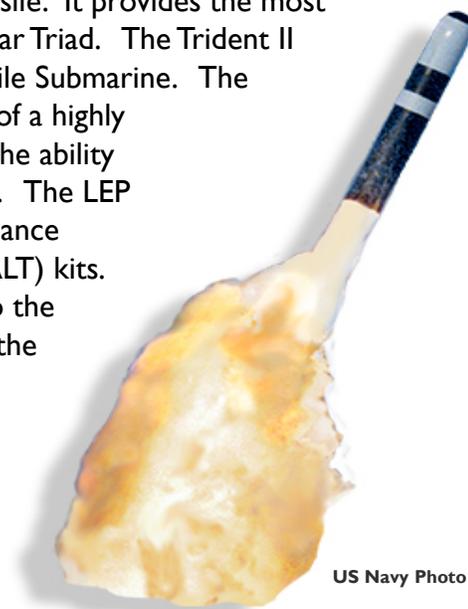
MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

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 2019 Program: Funding supports the redesign of the guidance system and missile electronics packages, which must be replaced to support the extended service life of the Ohio Class Submarines. The FY 2019 funding procures missile electronic and guidance SPALT kits as well as other critical components required to support the extended SSBN hull life for a 14 SSBN TRIDENT II program. This program also funds system integration efforts, replacement of aging rocket motors, refreshes and replacement of D5 legacy tooling and test support equipment, SPALT Insertion and modifications required for NEW START treaty obligations.

Prime Contractor: Lockheed Martin Corporation; Sunnyvale, CA

Trident II Ballistic Missile Mods										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	130.4	-	126.4	-	157.7	-	-	-	157.7	-
Procurement	1,099.1	-	1,143.6	-	1,078.8	-	-	-	1,078.8	-
Total	1,229.5	-	1,270.0	-	1,236.5	-	-	-	1,236.5	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

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 2019 Program: Begins a five-year multiyear procurement (MYP) contract (FY 2019 – FY 2023), which continues production of the SM-6 variant.

Prime Contractor: Raytheon Missile Systems; Tucson, AZ

Standard Missile-6										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	90.6	-	108.4	-	55.8	-	-	-	55.8	-
Procurement	491.2	125	546.1	125	615.9	125	-	-	615.9	125
Spares	4.9	-	15.0	-	20.7	-	-	-	20.7	-
Total	586.7	125	669.5	125	692.4	125	-	-	692.4	125

*FY 2017 include actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + includes \$35.2 million Overseas Contingency Operations (OCO) funds

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

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 infra-red 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

Infrared (IR) guidance for terminal engagement. Currently there are two RIM-116 configurations: Block I (RIM-116B) and 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 2019 Program: Continues low rate of production for the Block II (RIM-116C) missile as well as operational testing.

Prime Contractor: Raytheon Missile Systems; Tucson, AZ

Rolling Airframe Missile										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	17.4	-	41.2	-	26.3	-	-	-	26.3	-
Procurement	95.6	120	58.6	60	96.2	120	-	-	96.2	120
Total	113.0	120	99.8	60	122.5	120	-	-	122.5	120

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS

FY 2019 Program Acquisition Costs by Weapon System

Ground Based Strategic Deterrent (GBSD)



The Ground Based Strategic Deterrent (GBSD) program is the Air Force effort to replace the aging LGM-30 Minuteman III intercontinental ballistic missile (ICBM). The Minuteman III missile fleet was fielded in the 1970s with an initial 10-year service life, while 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 affordably address changing technology and threat environments through 2075. Deployment is projected to begin in the late 2020s.



Mission: As a critical part of the nuclear triad, ICBMs 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, dissuade proliferation, deter adversaries, and, should deterrence fail, decisively defeat adversary targets and retaliatory capabilities as authorized and directed by the President. The GBSD will continue to maintain strategic stability at a reasonable cost, while hedging against potential problems or vulnerabilities in other portions of the triad.

FY 2019 Program: Funds technology maturation and risk reduction activities to deliver mature and integrated technologically to support the preliminary design of the weapon system.

Prime Contractors: The Boeing Company; Huntsville, AL
Northrop Grumman Corporation; Bethpage, NY

Ground Based Strategic Deterrent (GBSD)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	109.0	-	215.7	-	345.0	-	-	-	345.0	-
Procurement	-	-	-	-	-	-	-	-	-	-
Total	109.0	-	215.7	-	345.0	-	-	-	345.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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 1978-1990 and require component refurbishment and replacement to maintain a safe, secure and effective capability.



Mission: Provide the strategic weapons for the airborne leg of the nuclear triad and are carried on the B-52, the B-2, and NATO dual-use aircraft today. The new variant consolidates four versions and 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. 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 with a First Production Unit in 2020. The Air Force portion of the LEP is to provide the development, acquisition and delivery of a guided tail kit assembly and all up round technical integration, system qualification and fielding of the B61-12 variant.

FY 2019 Program: Funds the development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP through continued Phase II of engineering and manufacturing development and prepare for the Milestone C decision in early FY 2019. Continues software development and integration for the F-15E and F-16 aircraft and begins B-2 and PA-200 integration.

Prime Contractors: The Boeing Company; St. Charles, MO

B61 Tail Kit Assembly (TKA)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	131.0	-	91.2	-	91.9	-	-	-	91.9	-
Procurement	-	-	88.3	30	162.0	250	-	-	162.0	250
Total	131.0	-	179.5	30	253.9	250	-	-	253.9	250

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

Long Range Stand-Off (LRSO) Missile

USAF

Long Range Stand-Off (LRSO) Missile 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 in 1982 and is well past its original 10-year design service life. LRSO details are classified to protect critical program information.



Mission: The Long Range Stand Off cruise missile 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 to provide 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, B-2 and the B-21 bomber.

FY 2019 Program: Funds the development, design, and planning for test, integration, qualification and nuclear certification activities. It continues funding for the Technology Maturation Risk Reduction (TMRR) efforts to include the first TMRR design reviews. The next major milestone after TMRR award is Milestone B decision with an Engineering Manufacturing and Development contract award in FY 2022.

Prime Contractors: Lockheed Martin Corporation; Bethesda, MD
Raytheon Company; Tucson, AZ

Long Range Stand-Off Missile (LRSO)										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	102.0	-	451.3	-	615.0	-	-	-	615.0	-
Procurement	-	-	-	-	-	-	-	-	-	-
Total	102.0	-	451.3	-	615.0	-	-	-	615.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

MISSILES AND MUNITIONS



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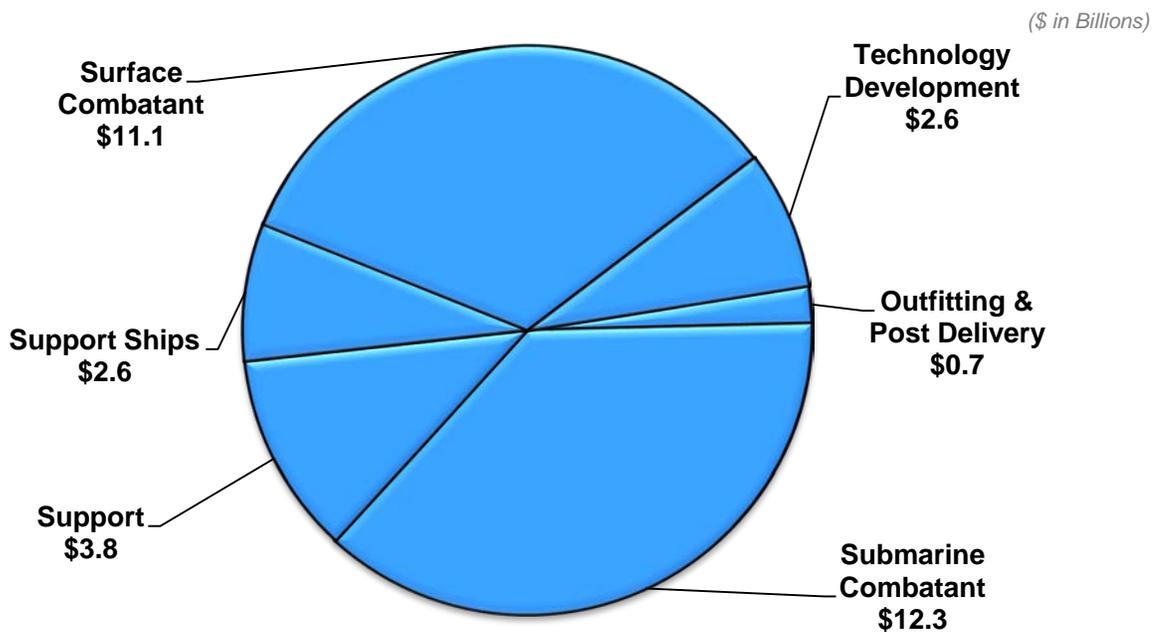
Shipbuilding and Maritime Systems

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 need.

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

The FY 2019 Shipbuilding Portfolio includes funding for the construction and service life extension of 18 vessels. Ten ships are part of the battle force fleet: 2 SSN 774 *Virginia* Class nuclear attack submarines; 3 DDG 51 *Arleigh Burke* Class destroyers; 1 Littoral Combat Ships (LCS); 2 Fleet Replenishment Oilers; 1 Towing, Salvage and Rescue Ship (T-ATS); and 1 Expeditionary Sea Base. Eight ships are support vessels: 5 Ship to Shore Connectors; 2 Landing Craft, Utility; and 1 LCAC Service Life Extension. In addition, the FY 2019 request includes funding for Advance Procurement to support detail design activities and long lead items for the *Columbia* Class Fleet Ballistic Missile Submarine (SSBN) and long lead item for the Refueling and Complex Overhaul of USS *John C. Stennis* (CVN 74).

FY 2019 Shipbuilding and Maritime Systems – Total: \$33.1 Billion



Numbers may not add due to rounding

FY 2019 Program Acquisition Costs by Weapon System

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 to 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 AIB 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.



US Navy Image

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 2019 Program: Funds the second year of construction costs for USS *Enterprise* (CVN 80); outfitting, training, and continued development of ship systems.

Prime Contractor: Huntington Ingalls Industries; Newport News, VA

CVN 78 <i>Gerald R. Ford</i> Class Nuclear Aircraft Carrier										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	118.7	-	138.1	-	108.2	-	-	-	108.2	-
Procurement	2,633.4	-	4,500.0	1	1,657.6	-	-	-	1,657.6	-
Total	2,752.1	-	4,638.1	1	1,765.9	-	-	-	1,765.9	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

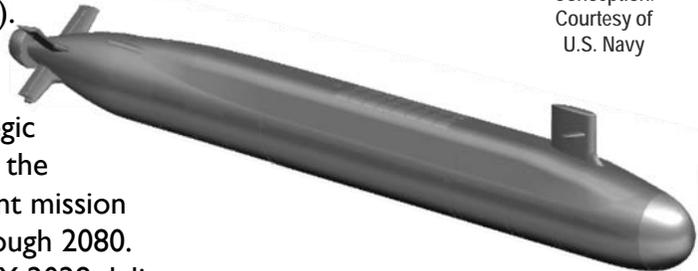
Columbia Class Ballistic Missile Submarine Program



The *Columbia* Class Ballistic Missile Submarine is designed to replace the current *Ohio* class of Fleet Ballistic Missile Submarine (SSBN). 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.

Ship construction begins in FY 2021 for FY 2028 delivery when the first *Ohio* class ships are due to be decommissioned.

The nuclear propulsion systems will be acquired from the nuclear industrial base under the direction of Naval Reactors, under U.S. Department of Energy authorities. 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.



Artist Conception. Courtesy of U.S. Navy

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 2019 Program: Funds advance procurement for long-lead items, detail design, and research and development of nuclear technologies and ship systems such as the propulsion system, combat systems technology, and the common missile compartment.

Prime Contractor: Development Phase: General Dynamics; Groton, CT

Columbia Class Ballistic Missile Submarine Program										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	1,071.5	-	1,041.6	-	704.9	-	-	-	704.9	-
Procurement	773.1	-	842.9	-	3,005.3	-	-	-	3,005.3	-
Total	1,844.6	-	1,884.5	-	3,710.3	-	-	-	3,710.3	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

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. The FY 2019 hulls are lead ships for the Block V contract and the first ships to incorporate Acoustic Superiority (on all 10 ships) and the Virginia Payload Module (starting with the second hull in FY 2019), which is an 84-foot hull section with four additional payload tubes, each capable of carrying seven Tomahawk cruise missiles or various other payloads.

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 2019 Program: Funds two ships in the first year of multiyear procurement (MYP) contract from FY 2019 to FY 2023 for ten ships, 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.

Prime Contractors: General Dynamics Corporation; Groton, CT
Huntington Ingalls Industries; Newport News, VA

SSN 774 Virginia Class Submarine										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	203.9	-	190.3	-	145.6	-	-	-	145.6	-
Procurement	5,190.7	2	5,356.0	2	7,300.8	2	-	-	7,300.8	2
Total	5,394.6	2	5,546.3	2	7,446.4	2	-	-	7,446.4	2

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

DDG 51 *Arleigh Burke* Class Destroyer



The DDG 51 class guided missile destroyers provide a wide range of warfighting 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.



US Navy Photo

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 128-140 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 2019 Program: Funds three Flight III DDG 51 class destroyers as part of a multiyear procurement (MYP) contract for ten ships from FY 2018 – FY 2022 (with potential options for additional ships), outfitting costs, cost-to-complete for prior year ships, and continued development of ship systems.

Prime Contractors: General Dynamics Corporation; Bath, ME
Huntington Ingalls Industries; Pascagoula, MS

DDG 51 <i>Arleigh Burke</i> Class Destroyer										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	149.2	-	288.2	-	213.4	-	-	-	213.4	-
Procurement	3,744.8	2	3,725.6	2	5,772.2	3	-	-	5,772.2	3
Total	3,894.1	2	4,013.7	2	5,985.6	3	-	-	5,985.6	3

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Littoral Combat Ship (LCS)



The Littoral Combat Ship (LCS) is a small surface combatant capable of operations close to shore. The design emphasizes speed, flexibility, and shallow draft. The LCS is designed for operations in three primary anti-access mission areas: Surface Warfare (SUW) operations emphasizing defeat of small boats, Mine Countermeasures (MCM), and Anti-Submarine Warfare (ASW). The ships are reconfigured for various operational roles by changing the mission module, each of which have mission area-specific equipment, vehicles, and crews. The modules are used to counter anti-access threats close to shore such as mines, quiet diesel submarines, and swarming small boats.

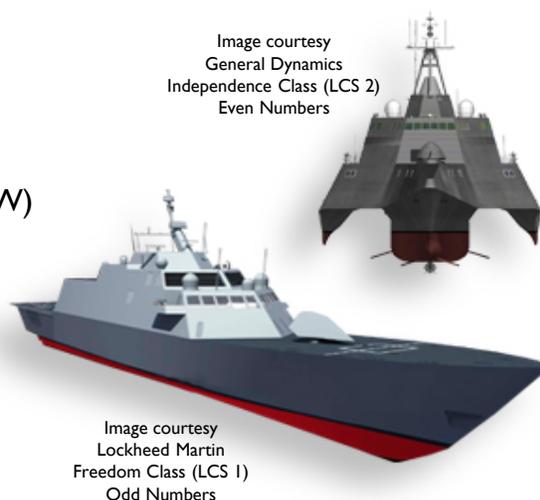


Image courtesy
General Dynamics
Independence Class (LCS 2)
Even Numbers

Image courtesy
Lockheed Martin
Freedom Class (LCS 1)
Odd Numbers

The seaframe acquisition strategy procures two seaframe designs which are a separate and distinct acquisition program from the mission module program. The two programs are synchronized to ensure combined capability.

Mission: Defeats asymmetric threats and assures naval and joint forces access into contested littoral regions by prosecuting small boats and craft, conducting mine countermeasures, and performing anti-submarine warfare.

FY 2019 Program: Funds construction of one LCS seaframe, outfitting, trainers, support equipment, cost-to-complete for prior year ships, modernization efforts, and development costs for a new class of small surface combatant.

Prime Contractors: Lockheed Martin/Marinette Marine Corporation; Marinette, WI
Austal USA; Mobile, AL

Littoral Combat Ship										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	133.9	-	184.4	-	162.8	-	-	-	162.8	-
Procurement	1,870.5	2	1,469.4	2	1,091.6	1	-	-	1,091.6	1
Total	2,004.4	2	1,653.8	2	1,254.4	1	-	-	1,254.4	1

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request + Emergency Amendment: Missile Defeat and Defense Enhancement appropriations + Overseas Contingency Operations (OCO)

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

CVN Refueling Complex Overhaul



The CVN Refueling Complex Overhaul (RCOH) life extension program provides for the modernization of nuclear powered fleet aircraft carriers. During the RCOH, the nuclear fuel is replaced and major system modernization activities are implemented to extend the useful operational life of the ship. An RCOH is performed midway through the ship's lifespan, which, for *Nimitz* class carriers, is approximately 25 years, and can take four years to complete.



Photo Courtesy of Northrop Grumman

Mission: Refuel and upgrade the *Nimitz* class aircraft carriers at mid-life to ensure reliable operations during the remaining ship life.

FY 2019 Program: Funds procurement of long-lead items and efforts for USS *John C. Stennis* (CVN 74) scheduled to begin the overhaul in FY 2021.

Prime Contractor: Huntington Ingalls Industries; Newport News, VA

CVN Refueling Complex Overhaul										
	FY 2017*		FY 2018**		FY 2019					
					Base Budget		OCO Budget		Total Request	
	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	1,932.3	-	1,680.8	-	449.5	-	-	-	449.5	-
Total	1,932.3	-	1,680.8	-	449.5	-	-	-	449.5	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Ship to Shore Connector



The Ship to Shore Connector (SSC) is the functional replacement for the existing fleet of Landing Craft, Air Cushioned (LCAC) vehicles, which are nearing the end of their service life. The SSC is an air-cushioned landing craft intended to transport personnel, weapon systems, equipment, and cargo from amphibious vessels to shore. The vessel can rapidly move assault forces to conduct amphibious operations and operate over the high water mark to include movements over ice, mud, and swamps.

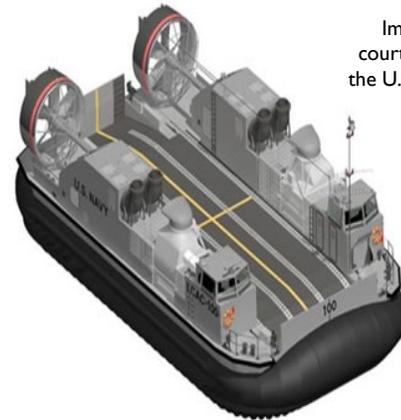


Image courtesy of the U.S. Navy

Mission: Transports vehicles, heavy equipment, and supplies through varied environmental conditions from amphibious ships to shore. Enhances the Navy and Marine Corps capability to execute a broad spectrum of missions from humanitarian assistance and disaster response to multidimensional amphibious assault.

FY 2019 Program: Procures five vessels and continues research, development, and testing.

Prime Contractor: Textron Marine and Land Systems; Slidell, LA

Ship to Shore Connector										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	12.6	-	22.4	-	1.4	-	-	-	1.4	-
Procurement	128.1	2	222.7	3	360.9	5	-	-	360.9	5
Total	140.7	2	245.1	3	362.4	5	-	-	362.4	5

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

John Lewis Class Fleet Replenishment Oiler



The Fleet Replenishment Oiler (T-AO) program will build 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 will be 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.

FY 2019 Program: Funds construction of two fleet oilers, continued development of ship systems, outfitting costs and cost-to-complete for prior year ships.

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

John Lewis Class Fleet Replenishment Oiler										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	1.1	-	2.0	-	1.3	-	-	-	1.3	-
Procurement	73.1	-	541.1	1	1,085.3	2	-	-	1,085.3	2
Total	74.1	-	543.1	1	1,086.6	2	-	-	1,086.6	2

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

ESB Expeditionary Sea Base



Expeditionary Sea Base (ESB) ships are highly flexible platforms that may be used across a broad range of military operations supporting multiple operational phases. Acting as a mobile sea base, they will be part of the critical access infrastructure that supports the deployment of forces and supplies to provide prepositioned equipment and sustainment with flexible distribution.

US Navy Photo



The first delivered ESB, USS *Lewis B. Puller* (T-ESB 3), and the four follow-on ships, will be optimized to support a variety of maritime based missions including Special Operations Forces (SOF) and Airborne Mine Counter Measures (AMCM). The ESBs include a four spot flight deck and hangar and are designed around four core capabilities: aviation facilities, berthing, equipment staging support, and command and control assets.

Mission: Supports and executes a variety of missions including humanitarian support and sustainment of traditional military missions. The ESB will provide core capabilities to transfer vehicles and equipment at-sea and then interface with surface connectors to deliver the vehicles and equipment ashore.

FY 2019 Program: Funds construction of one Expeditionary Sea Base.

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

ESB Expeditionary Sea Base										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	-	-	-	-	650.0	1	-	-	650.0	1
Total	-	-	-	-	650.0	1	-	-	650.0	1

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

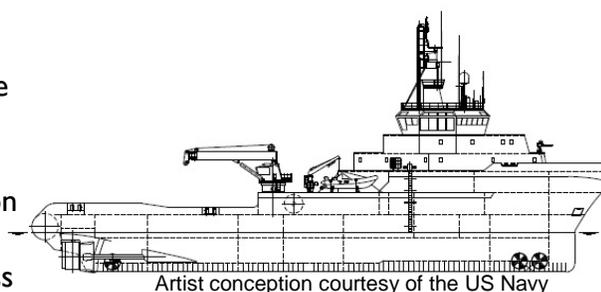
SHIPBUILDING AND MARITIME SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

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). Still in the design phase, 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 clean up of oil spills and ocean accidents, and to provide fire fighting 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.



Construction begins in FY 2019 with the lead ship delivery in FY 2020.

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

FY 2019 Program: Funds construction of one Towing, Salvage, and Rescue Ship.

Prime Contractor: TBD

T-ATS Towing, Salvage, and Rescue Ship										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	-	-	-	-	-	-	-	-	-	-
Procurement	-	-	76.2	1	80.5	1	-	-	80.5	1
Total	-	-	76.2	1	80.5	1	-	-	80.5	1

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SHIPBUILDING AND MARITIME SYSTEMS



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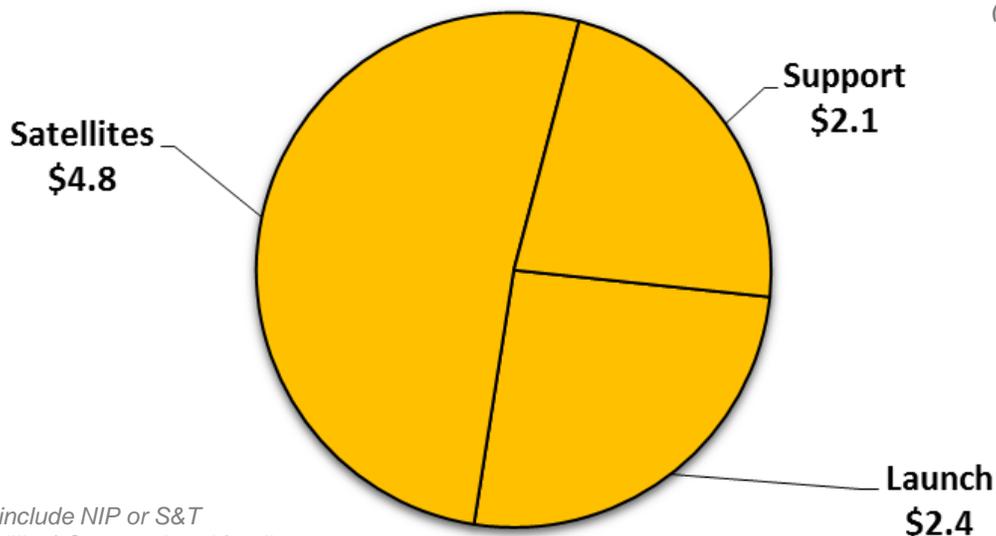
Space Based Systems

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. Generally speaking, the first two satellites of a new system are purchased with Research, Development, Test and Evaluation (RDT&E) funding and the remainder of the satellites are purchased with Procurement funding.

The FY 2019 budget highlights includes funding for integration and launch costs of the Space Based Infrared System (SBIRS) space vehicles Geosynchronous Earth Orbit (GEO)-5 and GEO-6, and accelerates development of Next-Generation Overhead Persistent Infrared (OPIR) satellites; continues funding for the production oversight of the Advanced Extremely High Frequency (AEHF) space vehicles AEHF-5 and AEHF-6, and continues the Space Modernization Initiative RDT&E activities. Also funds the procurement of Evolved Expendable Launch Vehicle (EELV) Launch Services, specifically five launch vehicles, and Launch Capability activities.

FY 2019 Space Based Systems – Total: \$9.3 Billion

(\$ in Billions)



Does not include NIP or S&T (\$117.6 million) Space related funding

SPACE BASED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Evolved Expendable Launch Vehicle



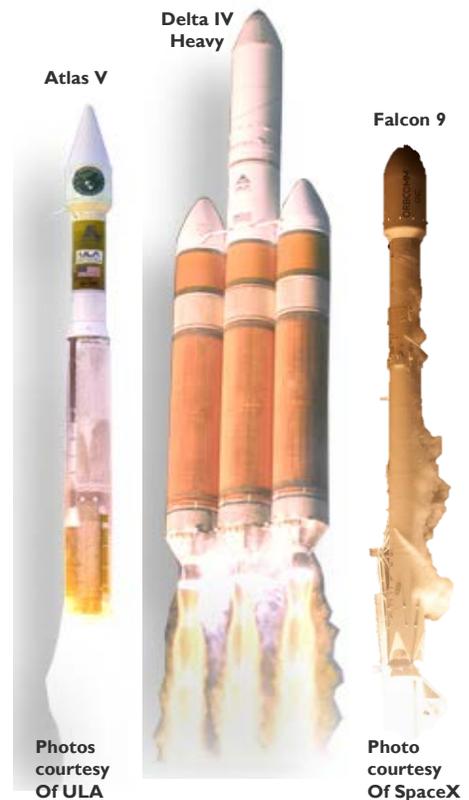
The Evolved Expendable Launch Vehicle (EELV) provides launch services for medium and heavy lift class satellites to the Air Force, Navy, the National Reconnaissance Office (NRO), and other government purchasers.

Mission: Provides launch services and capability for medium to heavy class national security space satellites.

FY 2019 Program: Procures five Air Force launch services. All five are planned for competition, which are usually ordered no-later-than 24 months prior to the planned mission unless additional first time integration is needed; funds EELV Launch Capability (ELC) effort including mission assurance, program management, systems engineering, integration of the space vehicle with the launch vehicle, launch site and range operations, and launch infrastructure maintenance and sustainment.

Continues EELV launch service investment to provide two commercially-viable, domestically-sourced space launch service providers with U.S. made rocket engines.

Prime Contractors: United Launch Alliance (ULA); Centennial, CO
SpaceX; Hawthorne, CA



Evolved Expendable Launch Vehicle										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	381.4	-	297.6	-	245.4	-	-	-	245.4	-
Procurement	1,253.4	3	1,563.9	3	1,704.5	5	-	-	1,704.5	5
Total	1,634.8	3	1,861.5	3	1,950.0	5	-	-	1,950.0	5

*FY 2017 includes actuals for Base

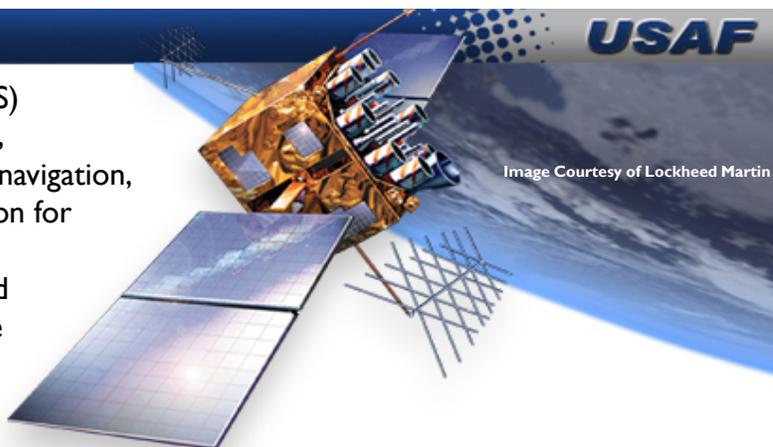
Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

FY 2019 Program Acquisition Costs by Weapon System

Global Positioning System

The Global Positioning System (GPS) provides world-wide, 24-hour a day, all weather 3-dimensional position, navigation, and precise timing (PNT) information for military and civil 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 (civil), a more powerful M-code (military) signal, and the possibility to on-ramp future capabilities. The GPS Next Generation Operational Control System (OCX) will enable operational use of all modernized GPS signals, as well as enabling improved PNT performance.



Mission: Provides worldwide PNT to military and civilian users.

FY 2019 Program: Funds launch campaign and on-orbit checkout for GPS III Space Vehicles (SVs) 01 and 02, and design maturation supporting the evolved GPS IIIIR (SV 11+). Continues the development of GPS OCX Blocks 1 and 2, and enhancements to the legacy Operational Control System prior to OCX delivery. Funds the technology development and lead platform integration of Military GPS User Equipment (MGUE) Increment I. Funds the GPS Program Office's responsibility as the Prime Integrator (Enterprise Integration) to synchronize space, control, and user segment programs and manage civil/military specifications and requirements.

Prime Contractors: GPS III: Lockheed Martin Corporation; Denver, CO
 GPS OCX: Raytheon Company; Aurora, CO
 GPS MGUE Inc I: L3 Interstate Electronics Corporation; Anaheim, CA
 Rockwell Collins International; Cedar Rapids, IA
 Raytheon Company; El Segundo, CA

Global Positioning System										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	840.4	-	1,018.3	-	1,405.2	-	-	-	1,405.2	-
Procurement	54.4	-	102.2	-	85.5	-	-	-	85.5	-
Total	894.8	-	1,120.5	-	1,490.7	-	-	-	1,490.7	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SPACE BASED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Space Based Infrared System (SBIRS)

Space Based Infrared System (SBIRS)

is a follow-on system to the Defense Support Program (DSP) that will field a four satellite constellation in Geosynchronous Earth Orbit (GEO) and a two hosted payload constellation in Highly Elliptical Orbit (HEO) with an integrated centralized ground station serving all SBIRS space elements.

The GEO payload consists of a scanning infrared (IR) sensor, which provides a higher revisit rate, and a staring IR sensor, which provides a higher fidelity and persistent coverage for areas of interest. The HEO payload consists of a single IR sensor.

- The HEO-3 and HEO-4 payloads are now on orbit
- The GEO-4 satellite was delivered directly from production and launched on January 20, 2017 as SBIRS Flight 3
- The GEO-3 satellite was approved for fueling December 2017 with a launch in January 2018 as SBIRS Flight 4
- The GEO-5 and GEO-6 satellites are scheduled to launch in 2021 and 2022 as replenishment satellites for GEO-1 and GEO-2 at the end of their useful lives

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 2019 Program: Funds integration and launch costs for GEO 5/6 satellites, mobile/ground hardware/software, and completes block 20. Accelerates development of Next-Generation Overhead Persistent Infrared (OPIR) satellites; and funds ground segment development. The program also continues the Space Modernization Initiative (SMI) development activities by improving insertion of new technologies to replace obsolete parts and materials and starts development of operational prototypes to reduce technical risk for future systems.

Prime Contractor: Lockheed Martin Corporation; Sunnyvale, CA

Space Based Infrared System										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	162.0	-	382.9	-	703.7	-	-	-	703.7	-
Procurement	355.1	-	1,122.4	-	138.4	-	-	-	138.4	-
Total	517.1	-	1,505.3	-	842.1	-	-	-	842.1	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request

SPACE BASED SYSTEMS

FY 2019 Program Acquisition Costs by Weapon System

Advanced Extremely High Frequency and SATCOM Projects

The Advanced Extremely High Frequency (AEHF) system will be a four satellite constellation of communications satellites in geosynchronous orbit that will replenish the existing EHF system, Milstar System at a much higher capacity and data rate capability.



- 24-hour low, medium, and extended data rate satellite connectivity from 65 N to 65 S latitude worldwide
- AEHF-1, AEHF-2, and AEHF-3 are in orbit and operational
- The launch of AEHF-4 is planned for 2018; AEHF-5 and AEHF-6 are scheduled to extend the constellation life and are planned to launch in 2019 and 2020, respectively
- The last Wideband Global SATCOM (WGS) #10 satellite vehicle is preparing for final assembly integration and test in support of a projected November 2018 launch

Mission: Provides survivable, anti-jam, low probability of detection/intercept, worldwide secure communications for tactical and strategic users and provides additional protection for strategic users against shocks from a nuclear attack. The AEHF enables tactical users to obtain battlefield maps, share targeting data, and conduct voice calls. The AEHF is a collaborative program that also includes resources for Canada, the United Kingdom, and the Netherlands.

FY 2019 Program: Continues funding for the production oversight of the AEHF-5 and AEHF-6 space vehicles. Continues selected SATCOM development activities, which are focused on improving capabilities to include AEHF system operational resiliency, Protected Tactical Service (PTS), Protected SATCOM Services-Aggregated (PSCS-A), and Protected Tactical Enterprise Service (PTES).

Prime Contractor: AEHF – Lockheed Martin Corporation; Sunnyvale, CA
 WGS – Boeing Satellite Systems; El Segundo, CA
 SATCOM Projects – To Be Determined

Advanced Extremely High Frequency and SATCOM Projects										
	FY 2017*		FY 2018**		FY 2019					
	\$M	Qty	\$M	Qty	Base Budget		OCO Budget		Total Request	
					\$M	Qty	\$M	Qty	\$M	Qty
RDT&E	340.0	-	315.0	-	677.0	-	-	-	677.0	-
Procurement	694.0	-	138.0	-	91.0	-	-	-	91.0	-
Total	1,034.0	-	453.0	-	768.0	-	-	-	768.0	-

*FY 2017 includes actuals for Base

Numbers may not add due to rounding

**FY 2018 reflects the President's Budget Base request



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