



Strategy to Ask

Analysis of the 2020 Defense Budget Request

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About the Author



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Prior to joining CNAS, Ms. Blume served as Deputy Chief of Staff for Programs and Plans to the Deputy Secretary of Defense, whom she advised on programming and budget issues, global force management, operational and strategic planning, force posture, and acquisition policy. During this time, she served as Executive Secretary of the Deputy's Management Action Group, the top resource decision making body at the U.S. Department of Defense (DoD). She also served in the Office of the Under Secretary of Defense for Policy and in the Office of the Deputy Assistant Secretary of Defense for Plans and Posture. During her years at DoD, Blume participated in two Quadrennial Defense Reviews, the 2013 Strategic Choices and Management Review, and six Program and Budget Review cycles.

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About the Defense Program

Over the past 10 years, CNAS has defined the future of U.S. defense strategy. Building on this legacy, the CNAS Defense team continues to develop high-level concepts and concrete recommendations to ensure U.S. military preeminence into the future and to reverse the erosion of U.S. military advantages vis-a-vis China, and to a lesser extent Russia. Specific areas of study include concentrating on great-power competition, developing a force structure and innovative operational concepts adapted for this more challenging era, and making hard choices to effect necessary change.

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Executive Summary

The defense establishment is enjoying a period of bipartisan agreement on the need to prioritize strategic competition with China and Russia. Recent strategies from both the Obama and Trump administrations have articulated this direction. In light of this fact, the critical question this report asks is: Has the Trump administration put resources behind its strategy?

The answer is: Yes and no. The 2020 budget request does contain some new and exciting investments that bring the size and shape of the joint force into better alignment with the *National Defense Strategy* (NDS). For example:

- The **Army** has chosen to slow its end-strength growth, while setting a goal of achieving a 50-50 split between investment in legacy and next-generation systems, compared with a ratio of 80-to-20 today.
- The **Navy** has shifted substantial resources to accelerate development of new unmanned systems.
- The **Air Force** continues to invest in advanced aircraft and munitions, though with some notable reductions from the fiscal 2019 spending plan.

However, an examination of the budget through the framework of two critical balancing acts begins to reveal where the 2020 budget request comes up short relative to the strategy's ambition. First, every defense budget must consider the balance among the joint force's size, its readiness, and its possession of and ability to wield advanced military technology. Second, defense officials must also decide on the relative prioritization of today's military operations against the need to prepare for the future by investing in next-generation military systems. In both respects, this defense budget request perpetuates bias in favor of size and the near term. A budget request more in line with the strategy would have:

- Abandoned quantitative goals such as 355 ships for the Navy and 386 squadrons for the Air Force.
- Invested far more in the next generation of critical military technologies, including advanced munitions, artificial intelligence, and autonomous systems.

But the real failing of the 2020 budget proposed by President Donald Trump's administration is its pack-aging. In an attempt to avoid negotiating with Democrats over domestic spending, the administration has submitted a budget that, while technically complying with current spending caps introduced in the Budget Control Act, actually increases defense spending by shifting \$98 billion from the regular defense budget into accounts not subject to these spending limits. This blatant budgetary malpractice, in combination with the poison pill of Southwest border wall funding, rendered the president's 2020 defense budget request dead on arrival in Congress. As a result, the administration has abdicated to Congress critical decisions about the size and shape of the future joint force.

Introduction

The strategic direction of the Department of Defense (DoD) is at present clearly defined and widely agreed upon. At its simplest, the strategy directs the department to focus its energies on strategic competition with China and Russia, while finding more economical ways to protect the United States from terrorist threats.¹ The Obama administration began moving in this direction under the auspices of the Rebalance to the Asia-Pacific and the Third Offset.² The Trump administration, under then-Secretary of Defense Jim Mattis, clarified, refined, and expanded upon this vision, resulting in the 2018 *National Defense Strategy* (NDS).³ A congressionally mandated, bipartisan commission on the strategy has since validated the NDS' prioritization of the threats posed by China and Russia.⁴ Put simply, the defense establishment is, more or less, all rowing in the same direction. (Whether the defense establishment is rowing in the same direction as President Donald Trump, or the American people, is another question, and outside the scope of this report.)

Unfortunately, recent budgets have not featured the same clarity or enjoyed the same consensus support. The administration's 2019 defense budget request was somewhat disappointing. In that cycle, the Trump administration had several factors working in its favor: a large influx of money for defense, a new strategy, and key political personnel in place for the entirety of the budget build. Nevertheless, the administration largely failed to capitalize on these advantages. Officials claimed that the strategy

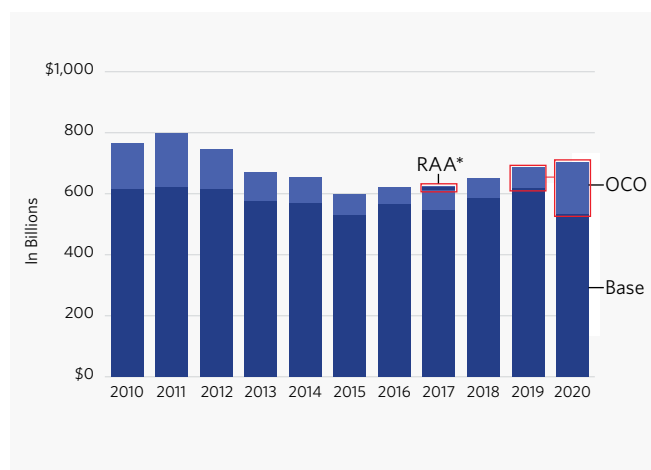
The defense establishment is, more or less, all rowing in the same direction.

was too late in arriving to make major adjustments to the budget. Ultimately, the Trump administration missed this critical opportunity to bring resources into alignment with a strategy that enjoys broad bipartisan support.⁵

Aware that the 2019 budget request did not fully support the NDS, and anticipating disappointment even before that budget's release, Deputy Secretary of Defense Patrick Shanahan promised a "masterpiece" for 2020.⁶ Thus the critical question this report asks is: Has he made good on that promise?⁷ In other words, does the "ask" (the defense budget request) fully implement the strategy?⁸ In short, the answer is that the budget request is largely supportive of the strategy but contains some critical points of divergence, explored fully below.

2020 Budget Request Overview

The 2020 president's budget requests \$750 billion for national defense.⁹ Of this amount, \$718 billion goes to the Department of Defense; the remaining \$32 billion funds nuclear programs at the Department of Energy and some other defense-related activities that fall under other federal agencies (e.g., the Departments of Justice and Homeland Security).¹⁰ This request is a real (adjusted for inflation) increase of approximately 2.8 percent over the administration's 2019 request and the 2019 level enacted by Congress.¹¹



Historical Defense Budget Requests 2010–2020¹²

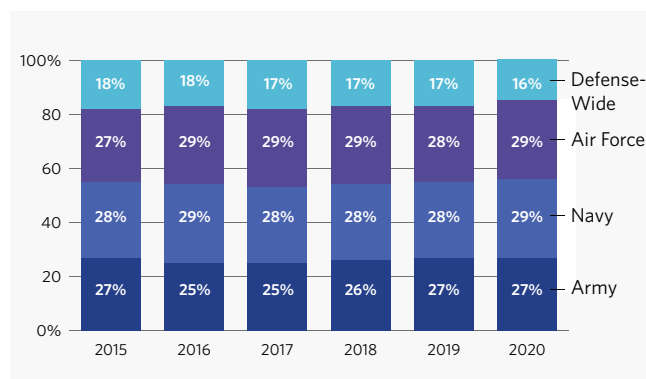
*RAA: Request for Additional Appropriations
(Adjusted for inflation.)

Most would agree that the defense budget is objectively quite large. However, even this simple characterization is not without controversy. Defense hawks are fond of noting that current defense spending as a percentage of gross domestic product (GDP) is historically low.¹³ Conversely, those who wish to reallocate resources away from defense often note that the United States spends more on its military than the next seven countries combined.¹⁴ However, the fact remains that how DoD spends its money is more important than how much money it has to spend.¹⁵

Since 2015, each of the military departments' relative shares of the defense budget have remained virtually unchanged and nearly identical to each other, and this trend continues in the 2020 request. This fact is not completely surprising. Given the overall size of the defense budget, billions must move between the services to be visible as a change in percentage. However, this remarkable consistency in service shares of the budget over time is also indicative of the dominance of the services in building the DoD budget request, and their success in fighting to maintain equal shares of the pie.

At a macro level, the strategy's focus on high-end competitors, and implied acceptance of the 2012 Defense Strategic Guidance's (DSG) directive not to size the force for large, long-term stability operations, would suggest a shift in resources away from the Army and to the Navy and the Air Force.¹⁷ While the Army's relative share of the budget has come down since the height of the wars in Iraq and Afghanistan, the practice of dividing resources in consistent shares among the military departments persists, despite the NDS' direction.

Over this same period, the defense-wide accounts have slightly but steadily declined as a share of the overall budget. This portion of the budget funds everything that does not fall under a service budget, including the Missile Defense Agency (MDA), U.S. Special Operations Command, the Office of the Secretary of Defense, the Joint Staff, and many others. While the majority of this funding has direct operational relevance, this segment of the defense budget is frequently a target for cuts because it is also home to many of DoD's back-office functions, such as human resources, accounting, and contract management. DoD should, of course, continue to strive for greater efficiency in these areas, although there are many obstacles to reform in this space. For example, many improvements in efficiency, such as increased automation in accounting processes, require large up-front investments in things such as information technology (IT) systems. It is difficult to justify these expenses when this segment of the budget is under constant downward pressure and when these investments might not start paying off until after the usual five-year planning horizon. Second, greater efficiency in DoD business lines generally results in lost jobs in a congressional district. As a result, Congress frequently extols DoD to make cuts in these areas, while at the same time individual members do their level best to block implementation of reforms



Services' Shares of the DoD Top-Line¹⁶

that DoD proposes. The Department of Defense has set a goal of achieving \$7.7 billion in savings through these types of reforms in fiscal 2020.¹⁸ It is an ambitious goal, and if DoD fails to reach it the shortfall will have to come from some other part of the spending plan. However, DoD's continued commitment to good stewardship of taxpayer dollars is laudable.

What Do Taxpayers Get for Their \$718 Billion?

In short, for this staggering sum of money, the U.S. taxpayer gets a staggeringly capable military—the best in the world. This military does a number of vitally important but largely invisible things for the American people. First and foremost, the U.S. military underwrites stability in the international system, engendering the relative peace that allows the global economy to flourish and nations to prosper. Further, the credible possibility of the use of military force ensures that American diplomats negotiate from a position of strength in furtherance of U.S. interests.

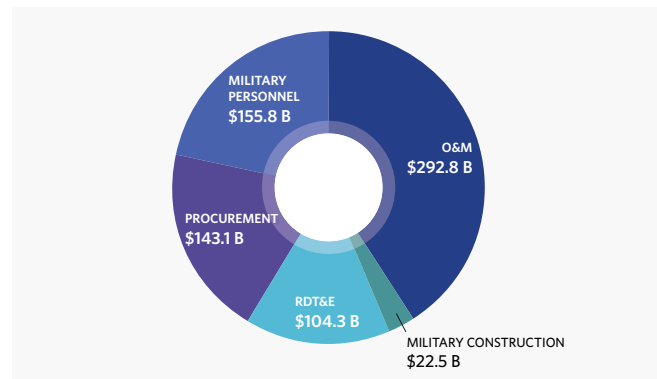
Even more importantly, U.S. military might deters other nations from engaging the United States in armed conflict. The lack of a major state-on-state war since the end of World War II, despite the existence of many strategic flashpoints, suggests that the U.S. nuclear and conventional deterrents are highly effective. The fact that U.S. competitors and adversaries so often resort to

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provocations designed to come in below U.S. thresholds for military response (i.e., “gray zone” activity) is further evidence that U.S. military might has successfully deterred these actors from pursuing conventional military conflict. George Washington’s advice to Congress that “if we desire to secure peace, one of the most powerful instruments of our rising prosperity, it must be known, that we are at all times ready for war” is just as true today as it was at the nation’s founding.¹⁹

More Specifically, What Does \$718 Billion Buy?

The largest share of the defense budget resides in **operations and maintenance (O&M)** accounts, about 41 percent in the 2020 request.²⁰ These funds are the “doing things” part of the budget. They cover everything from repairing trucks to flying airplanes to training sailors. The department has only one fiscal year to execute these



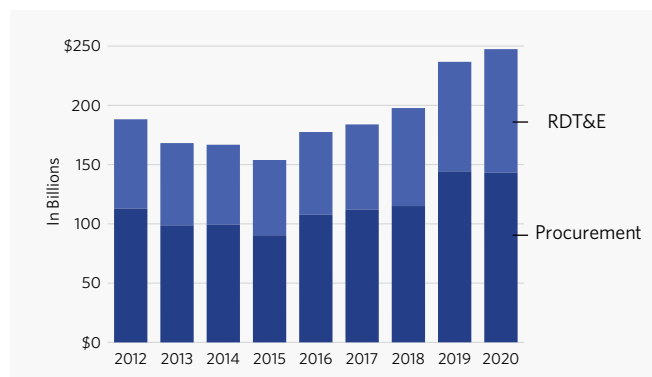
The 2020 Defense Budget Request by Title²²

funds, but they are generally subject to the least amount of congressional direction. For example, in 2019, the entire base budget operations and maintenance appropriation takes up less than three of the defense bill’s 67 pages.²¹

The next largest share of the defense budget pays for **military personnel**—uniformed service members, their basic pay, housing allowances, health care, retirement, and other related costs. These expenses comprise about 22 percent of the 2020 defense budget request.²³ Military personnel costs grow faster than the rate of inflation, largely due to factors that exist in the broader economy as well, such as the rising cost of health care, which for military personnel, retirees, and dependents will be nearly \$50 billion in 2020.²⁴ The 2020 budget request also asks for a 3.1 percent increase in military pay—the largest military pay raise in 10 years.²⁵ Conversely, the administration has requested no pay raise for civilians for the second year in a row, though Congress ultimately authorized a pay raise of 1.9 percent for fiscal 2019.²⁶

The third major share of the defense budget is the **research, development, test, and evaluation (RDT&E)** and procurement accounts, often known collectively as the investment accounts. In 2020, these accounts comprised about 15 percent and 20 percent of the total request, respectively.²⁷ These accounts fund the design, development, and acquisition of all the weapons systems in the joint force. These accounts grew substantially between the fiscal 2018 and 2019 requests but have leveled off in the 2020 request, adjusted for inflation. However, the 2020 request does shift resources from procurement into RDT&E, which in this case is a positive development. A major criticism of the 2019 request was that it bought a lot of “new old” stuff—marginal upgrades or new units of platforms that have already been in service for decades, and that were not designed to cope

with the operational challenges presented by China and Russia now and into the future. This shift in favor of RDT&E suggests increased emphasis on next-generation systems, explored further below.



The Investment Accounts²⁸
(Adjusted for inflation.)

A final segment of the DoD budget is **military construction** funding, known as MILCON. These funds are small—only about 3 percent of the defense budget—but are subject to a disproportionate amount of scrutiny, and even more so this year. Members of Congress have a particular interest in the funds that build (or downsize or close) military bases and other facilities in their districts. As a result, there is a separate appropriations subcommittee for MILCON and Congress appropriates MILCON funds separately from the rest of the defense budget. Members of Congress have been even more interested in MILCON funding in this cycle, since the administration announced plans to reprogram some 2019 MILCON funding without further approval from Congress by using an emergency declaration for wall construction on the United States’ Southwest border.²⁹ In the 2020 defense budget request, the administration has asked for \$3.6 billion to restore these reprogrammed funds, and an additional \$3.6 billion for further border wall construction in 2020.³⁰ It is notable that the administration has chosen to include these funds in the defense portion of the budget, rather than in the Homeland Security request. Perhaps the administration thinks that it has a greater likelihood of securing funding for the border wall as part of the defense budget, but the more likely outcome is that this request will politicize the defense authorization and appropriations process. This part of the budget request is designated as “emergency” funding and as a result is not subject to current caps on discretionary spending.³¹

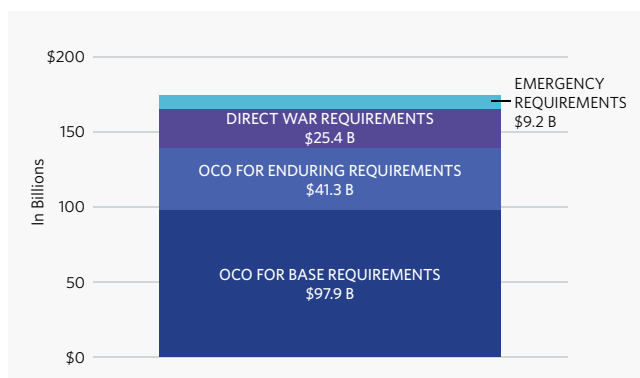
Spending Caps and Sequester

The Budget Control Act of 2011 (BCA) established caps on defense and nondefense discretionary spending through fiscal 2021 and put in place a mechanism called sequester to enforce these caps.³² If Congress appropriates funds above the caps, sequestration will automatically cancel budget authority above the levels established by the caps by taking an equal cut across all accounts.³³ The president has the authority to exempt military pay from sequestration, but in that case all other accounts would be cut at a higher level to make up the difference.³⁴

The members of Congress and executive branch officials who designed the BCA intended sequestration as an outcome so horrifying that politicians would never let it come to pass, instead envisioning that they would negotiate new spending levels and change the law accordingly. However, by 2013, Republicans and Democrats in Congress had failed to reach a budget compromise, resulting in automatic sequestration cuts in March of that year.³⁵ Since then, the executive and legislative branches have managed the BCA caps through a series of short-term budget deals that temporarily increased the caps for two years at a time. The most recent of these deals, the Bipartisan Budget Act of 2018, covered that year and 2019.³⁶ Currently there is no deal to adjust the caps for 2020.

Overseas Contingency Operations Funding

The Trump administration is attempting to avoid negotiating an increase to the BCA caps by submitting a defense budget request that is technically compliant with the caps but that increases the Overseas Contingency Operations (OCO) request by 152 percent, from \$69 billion in 2019 to \$174 billion in 2020.³⁷



The 2020 Overseas Contingency Operations Funds Request³⁸

The Obama administration created the OCO designation in 2011 to provide stability and transparency in the way the government funded the wars in Iraq and Afghanistan.³⁹ Since then, the OCO designation has largely succeeded in accomplishing these objectives, replacing a series of ad hoc, out-of-cycle supplemental budget requests with an annual request for contingency operations usually submitted alongside the base budget, which clearly identifies the costs of these wars. Critically, money appropriated as OCO is not subject to the BCA's caps on discretionary spending. In other words, Congress can increase appropriations for defense above existing legal caps without risking sequestration if it designates those increases as OCO.

As a result, OCO has been an important source of flexibility in negotiations in previous budget cycles. However, this administration's decision to shift approximately \$98 billion in base budget requirements into the OCO account in its budget request is new and notable.⁴⁰ According to the acting director of the Office of Management and Budget (OMB), the administration is attempting to use this increase in OCO to grow defense spending, while cutting domestic discretionary spending down to the levels established by the BCA caps.⁴¹ In other words, the administration is using the OCO accounts to try to avoid negotiating with Democrats in Congress about the balance between defense and nondefense discretionary spending.

While it is true that OCO accounts have funded some base budget requirements in the past, there are two critical differences in how the administration is attempting to use this mechanism in the 2020 budget

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request. First, prior shifts from the base budget to OCO were agreed upon by the legislative and executive branches as a result of budget negotiations. In this instance, the executive branch has made this move unilaterally in an attempt to avoid such negotiations. In the former case, the executive and legislative branches decided to use the OCO accounts as an important source of negotiating flexibility in a very tight fiscal

environment. In the present case, the executive branch alone is attempting to use this mechanism to short-circuit negotiations with Congress. Second, this shift is much, much larger than any previous use of OCO to fund base budget requirements. The largest prior amount of base budget requirements funded through OCO was \$18 billion in fiscal 2017.⁴² The administration's 2020 request would increase that number more than fivefold, while simultaneously scaling back actual overseas contingency operations in places such as Syria and Iraq.

However, DoD has approached this shift in resources very transparently. The way that the department has identified these funds and the mechanics of how it has moved them from the base budget into OCO provides a relatively simple way out of this gimmick. In its budget materials, DoD has moved entire budget lines from the base budget procurement and operations and maintenance accounts into OCO, and noted where it has done so, making it relatively easy for Congress to move those lines back into the base budget, and effectively create a new starting point for a budget deal.

What Happens Next?

Now it is Congress's turn. The administration delivered its request nearly six weeks later than the law requires, ostensibly due to the government shutdown in January. The delayed request means Congress will have a month and a half less than usual in which to build and pass its authorization and appropriations bills before the end of the fiscal year. To get there, Congress will have to do a couple of things in parallel. The leadership (Senate Majority Leader Mitch McConnell, Speaker of the House Nancy Pelosi, and their minority counterparts) must either attempt to negotiate a deal with the White House to raise spending caps, or choose to build appropriations that comply with the caps. At the same time, the DoD authorizing and appropriating committees will write their bills, without knowing how much money they will have to work with in the end. All of the above will have to be reconciled, voted out of both houses of Congress, and signed into law by the president before the fiscal year ends on September 30.

If Congress fails to authorize funding for 2020 prior to the end of fiscal 2019, it can use a continuing resolution to continue funding the government at fiscal 2019 levels, or the government will shut down (again). If continuing resolutions continue into January of 2020, sequester will take effect, revoking budget authority above the 2020 spending caps through automatic, across-the-board cuts.⁴³ On that cheerful note, and without further delay, let's dig into the details of what the administration has asked for in 2020.

Finding the Balance: Capacity, Capability, and Readiness

The first balancing act, and the fundamental challenge in building a defense budget, is balancing the size of the force (capacity) and its level of fielded military technology (capability) against the preparedness of the joint force to go do things (readiness), aptly dubbed the “iron triangle of painful tradeoffs,” and for good reason.⁴⁴ The larger the joint force is, the more resources it requires for training and maintenance, and to field advanced weapons systems. The more money the department invests in advanced military technology, the less money it has to invest in everything else. These resource pressures at the angles of the iron triangle are why DoD’s current aspiration for “capable capacity” is nonsense.⁴⁵ By definition, when talking about the tradeoffs required to live within a resource constraint, the decision cannot be “all of the above.” Strategic ambition, translated into military “requirements,” will always exceed available resources. When he rolled out the NDS, then-Secretary Mattis implicitly acknowledged this reality, stating that a budget in line with the document’s direction would prioritize the capability of the joint force over its size.⁴⁶

However, force size seems to consistently matter most to many lawmakers, fed by reports from senior military officers who, in the course of advocating for increased budget authority, stress how thinly stretched their forces are across a wide array of missions. The

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option to scale back current military operations is rarely seriously considered, while the chorus advocating for an ever-larger military to meet ever-expanding peacetime “requirements” grows louder and louder.⁴⁷ Under a resource constraint, even one as large as \$750 billion, this persistent bias toward force size puts the squeeze on both readiness and investment in advanced military technology, thus risking a “hollow force” like those that occurred in the 1970s and the 1990s.⁴⁸

When the geometry of the iron triangle gets out of balance in this way, the results can be deadly, as seen in

2017 with the collisions of the *USS Fitzgerald* and the *USS John S. McCain* with merchant vessels in the busy sea lanes of the Western Pacific. All told, 17 sailors lost their lives in these collisions⁴⁹ Undoubtedly there were many contributing factors to these tragic accidents, and debate on proximate cause rages on.⁵⁰ However, the Navy’s persistent prioritization of building 355 ships, which has come at the expense of the subordinate systems that make these ships useful, as well as the training of its sailors and the maintenance of its platforms and weapons systems, is one possible contributing factor. The peacetime operational tempo of the Navy, particularly in the Western Pacific, was undoubtedly another.

The Air Force is now following the Navy down the primrose path to program imbalance by committing to a similar quantitative target —386 operational squadrons.⁵¹ By defining success as a single number, the Air Force has ensured that the much more important conversations about the right mix of aircraft for the joint force will have difficulty getting an airing, particularly on Capitol Hill.⁵² Army leadership, on the other hand, appears to be slowly backing away from its long-standing view that the number of soldiers in the active component is the most important metric in measuring the health of the Army. The 2020 budget request bears evidence of these newly reversed positions, discussed further.

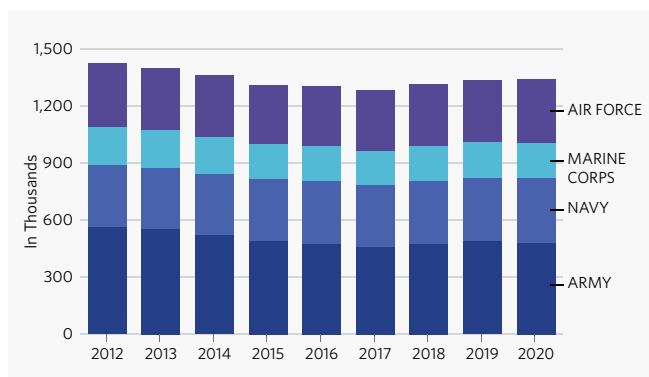
The Trump administration’s prior budget requests have strongly emphasized readiness, and this emphasis was not wrong. The fiscal constraints that plagued DoD in the late Obama administration, combined with the belief on the part of decision-makers that more defense funding was always just on the horizon, led to cuts that disproportionately impacted readiness, and the Trump administration was correct in prioritizing restoration of these funds. However, it does not matter how ready the joint force

is for today’s conflicts if it will be unable to meet the challenges posed by technologically advanced adversaries 10, 20, or 30 years in the future. With readiness now restored (with a few notable exceptions, discussed later), it is time for the administration to begin to invest seriously in the capability of the future force.

The Size of the Joint Force

The first and most obvious manifestation of the iron triangle is the literal size of the force—how many soldiers, sailors, airmen, and Marines are there? The

short answer is “a lot”—over 2 million requested for 2020 in the active components, Reserves, and National Guard.⁵³ That number has steadily increased since the beginning of the Trump administration. The fiscal contraction precipitated by the BCA drove several years of end-strength reductions in the second half of the Obama administration, as a result of guidance to pursue a smaller but more capable joint force.⁵⁴ The Trump administration reversed this trend, starting by increasing Army end strength in its request for additional appropriations in fiscal 2017, and has continued to increase the size of the force in each of its three full budget requests since then.⁵⁵



U.S. Military End-Strength Requested 2012-2020, Active Components⁵⁶

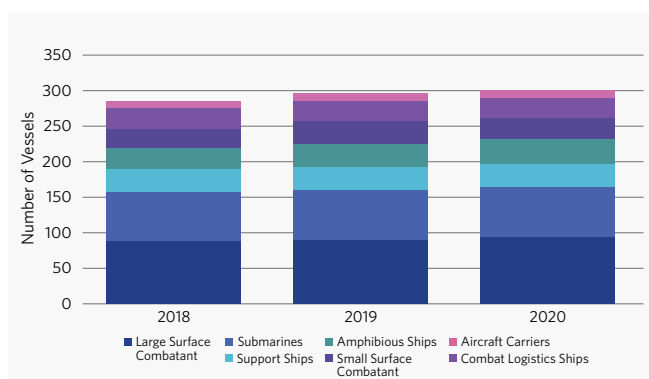
The capacity story is a little different for each service. The **Army** is the service generally most focused on end strength. The Army resisted the 2012 DSG's directive to pursue a smaller but more capable joint force.⁵⁷ The DSG also clearly stated that DoD would no longer size the force for “large-scale, prolonged stability operations.”⁵⁸ The DoD Strategic Choices and Management Review (SCMR), made necessary by BCA-driven budget cuts, followed the DSG, concluding that it would be possible to reduce the size of the Army from a planned end-strength of 490,000 in the active component down to somewhere between 420,000 and 450,000 while maintaining its ability to execute the priority missions defined by the strategy at the time.⁵⁹ Army leadership, most notably then-Chief of Staff of the Army General Ray Odierno, did not agree.⁶⁰ Many an Army officer at the time often recited the mantra “quantity has a quality of its own.”⁶¹

When the Trump administration came into office, it immediately undertook to reverse these cuts, requesting funding for additional soldiers in its amendment to the Obama administration's 2017 budget request.⁶² Defense leaders took this step despite simultaneously developing

a strategy that prioritized air- and sea-power-centric conflicts, leading to the conclusion that a smaller ground force was entirely appropriate. The Trump administration continued to request additional Army end strength in its fiscal 2018 and 2019 budget requests.⁶³ However, the Army's desire to grow has now outstripped its ability to recruit. In fiscal 2018, the Army failed to meet its recruiting target for the first time since the height of the Iraq War.⁶⁴ In the 2020 president's budget request, the Army has slowed its projected growth. The 2019 budget request projected the Army would reach an active component end strength of 495,500 in fiscal 2023; the 2020 request projects active end strength of only 488,000 a year later, in fiscal 2024.⁶⁵ The Army does not share its reasoning behind this decision. It could be an adjustment to account for more conservative estimates of how many soldiers the Army is able to recruit in any given year. It could also reflect recognition by Army leaders that the service needs to trim its numbers in order to invest more in modernization. It may be a little of both.

The **Marine Corps'** story has been similar to the Army's, but less extreme. The SCMR recommended cuts for all ground forces; the Obama administration's final budget request (fiscal 2017) brought the Marine Corps active component to 182,000.⁶⁶ The Trump administration's first full budget request (fiscal 2018) increased the active Marine Corps to 185,000. Since the 2019 budget request, Marine Corps active end strength has held steady at approximately 186,000 Marines.⁶⁷ The Marine Corps has not experienced the same recruiting difficulties that the Army has. One possible explanation is the relative size of the two services; including the reserve components, the Marine Corps is less than a quarter the size of the Army.⁶⁸

The **Navy** generally measures its capacity by the number of capital ships in the fleet, a topic upon which people in Congress, the White House, the Office of the Secretary of Defense, the chattering class, and the Navy itself have very strong feelings. Currently there are 288 ships in the inventory; the administration has asked for a net increase of 13 ships in fiscal 2020.⁶⁹ The Navy first asserted a “requirement” for 355 ships in 2016.⁷⁰ Since then, the Trump administration has endorsed this goal, and Congress has codified it in law.⁷¹ Congress also requires the Navy to submit a 30-year shipbuilding plan annually in conjunction with the president's budget request. The current plan indicates that the Navy will achieve a 355-ship fleet in fiscal 2034, if optimistic assumptions about budget levels, acquisition schedules, and ship service life hold.⁷²

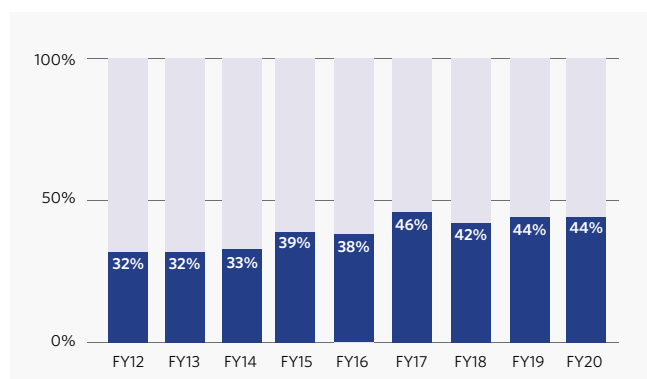


Navy Ship Inventory⁷³

Acting Deputy Secretary of Defense David Norquist noted that the shipbuilding budget in the 2020 budget request is larger than it has been in 20 years.⁷⁴ However, the future years defense program (FYDP) profile for shipbuilding actually decreases in the 2020 request from the 2019 request.⁷⁵ In other words, the amount planned for fiscal 2020 increased from both the 2019 requested and enacted levels, but the planned levels for 2021–2023 are lower in the 2020 request than they were in the 2019 request. There are several changes in the program that contribute to this trend. First, in the 2020 program, the Navy pulled an Aegis-equipped *Arleigh Burke*-class destroyer (DDG-51) and an oiler (T-AO) forward from their originally planned procurement in 2021 to 2020.⁷⁶ In addition, the Navy has asked for an additional *Virginia*-class fast attack submarine (SSN) in 2020, increasing the planned buy from two to three.⁷⁷ Further, the Navy decreased the DDG-51 buy planned for fiscal 2022 from three to two.⁷⁸ The shipbuilding plan also reflects a decision to delay procurement of two *San Antonio*-class amphibious ships (LPD Flt II) beyond the FYDP, while accelerating the planned buy of the new next-generation frigate (FFG(X)), adding a ship in 2021.⁷⁹ Finally, the 2020 budget request cancels the midlife refueling and complex overhaul (RCOH) for the aircraft carrier *USS Harry S. Truman* (CVN-75), planned to occur in fiscal 2024, electing instead to decommission the ship early.⁸⁰

These changes to the shipbuilding plan are largely consistent with the strategy. The additional submarine, in particular, is a laudable choice, given the persistent advantage the United States enjoys over China in the sub-surface domain.⁸¹ However, this rate of SSN production, combined with production of the new *Columbia*-class ballistic missile submarines, will stress existing defense industrial base capacity. The long-anticipated

termination of the littoral combat ship in favor of the more capable new frigate is also welcome news. Regarding the reduction in amphibious ships, Chairman of the Joint Chiefs of Staff General Joe Dunford noted in a hearing before the Senate Armed Services Committee that the requirement for 38 amphibious ships stands, but the Navy decided to prioritize other platforms in the 2020–2024 time frame.⁸² These “other platforms”—fast-attack submarines, Aegis-equipped destroyers, and frigates—are arguably more relevant to the challenges posed by China and Russia.



Shipbuilding as a Percentage of Navy Procurement⁸³

Chief of Naval Operations Admiral John Richardson indicated earlier this year that the Navy is rethinking the 355-ship requirement, noting the possibility “a new number” later this year.⁸⁴ If his somewhat elliptical remarks portend a better balance between shipbuilding and everything else in the Navy budget, it is a positive development. As previously noted, overinvestment in shipbuilding crowds out investment in the rest of the Navy, resulting in an unbalanced program. Some observers correctly note that the Navy is now overextended.⁸⁵ To solve this problem, they recommend building more ships and vociferously defend the 355-ship target, or advocate for even higher numbers of ships.⁸⁶ However, they overlook two critical points in making their cases. First, there is another, more obvious way to solve the problem of overextension, which is to scale back operations. Second, given that resource constraints are as certain as death and taxes, spending ever more on building ships means fewer resources available for training, weapons, maintenance, and everything else it takes to make an effective naval force. For example, the Navy does not have enough sailors to adequately staff the ships currently in the fleet, much less to accommodate additional ships.⁸⁷ The Navy continues to work toward

correcting this deficiency in the 2020 budget request by adding more than 15,000 sailors by 2024.⁸⁸

Compounding the administration's commitment to building a 355-ship Navy is Congress's general inclination to add more ships to the program in addition to those DoD requests, exacerbating any imbalance that already exists in the defense budget request. Members of Congress, particularly on the sea power subcommittees, have wasted no time in challenging Navy officials over their changes to the shipbuilding program and lack of commitment to achieving 355 ships in the fleet in the near term, most notably over the decision to retire the *USS Harry S. Truman* early.⁸⁹ Undoubtedly the number of ships in the fleet will remain a hot topic throughout the 2020 congressional budgeting process.

As previously noted, the Air Force has now followed in the Navy's footsteps by publicly committing to a goal of 386 operational squadrons.⁹⁰ While it is true that the Air Force does have capacity challenges, commitment to an unrealistic and unnuanced numeric target is not the solution to these problems. It does not allow for consideration of the capabilities required or the mix of high-end and low-end aircraft that would best suit the needs of the joint force. Since the drawdown of ground forces in Iraq and Afghanistan, the Air Force has been the service most stressed by the ongoing counterterrorism fight in the Middle East and North Africa. At the same time, and like the other services, the Air Force has gotten smaller, and the average age of its aircraft is increasing.⁹¹ Some of this reduction in size is to be expected based on technological advances. For example, precision-guided munitions make bombs more likely to hit their targets, which means the Air Force can plan to drop fewer bombs, presumably meaning that it also will need fewer airplanes from which to drop them. However, today's Air Force contains 312 operational squadrons versus the 401 that were in the force during Operation Desert Storm.⁹²

The **Air Force** is stretched thin, and if the prevailing modality of ongoing counterterrorism campaigns continues to be airstrikes, there is no relief on the horizon. One partial solution to the capacity challenges the Air Force faces would be to move ahead with a light-attack aircraft (OA-X) program. If successful, light attack would provide a platform for use in permissive environments (over Afghanistan, for example) that would be significantly cheaper to buy, to operate, and to maintain than the current fleet of aircraft the Air Force is using to conduct airstrikes in these areas. A light-attack aircraft program would be consistent with the strategy, which directs the department to develop more efficient and economical ways to prosecute counterterrorism

campaigns.⁹³ Unfortunately, the Air Force has announced an indefinite delay in its solicitation for the aircraft, pending further experimentation.⁹⁴ The 2020 Air Force budget justification books include \$35 million per year in 2020–2022 for continued experimentation, and a procurement wedge (or placeholder funding) starting in 2022.⁹⁵

Like the Navy, the Air Force also does not have adequate numbers of key personnel to operate and maintain the current fleet. The pilot shortage is chronic, and thus far resistant to the myriad initiatives the Air Force has used to address the problem.⁹⁶ In addition, aging aircraft also put a strain on maintainers. As a result, the Air Force has been steadily growing in end strength since 2016.⁹⁷ The 2020 budget request continues this trend, seeking to increase the Air Force's active component by nearly 8,500 by 2024.⁹⁸

The bottom line for both the Navy and the Air Force is that their capacity goals of 355 ships and 386 operational squadrons respectively are likely unattainable, and attempting to achieve them risks severely unbalancing the composition of the joint force. The Navy itself admits that, even if the current high defense top lines hold, it will not achieve 355 ships in the fleet until 2034, and it can only achieve that timeline by aggressively pursuing

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service life extension programs for ships already in the fleet, further exacerbating the Navy's maintenance challenges (discussed later).⁹⁹ The Air Force's plan to get to 386 operational squadrons requires it to grow by 24 percent.¹⁰⁰ Experts disagree about likely levels of defense spending in the coming years, but none believe it will increase by 24 percent in real terms. Given this reality, and the rigidity of the practice of apportioning equal shares to each of the services (previously discussed), it is very difficult to see where the money might come from that would enable the Air Force to achieve this goal. For both services, the harm comes in trying to achieve the impossible. Striving to achieve these unrealistic numeric

goals risks unbalancing the rest of their programs, resulting in underinvestment in the subordinate systems and munitions that make these ships and aircraft operationally effective, or in the people who operate them, leaving the “iron triangle” dangerously unbalanced.

The Readiness of the Joint Force

As noted above, the Trump administration’s first three budget actions (its amendment to the Obama administration’s 2017 request and the 2018 and 2019 president’s budgets) all prioritized readiness. The administration’s 2020 budget request continues this trend but begins to level off investment in this space. The term readiness means many different things to different people, but this report will focus on three significant budgetary components: maintenance accounts, training, and investments in infrastructure and facilities. When the services rolled out their budget requests on March 11, many briefers employed the phrase “funded to maximum executable levels” to describe some of their key readiness accounts. These statements are good news for readiness, as far as it goes, but they only indicate that the services have funded readiness (training, maintenance, etc.) at levels that the current infrastructure and workforce can support. These statements do not tell us anything about the sufficiency of that current infrastructure or workforce, and herein lie a few lingering concerns about readiness.

Despite the focus on readiness that has been the hallmark of the Trump Pentagon, adequate maintenance resources for aging fleets of ships and aircraft in both the Navy and Air Force remain areas of concern. For example, the Navy claims that the 2020 budget request funds ship and aircraft depot maintenance to maximum executable levels.¹⁰¹ However, the Navy’s unfunded priorities list (UPL) indicates that at least in some cases, depot capacity is not currently adequate to meet the maintenance needs of the fleet. The list’s No. 1 unfunded request is for \$814 million to move some submarine maintenance “to private shipyards due to public shipyard capacity constraints.”¹⁰² This state of affairs begs the question, what good is a 355-ship Navy if maintenance infrastructure is inadequate to support the current 288-ship fleet? The Navy is addressing this shortfall in maintenance capacity not only by seeking to shift some maintenance to private shipyards, but also by increasing capacity and workforce in its own shipyards.¹⁰³ Similarly, the Air Force reports a \$1.4 billion increase in its primary maintenance account (weapons system sustainment or WSS), while its No. 1 UPL item is \$579 billion for additional WSS funding.¹⁰⁴

The Army and the Air Force are making investments to bring their key training programs into alignment with the threats prioritized by the NDS. The Army request funds maximum throughput of its Combat Training Centers, including 25 Brigade Combat Team rotations focused on “decisive action” training, meaning the exercises will focus on the skills and capabilities needed in a fight with a highly capable adversary.¹⁰⁵ The Air Force request funds its primary training line item—flying hours—to maximum executable levels, in this case meaning that the service has funded the maximum number of flying hours that its pilots, aircraft, and maintainers can support.¹⁰⁶ The Air Force is also increasing investment in training ranges and simulators to better mimic high-end threats.¹⁰⁷

Each of the services also reported funding facilities maintenance at higher levels in the 2020 budget request than in recent history. The Department of Defense has long had a target of funding facilities sustainment and maintenance at a minimum of 90 percent

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of the requirement in a given year.¹⁰⁸ Unfortunately, the services have often used these accounts as bill-payers for higher-priority requirements in lean years, often failing to meet that target. In the short term, deferring maintenance on buildings and other facilities is an easy choice to make. However, in the long term, deferred maintenance can end up costing the department millions of dollars, as infrastructure fails to meet its planned service life due to inadequate maintenance compounding over the years. In the 2020 request, all four services funded facilities sustainment and maintenance to at least 85 percent of their requirements for the fiscal year, not quite meeting the 90 percent goal, but getting much closer than they have been in recent years.¹⁰⁹

The Capability of the Joint Force— The Present Versus the Future

The second critical balancing act all budgets must undertake is the relative prioritization of the present (current operations, present-day readiness, maintenance and procurement of legacy systems) against the future (developing and fielding next-generation weapons and platforms). Any dollar invested in developing future capabilities comes at the expense of an incremental dollar spent on something that may further U.S. security interests in the near term. Conversely, any dollar spent on a current operation or legacy system comes at the expense of developing and eventually fielding some future military capability. A budget request that fully implements the NDS will prioritize investment in the future, developing and fielding the advanced capabilities needed to maintain and extend the U.S. military's technological edge against highly capable adversaries. While this budget request does make some very good investments in advanced technologies, it also remains heavily invested in shoring up legacy fleets to reduce risk in the near term.

Unfortunately, it is human nature to prioritize near-term rewards over benefits realized in the future.¹¹⁰ This axiom often seems doubly true for elected officials and senior political appointees, who likely will not be around decades into the future to face the consequences of the choices they are making today. Making a decision that accepts risk in the near term in exchange for an uncertain payoff decades in the future is a very difficult thing to do. For example, choosing to forgo a current counterterrorism operation, and thus potentially increasing risk of an attack in the near term, in order to devote additional resources to technology development that may or may not bear fruit is an extraordinarily difficult decision to make. However, it is precisely this kind of investment in technology development that may prove dispositive in a future conflict with far higher stakes. Although this kind of stark tradeoff is generally not directly considered in building the DoD budget request, it is effectively the sum of the tradeoffs made in the process of making a budget. Assumptions about future levels of defense spending also shape this dynamic. Money spent to develop new weapons systems is money wasted if there is no additional money available at the end of the development cycle to put those new systems into production and get them to the field.¹¹¹ In sum, the incentives to invest in the force of today at the expense of the force of the future are strong.

Nevertheless, the technological advantage that the U.S. military has enjoyed due to Second Offset technologies, such as precision guidance and stealth, is steadily eroding.¹¹² Consequently, DoD needs to invest in developing the next generation of military systems to halt and ultimately reverse this trend. Under a resource constraint, even a large one, the department must make thousands of tradeoffs that aggregate into a prioritization of present-day threats and acceptance of risk against the threats of the future, or vice versa. Thus the critical question here is, where has this administration chosen to park its risk—in the near term, or a decade or more in the future? The department is making some very good investments that will decrease risk in the future, including in such things as unmanned systems. However, the predominant trend in this budget request is to avoid risk in the near term by investing in shoring up legacy fleets. These investments in the legacy force necessarily come at the expense of further investment in advanced capability.

Combat Aircraft

This tradeoff between the present and the future is apparent in the way the department has chosen to manage its portfolio of combat aircraft. Force planners in the 1990s envisioned pristine fleets consisting almost entirely of the most advanced fifth-generation aircraft for both the Air Force and the Navy in the 2020s and 2030s. That vision has not survived contact with reality, due to fiscal constraints, schedule slips, and nearly two decades of counterterrorism and counterinsurgency campaigning that has been very reliant on tactical aircraft. The result is that both the Navy/Marine Corps and Air Force will continue to operate mixed fourth- and fifth-generation fleets decades into the future. In choosing to invest heavily in shoring up its fleets of fourth-generation aircraft in this budget request, the department has effectively decided to prioritize the present over the future. In other words, these investments are not entirely consistent with the strategy, though they are understandable in light of the current state of these fourth-generation fleets.

This report discussed the capacity challenges in the Air Force's fighter fleet above, but it is worth taking some time here to review how the Air Force wound up with an ever-smaller and ever-older fleet of aircraft before assessing the procurement decisions the department has made in the 2020 budget request. The department has not purchased fifth-generation aircraft in the quantities or at the rates originally envisioned. The first blow came when then-Secretary of Defense Bob Gates canceled the F-22 program in 2009, capping that fleet at 187 aircraft,

versus the originally planned 750.¹¹³ Since then, the Air Force has also continually revised its annual planned F-35A purchase downward. Most recently, the 2019 budget justification books indicated a plan to buy 258 F-35As over the FYDP.¹¹⁴ The Air Force's 2020 plan brings that number down to 240 over the FYDP.¹¹⁵ To compensate for the relative lack of new aircraft coming into the fleet, the Air Force has extended the planned service life of many of its platforms, including the F-15 and the F-16, which are the aircraft the F-22 and the F-35A were originally designed to replace. Where the Air Force has attempted to retire aging aircraft in order to shift resources to newer programs, Congress has generally acted to reverse these decisions, most notably by preventing the Air Force from retiring its fleet of A-10s.¹¹⁶ In sum, the Air Force has had to revise its vision of an all-fifth-generation fleet in the 2020s and 2030s to a mixed fleet of fourth- and fifth-generation aircraft.

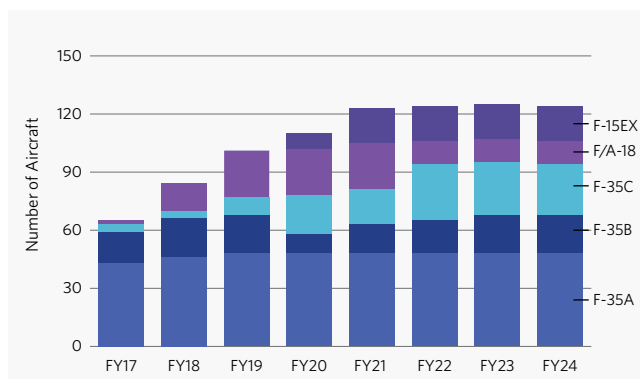
The Air Force's immediate problem is that the oldest F-15s in the fleet (C and D variants), which were supposed to be replaced by the F-22 and instead have had their service lives extended, are now literally falling apart. According to the Air Force's 2020 budget justification book, "Many F-15C/Ds are beyond their service life and have SERIOUS structures risks, wire chafing issues, and obsolete parts. Readiness goals are unachievable due to continuous structural inspections, time-consuming repairs, and on-going modernization efforts. The average F-15C/D is 35 years old with over 8,300 flight hours; the oldest F-15C was delivered in 1979."¹¹⁷ That these aircraft have little useful life left in them is a fact. The question is, what to do about it?

Enter the F-15EX, the department's proposed replacement for the aging F-15C/Ds. This aircraft would be based on the F-15 variant currently in production for sale to Qatar, with the addition of some U.S.-only capabilities, including the Eagle Passive Active Warning and Survivability System (EPAWSS).¹¹⁸ The department's request includes eight aircraft in 2020 and 18 aircraft per year in 2021 through 2024 at a unit cost of just over \$80 million.¹¹⁹

The department could have opted instead to acquire additional F-35As to replace the aging F-15s. In response to a question from Senator Joe Manchin at the DoD 2020 Posture hearing before the Senate Armed Services Committee as to why the department chose the F-15EX, Dunford stated that, while the cost per aircraft would not differ substantially between the F-15EX and the F-35A, the F-15EX would cost about 50 percent less to operate than the F-35A and would have double the service life.¹²⁰ Further, the Air Force budget justification book notes

that the F-15EX would use F-15 logistics, maintenance, and training infrastructure that is already in place, whereas the F-35A would require additional infrastructure at current F-15 bases.¹²¹ It is important to note that these figures on cost to operate and service life for both aircraft are just estimates, and that a true apples-to-apples comparison on cost per flying hour is extremely difficult to achieve.¹²² Only time will tell whether the estimates on which the department based its decision to acquire F-15EX were correct. But it is also notable that, at the same Senate Armed Services Committee hearing, Dunford reasserted the Air Force's commitment to the F-35 as the primary aircraft for the future.¹²³

The Air Force also could have chosen to simply retire the F-15C/Ds. This option would accept risk in the near term by exacerbating the capacity challenges the Air Force faces, discussed in the section above. However, it would also have liberated resources that could have been invested in developing the next generation of military technology. Granted, if the Air Force were to attempt to retire the F-15C/Ds without replacement, Congress would likely act to prevent it, as happened with the A-10. This scenario would leave the Air Force in the worst possible position, stuck patching up and flying aircraft that are beyond their useful life.



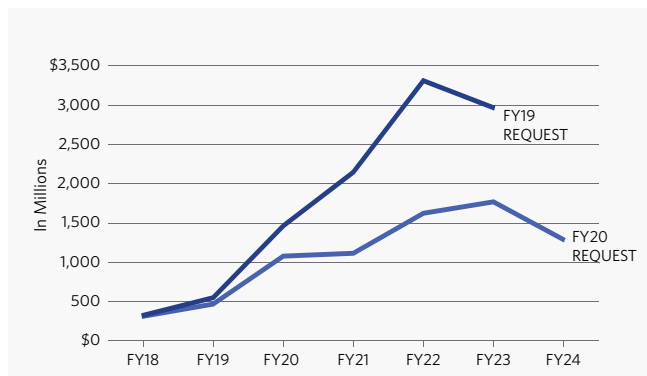
Fighter Aircraft Quantities Requested

Source: Data provided by Govini, derived from DoD budget justification books.

The Navy has had a similar dynamic going for some years now in the way it has managed procurement of additional F/A-18E/Fs alongside the F-35B and F-35C. Aging aircraft, inadequate maintenance funding, and delays in F-35 procurement conspired to create a shortage in available carrier-based fighter aircraft.¹²⁴ DoD had stopped requesting new F-18E/Fs in fiscal 2013.¹²⁵

However, due to concerns about the shortfall in available Navy fighter aircraft, Congress authorized and appropriated funding for five new F/A-18E/Fs in fiscal 2016.¹²⁶ DoD has included new F/A-18E/Fs in each of its budget requests since then. The fiscal 2020 budget request includes 24 in the budget year, and a total of 84 over the FYDP.¹²⁷ The Navy also requests 20 F-35Cs in fiscal 2020, and a total of 120 over the FYDP.¹²⁸

Looking further into the future, the Air Force's Next Generation Air Dominance (NGAD) program will develop whatever comes after the F-35 and the F-22. The department's request for this program doubled from 2018 to 2019, and has doubled again, coming in at an even \$1 billion for fiscal 2020.¹²⁹ However, the planned future years request decreased by \$3.3 billion between 2019 and 2020.¹³⁰ The Air Force has not publicly explained the reasons for this decision. It could be that the Air Force believes it has found a way to achieve the same capability at a third lower cost. Alternatively, it could be that the Air Force is reconsidering the objectives or the structure of the program.



Next Generation Air Dominance (NGAD)

Source: Data provided by Govini, derived from DoD budget justification books. This chart is adjusted for inflation.

The Air Force's bomber portfolio contains a mix of new and old similar to that seen in the Air Force and Navy fighter fleets. Investment in development of the new B-21 continues apace, with very little change between the fiscal 2019 and fiscal 2020 requests. The department requests \$3 billion for the program in 2020, up from \$2.3 billion in 2019, reflecting the program's ongoing transition from development to procurement.¹³¹ At the same time, the Air Force continues its plan to replace the engines on its fleet of B-52s, the youngest of which entered service in 1962, and which the Air Force intends to keep flying until at least 2050.¹³² The 2020 request calls for \$1.4 billion for the new engines over

the FYDP, the largest component of the B-52 modernization request, which totals \$2.3 billion over the same five years.¹³³

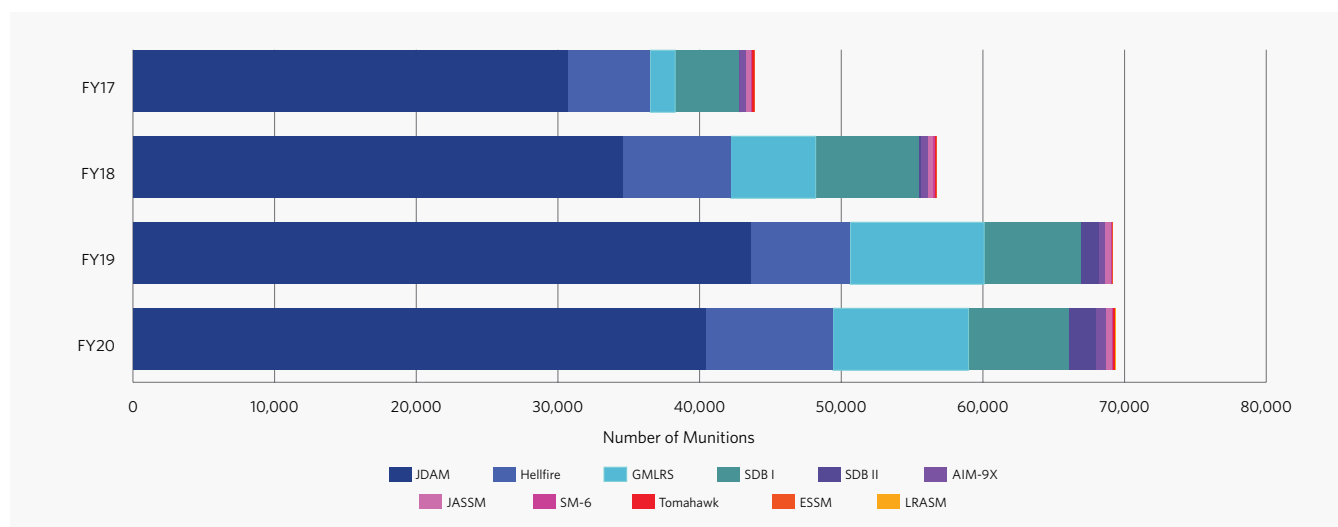
In sum, the decision to continue to invest heavily in legacy aircraft is a decision to draw down risk in the near term and is thus somewhat inconsistent with the course charted by the NDS. This decision is not wrong per se, but it does come at the expense of larger investments in more advanced capabilities. It is also a decision that favors capacity; the department has chosen to buy additional fourth-generation fighter aircraft because it believes their full life cycle cost will be less than that of fifth-generation platforms, and thus DoD can afford more of them. The result is that mixed fourth- and fifth-generation fleets are here to stay, and the services could even start to see mixed fourth-, fifth-, and sixth-generation fleets of aircraft in the future.

Munitions

The campaign against the Islamic State group (ISIS) in Iraq and Syria has been heavily reliant on airstrikes, and efforts to minimize collateral damage mean that the joint force has expended many relatively advanced precision-guided munitions in recent years, depleting existing stocks of weapons such as the Joint Direct Attack Munition (JDAM). The strategy's focus on competition with China and Russia also encourages adequate stocks of other critical munitions, such as the long-range anti-ship missile (LRASM). As a result, the 2020 budget request funds these and other critical munitions at maximum production rates.

While replenishing stocks of these critical munitions as fast as the current industrial base capacity will allow is definitely a good thing, it does not indicate whether those maximum production rates are adequate to meet the needs of the joint force, now or in the future. Rather, the fact that the department is buying munitions at maximum production rates in peacetime indicates that capacity in the munitions industrial base would almost certainly be inadequate were the United States to enter a shooting war with a capable adversary. The department is taking some steps to increase capacity in this sector. For example, the 2020 budget request continues and expands the Army's effort to increase capacity at the Holston Army Ammunition Plant, requesting \$268.8 million for this purpose in 2020.¹³⁴ Holston is at present the only U.S. manufacturer of most of the explosives used in U.S. munitions, which is concerning in and of itself.¹³⁵

Despite this and other positive steps, the industrial base in this sector remains fragile, and has lost critical design skills because DoD has not developed a new



Selected Munitions Quantities Requested

Source: Data provided by Govini, derived from DoD budget justification books.

land-based tactical missile in two decades.¹³⁶ Fortunately, this drought of new munitions technology is coming to an end. For example, as part of its long-range precision fires line of effort (No. 1 of six Army modernization priorities), the Army is developing the new precision strike missile (PrSM).¹³⁷ The Army requests \$164.2 million to fund continued development in 2020 and a total of \$848.7 million over the FYDP.¹³⁸

Looking further into the future, the department continues to pursue new hypersonic weapons. These weapons are the highest technical development priority for Under Secretary of Defense for Research and Engineering Mike Griffin.¹³⁹ The department is requesting \$2.6 billion for hypersonic programs in 2020.¹⁴⁰ The most prominent program in this area is the Air Force's hypersonics prototyping effort, totaling \$576 million in fiscal 2020, a modest increase from the fiscal 2019 request.¹⁴¹ These funds are evenly split between two competing approaches—the air-launched rapid response weapon and the hypersonic conventional strike weapon.¹⁴²

The Air Force and the Army's efforts to innovate in this space stand in contrast to the Navy. Navy RDT&E spending on munitions development decreases by about half from fiscal 2020 to fiscal 2024.¹⁴³ While the Navy can certainly free ride on the Air Force's investment in developing some munitions—small diameter bomb (SDB) II, for example—the Navy is going to be waiting an awfully long time for the Air Force to develop a new torpedo for it. As a result, the Navy risks falling behind in developing

advanced munitions, a critical capability in any future conflict where the joint force will face advanced integrated air defense systems.

Artificial Intelligence and Autonomous Systems

Autonomy and artificial intelligence (AI) are already beginning to dramatically change the global economy, and both have enormous potential to change the future of warfare as well. Just as the industrial revolution profoundly changed the way militaries fight wars, the emergence of AI could have similarly sweeping impacts on warfare, as well as the geopolitical context in which wars occur.¹⁴⁴ The critical question is whether the United States will be at the forefront of these developments or lag behind, reacting to advances in this space by competitors such as China.

Given the enormous implications of artificial intelligence for the future of warfare, it should be a far higher priority for DoD in the technology development space, and certainly a higher priority than the current No. 1—development of hypersonic weapons. A budget that fully implemented the NDS would invest heavily in this area. While DoD is making progress in AI, having released its first-ever *Artificial Intelligence Strategy* in 2018, it is, quite simply, still not moving fast enough.¹⁴⁵ The 2020 defense budget request includes only \$927 million for artificial intelligence.¹⁴⁶ Investments include a continuation of Project Maven, which aims to greatly speed the processing and analysis of full motion video.¹⁴⁷ The request also funds the Joint Artificial Intelligence Center

(JAIC), which seeks to apply the lessons learned to date through Project Maven beyond the intelligence community to other DoD mission sets.¹⁴⁸

The AI sector exemplifies the ways in which the innovation environment has changed in the 21st century. While DoD labs and agencies continue to do good and important work in this space, the primary AI innovators are tech companies such as Google, Microsoft, and Amazon. Unfortunately, engaging with these companies has sometimes proved challenging for DoD. For example, Google declined to renew its contract supporting Project Maven in deference to employees who protested working with the Department of Defense on this project.¹⁴⁹ Employees at Microsoft also recently objected

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to a DoD contract, protesting the Army's use of their HoloLens technology.¹⁵⁰ In the 2020 Defense budget hearings before the Senate Armed Services Committee, Shanahan, the acting secretary of defense, and Dunford, the chairman of the Joint Chiefs of Staff, struck back, asserting that "the work Google is doing in China is indirectly benefiting the Chinese military."¹⁵¹ This hostility between the Department of Defense and the tech sector's leading lights is unhelpful, to say the least. As Eric Schmidt, the former executive chairman of Google and the current chairman of the Defense Department's Innovation Board, has observed, "We need to get our act together as a country."¹⁵²

DoD also requests \$3.7 billion for autonomous systems in fiscal 2020.¹⁵³ The Navy's 2020 budget request contains some particularly exciting developments in this space. The 2020 request accelerates the Navy's development of the large unmanned surface vessel (USV) program, investing \$447 million in the budget year and purchasing two large USVs per year through the FYDP.¹⁵⁴ The 2020 request also increases investment in unmanned undersea vehicles (UUVs), investing \$359 million in the budget year.¹⁵⁵ Of particular interest is the Orca extra-large UUV, in which the Navy will invest \$182 million in 2020 to procure two prototypes, with plans to acquire a total of nine vehicles over the FYDP.¹⁵⁶ The Navy also continues to fund the development of the MQ-25, an unmanned,

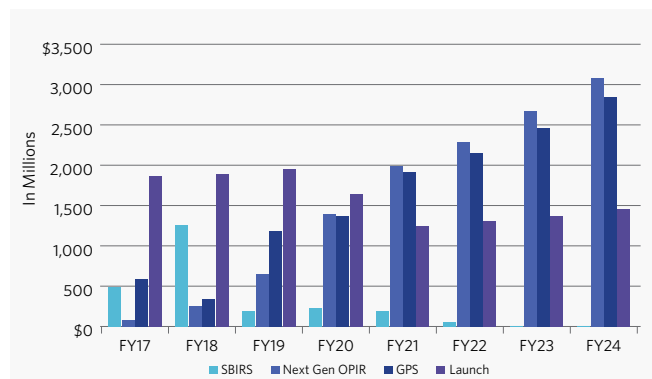
carrier-based tanking platform that will extend the range of the carrier air wing.¹⁵⁷ The Air Force is also pursuing new autonomous systems, specifically low-cost uninhabited attritable aircraft, though these investments remain frustratingly small and are buried within larger budget line items.¹⁵⁸ For example, in its Skyborg program, the Air Force is developing control systems for drone aircraft, while its XQ-58 Valkyrie program aims to produce a small, low-cost jet-powered uninhabited aircraft.¹⁵⁹ These autonomous systems all have the potential to alleviate many of the services' readiness and manning woes, while generating additional capacity AND capability. Perhaps more significantly, they also create opportunities for innovative operational concepts that can help the U.S. military maintain and extend a position of dominance against its most challenging competitors.

Space

The Trump administration has made a lot of news over the past year with its unusually public deliberations about how the Department of Defense will organize its space forces and resources. Happily, the administration appears to have agreed upon a single position, memorialized in Space Policy Directive 4, signed by Trump in February of this year. In that document the administration proposes "a new branch of the United States Armed Forces to be initially placed by statute within the Department of the Air Force," though the directive still contemplates a new, separate military department dedicated to space in the future.¹⁶⁰ Congress would have to act on both the creation of a new service under the Department of the Air Force or a new military department. However, the president does not need congressional approval to create a new unified combatant command (COCOM) for space, which the directive also establishes.¹⁶¹ For 2020, DoD requests \$72.4 million to stand up Space Force and \$83.8 million to create U.S. Space Command.¹⁶² The department also intends to establish a Space Development Agency "dedicated to rapidly developing, acquiring, and fielding next-generation space capabilities," and requests \$149.8 million for this purpose in fiscal 2020.¹⁶³

However, the more important part of the space budget is what DoD will actually spend on space capability. The Air Force requests \$14 billion for the space portfolio in fiscal 2020, a 17 percent increase over 2019.¹⁶⁴ This increase reflects growth in space situational awareness, space control, missile warning, satellite communications, and position, navigation, and timing.¹⁶⁵ The largest increase went to next-generation overhead persistent infrared (OPIR) systems, which provide missile warning

and which will replace the current space based infrared system (SBIRS). The department requests \$1.6 billion for this program in fiscal 2020, up from \$812 million in fiscal 2019.¹⁶⁶ This increase makes good on the plan the Air Force announced last year in its fiscal 2019 budget request, when it canceled two additional SBIRS satellites in order to accelerate development of the next generation of OPIR capability.¹⁶⁷



Selected Space Programs

(Adjusted for inflation.)

Source: Data provided by Govini, derived from DoD budget justification books.

Increased focus on space is a welcome development, and a final decision on how to organize the bureaucracy to support the space-based set of military missions was long overdue. Hopefully the Space Force decision will allow DoD to move forward, focusing on capability investment and space operations rather than on reorganizing the bureaucracy.

Nuclear Forces and Missile Defense

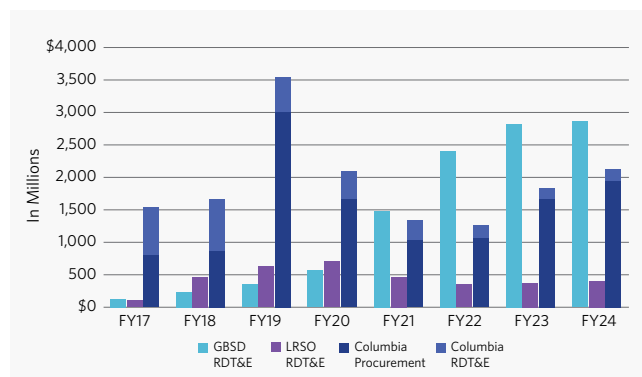
The 2020 budget request shows an increase in spending on the nation's nuclear forces. While the warheads themselves fall under the purview of the Department of Energy, specifically the National Nuclear Security Administration, the Department of Defense is responsible for the delivery systems, including the principal strategic systems, known collectively as the nuclear triad. The current systems that comprise the nuclear triad are: the Minuteman III intercontinental ballistic missile (ICBM); the B-52H and the B-2A strategic bombers, which carry the nuclear-armed air-launched cruise missile (ALCM) and gravity bombs, respectively; and the *Ohio*-class nuclear ballistic missile submarine. All of these systems are already beyond their planned service life.¹⁶⁸ As a result, DoD must recapitalize all three legs of the triad simultaneously. Although the cost

is considerable, peak spending will not approach the heights seen during the original development of the triad or its first recapitalization in the 1980s.¹⁶⁹ According to the 2018 *Nuclear Posture Review* (NPR), these recapitalization costs will peak in 2029 at 3.7 percent of the total DoD budget.¹⁷⁰

The fiscal 2020 defense budget request includes the early years of increased spending due to nuclear recapitalization. The *Columbia*-class ballistic missile submarine is the furthest along of the recapitalization efforts. These boats will replace the current *Ohio* class at a rate of one delivery per year starting in 2027.¹⁷¹ Investment in the Ground Based Strategic Deterrent (GBSD), the Minuteman III replacement, takes off over the course of the FYDP, increasing by nearly \$1 billion between fiscal 2020 and 2021, and by almost as much again between fiscal 2021 and 2022.¹⁷² The B-21, discussed in detail above, will serve as the next-generation strategic bomber. Investment in development of the long-range standoff weapon (LRSO), which will replace the current air-launched cruise missile (ALCM), decreases after fiscal 2020, although there does not appear to be any procurement investment inside the FYDP as yet.¹⁷³

The 2018 NPR dictates that the department will recapitalize all three legs of the triad at their current size.¹⁷⁴ However, there is opposition in Congress to both modernization of all three legs of the triad and to modernizing all three at their current size. The most notable opponent is House Armed Services Committee Chairman Adam Smith, who has asserted that it is possible to maintain an effective nuclear deterrent either with fewer warheads or with a nuclear dyad instead of the current triad.¹⁷⁵

Two months prior to releasing the 2020 president's budget, the Trump administration delivered its

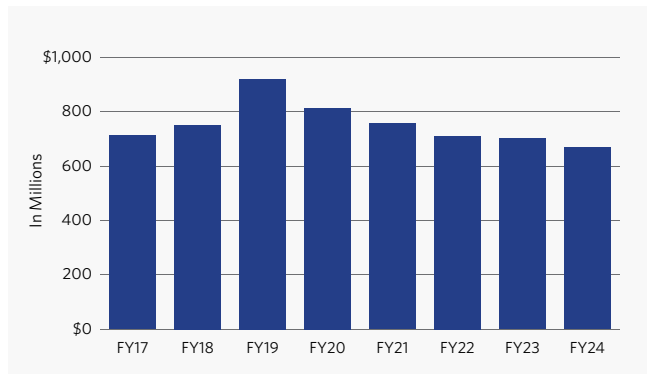


Next-Generation Nuclear Programs

(Adjusted for inflation.)

Source: Data provided by Govini, derived from DoD budget justification books. This chart is adjusted for inflation.

long-promised *Missile Defense Review*.¹⁷⁶ The review contains very little that is new or noteworthy, which is perhaps why the 2020 budget request for the Missile Defense Agency is similarly lackluster.¹⁷⁷ The first three years of the Trump administration saw significant growth in the MDA budget.¹⁷⁸ However, the 2020 request reverses that trend, coming in at \$9.4 billion, a reduction of over \$1 billion from the 2019 enacted level.¹⁷⁹ The out years see further decreases in the MDA budget. The request is notable for what it does not include more so than for what it does include. For example, the request includes \$157 million to develop technologies that will defend against hypersonic weapons; however, MDA's unfunded priorities list includes an additional \$720 million for investment in counterhypersonic technology that the department has chosen not to fund.¹⁸⁰ On the whole, MDA's resources remain overly committed to procuring existing systems (arguably the responsibility of the services, versus MDA) at the expense of investing more in developing new technologies, which is what the agency was created to do.



Missile Defense Agency Budget Requests

Source: Data provided by Govini, derived from DoD budget justification books. This chart is adjusted for inflation.

Conclusion

In its 2020 budget request, the Department of Defense has proposed some solid investments in support of the *National Defense Strategy*. For example, the Army has chosen to slow its end-strength growth, while setting a goal of achieving a 50-50 split between investment in legacy and next-generation systems, compared with an 80-20 ratio today.¹⁸¹ The Navy has shifted substantial resources to accelerate development of new unmanned systems. And the Air Force continues to invest in advanced aircraft and munitions, though with some notable exceptions, such as the reduction in FYDP funding for the next-generation air dominance program.

At the same time, DoD continues to invest heavily in the force of today, at the expense of the force of the future. In particular, adherence to purely numeric force structure goals developed without considering resource constraints continues to put pressure on the department's ability to modernize the joint force by investing in development and fielding of the next generation of military technology.

However, the real failing of this budget request is the way in which the Trump administration has chosen to package it. By delivering a budget request that nominally adheres to current spending caps while also quintupling the OCO budget in order to boost defense spending while suppressing domestic spending, the administration guaranteed that the proposal was dead on arrival. As a result, the administration has abdicated to Congress critical decisions about the size and shape of the joint force. Congress does not just hand DoD a new top line; it comes with instructions on where reductions (or growth) will occur.

The structure of the Trump administration's budget request clearly indicates a preference for no budget deal, leaving domestic discretionary spending caps in place. Both Republicans and Democrats in Congress have rejected this approach, and leaders have begun negotiating a deal to increase spending caps for both defense and nondefense discretionary spending.¹⁸² The catch will be whether they can come to an agreement that the president will sign before fiscal 2019 ends on September 30 or, failing that, before sequestration takes effect in January 2020.

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