



SEPTEMBER 2018

Analysis of the FY 2019 Defense Budget

AUTHORS

Todd Harrison
Seamus P. Daniels

A Report of the
CSIS INTERNATIONAL SECURITY PROJECT'S DEFENSE OUTLOOK SERIES

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1 | Overview of Defense-Related Funding

On February 9, 2018, Congress passed the Bipartisan Budget Act of 2018 (BBA 2018). This budget deal increased the cap on the defense budget by \$80 billion in FY 2018 to \$629 billion in base discretionary national defense budget authority, or \$700 billion if Overseas Contingency Operations (OCO) and emergency supplemental funding is included. This is \$26 billion more in base budget funding than the Trump administration requested for FY 2018 and a 12 percent real increase above the FY 2017 base budget (or a 9 percent increase if OCO and emergency funding is included). The BBA 2018 budget deal also increased the defense budget cap for FY 2019 by \$85 billion to \$647 billion in base discretionary funding or \$716 billion including OCO funding. However, the budget deal did not alter the defense budget caps for FY 2020 and FY 2021, which remain at \$576 billion and \$590 billion in base budget funding, respectively.

Just three days after BBA 2018 was enacted, President Trump submitted his FY 2019 budget request to Congress. The FY 2019 request is notable in three ways. First, it is the first budget request prepared from start to finish by the Trump administration. The FY 2018 budget request submitted last year was initially prepared by the Obama administration and handed over to the new administration in January 2017. The FY 2019 defense request is also notable because it was developed in parallel with the National Defense Strategy (NDS), which was released just ahead of the budget in January 2018. The NDS is required by statute and replaces the Quadrennial Defense Review (QDR). Unlike previous QDRs, however, the unclassified version of the 2018 NDS does not provide guidance on the force levels or funding required to execute the strategy. This makes it difficult to assess whether the FY 2019 budget request is aligned with the strategy and fully funds the force structure necessary to execute the strategy. A third reason the FY 2019 request is notable is that the level of funding in the budget matches the BBA 2018 budget deal's cap for defense. This means that the administration will not need to ask Congress to raise the cap again to get the level of funding that it is requesting for FY 2019.

Total Defense-Related Funding in the Request

The defense budget caps only apply to the discretionary national defense (050) budget function, but this does not include all defense-related funding in the budget. As shown in Table 1, total defense-related funding in the federal budget exceeded \$1 trillion for the first time in FY 2018 (in nominal dollars), and it is projected to stay above this level in the coming years. The FY 2019 request for the Department of Defense (DoD) includes \$617 billion in base discretionary funding, \$9 billion in mandatory funding, and \$69 billion in OCO funding, for a total of \$695 billion in DoD funding. The

request also includes \$23 billion for atomic energy programs, mainly for the Department of Energy to fund the sustainment and modernization of the nation's inventory of nuclear warheads and bombs as well as for the nuclear reactors used on Navy aircraft carriers and submarines. An additional \$9 billion is budgeted for defense-related activities in other parts of the federal government that provide support to DoD, such as the Federal Bureau of Investigation. Together, these funding lines make up the 050 budget function for national defense, which totals \$647 billion in base discretionary funding (or \$727 billion if mandatory and OCO funding is included).

Table 1: Summary of Defense-Related Funding in the FY 2019 Request

| <i>(All figures in then-year dollars)</i> | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 |
|--|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| DoD (base discretionary) | \$521.7B | \$523.4B | \$599.4B | \$617.1B | \$628.4B | \$648.2B | \$661.7B | \$676.0B |
| DoD (base mandatory) | \$15.4B | \$20.3B | \$6.8B | \$9.1B | \$9.4B | \$9.3B | \$9.4B | \$9.1B |
| DoD (OCO & Emergency) | \$58.6B | \$82.5B | \$71.8B | \$69.0B | \$73.0B | \$65.8B | \$65.8B | \$65.8B |
| <i>Subtotal DoD (051)</i> | <i>\$595.7B</i> | <i>\$626.2B</i> | <i>\$677.9B</i> | <i>\$695.1B</i> | <i>\$710.8B</i> | <i>\$723.3B</i> | <i>\$736.9B</i> | <i>\$751.0B</i> |
| Atomic Energy (discretionary) | \$18.9B | \$20.0B | \$21.8B | \$21.9B | \$23.0B | \$23.5B | \$24.0B | \$24.5B |
| Atomic Energy (mandatory) | \$1.3B | \$1.4B | \$1.3B | \$1.2B | \$1.2B | \$1.2B | \$1.2B | \$1.3B |
| Other Defense-Related (discretionary) | \$7.7B | \$8.2B | \$7.8B | \$8.0B | \$8.6B | \$5.3B | \$8.3B | \$11.4B |
| Other Defense-Related (mandatory) | \$0.6B | \$0.6B | \$0.6B | \$0.6B | \$0.6B | \$0.6B | \$0.6B | \$0.5B |
| <i>Subtotal National Defense (050)</i> | <i>\$624.1B</i> | <i>\$656.3B</i> | <i>\$709.3B</i> | <i>\$726.8B</i> | <i>\$744.2B</i> | <i>\$753.9B</i> | <i>\$771.0B</i> | <i>\$788.7B</i> |
| Veterans Benefits & Svcs (discretionary) | \$71.1B | \$74.6B | \$81.9B | \$83.4B | \$88.1B | \$88.0B | \$87.9B | \$87.8B |
| Veterans Benefits & Svcs (mandatory) | \$92.7B | \$104.7B | \$107.0B | \$109.8B | \$121.7B | \$129.6B | \$136.1B | \$144.0B |
| Amortization of Unfunded Military Retirement Liabilities | \$82.6B | \$86.9B | \$89.4B | \$91.7B | \$93.9B | \$97.0B | \$100.1B | \$103.4B |
| Defense-Related Tax Expenditures | \$21.1B | \$22.6B | \$23.8B | \$23.3B | \$23.8B | \$24.7B | \$25.7B | \$26.7B |
| <i>Total Defense-Related</i> | <i>\$891.6B</i> | <i>\$945.0B</i> | <i>\$1,011.5B</i> | <i>\$1,035.0B</i> | <i>\$1,071.7B</i> | <i>\$1,093.1B</i> | <i>\$1,120.8B</i> | <i>\$1,150.7B</i> |

Beyond the national defense budget function, the FY 2019 request includes several other sources of military-personnel related funding. It requests \$193 billion for veterans benefits and services, \$83 billion of which is discretionary funding that counts under the non-defense budget cap. The remaining \$110 billion in veterans funding is mandatory, which means it does not count under the budget caps and does not need an annual appropriation by Congress. The veterans portion of the budget has doubled over the past ten years, making it one of the fastest growing areas in the federal budget.

The budget request also includes \$86 billion in transfers from the Treasury to continue paying down the unfunded liability in the Military Retirement Trust Fund. The total unfunded liability was

estimated to be \$743 billion at the end of FY 2016.¹ An additional \$6 billion is budgeted to pay down the unfunded liability in the Medicare-Eligible Retiree Health Care Fund, which was estimated to be \$170 billion at the end of FY 2016.² The FY 2019 request also provides \$23 billion in tax expenditures, which continues the policy of excluding some military pay and veterans benefits from federal taxes.³ Altogether, the defense-related funding not included in the 050 national defense budget function totals \$308 billion in the FY 2019 request, which brings the total defense-related budget to \$1,035 billion. While these other sources of defense-related funding are important for understanding the broader fiscal implications of defense strategy and policy decisions, the remainder of this analysis focuses specifically on the DoD portion of the budget.

Five-Year DoD Budget Projection

The FY 2019 request includes the first detailed Future Years Defense Program (FYDP) of the Trump administration. While last year's FY 2018 request included a top-line projection of base budget funding for future years, it did not provide many details to support that funding. The new FYDP is 6 percent higher in total than the previous plan, adjusting for inflation. However, the FY 2019 FYDP projects limited growth in the future, increasing by a total of just 1.2 percent above inflation from FY 2019 to FY 2023.

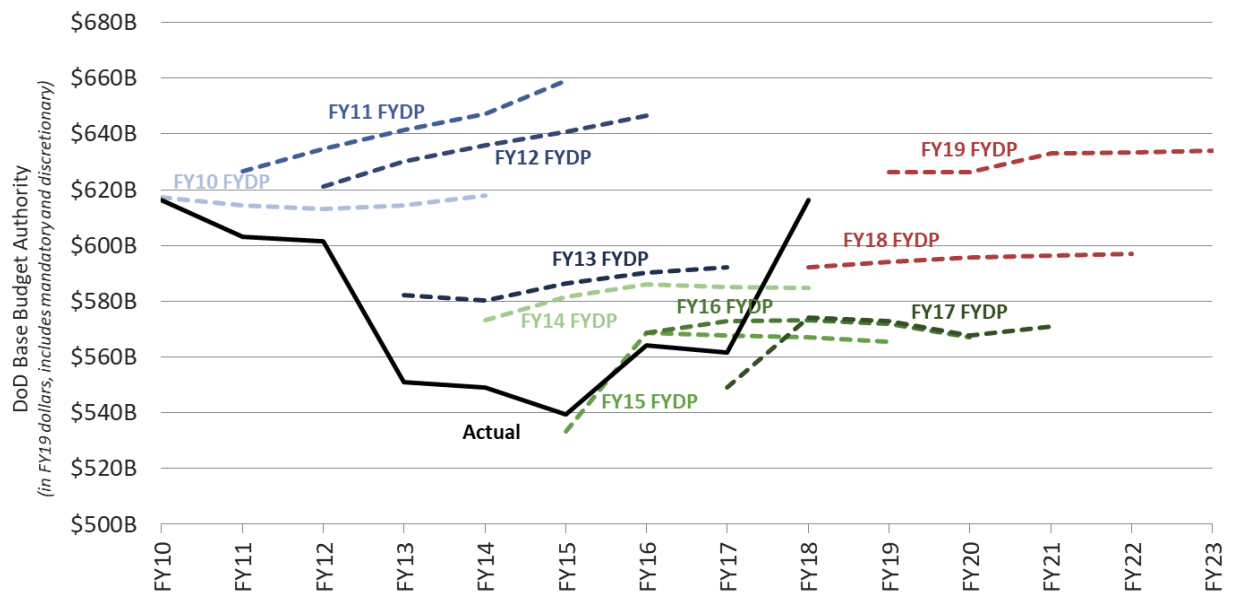
As shown in Figure 1, the FY 2019 FYDP would return the defense budget to near the level of the FYDPs submitted before the Budget Control Act (BCA) was enacted. The five years of funding in the FY 2019 FYDP totals \$3.15 trillion (in constant FY 2019 dollars), which is more than all but two of the FYDPs submitted by the Obama administration. In constant FY 2019 dollars, the Obama FY 2011 FYDP (\$3.21 trillion) and FY 2012 FYDP (\$3.17 trillion) each requested more funding than the Trump FY 2019 FYDP.

¹ DoD Office of the Actuary, *Valuation of the Military Retirement System - September 30, 2016*, June 2018, 5, [https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20\[June%202018\].pdf?ver=2018-06-08-092814-117](https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20[June%202018].pdf?ver=2018-06-08-092814-117).

² DoD Office of the Actuary, *Valuation of the Medicare-Eligible Retiree Health Care Fund - September 30, 2016*, December 2017, 3, <https://actuary.defense.gov/Portals/15/Documents/MERHCF%20Val%20Rpt%202016.pdf?ver=2017-12-22-110644-697>.

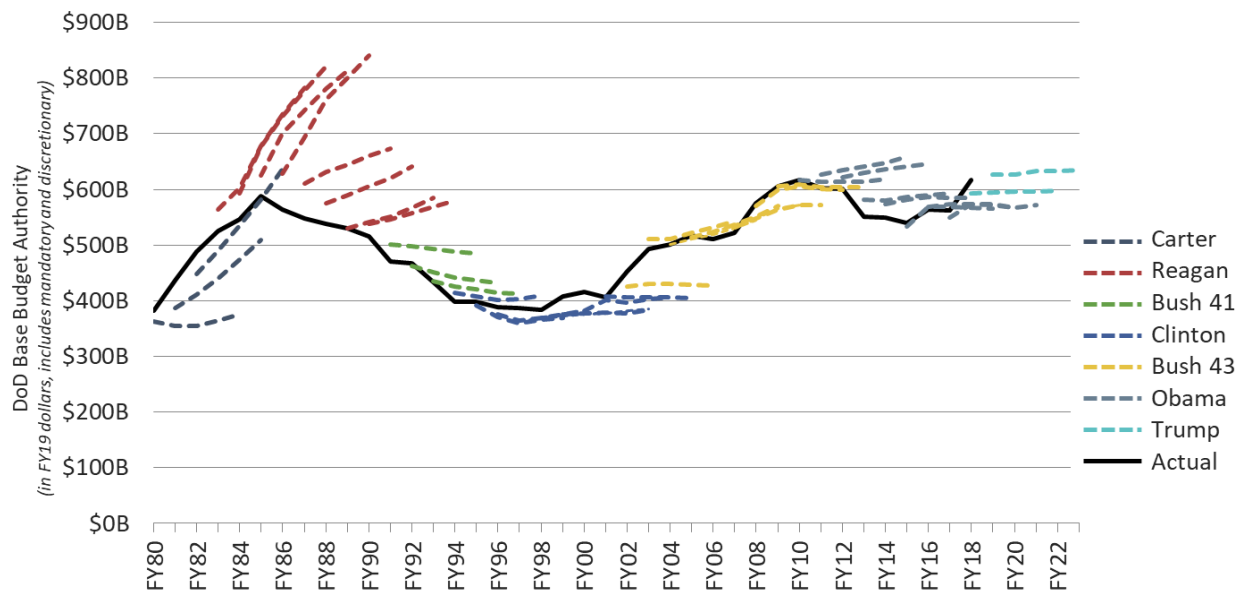
³ Executive Office of the President, Office of Management and Budget, *Analytical Perspectives, Budget of the United States Government, Fiscal Year 2019*, 156, 159-160, https://www.whitehouse.gov/wp-content/uploads/2018/02/ap_13_expenditures-fy2019.pdf.

Figure 1: DoD's FYDP Projections vs. Actuals



While the FYDP is useful for planning purposes, in the past, it has been a poor indicator of where the budget is headed. As shown in Figure 2, the FYDPs submitted by the Reagan administration greatly exceeded the actual level of funding appropriated by Congress, and the Reagan FYDPs continued projecting growth even when the budget was declining. In the 1990s, the Clinton administration repeatedly projected a lower defense budget than Congress ultimately appropriated. In more recent years, the Obama administration repeatedly projected a higher defense budget than Congress appropriated, mainly due to the enactment of the BCA and the caps it placed on the defense budget. The FYDP should therefore be viewed not as an indicator of where the budget is headed in the future but rather as a statement of administration policy. In the FY 2019 FYDP, the Trump administration is stating that it plans to maintain the current level of defense spending and limit real growth in the budget for the foreseeable future.

Figure 2: DoD FYDP Projections from FY 1980 to FY 2019



OCO and Emergency Supplemental Funding

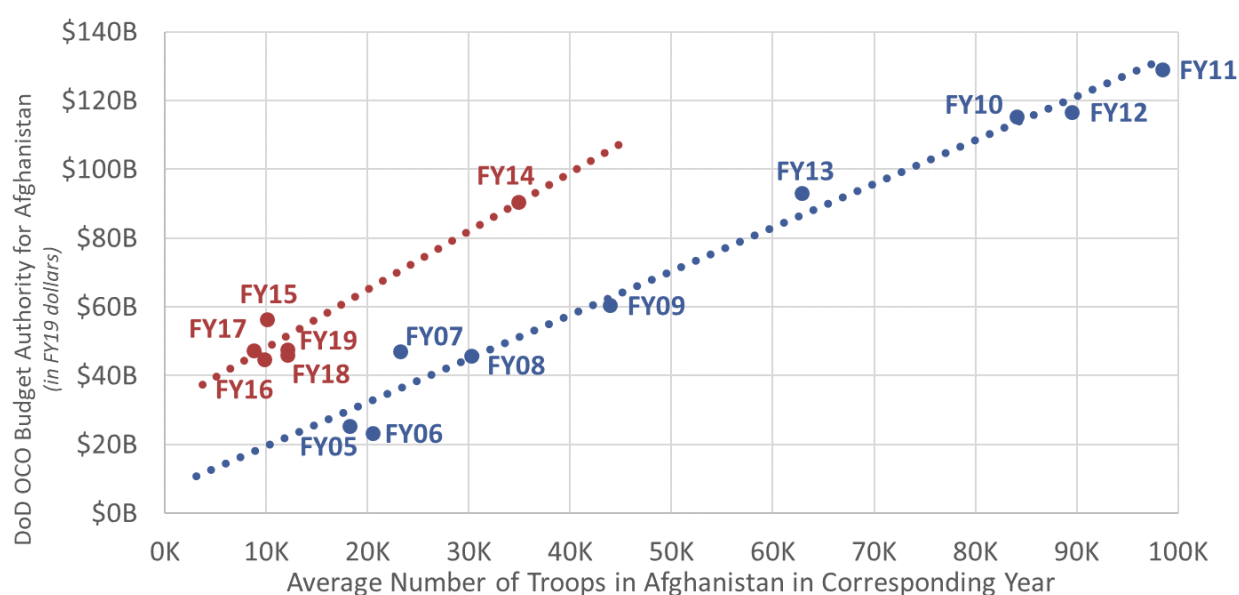
The budget request also includes \$69 billion in OCO funding. This compares to \$66 billion in OCO funding and \$5.8 billion in emergency supplemental funding enacted for FY 2018. Of the \$69 billion requested, \$46 billion is designated for operations in Afghanistan, \$15 billion is for operations in Iraq and Syria, \$6.5 billion is for the European Deterrence Initiative, and \$0.9 billion is for security cooperation funding to support partner nations.

One of the main differences between OCO/emergency supplement funding and base budget funding is that only base budget funding counts toward the BCA budget caps. This means that additional OCO and emergency funding can be appropriated by Congress without breaching the budget caps and triggering a sequester. The BCA does not specify what types of funding can be categorized as OCO or emergency, which effectively creates a loophole in the law. Both Congress and DoD have exploited this loophole in the past to allocate more money for defense (and some non-defense programs) than what would be allowed under the budget caps. Another difference is that OCO funding does not come with a five-year projection, which limits the ability of DoD and Congress to plan and budget for future years.

While some of the efforts to move base budget funding into OCO have been explicit in the appropriations bills, much of DoD's movement of base to OCO is more difficult to identify. For example, given the number of troops projected for the year (just under 12,000), the \$46 billion requested for Afghanistan in FY 2019 is far above the level of funding that should be needed for operations in that country. As shown in Figure 3, funding for Afghanistan followed a distinct trend line

from FY 2005 through FY 2013, with roughly \$7 billion per year in fixed costs (where the trend line crosses the vertical axis) and \$1.3 million per troop per year in variable costs (the slope of the trend line). Fixed costs include items that do not vary with the number of U.S. troops in theater, such as fixed infrastructure costs and support for the Afghan National Security Forces. This trend held true for nearly decade through surges and drawdowns. After the BCA went into effect in FY 2013, however, funding for Afghanistan began to follow a different trend line. This new, higher trend line indicates that the fixed costs are now roughly \$32 billion per year—some \$25 billion higher than before. This suggests that roughly \$25 billion in “enduring” or base budget costs migrated into the Afghanistan budget, effectively circumventing the budget caps. The actual funding needed for operations in Afghanistan is roughly \$20 billion in FY 2019.

Figure 3: Funding Designated for Afghanistan vs. Troop Levels



Beyond DoD and Congressional transfers from base to OCO, other items that likely belong in the base budget have been added to OCO as well. The European Deterrence Initiative (EDI), previously known as the European Reassurance Initiative, was initiated in the FY 2015 budget request in response to Russia’s actions in Ukraine. The stated intent of this fund was “to reassure our NATO allies and bolster the security and capacity of our partners,”⁴ by increasing the number of U.S. forces and prepositioned equipment in Europe and funding additional training and exercises with NATO allies and partners. Because it is in the OCO part of the budget request, EDI funding does not include a projection for how

⁴ Office of the Under Secretary of Defense (Comptroller), *European Reassurance Initiative: Department of Defense Budget Fiscal Year (FY) 2016* (Washington, DC: DoD, February 2015), 2, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/FY2016_ERI_J-Book.pdf.

much funding will be allocated in future years, which can create uncertainty in the minds of allies and adversaries alike about the U.S. military's commitment to this program.

In the FY 2019 request, the Trump administration includes a plan to transition these “enduring” costs back into the base budget. The budget shows that in FY 2020, \$53 billion in OCO funding will be moved back to the base budget, leaving only \$20 billion in OCO funding. Moving this funding to the base budget means that it will count toward the BCA budget cap, and thus the cap will need to be increased by \$53 billion more than it would be otherwise. To support the projections in this budget request, the defense budget caps would need to increase by \$137 billion in FY 2020 and \$133 billion in FY 2021. As has been the case in all previous budget deals since the BCA was enacted, increasing the defense budget caps would likely require an increase in the non-defense budget caps to attain the 60 votes needed to clear the Senate, further increasing the overall cost and impact on the federal deficit.

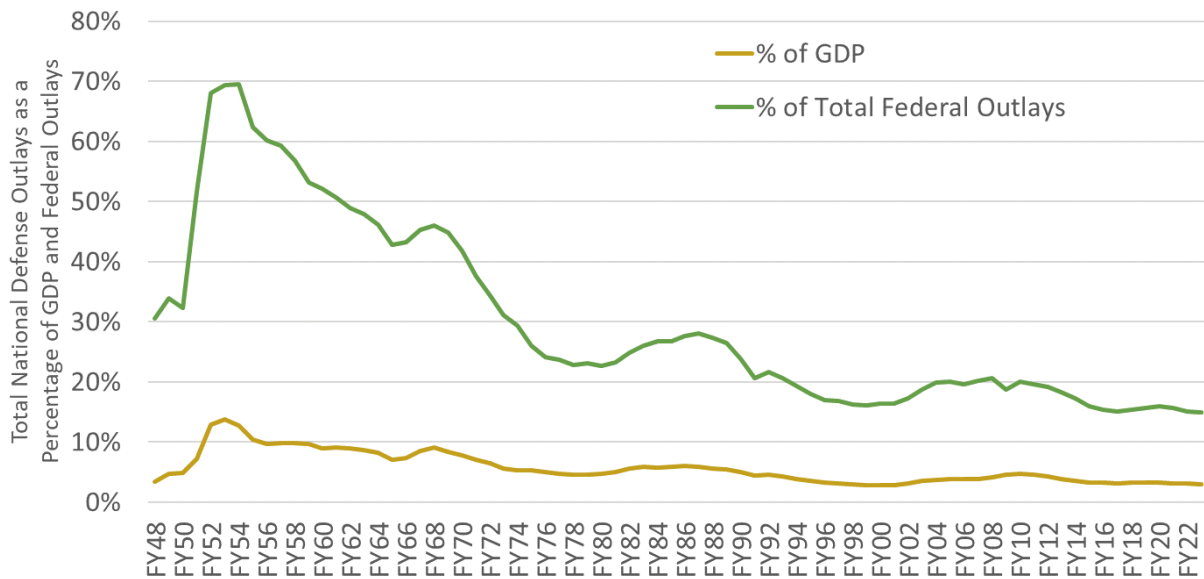
This is not the first time an administration has proposed moving funding from OCO to the base budget. In the FY 2016 budget request, the Obama administration pledged to transition “enduring” costs from OCO back into the base budget beginning in FY 2017 and ending by FY 2020.⁵ However, the administration did not follow up with a plan to do this, and it was not included in its final budget request the following year.

Historical Perspectives

Many different metrics are available to assess the overall size of the national defense budget relative to other periods. Two of the most commonly used metrics are defense spending as a percentage of Gross Domestic Product (GDP) and defense as a percentage of total federal spending, as shown in Figure 4. Defense as a percentage of GDP effectively measures the fraction of the nation's economic output devoted to defense—i.e., the economic burden of defense. The percentage of federal spending used for defense measures the priority of defense relative to other government programs and activities. Throughout the Cold War (FY 1950 to FY 1990), the United States spent an average of 7.4 percent of GDP and 40 percent of the total federal budget on defense (including both discretionary and mandatory funding). In more recent years, both measures have declined, falling to 3.3 percent of GDP and 15.6 percent of the federal budget in the FY 2019 budget request.

⁵ Office of the Under Secretary of Defense (Comptroller), *United States Department of Defense Fiscal Year 2016 Budget Request* (Washington, DC: DoD, February 2015), 7-9, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/FY2016_Budget_Request_Overview_Book.pdf.

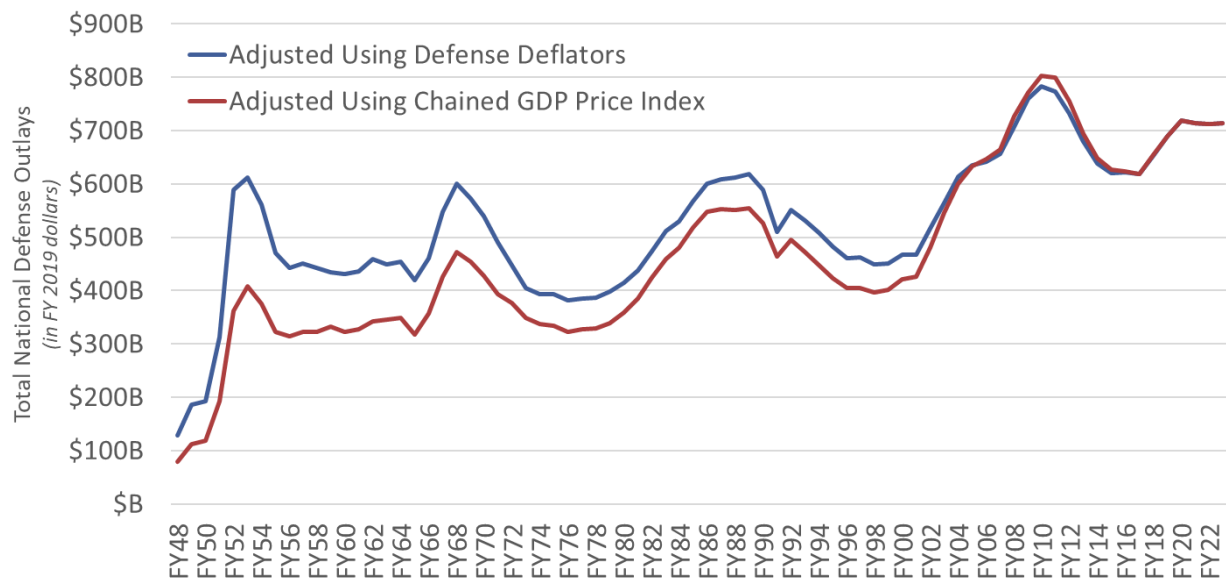
Figure 4: National Defense Outlays as a Percentage of GDP and Total Federal Outlays



Importantly, defense has declined as a percentage of GDP and the overall federal budget not because defense spending has declined but rather because the size of the economy and the overall federal budget have increased. As shown in Figure 5, defense spending in inflation adjusted dollars is at a relatively high level by historical standards, whether using the defense deflator (which counts some increases in labor costs as inflation) or the more neutral GDP chained price index to adjust for inflation. By either measure, total defense spending (including OCO funding) at the lowest point of the most recent drawdown roughly equaled the peaks of spending during the 1980s buildup, the Vietnam War, and the Korean War. The remainder of this analysis uses the chained GDP price index to adjust for inflation.⁶

⁶ All adjustments for inflation in this report are made using the GDP Chained Price Index published by the Office of Management and Budget (OMB) in Historical Table 10.1 rather than the deflators used by DoD. The defense deflators count some of the growth in labor costs for military and civilian employees as inflation and therefore understate the growth in these accounts over time.

Figure 5: National Defense Outlays Adjusted for Inflation

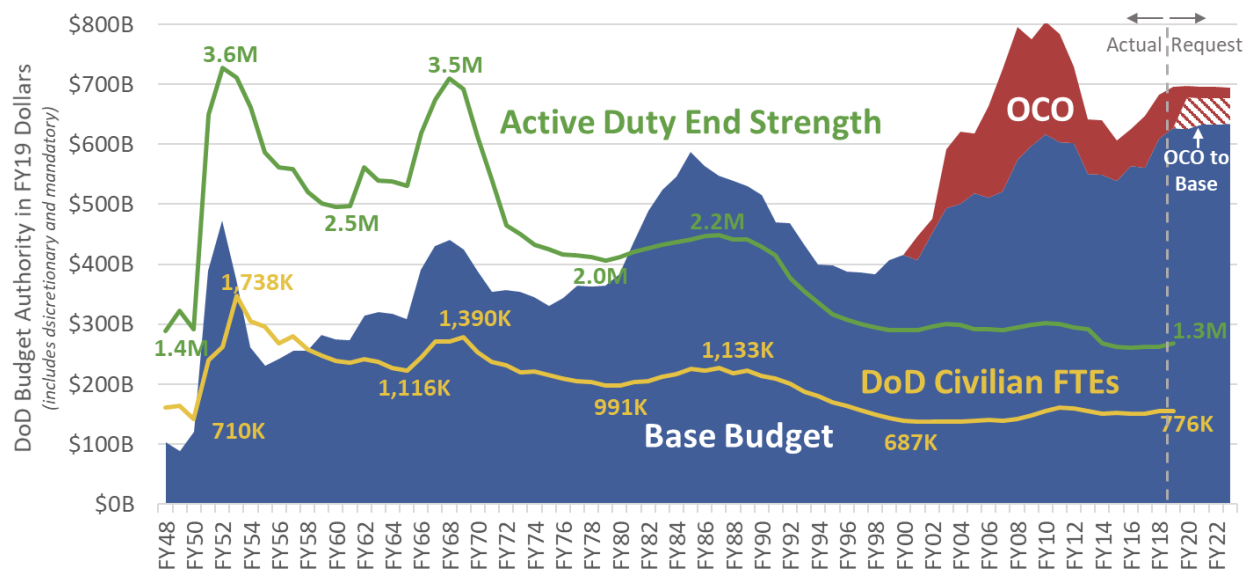


2 | Trends in the DoD Budget

Getting Less for More

The defense budget is naturally cyclic, rising when threats (or the perception of threats) are high and falling in times of peace. Since the end of World War II, the defense budget has experienced four such cycles, as shown in Figure 6. In the Korean War budget cycle, the defense budget grew by more than 400 percent from FY 1949 to the peak in FY 1952 (all figures are adjusted for inflation), and active end strength (the number of personnel in the active military) more than doubled over the same period. A similar cycle occurred during the Vietnam conflict, where the budget grew by 91 percent, and active end strength rose by 43 percent.

Figure 6: Trends in the DoD Budget, Active End Strength, and Civilian FTEs

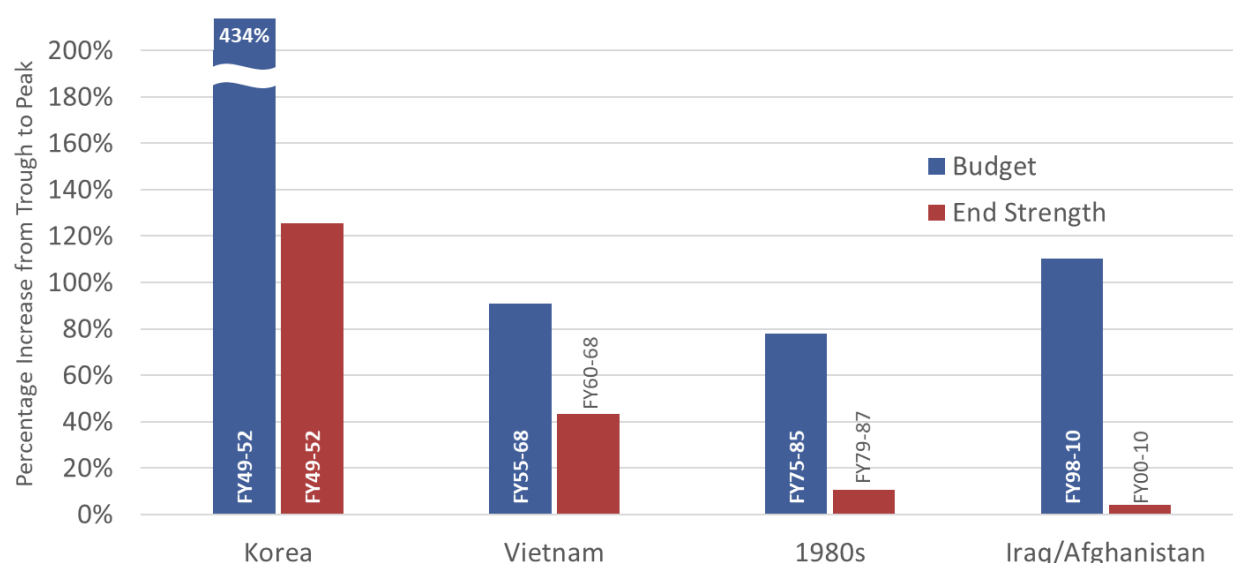


At the end of U.S. involvement in Vietnam, however, the relationship between the budget and the size of the force began to change. In 1973, the United States formally ended the draft and transitioned to an all-volunteer force, which resulted in higher compensation costs and reduced the military's ability to quickly increase end strength if needed. During the post-Vietnam drawdown, the budget fell by 25 percent (from the peak in FY 1968 to the trough in FY 1975), but the size of the force fell by 43 percent from FY 1968 to its low point in FY 1979—well below the pre-Vietnam level.

The budget cycle of the 1980s differed from Korea and Vietnam because it was not due to an active military conflict, and it did not result in a large increase in the size of the force. During this buildup the budget grew by 78 percent from trough to peak, whereas active end strength grew by just 10 percent. However, in the post-Cold War drawdown, both the budget and end strength fell by 35 percent.

The budget cycle of the 2000s marked a significant shift in trends in four main ways. First, this buildup did not result in a significant increase in the size of the military. While the budget grew by 110 percent from trough to peak—more than the Vietnam and Reagan buildups—the size of the force grew by just 4 percent. Second, despite the buildup being largely predicated on the response to 9/11 and operations in Afghanistan and Iraq, more than half (55 percent) of the growth was in the base budget. Third, the drawdown was relatively short and shallow by historical standards, lasting just five years and falling 25 percent from FY 2010 to FY 2015 (or 12 percent if OCO funding is excluded). And finally, even though the force did not grow substantially during the buildup, active end strength declined by 14 percent through FY 2016 to the lowest level since the end of World War II.

Figure 7: Increases in Budget and Active End Strength



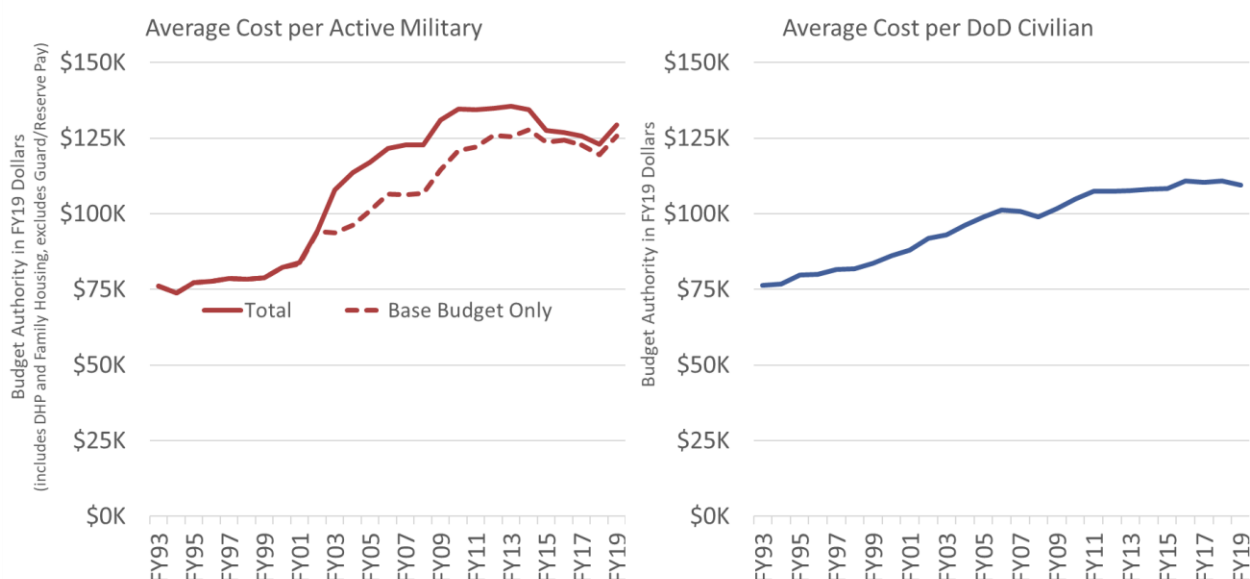
These trends indicate that force structure is becoming increasingly expensive. The budget proposed for FY 2019 is 82 percent higher in real terms than it was at the end of the Cold War drawdown in FY 1998, but the size of the force is 9 percent smaller. The military is spending more for a smaller force. It should be noted that total active end strength is just one measure of the size of the military. Chapter 4 of this report explores other measures of force structure for each of the Services and compares them to trends in the budget.

The remainder of this chapter examines some of the underlying reasons that force structure is becoming increasingly expensive. Specifically, it explores trends in military and civilian compensation, operation and maintenance (O&M), and acquisitions, and how these trends shape and constrain the current defense budget debate for FY 2019 and beyond.

Military and Civilian Personnel

DoD's labor costs have grown significantly over the past two decades. The average cost of an active duty service member in the FY 2019 request is 64 percent higher, adjusting for inflation, than it was 20 years ago, and the average cost of a DoD civilian is 31 percent higher. This growth is due to many different factors, including policy decisions and broader economic trends. As shown in Figure 8, much of the growth in compensation costs occurred during the early 2000s. Costs began to level off in FY 2012 and even declined slightly for military personnel before rebounding in the FY 2019 request.

Figure 8: Growth in Compensation Costs



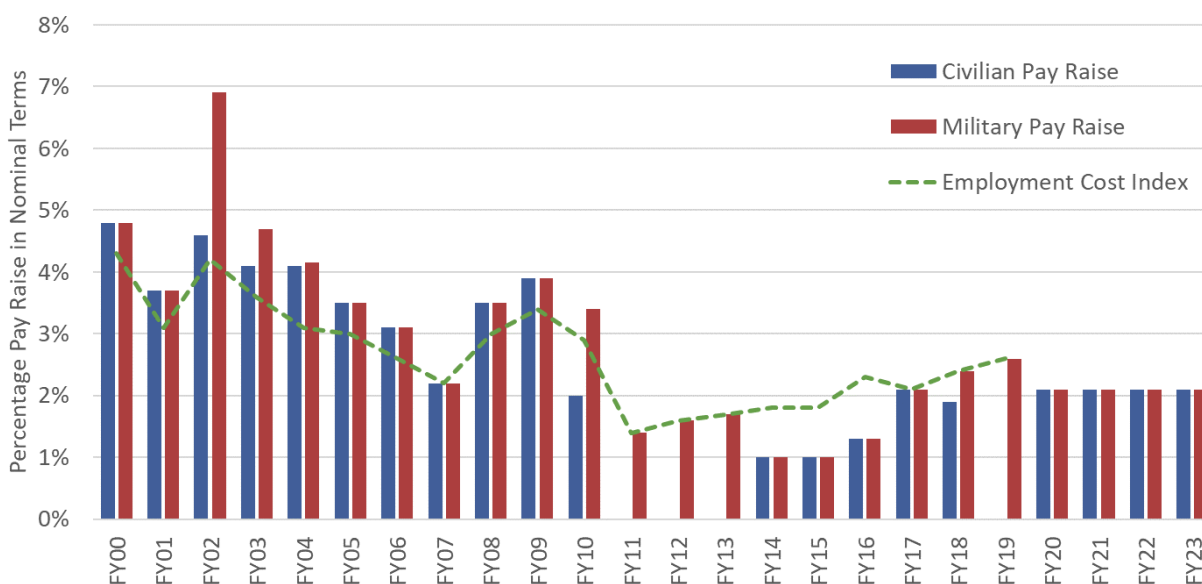
Part of the growth in both military and civilian compensation costs is due to higher pay raises in the 2000s. By statute, the military pay raise is supposed to equal the Employment Cost Index (ECI) for private sector workers' wages and salaries for the 12-month period ending on September 30 of two years prior to the fiscal year in which the raise takes effect.⁷ For example, the FY 2019 pay raise is set based on the ECI for the 12-month period ending on September 30, 2017, which is 2.6 percent.⁸ As shown in Figure 9, the military pay raise exceeded the ECI in all but one year from FY 2000 to FY 2010. After the BCA budget caps went into enforcement, the military pay raise dipped below the ECI for three years (FY 2014 to FY 2016), but it has equaled the ECI in each year since. The DoD civilian pay raise also exceeded the ECI in all but one year during the 2000s, but civilian raises fell below the ECI in

⁷ See *Adjustments of monthly basic pay*, 37 U.S. Code (1974), § 1009(c)(1), <https://www.law.cornell.edu/uscode/text/37/1009>.

⁸ U.S. Bureau of Labor Statistics, *Employment Cost Index Historical Listing - Volume V* (Washington, DC: GPO, July 2018), 122, <https://www.bls.gov/web/eci/echistrynaics.pdf>.

all but one year from FY 2010 to FY 2018. In three of these years (FY 2011 to FY 2013), DoD civilians received no raise at all. The FY 2019 request again proposes no raise for civilian employees.⁹

Figure 9: Military and Civilian Pay Raises



The FY 2019 request includes \$206 billion in military compensation-related funding and an additional \$85 billion in DoD civilian compensation, totaling 42 percent of the total DoD budget. Military compensation includes immediate cash compensation (e.g., basic pay, allowances, special pays, etc.) and non-cash or deferred forms of compensation (e.g., healthcare, retired pay accrual, family housing, etc.). For active duty service members, 53 percent of total compensation is in the form of cash compensation. In comparison, cash compensation in the private sector averages 69.5 percent of total compensation.¹⁰ Despite the *share* of cash compensation being lower than the private sector, cash compensation for the military remains highly competitive. For example, an O-1 fresh out of college makes over \$70,000 in cash compensation, not including the special pays, incentives, and bonuses that vary significantly from individual to individual. In comparison, the average starting pay for college

⁹ Military and civilian pay raises can be found in: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2019* (Washington, DC: DoD, April 2018), 75-76, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/FY19_Green_Book.pdf.

¹⁰ Bureau of Labor Statistics, “Employer Costs for Employee Compensation – March 2018,” news release, June 8, 2018, <https://www.bls.gov/news.release/pdf/eccec.pdf>.

graduates in the United States is \$50,390 according to a recent study.¹¹ After four years of service, an O-3 makes more than \$108,000 in cash compensation.¹²

Basic pay and other forms of compensation that depend on the level of basic pay, such as retired pay accrual, concurrent receipt, and social security tax, all grew faster than inflation in the 2000s. However, one of the fastest growing areas of compensation was health care. Military health care, excluding pay and benefits for military personnel who work in the health care system, totals \$42 billion in the FY 2019 request. These costs totaled just \$13.7 billion in the FY 2001 budget—an increase of 116 percent when adjusted for inflation. Reforms enacted by Congress and DoD in recent years have slowed the growth in healthcare costs, but continued reforms will be necessary to prevent further cost growth in the future.

One of the most significant changes in military compensation is the introduction of a blended retirement system in the FY 2016 National Defense Authorization Act (NDAA).¹³ Beginning on January 1, 2018, all new members joining the military, and those with less than 12 years of service that elect to join the new system, will receive a matching contribution to a 401k-like defined contribution retirement plan and a reduced retirement pension. For example, instead of receiving 50 percent of their highest three years of basic pay for 20 years of service, service members in the new system will receive 40 percent. The new blended retirement system means that nearly all new service members will leave with some retirement savings, whereas the old retirement system only benefits those who serve 20 years or longer or receive a medical retirement.¹⁴

Because existing service members are grandfathered under the old retirement system (unless they opt into the new system), the budgetary effects of the new system are minimal at first and will build over time as more service members fall under the new system. The FY 2019 request includes \$1.2 billion in funding for the cost of matching contributions in the blended retirement system,¹⁵ and the retirement pension accrual is somewhat lower than it would have been otherwise (although that is

¹¹ “High Demand, Low Reward: Salaries for 2018 College Graduates Flat, Korn Ferry Analysis Shows,” *Korn Ferry*, September 14, 2018, <https://www.kornferry.com/press/high-demand-low-reward-salaries-for-2018-college-graduates-flat-korn-ferry-analysis-shows>.

¹² The cash compensation figures in this paragraph are calculated using the Regular Military Compensation Calculator for 2018 found at <https://militarypay.defense.gov/calculators/rmc-calculator/>. It assumes a service member living in the zip code 20301. For the O-1 it assumes the service member is single with no dependents and less than two years of time in service, and for the O-3 it assumes the person is married with one dependent and four years of time in service.

¹³ *National Defense Authorization Act for Fiscal Year 2016*, Title VI, Subtitle D, Public Law 114-92, *U.S. Statutes at Large* 727(6)(d), (2015), <https://www.congress.gov/114/plaws/publ92/PLAW-114publ92.pdf>.

¹⁴ For more information on the blended retirement system, see the DoD’s “Uniformed Services Blended Retirement System,” <https://militarypay.defense.gov/blendedretirement/>.

¹⁵ Office of the Under Secretary of Defense (Comptroller), *Military Personnel Programs (M-1): Department of Defense Budget Estimates for FY 2019*, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/fy2019_m1.pdf.

more difficult to measure). The retirement pension accrual is determined each year by the DoD Office of the Actuary as a percentage of basic pay (known as the Normal Cost Percentage or NCP). In the most recent publicly available report, the Office of the Actuary estimated that the NCP for personnel in the old “High-3” retirement system is 32.3 percent, and the NCP for personnel in the new system is 23.7 percent.¹⁶ The weighted total NCP is 28.4 percent.¹⁷ As more personnel begin to fall under the new retirement system, the total NCP will approach the NCP of the new retirement system. Using these values, the estimated savings (cost avoidance) in the retirement accrual for FY 2019 is roughly \$2 billion, which more than offsets the \$1.2 billion cost of matching contributions. However, these values could change substantially in the future if the retention patterns, retirement savings rates, and retirement behaviors of service members deviate from what the Office of the Actuary is using in its models.

Operation and Maintenance

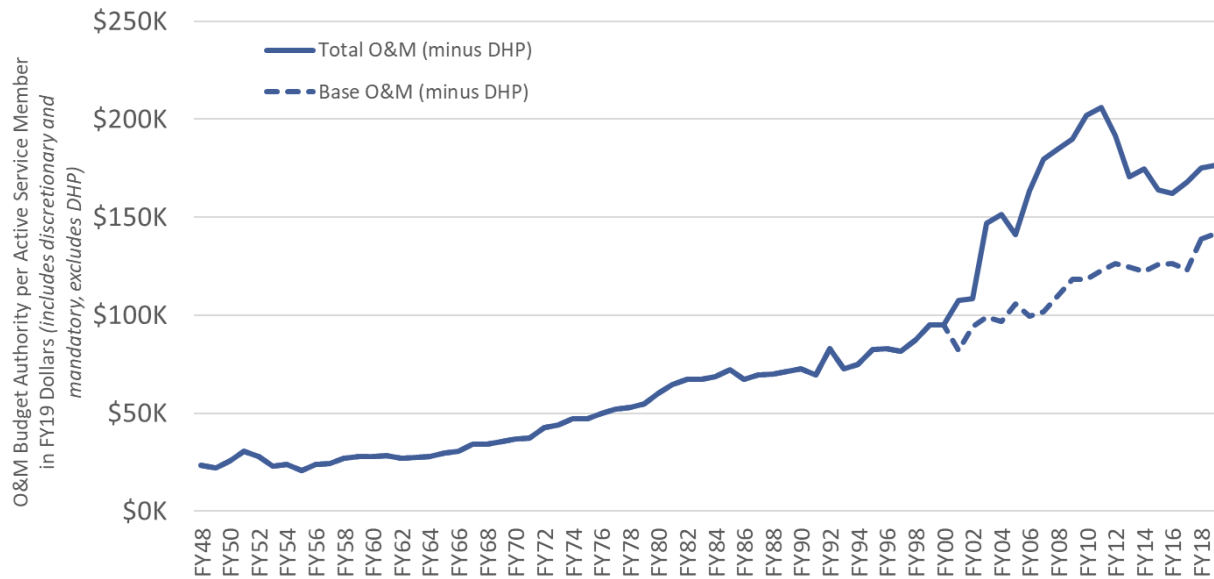
The FY 2019 request includes a total of \$284 billion for O&M, \$49 billion of which is designated as OCO funding. As discussed previously, some of this is used for “enduring” base budget activities and is not due to the incremental costs of operations in Iraq, Syria, and Afghanistan. The O&M budget also includes \$34 billion for the Defense Health Program, which is analyzed in the previous section as part of military compensation costs.

O&M costs, when normalized for the size of the force, have grown steadily over time. As shown in Figure 10, the O&M cost per active service member (excluding the Defense Health Program) grew at a compounded annual rate of 3.4 percent above inflation from the FY 1955 through FY 2000. During the 2000s, O&M costs grew at an even faster rate due to the wars in Iraq and Afghanistan. But even if all OCO funding is excluded, the base budget O&M cost per active service member continued growing at a rate of 2.1 percent above inflation. This suggests that the military will need an O&M budget that grows roughly 2 to 3 percent above inflation each year just to maintain the same size force in the future.

¹⁶ DoD Office of the Actuary, *Valuation of the Military Retirement System - September 30, 2016*, 19, [https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20\[June%202018\].pdf?ver=2018-06-08-092814-117](https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20[June%202018].pdf?ver=2018-06-08-092814-117).

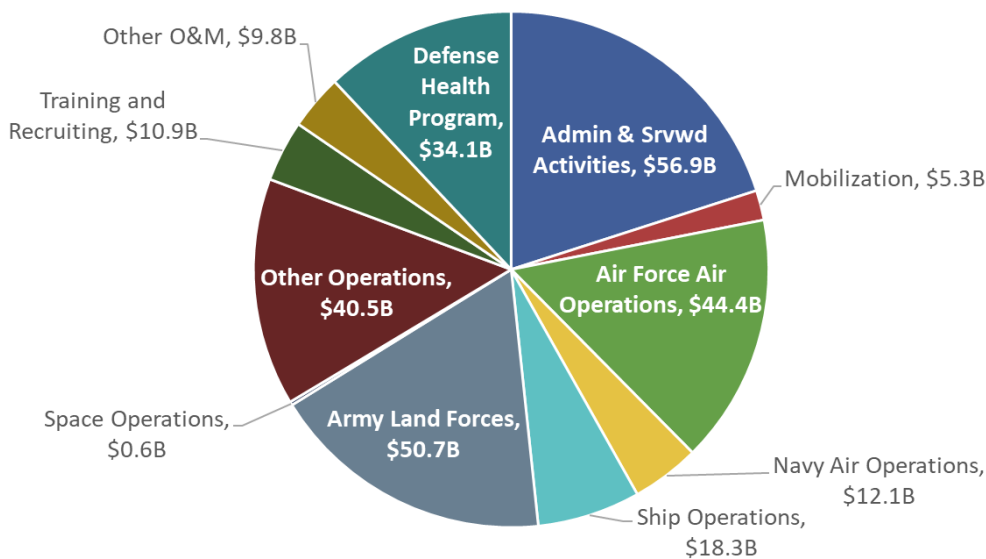
¹⁷ DoD Office of the Actuary, *Valuation of the Military Retirement System - September 30, 2016*, 5, [https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20\[June%202018\].pdf?ver=2018-06-08-092814-117](https://actuary.defense.gov/Portals/15/Documents/MRF%20ValRpt%202016%20[June%202018].pdf?ver=2018-06-08-092814-117).

Figure 10: O&M Budget Authority per Active Service Member



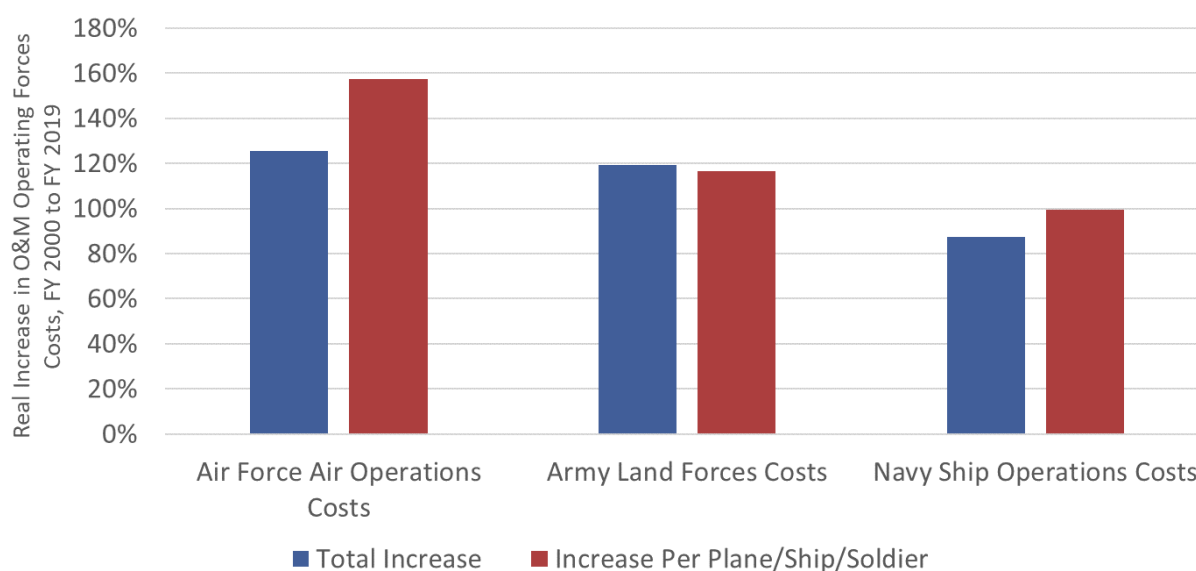
The fastest growing area of the O&M budget over the past two decades, not including the Defense Health Program, has been funding for operating forces. As shown in Figure 11, operating forces accounts make up 59 percent of the total O&M budget. Operating forces include air operations, ship operations, land forces, space operations, and other operations accounts. In theory, these costs should scale with the size of the force and the operational tempo. Funding for these accounts surged during the height of the wars in Iraq and Afghanistan, but as war-related operations subsided, funding did not return to pre-war levels. Moreover, the overall size of the force declined from FY 2013 to FY 2017, but funding for operating forces did not decline in proportion.

Figure 11: DoD O&M Budget in the FY 2019 Request by Activity



As shown in Figure 12, funding for operating forces generally increased (adjusting for inflation) from FY 2000 to FY 2019. The largest increases over this period were in Air Force air operations (125 percent) and Army land forces (119 percent), while the only area to decline in funding was Air Force space operations (-62 percent). Adjusting for changes in force structure, the rise in operating forces costs is even more pronounced. For example, on a per plane basis, the Air Force’s cost of air operations is 157 percent higher in the FY 2019 request than it was in FY 2000, the Army’s land forces operating costs per active duty soldier is 117 percent higher, and the Navy’s ship operations costs on a per ship basis is 99 percent higher (all adjusted for inflation).

Figure 12: Increases in O&M Operating Forces Costs, FY 2000 to FY 2019

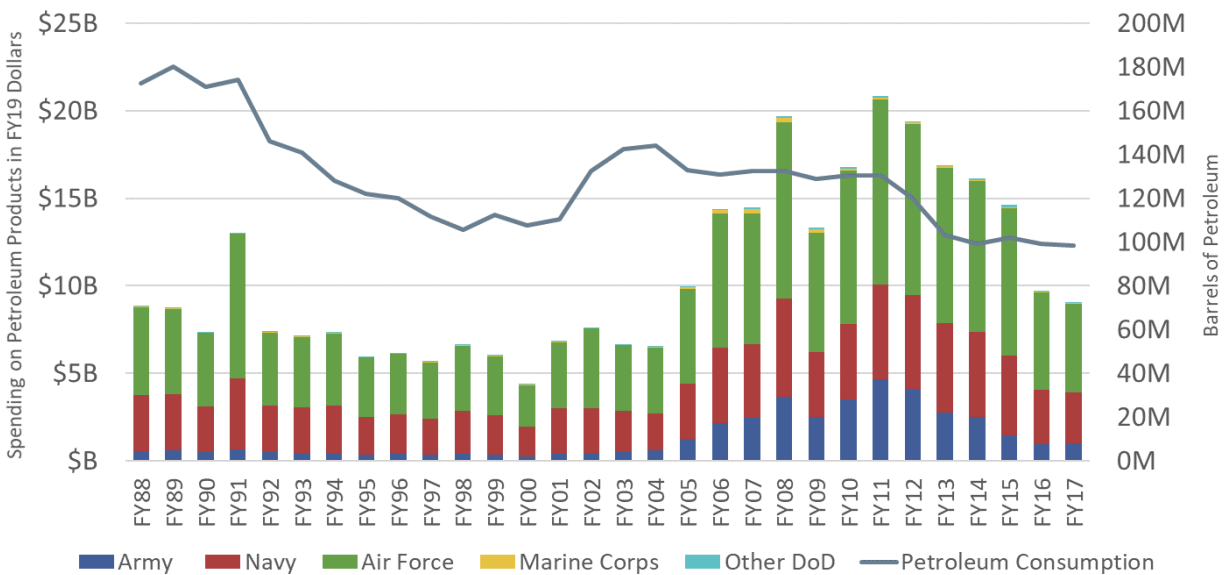


One of the cost drivers for operating forces is fuel. The Services buy fuel through the Defense Logistics Agency, which negotiates contracts on behalf of all of DoD. In FY 2017, the most recent data available, DoD spent \$8.8 billion dollars and consumed more than 98 million barrels of petroleum,¹⁸ or 1.4 percent of total consumption in the United States.¹⁹ As shown in Figure 13, both consumption and spending on petroleum have declined markedly in recent years. During the peak years of operations in Iraq and Afghanistan (FY 2002 through FY 2012), DoD consumed an average of 132 million barrels per year. However, spending on petroleum products, which varied during this time due to fluctuations in the price of petroleum, reached a peak in FY 2011 of \$18.4 billion (or \$20.9 billion in FY 2019 dollars). DoD remains sensitive to the price of oil today, as every increase of one dollar in the price of a barrel of petroleum increases DoD’s fuel costs by roughly \$100 million.

¹⁸ Defense Logistics Agency Energy, *Fiscal Year 2017 Fact Book*, 29, http://www.dla.mil/Portals/104/Documents/Energy/Publications/E_Fiscal2017FactBookLowRes2.pdf?ver=2018-03-29-073051-897.

¹⁹ U.S. Energy Information Administration, “How much oil is consumed in the United States?”, April 4, 2018, <https://www.eia.gov/tools/faqs/faq.php?id=33&t=6>.

Figure 13: DoD Petroleum Consumption and Spending



The costs of training and recruiting is one of only a few areas in the O&M budget that has declined in recent years. Funding for these activities fell by 4.5 percent in real terms from FY 2000 to FY 2019. One component of training—professional military education (PME)—has come under renewed scrutiny because it is criticized in the NDS. The NDS states that “PME has stagnated, focused more on the accomplishment of mandatory credit at the expense of lethality and ingenuity.”²⁰ The NDS calls for a new emphasis in PME on “intellectual leadership and military professionalism in the art and science of warfighting.”

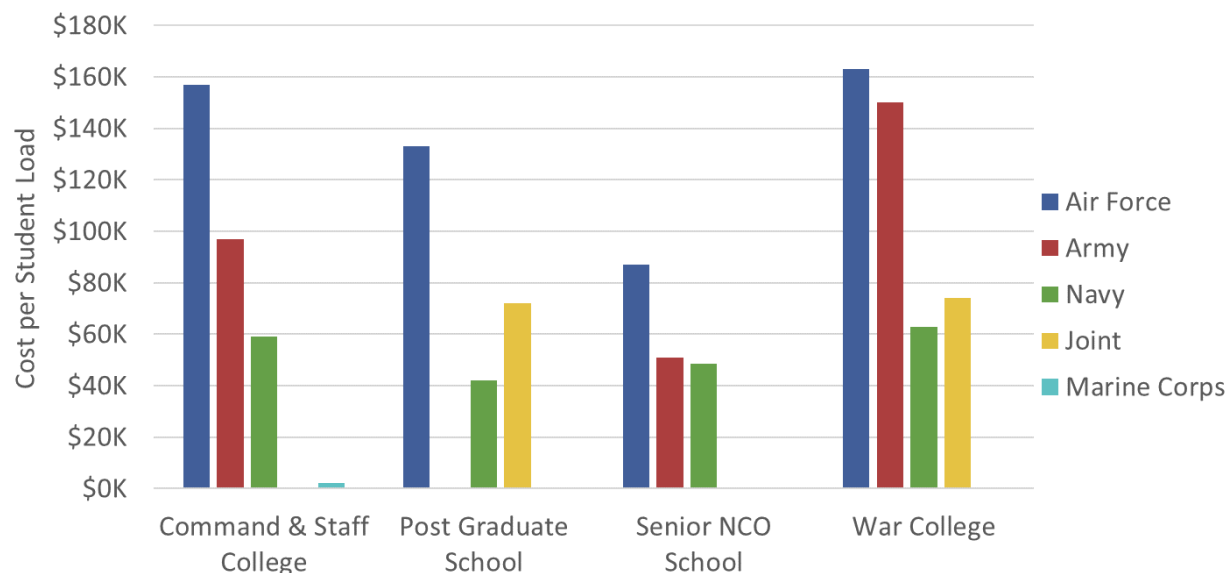
DoD maintains four separate war colleges, five command and staff colleges, and three senior enlisted schools, in addition to multiple post graduate schools, such as the Air Force Institute of Technology, the Naval Postgraduate School, and the Eisenhower School for National Security and Resource Strategy. The costs of PME, however, vary significantly across these institutions. As shown in Figure 14, the Air Force spends the most across the four main types of PME institutions. The cost per student load²¹ at the Air Command and Staff College, for example, is 62 percent higher than at the Army

²⁰ U.S. Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military’s Competitive Edge*, 8, <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.

²¹ Student load is a normalizing metric used by DoD when reporting the costs of PME in the PB-24 budget justification documents. It accounts for the length of different courses by normalizing costs on a per student-year basis.

Command and General Staff College and 166 percent higher than the Naval Command and Staff College. The most expensive PME course is the Air War College at \$163,000 per student load.²²

Figure 14: Cost of PME by Course Type and Service



Acquisitions

Unlike compensation and O&M funding, which have generally risen over time, acquisition costs tend to be cyclic and in phase with the overall defense budget. Procurement funding, shown in blue in Figure 15, tends to increase sharply when the overall budget is increasing and decline sharply when the overall budget is declining. In the most recent budget cycle, total procurement funding grew by 202 percent in real terms from its low in FY 1997 to the peak in FY 2008. Most of this increase, however, was in OCO funding and was used to procure equipment for the wars in Iraq and Afghanistan, such as missiles and munitions, up-armored vehicles, and drones. The base budget for procurement increased by just 82 percent over the same period. Procurement funding declined from FY 2008 to FY 2013, driven largely by reductions in war-related procurements, but it has since recovered. The base

²² PME costs can be found in the following DoD budget justification documents:

Air Force:

<https://www.saffm.hq.af.mil/Portals/84/documents/FY19/OM/Air%20Force%20Operations%20and%20Maintenance%20Vol%20II%20FY19.pdf?ver=2018-02-12-184429-337>

Army: <https://www.asafm.army.mil/documents/BudgetMaterial/FY2019/oma-v2.pdf>

Defense-Wide:

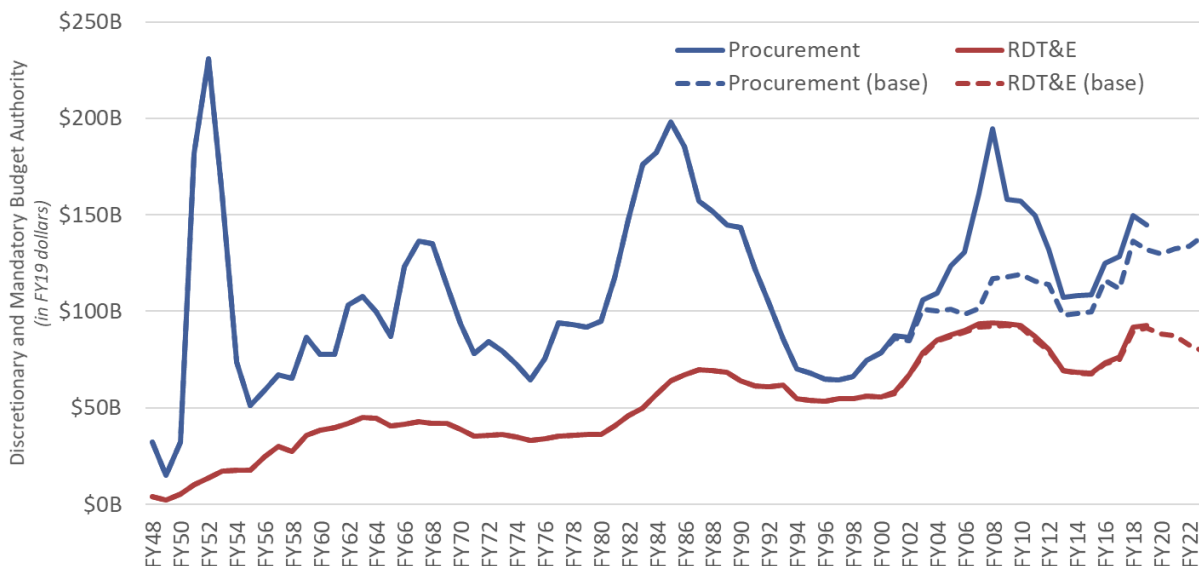
https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/budget_justification/pdfs/01_Operation_and_Maintenance/O_M_VOL_2/PB-24.pdf

Navy: http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/OMN_Vol2_book.pdf

Marine Corps: http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/OMMC_Vol2_Book.pdf

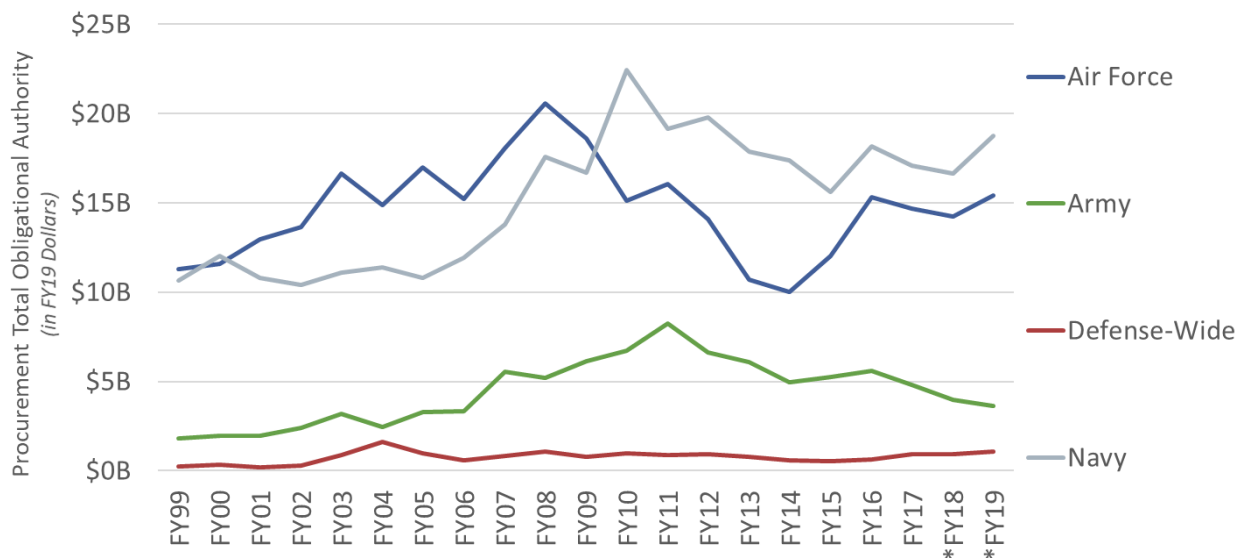
procurement budget is now well above the previous peak and is projected to continue growing over the FYDP.

Figure 15: Acquisition Funding



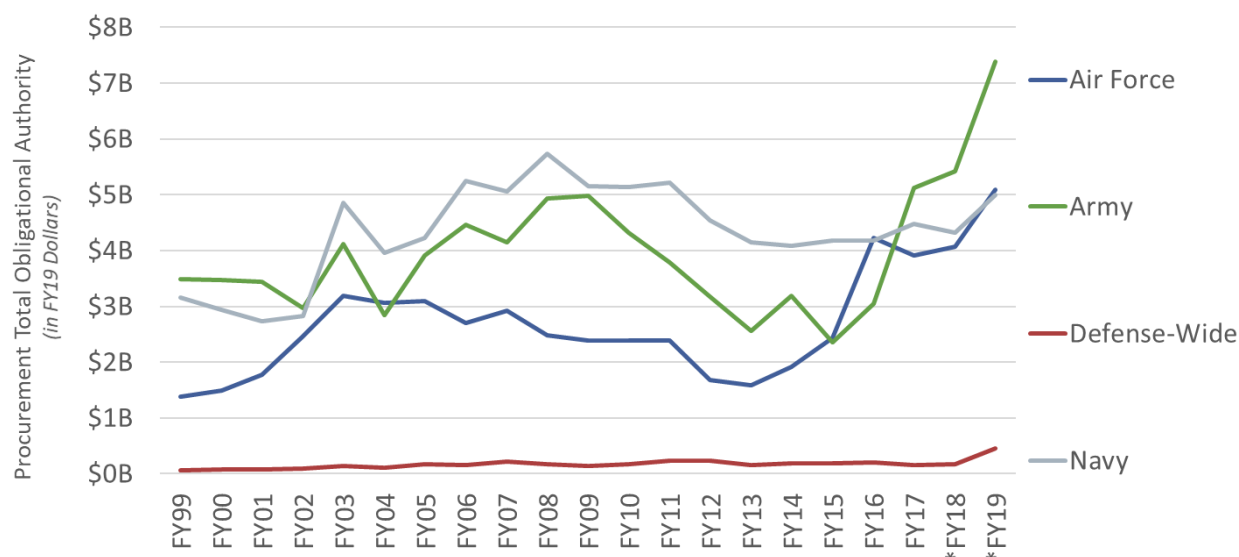
Within the procurement budget, different types of weapon systems have fared differently over the past two decades. Aircraft procurement funding is increasing, as shown in Figure 16, and it continues to be one of the largest areas of procurement funding. Since FY 2010, the Navy has spent more than the Air Force on aircraft procurement each year—a trend that continues in the FY 2019 request. Army aircraft procurement continues to decline in FY 2019, down by more than half from the peak reached in FY 2011.

Figure 16: Aircraft Procurement Funding



Funding for missiles and munitions, shown in Figure 17, is growing as well. Army procurements of missiles and munitions is up sharply in the FY 2019 request, more than tripling since FY 2015. This increase is driven by a ramp-up in production of the Guided Multiple Launch Rocket System (GMLRS) and the Patriot PAC-3 Missile Segment Enhancement (MSE).

Figure 17: Missiles and Munitions Procurement Funding



Two other areas of particular interest in the FY 2019 procurement budget are classified funding and space funding. Nearly all classified procurement funding is in the Air Force’s budget. As shown in Figure 18, classified procurement funding proved especially resilient during the most recent downturn in the defense budget, holding steady at around \$20 billion per year (in FY 2019 dollars). Classified procurements are on the rise again in the FY 2019 request, growing to more than \$23 billion—the highest level in more than 20 years. In contrast, space procurement funding continues to decline in the FY 2019 request to its lowest level in 12 years.

Figure 18: Classified Procurement Funding

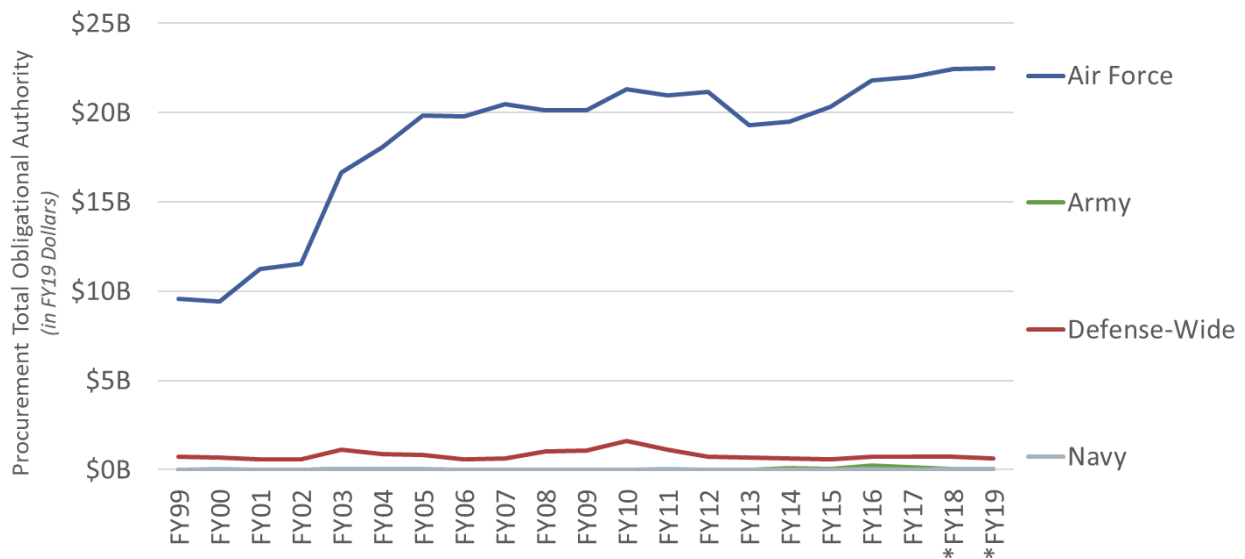
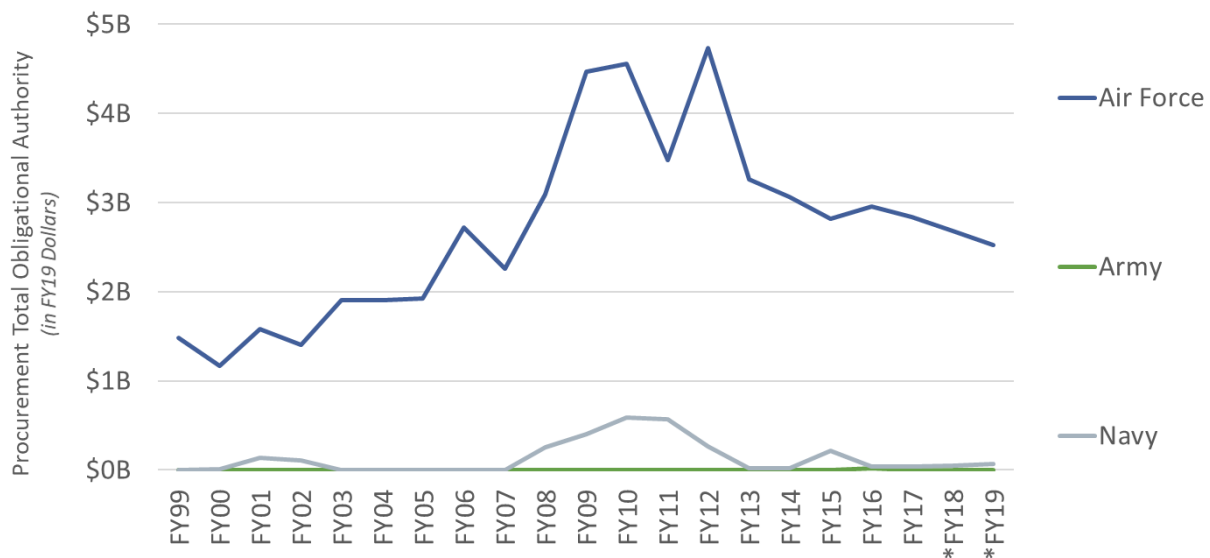


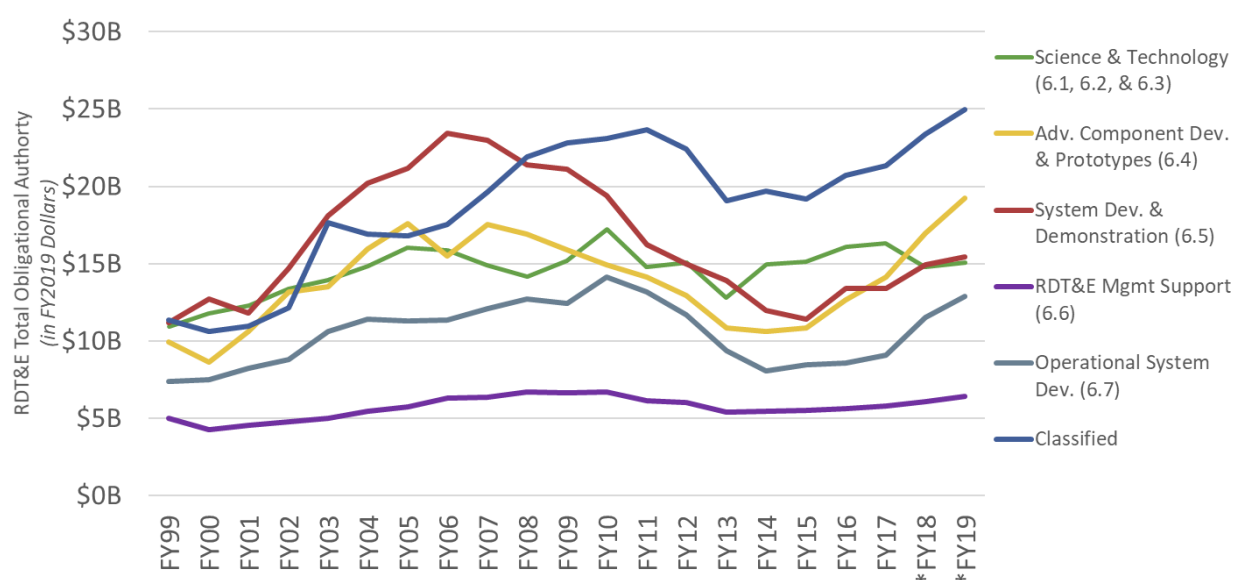
Figure 19: Space Procurement Funding



Funding for research, development, test, and evaluation (RDT&E) follows a different pattern than procurement. Recent trends indicate that RDT&E funding rises when the overall defense budget increases, but when the overall budget falls, RDT&E funding tends to decline only modestly. In the most recent budget cycle, RDT&E declined by 28 percent—the largest percentage decline in RDT&E since the end of World War II. However, RDT&E has since recovered, and the FY 2019 request for RDT&E is near the previous peak level of funding reached in FY 2008. Despite the renewed emphasis on innovation and modernization in the NDS, the FYDP projects that RDT&E funding in the base budget will decline by 13 percent in real terms through FY 2023.

The increase in RDT&E funding in the FY 2019 request is not evenly distributed across the Services. The Air Force receives the largest share of the increase, growing by 38 percent in real terms from FY 2017 to FY 2019, an increase of \$12 billion.²³ In comparison, RDT&E funding grows by 15 percent in the Army and just 1 percent in the Navy over the same period. The increase is also concentrated in specific types of RDT&E activities, as shown in Figure 20. Operational systems development (6.7) increases by 42 percent from FY 2017 to FY 2019 (adjusting for inflation), and advanced component development and prototypes (6.4) increases by 36 percent. In addition, classified RDT&E funding grows by 17 percent to a new inflation-adjusted high in the FY 2019 request.

Figure 20: RDT&E Funding by Budget Activity

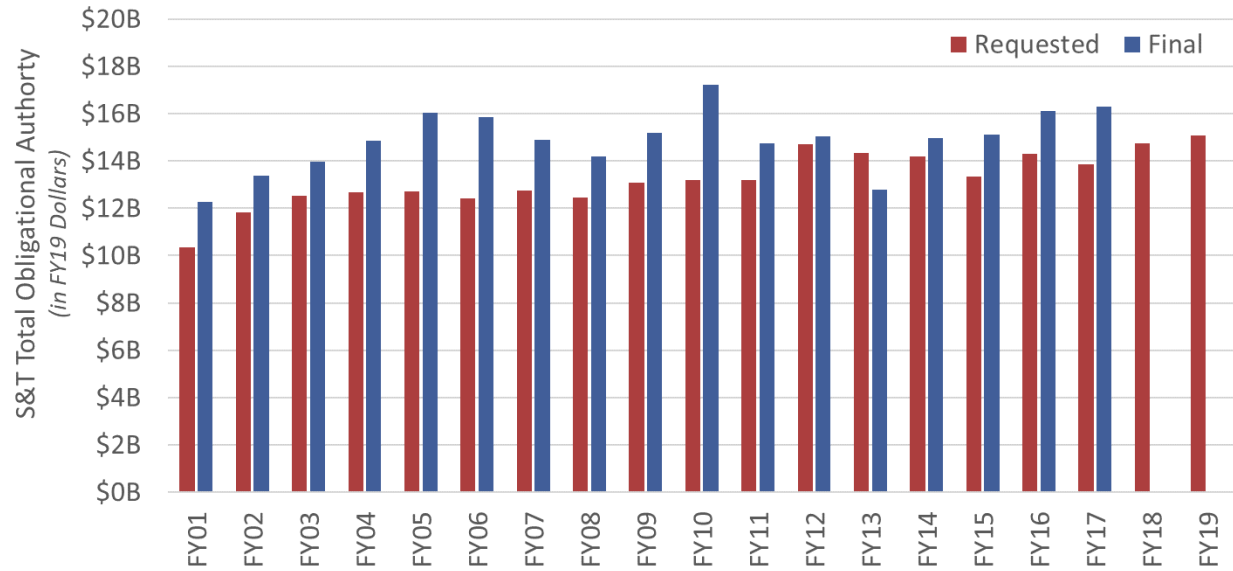


Overall funding for science and technology (S&T)²⁴ is lower in the FY 2019 request, driven by a 16 percent real reduction in funding for applied research (6.2) from the level enacted in FY 2017. S&T funding has traditionally been somewhat immune to the overall defense budget cycle. As a result, S&T funding has hovered around \$15 billion (in FY 2019 dollars) for nearly two decades. S&T funding is also somewhat unique because Congress consistently adds funding above the requested level. As shown in Figure 21, Congress added more S&T funding than was requested by DoD in 16 of the past 17 years. The only exception is FY 2013, the year in which sequestration was triggered.

²³ FY 2017 is used for comparison because it is the most recent year for which enacted funding is shown by DoD in its budget justification documents. The FY 2018 figures listed in the FY 2019 request are what was requested for that year, not what was ultimately enacted.

²⁴ S&T funding is the combination of basic research (6.1), applied research (6.2), and advanced technology and development (6.3).

Figure 21: Requested versus Final Unclassified S&T Funding



A more detailed discussion of the funding, status, and plans for major acquisition programs is included in the following chapter.

3 | Major Acquisition Programs

This chapter reviews the status, funding, and future plans of select major acquisition programs in the FY 2019 request. The programs are grouped into functional categories: aircraft, shipbuilding, air and missile defense, missiles and munitions, space, ground systems, and communications and electronics. Unless otherwise noted, information on the systems below is from DoD's *Program Acquisition Cost by Weapon System*, Service and DoD procurement and RDT&E justification books, and the Defense Technical Information Center's (DTIC) DoD Congressional Budget Data website.

Aircraft

AH-64E APACHE

RDT&E: \$0.2M | **PROCUREMENT:** \$1,271.1M

The FY 2019 budget request provides \$1.3 billion in funding for the Apache attack helicopter, a parallel new build and remanufacture effort. The budget requests \$343 million for the procurement of 12 new aircraft in the third year of a five-year multiyear procurement (MYP) contract and \$928 million to upgrade 48 existing AH-64D aircraft to the AH-64E configuration. The request also provides funding for the continued installment of the Target Acquisition Designation Sight (TADS) and Pilot Night Vision Sensors (PNVS) and other safety and reliability improvements. The program plans to buy 10 additional new aircraft from FY 2020-2021.

B-21 RAIDER

RDT&E: \$2,314.2M

In FY 2019, the Air Force is requesting \$2.3 billion for the continued development of its next-generation bomber, the B-21. Previously known as the Long Range Strike - Bomber, the B-21 will be optionally manned, be able to penetrate sophisticated air defense systems, and carry a substantial (but not publicly disclosed) payload. The bomber program is expected to begin fielding aircraft in the mid-2020s with a total planned procurement of at least 100 aircraft. The budget calls for \$11.6 billion in RDT&E over the remainder of the FYDP, and procurement funding is not yet shown.

C-130J HERCULES

RDT&E: \$48.0M | **PROCUREMENT:** \$1,523.9M

The administration is requesting \$1.6 billion in FY 2019 to begin a multiyear procurement (MYP) contract for the C-130J Hercules, a joint acquisition program designed to modernize U.S. tactical airlift capability. The request provides \$1.5 billion in procurement funding for several C-130J variants with a range of missions including: combat delivery (C-130J); search and rescue (HC-130J); special operations (MC-130J); and air-to-air refueling and tactical transport capability, airborne radio relay,

ISR, and close air support for the Marine Corps (KC-130J). The program provides funding for a total of 10 C-130J aircraft in FY 2019 and another 43 over the remainder of the FYDP.

CH-47 CHINOOK

RDT&E: \$159.5M | **PROCUREMENT:** \$148.5M

The FY 2019 budget request provides \$123.5 million in procurement base funding for the recapitalization of 6 MH-47G aircraft—the Special Operations Aviation variant of the Chinook—and \$25 million in OCO funding to replace one lost MH-47G. The budget additionally requests \$159.5 million in RDT&E for the continued development of the CH-47F Block II configuration, which is currently in Engineering and Manufacturing Development (EMD) and will provide increased lift, improved engine control, upgraded drive train components, and advanced flight controls. The EMD phase is expected to lead to a Milestone C decision in FY 2021 by producing three production representative test articles.

CH-53K HEAVY LIFT REPLACEMENT HELICOPTER

RDT&E: \$326.9M | **PROCUREMENT:** \$1,274.9M

The budget requests \$1.6 billion in FY 2019 for the CH-53K program, a marinized heavy-lift helicopter that replaces the CH-53E. The CH-53K provides the Marine Corps with an expeditionary heavy-lift capability that allows for the transport of armored vehicles, equipment, and personnel from ships to deep inland. The Marine Corps procured six helicopters between FY 2017-FY 2018 and is seeking \$1.1 billion for the procurement of 8 in FY 2019. The Service plans to procure an additional 61 helicopters over the course of the FYDP and 123 after FY 2023.

COMBAT RESCUE HELICOPTER

RDT&E: \$457.7M | **PROCUREMENT:** \$680.2M

The FY 2019 request provides \$1.1 billion for the Combat Rescue Helicopter program, which will replace the HH-60G as the Air Force's primary combat search and rescue helicopter. The budget includes \$680.2 million for the procurement of 10 aircraft in low rate initial production ahead of a Milestone C decision in the third quarter of FY 2019. The program ultimately plans to procure 103 aircraft in total.

E-2D ADVANCED HAWKEYE

RDT&E: \$223.6M | **PROCUREMENT:** \$952.7M | **SPARES:** \$12.5M

The E-2D provides command and control, air and missile sensing, and surveillance and tracking capabilities for the Navy. The FY 2019 request provides \$742.7 million for the procurement of 4 aircraft in the first year of a MYP contract with an additional 8 to be procured between FY 2020 and FY 2021. Additionally, the Navy is requesting \$223.6 million for continued development and replacement of radar and other aircraft systems on the Hawkeye.

F/A-18E/F SUPER HORNET

PROCUREMENT: \$1,996.4M

The FY 2019 budget request includes \$1.9 billion for the procurement of 24 F/A-18E/F Super Hornet aircraft in the first year of a three-year MYP contract for the Navy. The contract will procure 72 aircraft over the three-year period (FY 2020 – FY 2021) with 38 additional aircraft planned for FY 2022 - FY2023. In 2018, the Navy requested 14 Super Hornets, but Congress appropriated funding for an additional 10 aircraft. The FY 2019 request also includes \$58.8 million in advanced procurement funding.

F-15 EAGLE

RDT&E: \$330.0M | **PROCUREMENT:** \$695.8M | **SPARES:** \$41.3M

The administration is requesting \$1.1 billion in FY 2019 for modernization of the Air Force's fleet of F-15 strike fighters. The request provides \$695.8 million in procurement that includes funding for radar modernization, the Eagle Passive Active Warning Survivability System (EPAWSS), processor upgrades, the Infrared Search and Track (IRST) system, and other upgrades. The budget also provides \$330.0 million in RDT&E for avionics upgrades that support radar modernization and IRST capabilities and on-going EPAWSS development.

F-22 RAPTOR

RDT&E: \$603.6M | **PROCUREMENT:** \$259.7M | **SPARES:** \$3.7M

The FY 2019 request provides \$867.0 million for the F-22, including \$259.7 million in procurement for modernization and sustainment programs and necessary support equipment and spares. The request also provides \$603.6 million in RDT&E for software upgrades, sensor enhancements, on-going testing, GPS upgrades, and other classified development efforts.

F-35 JOINT STRIKE FIGHTER

RDT&E: \$1,262.0M | **PROCUREMENT:** \$8,798.5M | **SPARES:** \$632.0M

The F-35 Joint Strike Fighter is a joint acquisition program producing separate variants for the Air Force, Navy, and Marine Corps. The FY 2019 budget request provides \$8.8 billion for the procurement of 77 total aircraft: 48 for the Air Force F-35A Conventional Take-Off and Landing variant, 9 for the Navy F-35C Carrier variant, and 20 for the Marine Corps F-35B Short Take-Off and Vertical Landing variant. In FY 2018, Congress appropriated funding for a total of 86 aircraft (56 F-35A, 8 F-35C, 22 F-35B), 16 more than originally requested. The FY 2019 request also includes \$1.3 billion for continued development and \$632 million for spares. While the F-35A and F-35B reached initial operational capability (IOC) in 2016 and 2015, respectively, the F-35C was not expected to reach IOC until August

2018, although there are now concerns that it may not reach IOC until 2019.²⁵ The program is projected to reach full rate production in FY 2021.

H-1 PROGRAM: AH-1Z VIPER/UH-1Y VENOM

RDT&E: \$58.1M | **PROCUREMENT:** \$820.8M

The administration is requesting \$878.9 million in FY 2019 for the H-1 program, the next generation of attack and utility helicopters for the Marine Corps, replacing the AH-1W and UH-1N. The AH-1Z and UH-1Y provide superior speed, range, and payload at a reduced total ownership cost compared to their predecessors. The Navy seeks \$820.8 million for the procurement of 25 AH-1Z aircraft in FY 2019, slightly higher than the 22 aircraft requested in FY 2018.

KC-46A TANKER

RDT&E: \$88.2M | **PROCUREMENT:** \$2,559.9M | **SPARES:** \$365.0M

In FY 2019, the administration is requesting \$3.0 billion for the KC-46A Tanker. The KC-46A, a variant of the Boeing 767-2C commercial aircraft, will replace roughly a third of the existing KC-135 tanker fleet, while future programs will recapitalize the entire tanker fleet over a period of more than 30 years. The request provides \$2.6 billion for the procurement of 15 aircraft with a total planned buy of 175 aircraft. The first KC-46A is expected to be delivered in October 2018, a delay of more than a year from the original delivery date.²⁶

MQ-1C GRAY EAGLE

PROCUREMENT: \$114.7M

The MQ-1C Unmanned Aircraft System (UAS) is the Army's platform for providing intelligence, surveillance, reconnaissance, attack, and command and control. It is based on the MQ-1B Predator and includes a synthetic aperture radar to identify and track moving targets on the ground, a communications relay package, and greater weapons carrying capability. The administration is requesting \$43.3 million in the base budget and \$60.0 million in the OCO budget for the procurement of 10 aircraft in total. It also seeks \$11.4 million in procurement funding for the continued development of advanced MQ-1 Payload sensors.

²⁵ Ben Werner, "Schedule at Risk for Navy F-35C Fighters to be Combat Ready by End of Year," *USNI News*, March 29, 2018, <https://news.usni.org/2018/03/29/current-schedule-risk-navy-f-35c-fighters-combat-ready-end-year>.

²⁶ Valerie Insinna, "Here's when the US Air Force will get its first KC-46 tanker," *Defense News*, June 20, 2018, <https://www.defensenews.com/air/2018/06/20/heres-when-the-air-force-will-get-its-first-kc-46/>; Lara Seligman, "Boeing's KC-46 Tanker Will Miss Major Deadline," *Defense News*, May 27, 2016, <https://www.defensenews.com/breaking-news/2016/05/27/boeing-s-kc-46-tanker-will-miss-major-deadline/>.

MQ-4C TRITON, RQ-4 GLOBAL HAWK, & NATO AGS

RDT&E: \$507.5M | **PROCUREMENT:** \$654.1M

The MQ-4C performs high-altitude, long-endurance maritime ISR missions for the Navy, while both the Air Force and NATO partners use the RQ-4 for high-altitude, near-real-time, high-resolution ISR capabilities. The administration is requesting \$1.2 billion for the joint acquisition program, including \$507.5 million total in RDT&E funding for the three systems. The RDT&E funding includes \$51.5 million for the continued development of the NATO AGS variant. The Navy's budget request funds the procurement of 3 MQ-4Cs in FY 2019 on top of the 9 that Congress appropriated funding for in FY 2018. The Navy plans to procure 14 additional UAS over the remainder of the FYDP.

MQ-9 REAPER

RDT&E: \$138.2M | **PROCUREMENT:** \$773.5M

The Air Force's MQ-9 Reaper UAS provides medium altitude, long endurance, over-the-horizon reconnaissance and strike capabilities. The FY 2019 request provides \$911.7 million total for the joint acquisition program between the Air Force and SOCOM. It includes \$221.7 million in the Air Force base budget and \$339.7 million in the OCO budget for the procurement of 29 aircraft and \$187.5 million for modifications and payloads. SOCOM funding provides \$18.4 million in RDT&E and \$24.6 million in procurement for the development and purchase of SOF-specific capabilities for the MQ-9.

MQ-25 STINGRAY

RDT&E: \$683.9M

The primary mission of the MQ-25 Stingray carrier-based UAS is to conduct aerial refueling for the Navy, and its secondary mission is conducting ISR. Prior to January 2016, the aircraft had been funded under the Unmanned Carrier Launched Airborne Surveillance and Strike (UCLASS) program. The MQ-25 has an IOC of 2024-2026, and on August 30, 2018 the Navy selected Boeing as the prime contractor for this aircraft.²⁷

P-8A POSEIDON

RDT&E: \$197.7M | **PROCUREMENT:** \$1,983.8M | **SPARES:** \$37.4M

In FY 2019, the Navy is requesting \$2.2 billion for the P-8A Poseidon to replace the existing fleet of P-3s. The P-8A is a modified Boeing 737 commercial airliner that provides maritime patrol, anti-submarine warfare, anti-surface warfare, and ISR capabilities. The FY 2019 request provides \$1.8 billion for the procurement 10 aircraft and \$180 million in advanced procurement for FY 2020 when the Navy plans to procure 9 additional aircraft.

²⁷ U.S. Department of Defense, Press Operations, Release No: CR-168-18, *Contracts for Aug. 30, 2018*, August 30, 2018, <https://dod.defense.gov/News/Contracts/Contract-View/Article/1617374/>.

PRESIDENTIAL AIRCRAFT RECAPITALIZATION

RDT&E: \$673.0M

The Presidential Aircraft Recapitalization program will replace the existing Air Force One aircraft, a VC-25A Boeing 747-200, with the VC-25B, a modified Boeing 747-8. In FY 2018 and prior years, the program has already received \$1.0 billion in RDT&E funding, which included the procurement of the two airframes to be modified under the program. The budget request projects that the program will need \$2.9 billion in funding over the next five years, and an unspecified amount of funding will be needed beyond FY 2023.

UH-60 BLACK HAWK

RDT&E: \$157.8M | **PROCUREMENT:** \$1,262.3M

The administration is requesting \$1.3 billion for the procurement of 50 UH-60M helicopters and the upgrade of 18 existing UH-60A helicopters to the UH-60V configuration. The UH-60M variant provides air assault, general support, command and control, and aeromedical evacuation capabilities. FY 2019 marks the first year of upgrades for the UH-60A to the UH-60V, previously known as UH-60L Digital. The upgraded UH-60V aircraft will have an integrated digital map, integrated performance planning, and common functionality and training with the UH-60M. The request also provides \$157.8 million in continued development for the Black Hawk. The Army plans to procure 165 helicopters over the remainder of the FYDP.

V-22 OSPREY

RDT&E: \$161.6M | **PROCUREMENT:** \$1,118.5M

The administration is requesting \$1.2 billion in FY 2019 for the V-22 Osprey, a joint acquisition program producing tilt-rotor, vertical lift aircraft for the Navy, Marine Corps, and SOCOM. The request provides funding for 7 CMV-22 variant aircraft for the Navy in the second year of a 7-year multiyear procurement contract as well as \$37 million in advanced procurement funding. Procurement of the SOCOM variant aircraft (CV-22) stopped in FY 2017, and no further purchases are planned. The FY 2019 Air Force budget provides \$60 million for modifications of the CV-22.

VH-92A PRESIDENTIAL HELICOPTER

RDT&E: \$245.1M | **PROCUREMENT:** \$649.0M

The FY 2019 request provides \$894.1 million for the VH-92A Presidential Helicopter, which replaces the legacy VH-3D and VH-60N. The budget requests \$649.0 million in procurement funding for the low rate initial production of six helicopters. It also provides \$245.1 million in RDT&E for continuing EMD phase activities. A Milestone C decision on the program is expected in the second quarter of FY 2019.

Shipbuilding

CVN-78 FORD-CLASS AIRCRAFT CARRIER

RDT&E: \$108.2M | **PROCUREMENT:** \$1,657.6M

The administration is requesting \$1.8 billion to fund the second year of construction costs on the USS *Enterprise* (CVN-80), the third of the Gerald R. Ford-class, and continued development of ship systems. The *Enterprise* is expected to be delivered to the Navy in the end of FY 2027, while CVN-79, the USS *John F. Kennedy*, is scheduled to be delivered in FY 2024. The 2019 NDAA passed in August 2018 granted authority to the Navy for the procurement of the fourth carrier in the class, the CVN-81.

DDG-51 ARLEIGH BURKE-CLASS DESTROYER

RDT&E: \$213.4M | **PROCUREMENT:** \$5,772.2M

The FY 2019 request provides \$5.9 billion for the procurement of three Flight III DDG-51 destroyers, one more than the number of vessels procured in FY 2017 and FY 2018. FY 2019 marks the second year of a five-year MYP contract for ten destroyers total. The Flight III destroyers are equipped with the air and missile defense radar (AMDR) developed by Raytheon. The first of this variant, the USS *Jack H. Lucas* (DDG-125) is expected to be delivered in 2023.²⁸

EXPEDITIONARY SEA BASE

PROCUREMENT: \$650.0M

The Expeditionary Sea Base (ESB) is a multi-mission vessel that serves as a mobile staging base. The ESB, formerly known as the Mobile Landing Platform Afloat Forward Staging Base, provides aviation facilities, berthing, and command and control capabilities. The budget requests funds for the procurement of one ESB in FY 2019, and the Navy plans to procure one additional ESB in FY 2020 for a total of seven vessels.

JOHN LEWIS-CLASS OILER

RDT&E: \$1.3M | **PROCUREMENT:** \$1,085.3M

The FY 2019 request provides \$977.1 million in funding for the procurement of two T-AO 205 John Lewis-class fleet replenishment oilers to replace the T-AO 187 fleet oiler class. The John Lewis-class are designed with double-hulls like commercial oil tankers to prevent oil spills. The Navy ultimately plans to procure 20 T-AO oilers, with the first ship expected to be delivered in FY 2020. The FY 2019 request additionally provides \$75.0 million in advanced procurement and \$1.3 million in RDT&E.

²⁸ David B. Larter, “Doubts linger as US Navy preps to order 10 more Flight III destroyers,” *Defense News*, January 4, 2018, <https://www.defensenews.com/digital-show-dailies/surface-navy-association/2018/01/04/doubts-linger-as-us-navy-preps-to-order-10-more-flight-iii-destroyers/>.

LITTORAL COMBAT SHIP (LCS)

RDT&E: \$162.8M | **PROCUREMENT:** \$1,091.6M

In FY 2019, the administration is requesting \$1.3 billion for the procurement, outfitting, and support equipment of one LCS and continued development.²⁹ Two classes of the LCS—the Freedom-class and Independence-class—are distinguishable from one another by the unique trimaran hull design of the Independence class. Despite only requesting the procurement of two of the small surface combatants in FY 2018, Congress authorized and appropriated funding for three ships. Congress similarly authorized the procurement of an additional LCS in the FY 2019 NDAA, a move to which the administration “strongly objects.”³⁰ Numerous concerns have been raised over the LCS program, including issues of cost growth, design, and construction as well as doubts over the ship’s armaments and survivability.³¹ A January 2018 report from the DoD Office of the Director of Operational Test and Evaluation found that testing of the LCS demonstrated “that neither LCS variant is survivable in high intensity combat.”³² In April, reports suggested that the Navy may not deploy any LCS in 2018, due to a high percentage of the vessels undergoing maintenance availabilities.³³ The LCS will be replaced as the Navy’s primary small surface combatant with the procurement of the new FFG(X) frigate that is planned to begin in FY 2020.

SSBN COLUMBIA-CLASS SUBMARINE

RDT&E: \$704.9M | **PROCUREMENT:** \$3,005.3M

The FY 2019 request provides \$3.7 billion in funding for the Columbia-class submarine, the program intended to replace the *Ohio* class ballistic missile submarine (SSBN) fleet. It provides \$3.0 billion in advanced procurement for equipment and components with long lead times. The request also includes \$704.9 million in continued development. Construction of the first boat is scheduled to begin in October of 2021, and the first delivery is expected in FY 2027. Worries whether the program will stick to that schedule have arisen following the discovery of faulty welding on missile tubes that were

²⁹ Funds also include cost-to-complete for prior year ships.

³⁰ Executive Office of the President, Office of Management and Budget, *Statement of Administration Policy: Substitute Amendment to H.R. 6157 Department of Defense Appropriations Act 2019* (Washington, DC 2018), https://insidedefense.com/sites/insidedefense.com/files/documents/2018/aug/08152018_sap.pdf.

³¹ U.S. Library of Congress, Congressional Research Service, *Navy Littoral Combat Ship (LCS) Program: Background and Issues for Congress*, by Ronald O’Rourke, RL33741 (2018), <https://fas.org/sgp/crs/weapons/RL33741.pdf>; Jared Keller, “The Navy Basically Just Admitted That The Littoral Combat Ship Is A Floating Garbage Pile,” *Task and Purpose*, August 12, 2018, <https://taskandpurpose.com/navy-littoral-combat-ship-problems/>.

³² U.S. Department of Defense, Office of the Director, Operational Test and Evaluation, *FY17 Navy Programs: Littoral Combat Ship (LCS)* (Washington, DC 2017), <http://www.dote.osd.mil/pub/reports/FY2017/pdf/navy/2017lcs.pdf>.

³³ Megan Eckstein, “Navy May Not Deploy Littoral Combat Ships This Year,” *USNI News*, April 11, 2018, <https://news.usni.org/2018/04/11/navy-may-not-deploy-littoral-combat-ships-year>.

manufactured by a subcontractor on the project, BWXT, Inc.³⁴ The missile tubes in question are also designed for the Virginia-class SSN submarine as well as the United Kingdom's Dreadnought-class submarine.³⁵

SSN-774 VIRGINIA-CLASS SUBMARINE

RDT&E: \$145.6M | **PROCUREMENT:** \$7,300.8M

The administration is requesting \$7.4 billion for the Virginia-class nuclear-powered attack submarine, a vessel equipped with advanced stealth capabilities that can operate in both deep and littoral waters. The request funds the procurement of two ships in the first year of a five-year MYP contract in addition to providing \$1.8 billion in advanced procurement.

T-ATS TOWING, SALVAGE, AND RESCUE SHIP

PROCUREMENT: \$80.5M

FY 2019 request provides \$80.5 million for the procurement of one Towing, Salvage, and Rescue Ship (T-ATS). The T-ATS class vessels will replace the existing T-ATF Fleet Ocean Tugs and T-ARS Salvage Ships once they reach the end of their service lives beginning in 2020 and 2025, respectively. The Navy plans to procure 5 additional T-ATS ships over the remainder of the FYDP.

Air and Missile Defense

ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)

RDT&E: \$93.9M | **PROCUREMENT:** \$552.8M | **SPARES:** \$5.3M

The administration is requesting a total of \$652.0 million for the AMRAAM missile, an all-weather, all-environment radar guided missile that serves as the standard weapon for the military's beyond visual range intercept capabilities against high-speed enemy targets. The Air Force's FY 2019 budget request provides \$337.9 million in base funding and \$2.6 million in OCO for the procurement of 222 missiles, while the Navy is requesting \$211.1 million in base funding and \$1.2 million in OCO for the procurement of 141 missiles.

AEgis BALLISTIC MISSILE DEFENSE

RDT&E: \$863.3M | **PROCUREMENT:** \$805.8M

The Aegis Ballistic Missile Defense (BMD) serves as the naval component of the military's Ballistic Missile Defense System (BMDS), providing ballistic missile detection and tracking capabilities as well as midcourse and terminal phase interception. The administration is requesting \$1.7 billion in FY 2019

³⁴ David B. Larter, "The US Navy's top acquisition priority stumbles out of the gate," Defense News, August 6, 2018, <https://www.defensenews.com/breaking-news/2018/08/06/the-us-navys-top-acquisition-priority-stumbles-out-of-the-gate-after-bad-welds-discovered-in-missile-tubes/>.

³⁵ Ibid.

for the Aegis BMD Program. The request provides \$593.4 million for the procurement of 37 SM-3 IB missiles in the first year of a five-year MYP contract as well as 6 SM-3 Block IIA missiles. Additionally, it provides \$115.2 million in advanced procurement funding for SM-3 Block IB components and \$97.1 million for Aegis BMD hardware and software. The budget also includes \$863.3 million in RDT&E for the Aegis BMD flight test program as well as the integration of the SM-3 Block IIA missile into the Aegis BMD system.³⁶

AIR INTERCEPT MISSILE(AIM)-9X

RDT&E: \$77.3M | **PROCUREMENT:** \$199.6M | **SPARES:** \$17.0M

The AIM-9X, also known as the SIDEWINDER, is a joint acquisition program for short range air-to-air missiles for the Navy and Air Force. The FY 2019 budget request provides \$77.3 million for continued development of the missile, \$121.3 million for the procurement of 256 missiles for the Air Force, and \$78.3 million for the procurement of 192 missiles for the Navy. The 448 total weapons requested is a 9 percent decrease from the number of missiles requested in FY 2018. In FY 2020 and beyond, the Air Force plans to buy an additional 1,027 missiles and the Navy plans to procure another 1,258 missiles.

GROUND-BASED MIDCOURSE DEFENSE (GMD)

RDT&E: \$1,577.8M | **PROCUREMENT:** \$524.0M

The FY 2019 request provides \$2.1 billion for the Ground-based Midcourse Defense component of the BMDS, which provides the ability to intercept long-range ballistic missiles in the midcourse phase with the Ground-based Interceptor (GBI). It includes \$1.6 billion in RDT&E for the continued development of the GMD program, improved homeland defense sensors, the GMD test program, and the multi-object kill vehicle. A total of \$524.0 million is requested in procurement to support the deployment of 20 additional silos and GBIs at Fort Greely, AK.

PATRIOT/PAC-3/MSE

RDT&E: \$185.7M | **PROCUREMENT:** \$1,444.5M | **SPARES:** \$27.7M

The Patriot air and missile defense system protects against tactical ballistic missiles, cruise missiles, and aircraft. The FY 2019 request includes a total of \$1.7 billion in funding, \$313.2 million of which is in procurement for modifications and the integration of the system into the Integrated Air and Missile Defense architecture. The budget also requests \$1.1 billion to procure 240 PAC-3/MSE missiles, \$260 million of which is funded through OCO.

³⁶ The FY 2019 request also provides \$15.0 million in procurement and \$23.0 million in RDT&E for the Aegis Ashore program.

STANDARD MISSILE-6 (SM-6)

RDT&E: \$55.8M | **PROCUREMENT:** \$615.9M | **SPARES:** \$20.7M

The SM-6 is an extended range, air defense missile for AEGIS cruisers and destroyers, serving as the primary fleet defense against a variety of manned and unmanned aerial vehicles and cruise missiles. The FY 2019 program initiates a five-year MYP contract for the procurement of 125 missiles per year for FY 2019 through FY 2023.

TERMINAL HIGH ALTITUDE AREA DEFENSE (THAAD)

RDT&E: \$275.2M | **PROCUREMENT:** \$874.1M

THAAD system provides the ability to intercept ballistic missiles in the late mid-course and terminal phases of flight as part of the BMDS. The administration is requesting \$874.1 million in FY 2019 for the procurement of 82 interceptors and additional support costs. The budget request also provides \$275.2 million for continued development, software upgrades, and testing. The budget plans the procurement of a total of 122 interceptors in FY 2020 and beyond.

Missiles and Munitions

GROUND BASED STRATEGIC DETERRENT (GBSD)

RDT&E: \$345.0M

The GBSD program is developing the replacement for the aging Minuteman III intercontinental ballistic missile as the ground-based leg of the nuclear triad. The administration is seeking \$345 million in FY 2019 for continued development of this weapon system, and the annual funding for GBSD is projected to grow rapidly over the FYDP to more than \$3 billion in RDT&E funding in FY 2023. The program is currently in the Technology Maturation and Risk Reduction phase with two companies under contract. The Air Force plans to down select to one prime contractor for Engineering Manufacturing and Development as early as FY 2020, and the first missiles are expected to be ready for deployment by FY 2029.

GUIDED MULTIPLE LAUNCH ROCKET SYSTEM

RDT&E: \$154.1M | **PROCUREMENT:** \$1,013.6M

The administration is requesting \$1.2 billion for the Guided Multiple Launch Rocket System (GMLRS), a surface-to-surface missile capable of being fired from the M142 High Mobility Artillery Rocket System (HIMARS) and the M270AI Multiple Launch Rocket System (MLRS). Two variants of the missile exist: the GMLRS Unitary is used against precisely located point targets while the GMLRS Alternative Warhead (AW) engages area and imprecise targets. A third cluster munition variant previously existed, but production ended with the June 2008 DoD Policy on Cluster Munitions and Unintended Harm to Civilians. The FY 2019 Army request includes \$359.6 million in base funding and \$624.5 million in OCO for the procurement of 9,450 missiles while the Marine Corps requests \$29.5 million for 283 missiles.

HELLFIRE MISSILE

PROCUREMENT: \$625.3M

The HELLFIRE II is a family of air-to-ground missiles equipped with a semi-active laser terminal guidance system for precision strike capability against heavy, advanced armor and other targets. Over 80 percent of the funding provided in the FY 2019 request for the HELLFIRE II falls under the OCO budget. The Army is requesting \$255.0 million in OCO for the procurement of 2,684 missiles, while the Navy is requesting 1.5 million in OCO funding for 23 missiles. The Air Force's request is split between the base and OCO budgets; it seeks \$113.8 million in base funding and \$255.0 million in OCO for a total of 4,338 missiles. The total request for 7,045 missiles across the three services is a decrease from the FY 2018 request for 7,664 missiles and an increase above the 6,797 procured in FY 2017.

JAVELIN ADVANCED ANTI-TANK WEAPON SYSTEM

RDT&E: \$10.6M | **PROCUREMENT:** \$337.8M

The Javelin is a precision weapon used by dismounted soldiers against a variety of targets, including armored vehicles, fortifications, and personnel. The missile is fired from a reusable command launch unit (CLU). The FY 2019 request provides \$337.8 million for the procurement of 789 Javelin missiles as well as \$10.6 million for the development of a lightweight CLU.

JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)

RDT&E: \$60.1M | **PROCUREMENT:** \$492.3M | **SPARES:** \$0.4M

JASSM is a long-range standoff cruise missile delivered by fighter or bomber aircraft. The JASSM-Extended Range (ER) variant can travel 500 nautical miles, 300 farther than the baseline JASSM. The JASSM-ER is currently integrated on the B-1 and B-52 with plans to integrate the missile on F-15E, F-16, and B-2 platforms by FY 2020. The FY 2019 request provides for the procurement of 360 JASSM-ER missiles, the same number requested in FY 2018. The JASSM was used for the first time in combat against targets in Syria in April 2018.³⁷

JOINT DIRECT ATTACK MUNITION (JDAM)

RDT&E: \$15.8M | **PROCUREMENT:** \$1,153.6M

The administration is requesting \$1.2 billion in FY 2019 for the JDAM, a joint Air Force and Navy acquisition program led by the Air Force. The JDAM converts existing general-purpose gravity bombs into more accurate, weather-resistant munitions by installing a GPS/inertial navigation guidance capability. The Laser JDAM (LJDAM) variant, which adds a laser sensor kit to the standard JDAM system, provides the ability to attack moving targets. The FY 2019 request provides the Air Force with \$234.2 million in base funding and \$738.5 million in OCO for the procurement of 36,000 JDAM kits. The

³⁷ Oriana Pawlyk, "DoD Officials Erred About Weapons, Fighters Used in Syria Strike Mission," *Military.com*, April 19, 2018, <https://www.military.com/defensetech/2018/04/19/dod-officials-erred-about-weapons-fighters-used-syria-strike-mission.html>.

Navy requests a total of 7,594 JDAM kits funded by \$87.9 million in the base budget and \$93.0 million in OCO. The total request for 43,594 JDAMs represents a 26 percent increase above the FY 2018 request.

JOINT AIR-TO-GROUND MISSILE (JAGM)

RDT&E: \$18.6M | **PROCUREMENT:** \$300.6M

The JAGM is a precision-guided weapon for use against both moving and fixed land and naval targets, including armored vehicles and maritime patrol craft. The FY 2019 request provides \$276.5 million for the procurement of 1,046 JAGM missiles for the Army and \$24.1 million for the procurement of 75 missiles for the Navy. The Navy plans to procure 763 missiles over the course of the FYDP, while the Army plans to procure 5,695 over the same period.

LONG RANGE ANTI-SHIP MISSILE (LRASM)

RDT&E: \$143.1M | **PROCUREMENT:** \$125.4M | **SPARES:** \$0.3M

The LRASM is a semi-autonomous, precision-guided anti-ship missile designed to target enemy surface combatants. The LRASM is a joint acquisition program between the Navy and Air Force that transitioned from DARPA to Navy leadership 2014. The missile is expected to be integrated with the B-1 bomber by the end of FY 2018 and the F/A-18E/F by the end of the FY 2019. The FY 2019 request provides \$143.1 million for continued development, \$81.2 million in Navy procurement for 25 missiles, and \$44.2 million in Air Force procurement for 12 missiles. The Navy plans to procure an additional 50 missiles from FY 2020 - FY 2021, and the Air Force does not plan to procure any additional missiles.

LONG RANGE STAND-OFF MISSILE (LRSO)

RDT&E: \$615.0M

The LRSO is a new nuclear cruise missile to replace the Air Launched Cruise Missile (ACLM). It is a long-range standoff weapon capable of surviving advanced integrated air defense systems. The FY 2019 request is a 36 percent increase above the FY 2018 requested level and funds development, design, and planning for test, integration, qualification, and nuclear certification activities. An Engineering Manufacturing and Development contract is expected to be awarded in FY 2022 following a Milestone B decision.

ROLLING AIRFRAME MISSILE

RDT&E: \$26.3M | **PROCUREMENT:** \$96.2M

The Rolling Airframe Missile is designed to be a close-in defense against anti-ship cruise missiles. The request provides \$96.2 million for the procurement of 120 Block II RIM-116C missiles, which are deployed on a compact 21 missile launcher. The FYDP projects that missile production will increase over the coming years to 270 per year by FY 2022.

SMALL DIAMETER BOMB (SDB) I

PROCUREMENT: \$245.7M | **SPARES:** \$8.0M

The FY 2019 request provides \$105 million in base funding and \$141 million in OCO funding for the procurement of 6,826 Increment I Small Diameter Bombs. The SDB I is a precision-guided air-to-ground weapon capable of being delivered by fighter or bomber aircraft from medium-range standoff or close air support against fixed targets.

SMALL DIAMETER BOMB (SDB) II

RDT&E: \$177.6M | **PROCUREMENT:** \$192.2M

The SDB II is a precision-guided air-to-ground weapon capable of being delivered from both fighter and bomber aircraft against mobile and fixed targets from a medium-range standoff position in adverse weather. Whereas the SDB I is used to attack fixed targets, the SDB II is capable of hitting both mobile and stationary targets due to a tri-mode seeker equipped with radar, infrared homing, and semi-active laser guidance.³⁸ The FY 2019 request provides \$177.6 million in continued development and \$192.2 million in procurement to complete the Engineering and Manufacturing Development (EMD) phase and for Low Rate Initial Production.

TRIDENT II BALLISTIC MISSILE

RDT&E: \$157.7M | **PROCUREMENT:** \$1,078.8M

The administration is requesting \$1.2 billion in FY 2019 for the Trident II (D-5) Ballistic Missile. Carried on the nuclear-powered Ohio-class submarine (SSBN). The Trident plays a vital role in the nuclear triad by providing a survivable second-strike capability. The request funds modifications for the D5 Life Extension Program, which will extend the service life of the missile through 2042. FY 2019 funding will aid redesign efforts for the Trident guidance system and missile electronics packages in addition to procuring components to support the extended SSBN hull life.

Space

ADVANCED EXTREMELY HIGH FREQUENCY (AEHF)

RDT&E: \$151.5M | **PROCUREMENT:** \$29.8M

The FY 2019 budget request provides \$181.3 million for the AEHF program, a four-satellite constellation that provides worldwide, survivable, jam-resistant secure communications. AEHF is backward compatible with the legacy Milstar satellite constellation that it is replacing and provides significantly higher data throughput, data rates, and jam resistance.³⁹ Currently, three AEHF satellites

³⁸ Defense Industry Daily Staff, “Moving Target: Raytheon’s GBU-53 Small Diameter Bomb II,” *Defense Industry Daily*, July 2, 2018, <https://www.defenseindustrydaily.com/Raytheon-Wins-USAs-GBU-53-Small-Diameter-Bomb-Competition-06510/>.

³⁹ Gunter’s Space Page, 2018, https://space.skyrocket.de/doc_sdat/aehf-1.htm.

are operational in geosynchronous orbit, while a fourth is expected to launch in the first quarter of FY 2019. The fifth and sixth satellites are currently being procured under a fixed-price, block buy contract as part of the DoD's Efficient Space Procurement (ESP) program. They are expected to launch in the fourth quarter of FY 2019 and second quarter of FY 2020, respectively. AEHF RDT&E funding supports the Space Modernization Initiative to develop affordable and resilient systems to help meet demand for protected SATCOM capabilities.

EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV)

RDT&E: \$245.4M | **PROCUREMENT:** \$1,704.5M

The EELV program provides launch vehicles for medium- to heavy-class satellites. Procurement funding for the program is currently organized under two separate line items: one for launch capability (\$710.0 million) that includes funding for systems and factory engineering, integration and testing, infrastructure, and launch and range activities, and another for launch services (\$994.6 million), which funds five launches that are planned to be competitively awarded. The budget justification notes that in FY 2020 the line items will be combined into a single EELV procurement line item.

GLOBAL POSITIONING SYSTEM (GPS)

RDT&E: \$1,405.2M | **PROCUREMENT:** \$85.5M

The Air Force is requesting \$1.5 billion for the GPS program in FY 2019. The request includes approximately \$1.1 billion in RDT&E funding for the next-generation GPS satellites. The first two GPS III satellites (SV01-SV02) have been declared "Available for Launch," and the first will launch from Cape Canaveral before the end of 2018.⁴⁰ The remaining GPS III satellites (SV03-10) are currently in various stages of production. The Air Force opened contract for the follow-on GPS III satellites (SV11+) for competition, but both Northrop Grumman and Boeing declined to bid, leaving incumbent Lockheed Martin as the sole bidder for the program. The FY 2019 request provides \$451.9 million in RDT&E funding for follow-on development beyond the first ten satellites. The program plans to procure ten GPS III follow-on satellites from FY 2020 to FY 2023 and an additional ten satellites beyond FY 2023.

SPACE-BASED INFRARED SYSTEM (SBIRS)

RDT&E: \$703.7M | **PROCUREMENT:** \$138.4M

The SBIRS program is the next-generation system of missile warning satellites that provides initial warning of strategic missile attack for the United States and its allies. SBIRS is the follow-on system to the Defense Support Program and will field a four-satellite constellation in Geosynchronous Earth Orbit (GEO) and two hosted payloads in Highly Elliptical Orbit (HEO). Currently, four SBIRS-GEO space

⁴⁰ "U.S. Air Force Declares Second Lockheed Martin GPS III Satellite 'Available for Launch'," *Market Watch*, August 21, 2018, <https://www.marketwatch.com/press-release/us-air-force-declares-second-lockheed-martin-gps-iii-satellite-available-for-launch-2018-08-21>.

vehicles are in orbit with the fifth and sixth scheduled to replace GEO-1 and GEO-2 in 2021 and 2022, respectively. The HEO-3 and HEO-4 payloads are currently in orbit. The Air Force is planning to develop the next-generation replacement system for SBIRS amid concerns over the vulnerability of the system.⁴¹ As evidence of this new direction, the Air Force cancelled GEO-7 and GEO-8 and provided \$643.1 billion for the development of the next-generation system in FY 2019.

Ground Systems

AMPHIBIOUS COMBAT VEHICLE (ACV)

RDT&E: \$98.2M | **PROCUREMENT:** \$167.5M

The ACV is a partial and complementary replacement for the Marine Corps' existing Amphibious Assault Vehicle (AAV). The vehicle is an advanced generation armored personnel carrier capable of delivering Marines from ship-to-shore connector craft to littoral penetration points. The FY 2019 request of \$167.5 million in procurement funds the low rate initial production of 30 vehicles with the plan to procure an additional 148 from FY 2020 to FY 2021.

ARMORED MULTI-PURPOSE VEHICLE (AMPV)

RDT&E: \$118.2M | **PROCUREMENT:** \$710.2M

The administration's FY 2019 request provides \$828.4 million for the AMPV, the replacement program for the M113 Armored Personnel Carrier. The AMPV is a general-purpose vehicle capable of several missions, including medical treatment and evacuation, mortar carrier, and mission command. The FY 2019 budget includes \$479.8 million in base funding for the procurement of 131 vehicles and \$230.4 million in OCO for 66 vehicles. The request also funds the completion of the EMD phase as well as testing and verification. The Army plans to procure an additional 612 vehicles over the remainder of the FYDP.

FAMILY OF MEDIUM TACTICAL VEHICLES (FMTV)

RDT&E: \$3.7M | **PROCUREMENT:** \$132.9M

In FY 2019, the Army is requesting \$136.6 million for the FMTV, a family of 2.5- to 5-ton vehicles providing unit mobility and resupply of equipment and personnel across a variety of terrains and climates. Various models perform different mission types ranging from cargo transport and construction to airdrop missions and civil disaster relief. The vehicle can also operate as a platform for the High Mobility Artillery Rocket System (HIMARS) and as a support vehicle for the Patriot missile system. The budget provides \$132.9 million for the procurement of 426 vehicles in FY 2019 with an additional 870 planned through the remainder of the FYDP.

⁴¹ Sandra Erwin, "The end of SBIRS: Air Force says it's time to move on," *Space News*, February 19, 2018, <https://spacenews.com/the-end-of-sbirs-air-force-says-its-time-to-move-on/>.

FAMILY OF HEAVY TACTICAL VEHICLES (FHTV)

RDT&E: \$12.0M | **PROCUREMENT:** \$253.5M

The FY 2019 request provides \$265.5 million for the FHTV, a family of vehicles including 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 FHTV generally provides transportation capabilities for heavy cargo to supply combat vehicles and weapons systems. The FHTV variants perform a range of more specific tasks, including the transportation of specific materials and vehicles, hauling, towing weapons systems, and the recovery of specific vehicles. In FY 2019, the Army is requesting \$138.1 million in base funding for the procurement of 533 vehicles and \$115.4 in OCO for 601 vehicles.

JOINT LIGHT TACTICAL VEHICLE (JLTV)

RDT&E: \$5.0M | **PROCUREMENT:** \$1,956.5M

The JLTV is the replacement for the existing High Mobility Multipurpose Wheeled Vehicle (HMMWV). The vehicle, which passed Milestone C in October 2015, provides multipurpose transport capabilities with scalable armor and vehicle agility. There are two variants: the Combat Support Vehicle and the Combat Tactical Vehicle. In FY 2019, the Army is requesting \$1.3 billion for 3,390 vehicles, the Air Force is requesting \$30.1 million for 81 vehicles, and the Marine Corps is requesting \$607.0 million for 1,642 vehicles. The total request for 5,113 JLTVs is an increase of 84 percent above last year's procurement quantity. The Army plans to procure 11,408 additional vehicles over the remainder of the FYDP while the Marine Corps plans an additional 5,107 vehicles.

M-1 ABRAMS TANK MODIFICATION/UPGRADES

RDT&E: \$164.8M | **PROCUREMENT:** \$2,492.6M

The FY 2019 request provides \$2.7 billion for modifications and upgrades of the M1A2 Abrams, the Army's primary battle tank. The upgrades provide enhanced armor for greater crew survivability, improved computer systems, and improved thermal ranging night capabilities. Other modifications include frontal and side armor upgrades, ammunition rack upgrades, and technology upgrades. The Army will upgrade 135 M1A1 vehicles to the enhanced M1A2SEP v3 variant, 95 funded by \$2.0 billion in the base budget, and 40 funded by \$489.0 million in OCO. The Army plans to upgrade an additional 299 tanks over the remainder of the FYDP.

PALADIN INTEGRATED MANAGEMENT (PIM)

PROCUREMENT: \$418.8M

PIM is an Army modernization program that will ultimately replace the M109 Family of Vehicles, which includes the M109A6 Self Propelled Howitzer and the M992A2 Field Artillery Ammunition Supply Vehicle. PIM addresses obsolescence, size, weight, and power issues in the current M109 fleet. The

program began full-rate production in FY 2018 and requests funding for 36 systems in FY 2019. The Army plans to acquire an additional 235 PIM systems through the remainder of the FYDP.

STRYKER FAMILY OF ARMORED VEHICLES

RDT&E: \$58.9M | **PROCUREMENT:** \$309.4M

The Stryker combat vehicle provides the Army with a rapid, easily deployable, combat-capable response for contingencies. The Stryker comes in two basic versions, the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS), and it is capable of being deployed by the C-130, C-17, and C-5. In FY 2019, the Army requests \$287.5 million for modifications to address obsolescence and reliability issues as well as \$21.9 million to upgrade three vehicles from a flat bottom to a Double V Hull.

Communications and Electronics

WARFIGHTER INFORMATION NETWORK - TACTICAL (WIN-T)

PROCUREMENT: \$531.8M

WIN-T was planned to be the cornerstone of the Army's communications network modernization program, enabling connectivity for mission command on the move by providing satellite, terrestrial, and airborne data links to warfighters. There were originally four increments to WIN-T, each of which would gradually expand the communications capabilities available to warfighters. Increment 1 upgraded the Army's Joint Network Node (JNN) by allowing access to the Wideband Global Satellite constellation. Increment 2 provides networking capability for Army units on the move. In 2017, the Army announced that it planned to end procurement of WIN-T with Increment 2 because of its vulnerabilities to jamming and cyberattacks. It now plans to incorporate some of the capabilities already developed for Increment 3 into Increment 2 terminals. The FY 2019 request provides \$531.8 million to equip two Infantry Brigade Combat Teams (IBCTs) with WIN-T Increment 2 capability; modernize the Increment 2 capability already deployed to four ICBTs, one Stryker Brigade Combat Team (SBCT), and two divisions; and upgrade 76 Increment 1 units.

HANDHELD, MANPACK, AND SMALL FORM FIT RADIO (HMS)

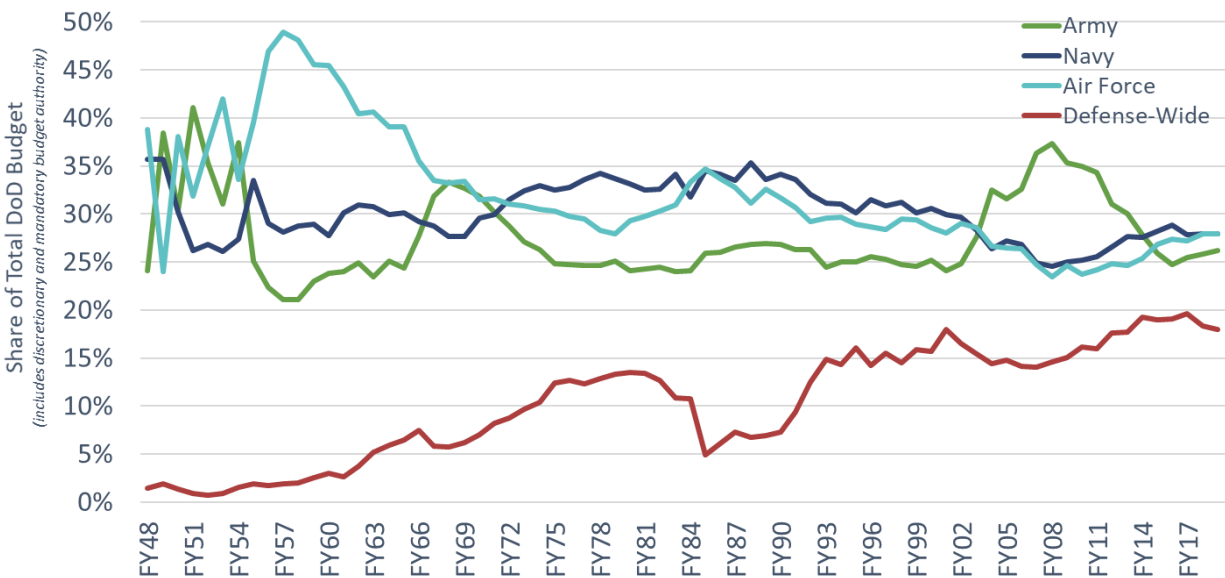
RDT&E: \$3.8M | **PROCUREMENT:** \$351.6M

The HMS program, previously part of the Joint Tactical Radio System (JTRS) program, provides software reprogrammable, networkable, multi-node radios capable of simultaneous voice, data, and video communications. The radios procured under the program provide communications networks to warfighters with on the move or at the halt line of sight and beyond line of sight (SATCOM) communications for dismounted personnel and mounted platforms. The request for FY 2019 funds the open competition process for the contract to produce the two-channel Leader Radio (LR) and the Manpack Radio (MP) and provides \$79.8 million for the procurement of 5,375 LR radios and \$271.8 million for 3,509 MP radios.

4 | Trends in Force Structure and Funding by Service

A persistent myth about the defense budget is that funding is divided into equal shares among the Services with each receiving roughly one-third of the total. As shown in Figure 22, this is not true now nor has it ever been true. The Services' shares of the budget have fluctuated over time in response to changes in defense strategy and overseas military operations. For example, in the late 1950s, as the military increased its nuclear forces under President Eisenhower's "New Look" strategy, the newly-created Air Force garnered nearly half of the overall defense budget. As the nation's involvement in the Vietnam conflict escalated, so too did the Army's share of the budget, rising from 24 percent in FY 1960 to 33 percent in FY 1968. Following the terrorist attacks of 2001, the Army's budget again grew disproportionately, reaching a peak of 37 percent of the total DoD budget in FY 2008. Defense-wide funding has also consumed a greater share of the budget over time, rising to an all-time high of 20 percent FY 2017. Defense-wide funding is separate from the Services' budgets and is used for the Defense Health Program, the Missile Defense Agency, the Office of the Secretary of Defense, and many other defense-wide activities and organizations.

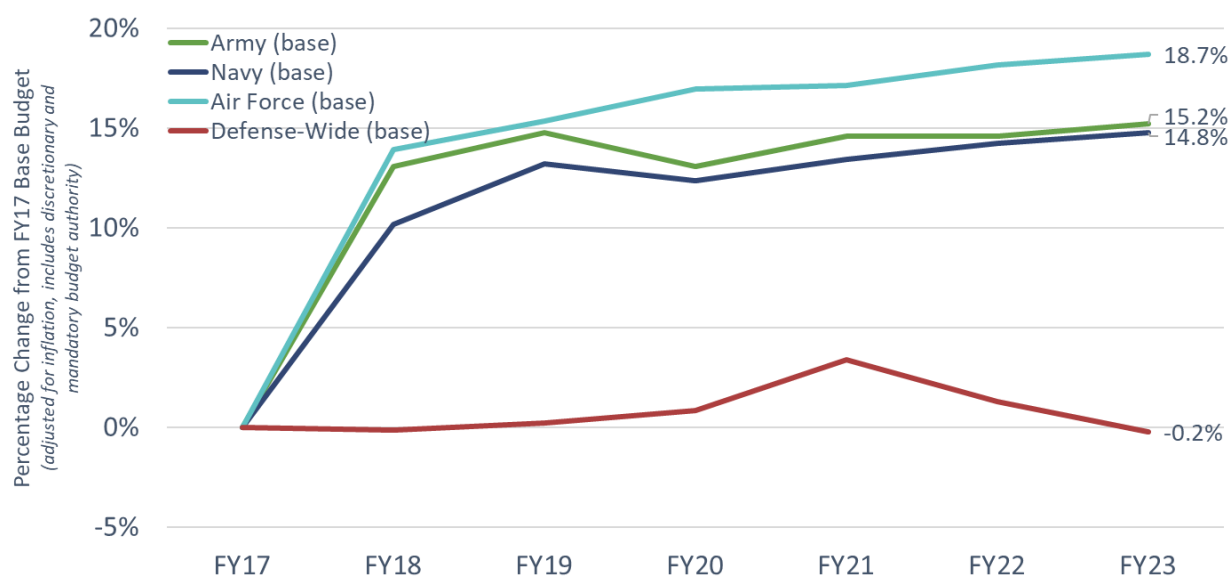
Figure 22: Service Shares of the Total DoD Budget



The FY 2019 budget request and FYDP would alter the Services' shares of budget by growing them at different rates. Figure 23 shows the relative change in each Services' base budget from FY 2017 through FY 2023. The Air Force gains the most, growing nearly 19 percent by FY 2023 (adjusted for inflation) above its FY 2017 base budget, while the Navy and Army grow by 15 percent each. In contrast, defense-wide accounts stay relatively flat from FY 2017 to FY 2023. This reflects an ongoing

effort in both Congress and the administration to limit the so-called “fourth estate” and put more of the budget in the control of the Services. It remains to be seen, however, if DoD will be able to make the reductions necessary to reign in the many agencies, headquarters staff, and other activities that comprise the defense-wide portion of the budget.

Figure 23: Percentage Change in Service Base Budgets from FY 2017 Level

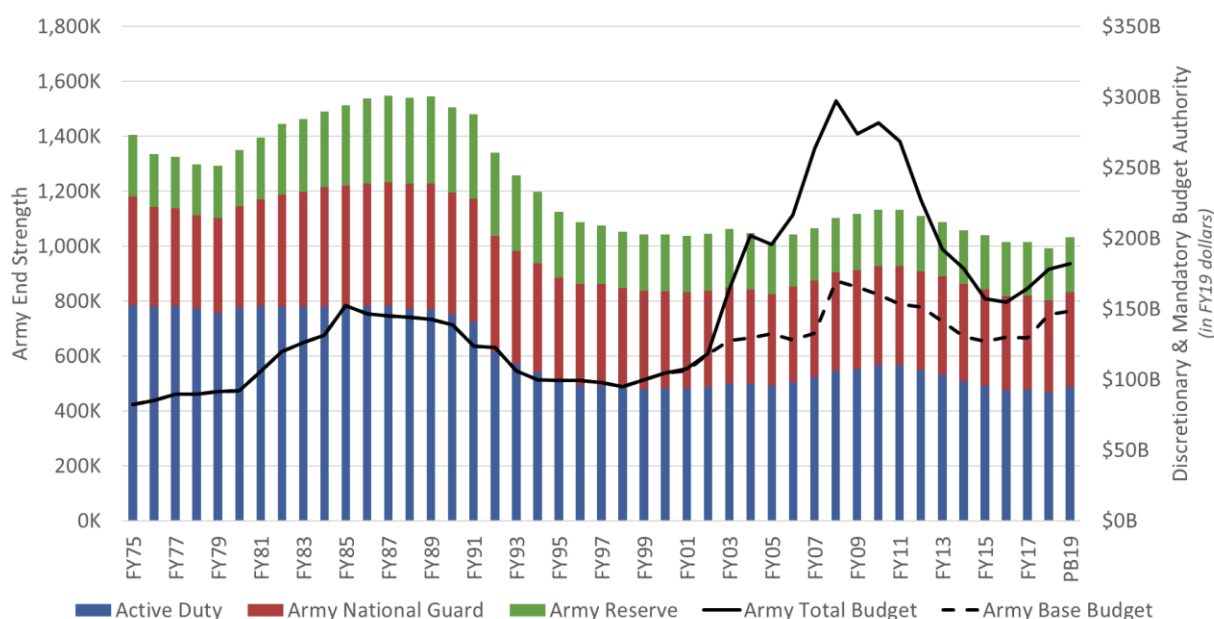


While the Services’ shares of the budget have fluctuated considerably over time, the force structure of each Service has declined since the late 1980s. Despite this downward trend in force structure, funding for each Service is at or above the level it was in the late 1980s (adjusting for inflation). The following sections explore these trends by Service in more detail.

Army

Following the September 11, 2001 (9/11) terrorist attacks, the Army’s overall budget increased by 176 percent between FY 2001 and its peak in FY 2008 (adjusted for inflation). While OCO funding accounted for a significant portion of that increase due to operations in Iraq and Afghanistan, base funding experienced real growth of 60 percent over that same time frame. Army active duty end strength increased more modestly during this time, growing 18 percent between FY 2001 and FY 2010. Total Army end strength (including the Army National Guard and Army Reserve) increased by 9 percent.

Figure 24: Army End Strength and Budget



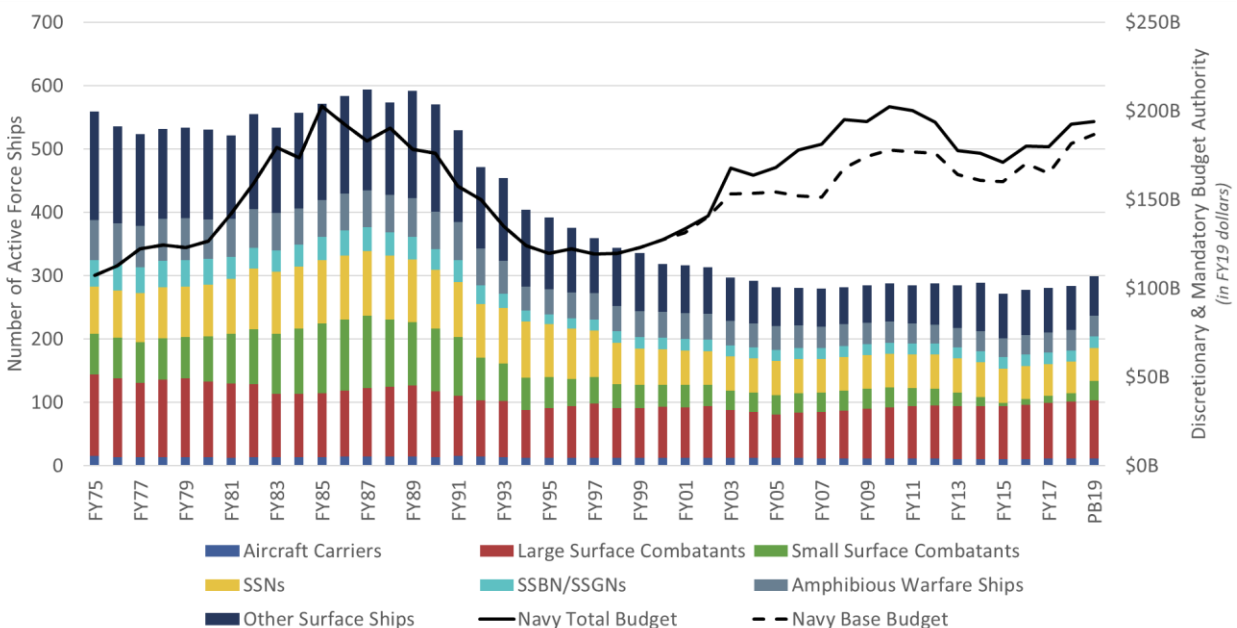
From FY 2010 through the FY 2019 request, the Army’s active duty end strength fell by 14 percent, while overall end strength declined by 9 percent. The Army’s budget, however, decreased by 39 percent from its peak in FY 2008 through the FY 2019 request, or 13 percent if OCO funding is excluded.

Compared to the post-Cold War low in FY 1998, the Army’s base budget in the FY 2019 request is 56 percent higher (or 92 percent if OCO funding is included), yet its total end strength is 2 percent smaller. Viewed from another perspective, the Army’s FY 2019 budget request of \$148.3 billion in base funding would return spending to roughly the level it was near the peak of the Cold War buildup in FY 1986, adjusted for inflation. In contrast, the size of the active duty Army is 38 percent lower than it was in FY 1986, or 33 percent lower if total Army end strength is used for comparison instead.

Navy

Similar to Army funding levels, the Department of the Navy’s budget (which includes funding for the Marine Corps) grew significantly following the 9/11 terrorist attacks, increasing 52 percent (including OCO funding) between FY 2001 and its peak in FY 2010 (adjusted for inflation). Unlike the Army’s increase, the bulk of the Navy’s growth came in the base budget, which grew by 36 percent over the same period. However, the Navy’s force structure, measured by the number of ships in the fleet, declined by 9 percent between FY 2001 and FY 2010.

Figure 25: Navy Active Force Ships and Budget⁴²



The overall size of the fleet has fallen dramatically since its peak of 594 ships (or 568 using the battle force ship counting method) in FY 1987, as shown in Figure 25. Over the course of the Cold War drawdown between FY 1987 and FY 1997, the Navy's force structure declined by 40 percent. The Service's budget fell by a comparable 35 percent over that same period, reaching a low point in FY 1997. Yet, as the Navy base budget increased by 34 percent (44 percent including OCO funding) from FY 1997 to FY 2015, the size of the fleet continued to decrease, falling by another 25 percent. The Navy's base budget of \$160 billion in FY 2015 supported a fleet of 271; the comparable FY 1991 budget of \$158 billion supported a fleet that was nearly twice as large at 529 ships.⁴³

During the presidential campaign and since being sworn into office, the Trump administration has said it intends to grow the Navy's force structure to a fleet of 355 ships.⁴⁴ The budget request progresses towards that goal by increasing the size of the fleet to 299 battle force ships in FY 2019. Moreover, the FY 2019 shipbuilding plan projects a fleet of 326 ships by the end of the FYDP in FY 2023. However, the Navy's thirty-year shipbuilding plan does not project that the fleet will reach 355-ships within the next thirty years. This is mainly due to the planned retirement of vessels that are reaching

⁴² Data for FY 1975-FY 2015 reflects the total number of active ships in the fleet as recorded by the [Naval History and Heritage Command](#) rather than the [total number of battle force ships](#) under [battle force counting procedures](#). The two counting methods are nearly identical from FY 2000 onward. Data for FY 2016-FY 2018 was taken from the [Naval Vessel Register](#) under the battle force ship counting method.

⁴³ The size of the fleet in FY 1991 using the battle force ship counting method was 526 ships, 48 percent larger than the FY 2015 fleet of 271.

⁴⁴ Lena Felton, "Read President Trump's U.S. Naval Academy Commencement Address," *The Atlantic*, May 25, 2018, <https://www.theatlantic.com/politics/archive/2018/05/read-president-trumps-us-naval-academy-commencement-address/561206/>.

the end of their service life. Under the plan, the Navy estimates it will reach a fleet of 355 ships sometime in the 2050s, but it could accelerate that timeline to the 2030s with “additional resources, service life extensions, and strong industry response.”⁴⁵ However, the FY 2019 budget request did not include the additional resources needed to meet this goal.

Apart from the time frame for reaching a 355-ship fleet, one outstanding question is how the Navy plans to fund and maintain a force structure of this size. The last time the Navy operated a fleet of this many ships was FY 1997 when its end strength was 18 percent larger than the end strength requested in FY 2019. Given the trends in personnel and O&M costs previously discussed, the Navy would need a significant increase in funding and end strength to support a 355-ship fleet today—beyond what is projected in the FY 2019 budget and FYDP.

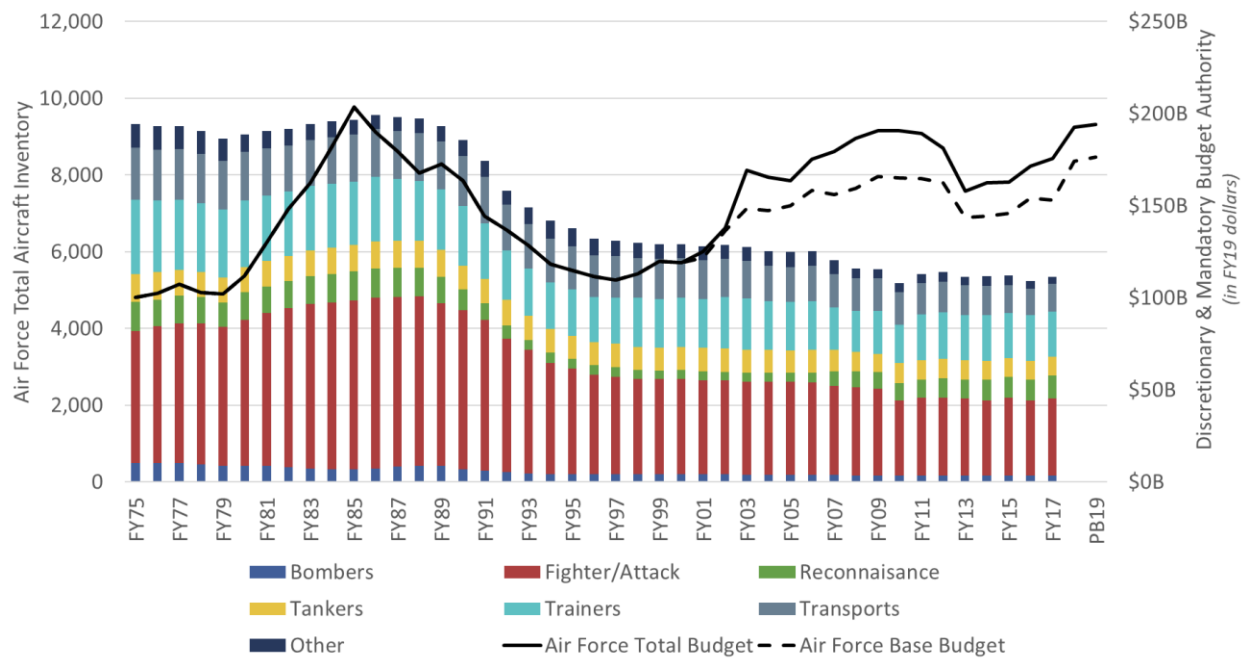
Air Force

The trends in the relationship between the Air Force’s force structure and budget largely parallel those of the Navy. Following the end of the Cold War, the Service’s budget fell by 46 percent from its peak in FY 1985 to its trough in FY 1997. As shown in Figure 26, this drop in funding was matched by a commensurate decline in the total aircraft inventory, which fell by roughly one third overall: a 37 percent reduction in bombers, a 43 percent reduction in fighter/attack aircraft, and a 66 percent reduction in reconnaissance aircraft. Yet as the Air Force budget increased by 74 percent from FY 1997 to FY 2010, or 51 percent if OCO funding is excluded, the aircraft inventory declined by another 18 percent, reaching an all-time low in FY 2010.

The Air Force is requesting \$176 billion in base funding for FY 2019, or \$194 billion if OCO funding is included. The base budget request alone would return spending to approximately the level it was in FY 1987. However, the number of aircraft in the inventory (as of FY 2017) is 44 percent smaller than the force in FY 1987, while the Air Force’s requested end strength for FY 2019 is 46 percent lower than FY 1987 levels. This indicates that the Air Force’s force structure, like the Army and Navy, is growing increasingly expensive to equip and maintain.

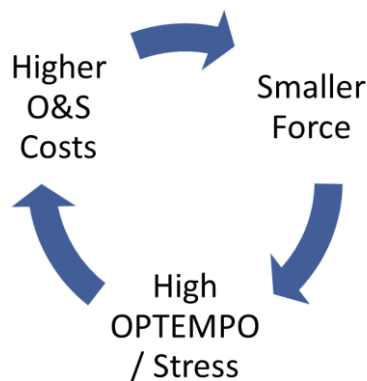
⁴⁵ U.S. Department of Defense, Office of the Chief of Naval Operations, Deputy Chief of Naval Operations, *Report to Congress on the Annual Long Range Plan for Construction of Naval Vessels for Fiscal Year 2019* (Washington, D.C. 2018), http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/LONGRANGE_SHIP_PLAN.pdf.

Figure 26: Air Force Total Aircraft Inventory and Budget



5 | Conclusion

The overarching theme that emerges from this analysis is that force structure is increasingly expensive to build and maintain in each of the Services. As detailed in Chapter 2, the combination of rising labor costs for military and civilian personnel and the steadily increasing costs of operation and maintenance means that MILPERS and O&M accounts would need to grow at a rate of roughly 2 to 3 percent above inflation each year just to maintain the same size force. These factors serve to erode the purchasing power of defense dollars over time and effectively limit the ability of DoD to grow, or even maintain, force structure in the future. Moreover, much of the equipment in the inventory is aging and will need to be upgraded or replaced in the coming years, which will require an even higher level of funding over a sustained period if major weapon systems are replaced on a one-to-one basis.



The trends observed over the past decades of rising budgets and declining force structure have created a self-reinforcing cycle. Higher costs (particularly in the base budget) have led to reductions in force structure, but security commitments and peacetime operations have not declined proportionately. This has resulted in a force that is arguably stretched thin in many respects—trying to do as much or more with fewer forces. A high operational tempo (OPTEMPO) means that tours are longer and more frequent, less time is available for training, and maintenance availabilities are more limited. This stresses the force—both the people and the equipment. Over time this stress drives costs higher as compensation costs go up to help with recruiting and retention issues and maintenance costs climb due to excessive wear on equipment. Higher costs can then lead to even greater reductions in force structure, putting even more stress on the force and undercutting near-term readiness. Pushed to an extreme, this can lead to a destructive cycle: a force structure—readiness death spiral.

To arrest this trend, the Department will need to consider several options—none of which are easy to implement. To reduce OPTEMPO to a more sustainable level, the most straightforward option is to grow the size of the force. With a greater pool of ready forces to draw upon, the deployment-to-dwell

ratio (i.e., the amount of time a unit spends deployed versus at home) can be reduced, which reduces stress on units and increases opportunities for training and maintenance. But growing the force in any substantial way will require a significant increase in resources beyond what is projected in the FY 2019 FYDP. As this analysis has shown, just maintaining the size of the force will likely necessitate 2 to 3 percent growth above inflation in MILPERS and O&M accounts.

Another option is to improve the efficiency with which the Department spends its budget. Management efficiencies can include eliminating unnecessary activities and staff, closing excess bases and facilities, and combining redundant organizations and functions. DoD could also slow the growth in compensation costs by rebalancing military and civilian compensation to spend relatively more on the forms of compensation employees value most and pay for this by cutting the forms of compensation they value least.⁴⁶ DoD could also improve the efficiency of military readiness funding by optimizing the allocation of resources for personnel, training, equipment maintenance, and supplies (i.e., readiness inputs) according to measures of unit performance (i.e., readiness outputs).⁴⁷ The challenge with achieving such efficiencies is that some of the inefficiencies within the military are by design—units, activities, and organizations are sometimes structured to be redundant to mitigate the odds of operational failure. Even when an inefficiency is not by design, it can be politically difficult to eliminate because it often means cutting jobs in someone’s congressional district. As former Air Force and DoD Comptroller Bob Hale once wrote in a report about achieving efficiencies, “The Department of Defense should be guided by a simple thought: keep trying, but be realistic.”⁴⁸

A third option to consider is to develop innovative capabilities and operational concepts that allow the military to accomplish the same missions with fewer forces. This approach is consistent with the third offset strategy and innovation initiative pursued in the final years of the Obama administration. For example, one of the initiatives funded by the Strategic Capabilities Office was to add a surface strike capability to existing SM-6 air defense missiles. By modifying the existing inventory of SM-6 missiles to have this new capability, it allows existing assets (and the ships that carry them) to be used for a wider range of missions. Not only does this pose a problem for an adversary to defend against, it makes better use of existing forces. It can also ease modernization requirements because major weapon systems may not need to be replaced on a one-for-one basis if newer weapons are substantially more capable and versatile. A challenge with this approach is that it takes time and additional funding to develop and field new capabilities and integrate these into the way forces train and operate.

⁴⁶ See Todd Harrison, *Rebalancing Military Compensation: An Evidence-Based Approach*, (Washington DC: Center for Strategic and Budgetary Assessments, July 2012), <https://csbaonline.org/research/publications/rebalancing-military-compensation-an-evidence-based-approach>.

⁴⁷ See Todd Harrison, "Rethinking Readiness," *Strategic Studies Quarterly* 8, no. 3 (2014): 38-68. <http://www.jstor.org/stable/26270619>.

⁴⁸ Bob Hale, *Promoting Efficiency in the Department of Defense: Keep Trying, But Be Realistic* (Washington, DC: Center for Strategic and Budgetary Assessments, January 2002), 25.

A final option to mitigate a force structure — readiness death spiral is to scale back U.S. security commitments and the day-to-day use of forces for peacetime presence activities. Each time forces are committed, whether it is for an operational deployment to a combat zone or a joint training exercise with allies and partners, it comes with an opportunity cost: a reduction in the readiness and availability of forces. Security commitments can be reduced without abandoning allies and partners by cutting back (rather than eliminating) peacetime presence activities and limiting U.S. military involvement in conflicts where U.S. security interests are not directly at stake. The 2018 NDS calls for a greater focus on the “reemergence of long-term, strategic competition by...revisionist powers,” namely China and Russia, and “rogue regimes such as North Korea and Iran.” But the strategy does not identify where the United States should reduce security commitments.

These options are of course not mutually exclusive. They can be implemented in various combinations depending on the priorities of the administration. In the FY 2019 request and the 2018 NDS, the administration does not appear to be pursuing a significant increase in force structure or a reduction in security commitments. Instead, DoD has indicated that it is counting on \$46 billion in efficiency savings over the FYDP—\$6 billion in FY 2019 and an average of \$10 billion per year thereafter.⁴⁹ It is implicitly banking on these savings to fund modernization and sustain the size of the force because the topline budget is projected to remain relatively flat, growing with inflation. If these savings do not materialize as expected, the administration will need to rethink its approach and potentially adjust its strategy to the fiscal reality it faces.

⁴⁹ Aaron Mehta, “How the DoD’s first-ever chief management officer plans to turn cash into military capabilities,” *Defense News*, May 22, 2018, <https://www.defensenews.com/interviews/2018/05/22/how-the-dods-first-ever-chief-management-officer-plans-to-turn-cash-into-military-capabilities/>.

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