

NOVEMBER 2019

U.S. Military Forces in FY 2020

The Struggle to Align Forces with Strategy

AUTHOR
Mark F. Cancian

CSIS | CENTER FOR STRATEGIC &
INTERNATIONAL STUDIES

A Report of the
CSIS INTERNATIONAL SECURITY PROGRAM

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ISBN: 978-1-4422-8143-1 (pb); 978-1-4422-8144-8 (eBook)

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Washington, D.C. 20036
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Rowman & Littlefield
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Lanham, MD 20706
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Acknowledgments

“Defense Outlook” is an annual series of studies on the linkages between strategy, budgets, forces, and acquisition. As part of the series, this paper examines how changes in the FY 2020 budget and in the national security environment are shaping the size and composition of the force, and what those changes mean in terms of cost, strategy, and risk. Todd Harrison and Seamus Daniels will soon release a companion paper, *Analysis of the FY 2020 Defense Budget*.

The series is part of a broader effort, called Defense 360 (<http://defense360.csis.org/>), to collect in one location the analysis that CSIS has done on current security issues.

This report is funded by the International Security Program at CSIS.

The author would like to thank Adam Saxton for his research support throughout this study.

Finally, the author thanks the many reviewers, inside CSIS and outside, who read the draft and provided valuable comments. Their insights improved the report, but the content presented—including any errors—remain solely the responsibility of the author.

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Budget Timeline

This paper is based on the president's budget proposal for FY 2020, presented to the Congress on March 11, 2019, on the evolving congressional appropriations and authorization acts for FY 2020, on the FY 2019 enacted budget, and on historical documents where needed. It does not include final enactment of appropriations or authorization bills, which are still weeks away as of this writing. However, the major elements of congressional action have become visible, so there is enough information available now to have confidence in the force structure discussion.

Executive Summary

Annually, CSIS senior adviser Mark Cancian publishes a series of papers on U.S. military forces—their composition, new initiatives, long-term trends, and challenges. The overall theme of this year’s report is the struggle to align forces and strategy because of budget tradeoffs that even defense buildups must make, unrelenting operational demands that stress forces and prevent force structure reductions, and legacy programs whose smooth operations and strong constituencies inhibit rapid change. This report takes a deeper look at the strategic and budget context, the military services, special operations forces, DOD civilians and contractors, and non-DOD national security organizations in the FY 2020 budget.

Strategic and Budget Context

The Trump administration’s 2018 *National Defense Strategy* (NDS) drives its FY 2020 budget proposal, which aims to fix readiness and increase modernization to prepare for long-term competition with China and Russia. Force structure expands very little. Thus, the Trump administration, like the Obama administration before it, has chosen capability over capacity, but unrelenting operational demands are pushing the services towards a high-low mix in order to cover both.

To pay for these initiatives, the proposed FY 2020 defense budget rises 4.9 percent above the FY 2019 level and continues a five-year streak of increases. However, the budget is projected to be flat in real terms after FY 2020, requiring internal offsets to pay for any future initiatives.

Although widely supported, the NDS has been criticized by some for being underfunded and by others for being too aggressive, while the proposed FY 2020 budget has been criticized for not making sufficient changes to align with the NDS.

The future poses two risks to the administration’s plans: (1) the lack of real growth in future budgets will hamper the launching of further initiatives; and (2) a softening of public, and then political, support could undermine both budgets and an engagement strategy.

Army

There are two major takeaways about Army plans. The first is that the Army’s plans for force expansion collapsed this year. The regular force increases from 478,000 soldiers in FY 2019 to 480,000 in FY 2020 instead of reaching the planned 492,000. The reserve components actually decline by 18,000 soldiers. Because structure—the total number of soldiers required—remains essentially unchanged, the Army will face challenges to avoid “hollowness.”

Three opposing dynamics pull the future size and shape of the Army:

- **Guidance in the NDS to focus on great power conflicts with Russia and China.** That implies a force equipped with advanced, and likely very expensive, technologies, paid for by cuts to structure, if necessary.
- **Day-to-day demand for forces to deploy to Afghanistan, Europe, and elsewhere.** That implies a larger force that may not need the most advanced technologies.
- **Difficulties in recruiting and retention.** As described earlier, this may drive force size regardless of strategy.

The second major takeaway is that Army modernization is a mix of good and bad news: the Army increased production of proven systems and shifted \$31 billion over the FYDP period into higher priority modernization programs but is still several years away from having a new generation of systems in production.

Because structure—the total number of soldiers required—remains essentially unchanged, the Army will face challenges to avoid “hollowness.”

Navy

The Navy in FY 2020 generally reflects the approach of the department as a whole. It sustains the level of readiness built in the FY 2017–FY 2019 budgets and modernizes mostly by increasing production of existing ship, aircraft, and munition programs.

The Navy feels the capacity/capability tension most acutely because of the high demands for its forces in day-to-day operations and the long lead times and high capital costs for its weapon systems. Therefore, it actually implements its force structure expansion plans, unlike the Army and Air Force, which also have expansion plans but have had to defer implementation.

The Navy thus projects that it will hit 308 ships by the end of FY 2020, up from its low point of 271 in 2015. It plans to reach its 355-ship goal by FY 2034 through a mix of service life extensions and new construction, but this will require shipbuilding budgets substantially higher than the historical average.

A major change is the acquisition of unmanned surface and subsurface vessels. Although these early acquisitions are essentially experimental, they could revolutionize naval combat in the long-term by shifting the fleet balance to smaller, more numerous, and more dispersed systems.

The Navy feels the capacity/capability tension most acutely because of the high demands for its forces in day-to-day operations and the long lead times and high capital costs for its weapon systems.

In FY 2020, naval aviation (Navy and Marine Corps) proposes to procure 148 aircraft of all kinds, up from the FY 2019 request of 120. Naval aviation procurement has mostly mature programs producing aircraft with few major issues. Inventories are stable. That is the good news.

The bad news is that, unlike the surface and subsurface forces, naval aviation has been slow to field unmanned aerial vehicles and remains focused on manned platforms. It also faces ever-higher costs to maintain its aircraft inventory.

Marine Corps

Unique among the services, the Marine Corps comes out of the wars significantly larger than it went in (186,100 today versus 172,600 in 1999). That has allowed it to maintain its traditional ground and aviation units and create new units for cyber and information warfare. However, the Marine Corps has decided not to grow in the future, focusing instead on readiness and modernization, and that creates a tension between creating additional new capabilities and maintaining traditional capabilities.

The lack of growth also exacerbates a tension in structure and training between what is needed for the routine forward deployment of Marine air ground task forces and the needs of a high-end major conflict. The former forces are light, trained for crisis response missions and peacetime engagement, and in high demand by combatant commanders. The latter are heavier, trained for intense combat, and the focus of the new strategy.

Aircraft inventories remain relatively stable. The rotary-wing fleet has mostly been recapitalized, and the fixed-wing fleet is in the process of recapitalization with the F-35. So, despite the high cost of contemporary aircraft, Marine aviation, unlike the Air Force, is in pretty good shape. However, the Marine Corps lags far behind the other services in fielding unmanned aerial vehicle (UAV) systems.

The lack of growth also exacerbates a tension in structure and training between what is needed for the routine forward deployment of Marine air ground task forces and the needs of a high-end major conflict.

A major question hanging over the entire Marine Corps is the effect of General Berger's new guidance, published as he took office in July as commandant. He questioned many long-standing aspects of Marine Corps structure: expensive and manned aviation platforms; large and expensive amphibious ships; and the 38-ship amphibious fleet goal. How this guidance will play out in the budget remains to be seen.

Air Force

Like the other services, the Air Force seeks to modernize for a great power conflict, an orientation the Air Force has traditionally been comfortable with. Thus, the F-35, B-21, and munitions programs receive budget emphasis. However, the need to improve readiness has caused it to put funding into increasing manpower over the last several years.

Further, a high level of operations pushes the Air Force (as with the other services) to maintain capacity. For the Air Force, that means sustaining legacy platforms like the A-10, F-16, and F-15, rather than retiring them, and buying the F-15EX. RPVs, now a full element of the force structure, also help extend capacity. This balance is also driven by judgments regarding how much stealth is needed in future conflicts and how airpower can make its greatest contribution, by strategic attack or operations close to the front lines.

Air Force officials still publicly support the 25 percent increase in force structure announced last year but make no moves to achieve it. Force structure stays level in FY 2020 and in the five-year period.

The average age of Air Force aircraft has increased from 18 years in 1995 to 29 years today. Some fleets, such as special operations aircraft (14 years), are in relatively good shape, but other fleets, such as tankers (52 years), are old. All these older fleets have programs in place for modernization, including the F-35, KC-46, and B-21, but the programs have been delayed, are expensive, and will take years to fully implement.

Congress will likely establish a Space Force/Corps of some sort, as the administration requested. This will increase attention on space programs and operations but will be a traumatic experience for the Air Force, which will lose organizations and personnel.

Air Force officials still publicly support the 25 percent increase in force structure announced last year but make no moves to achieve it.

All the services are buying more munitions. Many analyses show that U.S. forces would expend large amounts of munitions in a great power conflict. Thus, the Air Force budget procures a lot of munitions, especially air-to-ground munitions.

Special Operations Forces

Three themes continue: gradual force growth, to 66,559 (nearly the size of the British Army, 78,400); dependence on OCO funding, at 39 percent, much higher than the department's overall rate of 9 percent; and increasing organizational independence (so it looks even more like a separate service). Stress on the force, though continuing, appears to have eased. Unfortunately, ethical misconduct has emerged as a new and disturbing theme as a result of a series of high-visibility incidents.

DOD Civilians

Despite administration proposals to decrease the number of civilians in non-defense/domestic agencies, the administration proposes to increase the number of DOD civilians. This increase occurs because civilians help readiness, most being in maintenance and supply functions, not in headquarters (as is often believed). The bad news is that the administration proposes a civilian pay freeze and cuts to some benefits.

A major uncertainty is Secretary Esper's review of the "fourth estate"—all the DOD agencies and activities outside the military departments, mostly staffed by civilians. Esper has modeled this review after "night court," the process whereby he and other senior Army leaders scrubbed the Army budget in detail to align it better with the defense strategy. Results of the "fourth estate review" will be incorporated into the FY 2021 budget.

Contractors

Contractors have become a permanent element of the federal workforce, but they remain controversial. Service contractors provide workforce flexibility by conducting non-core governmental activities but raise questions about the line between government and the private sector. Nevertheless, at \$151 billion in FY 2018, service contracts are substantially above the prewar level and are increasing. In response to this long-term increase, DOD is trying to give service contracts the kind of oversight that product contracts have received.

Operational or battlefield contractors allow limited U.S. military forces to conduct a wider range of operations than they could otherwise but raise concerns about reliance on “mercenaries.” Nevertheless, they now form a permanent element of the U.S. forces overseas, along with active duty personnel, reservists, and government civilians, and reliance on these operational contractors is increasing. They outnumber military personnel in the Central Command region (53,000 to 35,000), and the ratio of contractors to military personnel in Iraq/Syria/Afghanistan has increased from 1:1 in 2008 to 1.3:1 today. With stronger controls and oversight in place, contracting scandals have nearly ceased, and the use of battlefield contractors has receded into the background as a political issue.

For both service and operational contractors there are long-standing and unresolved questions about their relative cost compared to military personnel and government civilians, so debates regarding their appropriate use continue.

National Security Organizations Outside DOD

The largest such organization is the National Nuclear Security Administration (NNSA), the part of the Department of Energy that develops and produces nuclear weapons, develops and sustains naval reactors, and conducts nuclear nonproliferation activities. The FY 2020 budget emphasizes military programs, consistent with the administration’s priorities for a “hard power” approach. In FY 2020, Weapons Activities and Naval Reactors increase, while non-proliferation activities remain essentially level.

This represents the ramping up of nuclear modernization and infrastructure recapitalization efforts, commitments the Obama administration made in ratifying the New START treaty in 2010 and that the Trump administration expanded in its Nuclear Posture Review. From FY 2013 to FY 2020, Weapons Activities increases from \$7.0 billion to \$12.4 billion, Naval Reactors increases from \$1.0 billion to \$1.65 billion, and non-proliferation activities decrease from \$2.2 billion to \$2.0 billion.

1 | The Strategic and Budget Context

This first chapter analyzes the strategy and budget context for building forces in FY 2020, criticisms of the strategy, budget and resulting force plans, and risks for sustaining force levels in the future.

KEY TAKEAWAYS

- The administration's FY 2020 budget proposal continues defense spending increases to align U.S. military forces with a national defense strategy (NDS) focused on great power competition. This strategy prioritizes capability over capacity.
- Thus, the FY 2020 budget prioritizes modernization to compete with China and Russia and maintains the higher readiness levels achieved in the FY 2017-FY 2019 budgets. It expands force structure only a little. Even defense buildups have limits and require trade-offs.
- However, day-to-day operations for ongoing conflicts, crisis response, and allied engagement continue to put high demands on forces.
- These unrelenting operational demands require force structure and drive the services to a high-low mix: high for great power conflict, low (or less high) for day-to-day deployments and regional conflicts.
- Although widely supported, the NDS has been criticized by some for being underfunded and by others for being too aggressive, while the proposed FY 2020 budget has been criticized for not making sufficient changes to align with the NDS.
- The future presents two major risks for sustaining force plans: (1) a lack of real growth in future budgets; and (2) softening public support.

Although the dictates of the 2018 national defense strategy are clear, implementing them in the real world is difficult in the face of real-world crises, the inertia of legacy investments, and the long timelines needed to field new capabilities. Thus, the budget continues the priorities that Secretary James Mattis set in 2017 but struggles with the need to make trade-offs.¹ These priorities include:

- **Fixing readiness, so that forces meet a minimum standard.** Readiness is vital for maintaining current capabilities and, hence, deterrence but is extremely expensive and perishable. Readiness funding increases in FY 2017–FY 2019 fixed many shortfalls, but forces have not fully attained the readiness levels that the services desire. Nevertheless, the budget priority has shifted to modernization (RDT&E increases 9.5 percent).
- **Increasing modernization to fill existing gaps and build capability to compete with great powers such as Russia and China.** The budget continues production of existing systems and increases R&D for future systems but does not launch major new programs. Instead, the budget upgrades existing systems and buys more munitions, particularly long-range and precision munitions. Many potentially new systems remain in RDT&E.
- **Expanding force structure, but modestly.** This represents a conscious decision to focus budgets elsewhere. However, high day-to-day demands for forces continue in order to sustain ongoing operations for the Middle East and Eastern Europe, global presence to support partners and allies, and crisis response against threats such as North Korea, Iran, and Venezuela.

The tensions show that there is no escaping the trade-offs between readiness, modernization, and force structure. All are desirable. In an ideal world, forces would be highly ready, thoroughly modernized, and large enough to meet the demands of both surge warfighting and day-to-day deployments. However, even large budget increases have limits and, therefore, require choices, often characterized as capacity versus capability. The Trump administration, like the Obama administration before it, has chosen capability, at least in theory. However, the press of operational demands is pushing the services towards a high-low mix in order to cover both.

The Administration's Strategy

The administration's *National Security Strategy*, issued in December 2017, and *National Defense Strategy* (NDS), issued in January 2018, describe the national security environment the administration sees and, by implication, the rationale for military forces that it plans.² The NDS bluntly depicts a U.S. military that is losing its edge over potential competitors and urges “increased and sustained investment” for “long-term strategic competitions with China and Russia.” It echoes many long-standing themes from the Republican national security establishment.

The NDS identifies five threats: China, Russia, North Korea, Iran, and global terrorism. These are the same threats that Secretary Carter described at the end of the last administration, but the order has changed.³

1. James Mattis, “Implementation Guidance for Budget Directives in the National Security Presidential Memorandum on Rebuilding the U.S. Armed Forces,” Department of Defense, January 31, 2017, <https://media.defense.gov/2017/Feb/01/2001693094/-1/-1/0/DDD-170201-373-002>.

2. White House, *A New National Security Strategy for a New Era* (Washington, DC: December 2017), <https://www.whitehouse.gov/articles/new-national-security-strategy-new-era/>; Department of Defense, *A Summary of the 2018 National Defense Strategy: Sharpening the American Military's Competitive Edge* (Washington, DC: January 2018), <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.

3. For example, Secretary of Defense Ash Carter, “U.S. National Security Challenges and Ongoing Military Operations,” Senate Armed Services Committee, 114th Cong., 2nd sess., September 22, 2016, https://www.armed-services.senate.gov/imo/media/doc/Carter_09-22-16.pdf.

Whereas Carter had put Russia first, the Trump administration puts China first. Further, the administration strategy puts greater emphasis on China and Russia than the other three threats.

Most strategists agree with this set of priorities, arguing that China is the United States' most challenging long-term competitor. Its share of global wealth has more than tripled from 1994 to 2015, growing from 3.3 percent to 11.8 percent. Its share of global military spending has increased six-fold, from 2.2 percent in 1994 to 14 percent in 2018, and China is now the second-largest military spender in the world.⁴

Russia has some military strengths and has shown itself to be an opportunistic aggressor. It competes fiercely in the gray zone, and its nearness to NATO allies in Eastern Europe, especially the Baltic States, causes concerns about a rapid strike. However, Russia is economically weak (with an economy only as large as Italy's) and faces demographic collapse, so its ability to be a long-term competitor with the United States is limited, especially with the United States allied to the rich countries of NATO. In national security, Russia punches above its weight.

The NDS also emphasizes the importance of allies, extolling their value, the long-standing relationships, and the need for these connections in the future. This contrasts with the president's often critical comments. Finally, the NDS has an extended discussion about the importance of the "resilient, but weakening post-WWII international order."

A big change is the force sizing construct, the way the strategy calculates how many forces are needed and of what kind. The two major conflict construct, which has been a constant in various configurations since the end of the Cold War, is replaced by a "1+" construct: "defeating aggression by a major power . . . [and] deterring aggression by [another] major power." This change likely reflects the fact that conflict with a major power like China or Russia would be more demanding than the typical regional conflicts of the past such as in North Korea or Iraq. What it means for force planning, however, is unclear in the unclassified documents.

Overall, as with the *National Security Strategy*, there is a strong tone of U.S. primacy: "The Department of Defense will . . . remain the preeminent military power in the world, ensure the balance of power remains in our favor, and advance an international order that is most conducive to our security and prosperity." The department will "prevail in conflict and preserve peace through strength." There is no hint that the United States will accept a decline in status or even a multipolar world.

4. Hal Brands, *Dealing with Allies in Decline: Alliance Management and U.S. Strategy in an Era of Global Power Shifts* (Washington DC: Center for Strategic and Budgetary Assessments, 2017), p. 22, https://csbaonline.org/uploads/documents/ALLIES_in_DECLINE_FINAL_b.pdf; Nan Tian et al., "Trends in World Military Expenditure, 2018," SIPRI, SIPRI Fact Sheet, April 2019, p. 3, https://sipri.org/sites/default/files/2019-04/fs_1904_milex_2018_0.pdf.

The Administration's Plan for Force Structure

Table 1: Force Structure Targets

	BCA Caps LT effects ("Sequestration")	Obama FY 2017 FYDP Goal	Trump Campaign (9/2016)	FY 2020 Budget	FY 2024 FYDP Plan ⁵
Army manpower (regular/reserve)	421,000/498,000	450,000/ 530,000	540,000/ [563,000]*	480,000/ 525,500	488,000/ 528,500
Army brigade combat teams (AC/RC)	53 (27/26)	58 (30/28)	68 (40/28)	58 (31/27)	58 (31/27)
Navy carriers	10	11	12	11	11
Navy ships	274	295	350	301	314 (355 by FY2034)
Air Force TacAir A/C (4th/5th generation)	1,015 (668/347)	1,101 (699/402)	1,310 (837/473)	1,194 (939/255)	~1,200*** (833/367)
USMC manpower	175,000	180,000	242,000 (!)**	186,200	186,400

*Not specified in Trump's speech but taken from the Heritage study on which the speech was based. Dakota Wood, *Rebuilding America's Military: Thinking about the Future* (Washington, DC: Heritage Foundation, 2018), <https://www.heritage.org/defense/report/rebuilding-americas-military-thinking-about-the-future>.

**This was the implied size of the Marine Corps in the Heritage study that Trump cited. It is not clear that the study intended such a large increase.

***Operational inventory ("PMAI") estimated at 56 percent of total inventory. The Air Force is moving to a different sizing metric—operational squadrons—but data are not yet fully available.

The table shows the evolution of force structure plans. The bottom line is that even an expanded budget does not allow large force structure increases. Force structure is a lower priority under the current national defense strategy, and the modest increases in the administration's plans reflect that reality.

- In the left column is the force structure that would result if the caps set by the Budget Control Act of 2011 (BCA) were imposed. As discussed later, these caps may be a thing of the past, but the implied force structure could again become relevant if concerns about deficits or the desire to increase domestic spending severely squeezed the DOD budget.⁶
- The second column shows the last plans of the Obama administration. While higher than the BCA level, these levels were still not adequate to implement the multi-theater strategy that the Obama administration had adopted at the end of its time in office.
- The third column shows what President Trump had laid out during the campaign. Based on work by the Heritage Foundation, described later, it shows a very large force increase.
- The fourth column shows the forces for FY 2020 in the president's budget proposal.
- The final column shows the long-term force structure targets described in the FY 2020 budget proposal.

The chapters on the individual services discuss the specifics of each service's forces.

5. Note: The Future Years Defense Program (FYDP) is DOD's internal program and financial database as approved by the secretary. The FYDP arrays cost data, manpower, and force structure over a five-year period. Because these plans are fiscally constrained to a level directed by the president, they represent an official statement about priorities. The current FYDP period is FY 2020-FY 2024.

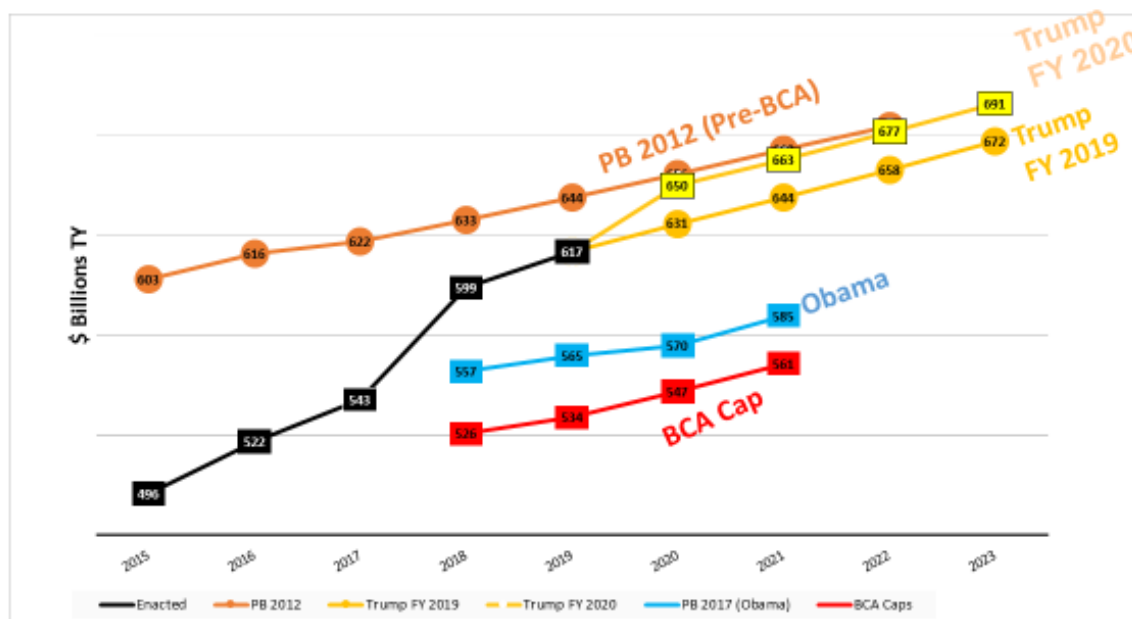
6. Force levels from Department of Defense, *2014 Quadrennial Defense Review* (Washington, DC: March 2014), https://archive.defense.gov/pubs/2014_Quadrennial_Defense_Review.pdf.

The Administration's Budget: Putting its Money Where its Mouth Is

As budgeteers like to say, “Plans without funding are hallucinations.” The future of military forces and implementation of the administration’s entire national security DOD strategy depend on the future of the budget. To its credit, the administration put resources toward its strategy. The large DOD budget increase proposed in 2020 (4.9 percent over 2019), coming after several previous years of increases, would (if enacted) allow the services to rebuild readiness, institute a robust modernization program, and grow force structure a little.

The chart below shows the evolution of the DOD budget projections.

Figure 1: DOD Budget Projections



“PB 2012.” The upper line is the budget projection before the Budget Control Act of 2011. Then-Secretary Gates regarded it as the minimum required to execute the strategy, and defense hawks often refer to it as a goal.

“Enacted.” This black line shows Congressional appropriations through FY 2019.

“Trump FY 2020.” This is the Trump administration’s fiscal projection in the FY 2020 budget. After FY 2020, the forecast levels off in constant dollar terms. (The forecast appears to increase because this chart is in then-year dollars, which includes inflation. This projection normalizes for some complex budget manipulations that the administration proposed.⁷)

“Trump FY 2019.” This is the Trump fiscal projection in the FY 2019 budget. This was the first long-term budget projection that the Trump administration made. The FY 2020 projection shows a large increase over this initial projection.

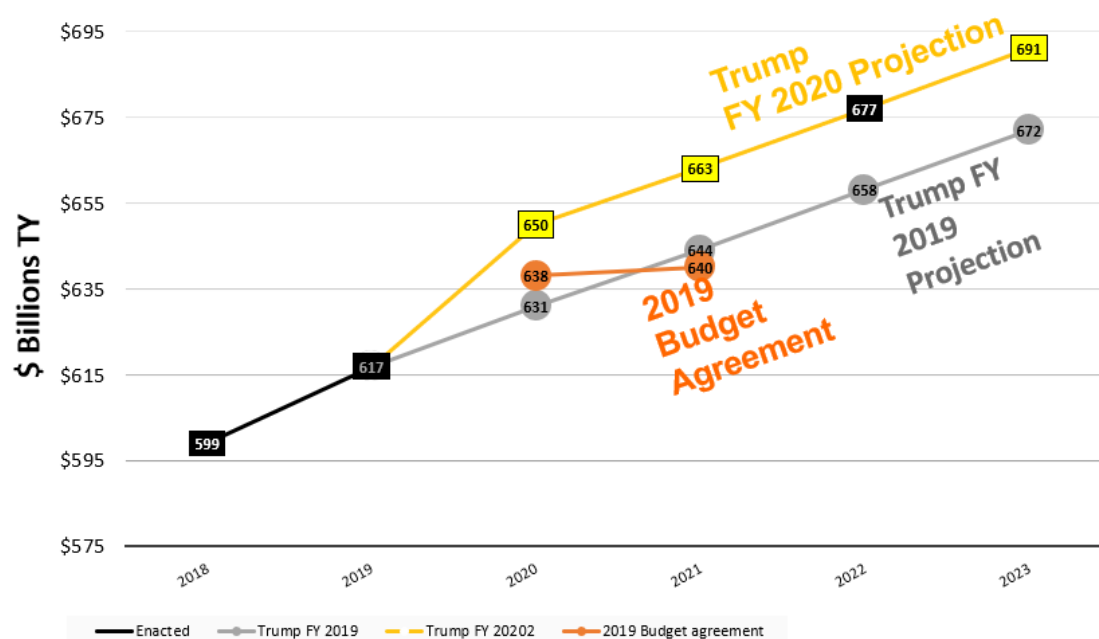
7. For a description of these manipulations, regarded by many as “gimmicks,” see Mark Cancian, “What’s the Topline Defense Budget, and How Will DoD Distribute the Money?” in Kathleen Hicks et al., “What to Look for in the FY2020 Defense Budget Request,” CSIS, *CSIS Briefs*, January 31, 2019, <https://www.csis.org/analysis/what-look-fy-2020-defense-budget-request>. It appears that the Congress will not go along with the proposed manipulations.

“Obama FY 2017.” This is the projection in the FY 2017 budget, the last budget that the Obama administration produced.

“BCA Caps.” This represents the floor. Successive budget agreements have modified the caps, and the most recent budget agreement lifts the caps in FY 2020 and FY 2021. The caps cease after FY 2021.

Because the administration’s FY 2020 budget projection is flat in real terms after FY 2020, internal offsets will be needed to pay for any future initiatives. The recent budget agreement exacerbated this challenge. It shaves the FY 2020 level, though the reduction is not as large as it seems because half of it is for the border wall. The FY 2021 reduction from the planned level is substantial, about \$10 billion below inflation, and may signal that the defense budget has reached its peak. This flatness makes budgeteers wary about force structure increases because they are expensive and, once made, must be sustained.

Figure 2: DOD Budget Projections with 2019 Budget Agreement



Criticisms and Competing Visions

The NDS received a lot of support in Congress and the broader national security community. The challenges that it identified built on what the Obama administration had been discussing after 2014 and on many analyses by outside experts.

Nevertheless, Washington being the debating society that it is, four sorts of criticisms—not all compatible—emerged that bear on the size and structure of forces:

- The strategy is underfunded;
- The modernization program, and the budget in general, is focused too much on existing systems and not enough on future systems;
- The strategy focuses too much on great power conflict and downplays more likely demands; and
- The strategy itself is wrong.

THE STRATEGY IS UNDERFUNDED

This criticism arises from statements by General Dunford, chairman of the Joint Chiefs of Staff, that the defense strategy requires 3 to 5 percent real growth per year. Dunford and other senior officials have made this point many times, so it is not a casual observation. However, no analytic justification has ever been presented.⁸

The foremost critique of resources came from the National Defense Strategy Commission, a group created by Congress to consider the department's National Defense Strategy and provide an independent perspective. The commission supported the broad objectives of the NDS but criticized many of the trade-offs the NDS made, for example, moving from a "two-war" force sizing construct to a "one-war plus" construct and relying on a "dynamic force employment" process to make up for force structure shortfalls. Furthermore, it highlighted a failure to invest sufficiently in innovation and joint experimentation and the lack of focus on "gray zone competition."⁹

The commission harshly criticized what it saw as the lack of adequate resources and called the current situation "an emergency." It states pointedly that "The NDS is not adequately resourced," and "America is very near the point of strategic insolvency, where its 'means' are badly out of the alignment with its 'ends.'" It strongly endorsed Chairman Dunford's goal of 3 to 5 percent real budget growth.

Conservative think tanks have picked up this theme. For example, a recent Heritage Foundation publication affirmed the 3 to 5 percent annual growth goal, highlighting the need to "maintain current gains, while continuing to prepare the nation's military for great power competition." Heritage specifically noted that the requested active end-strength growth across the services was "very modest" and short of the 16,000 personnel increase necessary to fill readiness gaps.¹⁰

Similarly, Rick Berger and Gary Schmitt of the American Enterprise Institute argued that "the proposed budget . . . falls short of the funding the military needs to carry out the strategy with confidence."¹¹

This discussion points out the ends/ways/means connection, that is, that strategies must be connected to programs and resources. Pursuing anything like the current strategy—which includes competing long-term with China and Russia; meeting threats from North Korea, Iran, and global terrorism; using robust forward stationing and deployments to maintain global alliance structures; and maintaining an all-volunteer force—requires a lot of resources. Different strategies, as described later, can save money, but it is not possible to pursue the current strategy with significantly reduced resources. Whether the current strategy needs an even larger budget, given recent budget increases, can be debated.

NOT ENOUGH CHANGE IN THE BUDGET

Another criticism, also raised by the National Defense Strategy Commission, is that the budget did not go far enough in implementing the strategy; that is, the budget retains too many legacy forces and systems and does not move aggressively enough in funding and fielding the kinds of advanced technologies that

8. See, for example, "A Conversation with Chairman of the Joint Chiefs Of Staff Joseph Dunford," Brookings Institution, Washington, DC, May 29, 2019, <https://www.brookings.edu/events/a-conversation-with-chairman-of-the-joint-chiefs-of-staff-general-dunford/>; Aaron Mehta, "DoD needs 3-5 percent annual growth through 2023, top officials say," *Defense News*, June 13, 2017, <https://www.defensenews.com/pentagon/2017/06/13/dod-needs-3-5-percent-annual-growth-through-2023-top-officials-say/>.

9. National Defense Strategy Commission, *Providing for the Common Defense: The Assessment and Recommendations of the National Defense Strategy Commission* (Washington, DC: United States Institute of Peace, November 13, 2018), <https://www.usip.org/publications/2018/11/providing-common-defense>.

10. Frederico Bartels et al., "How Congress Can Improve the President's 2020 Defense Budget Request," Heritage Foundation, *Backgrounder* 3402, March 27, 2019, p. 1-2, <https://www.heritage.org/sites/default/files/2019-03/BG3402.pdf>.

11. Rick Berger and Gary Schmitt, "Budget Deal Is No-Win for the Military," *Wall Street Journal*, July 28, 2019, <https://www.wsj.com/articles/budget-deal-is-no-win-for-the-military-11564337478>.

the strategy requires. In general, such critics argue for cutting forces to fund more modernization. Here are three criticisms among many:

- Susanna Blume, a senior fellow at the Center for a New American Security: “The proposal remains too focused on both the size of the joint force as opposed to its overall capability and on reducing risk in the near term at the expense of investment in the future.”¹²
- Elbridge Colby, former deputy assistant secretary of defense for strategy: “The U.S. armed forces need to adapt to deal with a potential great power threat. This will require making significant changes in the way the US military is sized, shaped, postured, employed, and developed . . . [focusing on] quality rather than size.”¹³
- Christian Brose, former staff director of the Senate Armed Services Committee: “Washington has been voicing the need for change, and failing to deliver it, ever since officials at the US Department of Defense first warned of a coming ‘military-technical revolution,’ in 1992.”¹⁴

The caution in the service budgets may be a feature, not a bug—a judgment by service programmers that the current budget increase may not last, as described below under “risks.” In that view, the services should buy as much as they can of existing systems and not try to start many new ones, which may not be sustainable if funding declines in the future. Thus, the lack of change may reflect different views about the fiscal future and not about strategy.

TOO FOCUSED ON GREAT POWER CONFLICT

In contrast to the strategists who focus on great power competition and therefore want DOD to move more quickly to align the budget with the needs of high-end conflict, other strategists argue that the press of ongoing conflicts, allied desires for engagement, and the need to respond rapidly to crises pushes against such a strategy. In this view, the world is in a state of persistent conflict that demands a continuing U.S. response.¹⁵ As many experts point out, physical presence is needed to meet these demands and to exercise global leadership; virtual presence is actual absence.¹⁶ Former Secretary Gates called ignoring current conflicts and focusing on future conflicts “next war-itis.”¹⁷

Continuing high demand for forces increases operational tempo. DOD has a global force management process to prioritize force requests and allocate forces to meet them so that they do not overly stress personnel. The tension is that combatant commanders have no restrictions on their requests for forces, and therefore, a gap always exists between requests and the forces available to meet them.¹⁸ Further, the national leadership often directs deployments and commitments in response to global events despite intentions to reduce demands. For example, deployments to Europe have increased greatly since Russia’s seizure of the Crimea and invasion of Ukraine.

12. Susanna Blume, “What Congress Should Do with the FY 2020 Defense Budget,” Center for a New American Security, May 22, 2019, <https://www.cnas.org/publications/commentary/what-congress-should-do-with-the-2020-defense-budget>.

13. Elbridge Colby, “How to Win America’s Next War: War’s Sci-Fi Future,” *Foreign Policy*, May 5, 2019, <https://foreignpolicy.com/2019/05/05/how-to-win-americas-next-war-china-russia-military-infrastructure/>.

14. Christian Brose, “The New Revolution in Military Affairs: War’s Sci-Fi Future,” *Foreign Affairs* 98, no. 3 (May/June 2019): 122-134.

15. See, for one example among many: James Thomas, *Reshaping the U.S. Military*, Testimony Before the Senate Armed Services Committee, 115th Cong., 1st sess., February 16, 2017, <https://www.armed-services.senate.gov/hearings/17-02-16-reshaping-the-us-military>.

16. For example, Thomas Donnelly, *Peers, Near-Peers, and Partial Peers: Making Sense of America’s Balance-of-Power Interests*, Statement before the Senate Committee on Armed Services, 115th Cong., 1st sess., February 16, 2017; Michael J. Mazarr, “Presence v. Warfighting: A Looming Dilemma in Defense Planning,” *War On The Rocks*, April 26, 2016, <https://warontherocks.com/2016/04/presence-vs-warfighting-a-looming-dilemma-in-defense-planning>.

17. Associated Press, “Military Must Focus on Current Wars, Gates Says,” NBC News, 2008, http://www.nbcnews.com/id/24600218/ns/us_news-military/t/military-must-focus-current-wars-gates-says/#.XURBD-hKhPY.

18. For an excellent description of how force demands are generated, forces are allocated, and services cycle units through deployments, see Edward J. Filiberti, *Generating Military Capabilities* (Carlisle, PA: U.S. Army War College Press, 2016).

To meet both wartime and day-to-day force demands, conservative think tanks have proposed larger force structures.

- Heritage's *Index of U.S. Military Strength* evaluates U.S. force structure based on its ability to "handle two major wars or major regional contingencies (MRCs) simultaneously or in closely overlapping time frames." To meet this requirement, the index calls for a large expansion of U.S. active-duty components: 50 regular Army brigade combat teams, 400 battle force ships, and 625 strike aircraft, 36 active duty Marine Corps battalions, and 1,200 active duty Air Force fighter/ground-attack aircraft. On a five-category scale from "very weak" to "very strong," the index rated the U.S. Navy and Air Force as being "marginal." The Army was upgraded to "marginal" from "weak" based on an increase in Brigade Combat Teams, and the Marine Corps was rated as "weak" due to procurement delays and a lack of readiness.¹⁹
- The American Enterprise Institute has similarly recommended a broad expansion of forces to cover a "three-theater" demand. It argued that "America's deteriorating international position requires an urgent reinvestment in and expansion of U.S. military forces." The recommended budget is 4 percent of GDP, about \$112 billion above the Trump administration's planned FY 2020 budget.²⁰ In a supplemental report aimed at "repairing and rebuilding" the armed forces, Mackenzie Eaglen outlined a path whereby in 2025 the Army would have 519,000 active end strength, the Marine Corps 202,000, and the Air Force 350,000. In addition, an accelerated shipbuilding plan would bring the Navy's fleet up to 339 ships.²¹

The competing demands of a high-end conflict and day-to-day force deployments push the military services towards a high-low mix: a force that incorporates both advanced, and often very expensive, technologies and less expensive elements that can cover less demanding threats, such as regional opponents and crisis response. The administration's program does not acknowledge such an approach, but the services appear to have moved in that direction in regard to particular decisions, such as the Air Force's decision to retain the A-10 and procure some F-15EXs and the Navy's decision to continue the frigate program, continue procurement of F-18s, and investigate less-expensive amphibious ships.

Seth Jones, director of CSIS's Transnational Threats Project, has argued that a focus on great power competition should not obscure the fact that the most likely demands on DOD will be to respond to global terrorism and actions in the gray area between peace and conflict. He notes: "It would be imprudent if the United States were to move too quickly away from countering terrorists while the threat is still high."²² While the NDS does include terrorism as a threat, it also notes that "Interstate strategic competition, not terrorism, is now the primary concern in US national security."²³

As noted in the service sections of this report, the proposed FY 2020 budget does not reduce forces dedicated to counterterrorism and irregular warfare. However, the training of general-purpose forces has been almost

19. Dakota Wood ed., *2019 Index of U.S. Military Strength* (Washington, DC: The Heritage Foundation, November 2018), https://www.heritage.org/sites/default/files/2018-09/2019_IndexOfUSMilitaryStrength_WEB.pdf.

20. Calculated by taking 4 percent of the latest reported U.S. GDP according to World Bank numbers (about 20 trillion in 2018) then subtracting the current U.S. DoD budget. "GDP (current US\$)," World Bank, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US>; Four percent requirement from, *To Rebuild America's Military*, (Washington, DC: American Enterprise Institute, October 2015), <http://www.aei.org/wp-content/uploads/2015/10/To-Rebuild-Americas-Military.pdf>.

21. Mackenzie Eaglen, *Repair and Rebuild: Balancing New Military Spending for a Three-Theater Strategy* (Washington, DC: American Enterprise Institute, October 2017), p. 17, <http://www.aei.org/wp-content/uploads/2017/11/Repair-and-Rebuild.pdf>.

22. Seth G. Jones, "America's Counterterrorism Gamble," CSIS, *CSIS Briefs*, July 2018, <https://www.csis.org/analysis/americas-counterterrorism-gamble>.

23. *A Summary of the 2018 National Defense Strategy*, p. 1.

entirely reoriented towards high-end conflict. The risk, as one observer of special forces noted, is that “the military will double down on operational models that were designed for direct confrontation with a near-peer adversary” and ignore “unconventional challenges.”²⁴

THE STRATEGY IS WRONG—TOO FORWARD DEPLOYED, TOO AGGRESSIVE

Although the NDS strategy has received wide and bipartisan support, it is not universally acclaimed, particularly by those who want to spend less on defense. However, if ends/ways/means are to remain aligned, then reduced budgets require a less ambitious strategy.

CATO, for example, has consistently rejected a strategy of engagement and forward deployments and instead proposes a strategy of “restraint.” As Christopher Preble, CATO’s vice president for defense and foreign policy studies, argues: “Admitting that the United States is incapable of effectively adjudicating every territorial dispute or of thwarting every security threat in every part of the world is hardly tantamount to surrender. It is, rather, a wise admission of the limits of American power and an acknowledgment of the need to share the burdens, and the responsibilities, of dealing with a complex world.”²⁵

CATO’s strategy would reduce forward deployments and cut the Army, Air Force, and Marine Corps by a third. The strategy would cut the Navy relatively less (by 25 percent) to retain the ability to deploy globally when needed. Reserves would be reduced less than active-duty forces to maintain a surge capability. These changes would cut about \$110 billion per year from the defense budget.²⁶

Within the last year, a progressive critique of national security strategy and budgets has arisen, espousing a strategy of “restraint” and making similar critiques as CATO. One such analysis proposes cutting ground (Army and Marine Corps) force structure heavily, reducing readiness through cuts in civilians and contractors, and terminating several nuclear modernization programs and most national missile-defense programs. It would save about \$125 billion per year when fully implemented.²⁷

Risks

The future poses two risks to the administration’s plans: (1) the lack of real growth in future budgets; and (2) the sustainment of public support.

LACK OF REAL GROWTH IN FUTURE BUDGETS

As noted earlier, budgets after FY 2020 are flat in constant dollar terms. This is not all bad for defense. The administration decided to give DOD its budget increase up front and not gradually, so DOD benefited from higher near-term budgets.

Nevertheless, there will be new initiatives and programs proposed to increase capabilities for great power conflicts. Further, there are likely to be “fact of life” bills that must be paid. For example, O&M requirements may continue to increase in real terms, perhaps to pay for rising healthcare costs, and personnel compensation will need to increase to compete for labor in a market economy. CBO estimates

24. Phillip Lohaus, “A New Blueprint for Competing below the Threshold: The Joint Concept for Integrated Campaigning,” War on the Rocks, May 23, 2018, <https://warontherocks.com/2018/05/a-new-blueprint-for-competing-below-the-threshold-the-joint-concept-for-integrated-campaigning/>.

25. Christopher A. Preble, “Adapting to American Decline,” *New York Times*, April 21, 2018, <https://www.cato.org/publications/commentary/adapting-american-decline>.

26. From a think tank budget exercise, results described in Jacob Cohn and Ryan Boone, eds., *How Much Is Enough? Alternative Defense Strategies* (Washington, DC: Center for Strategic and Budgetary Analyses, 2016), <http://csbaonline.org/research/publications/how-much-is-enough-alternative-defense-strategies>.

27. Center for International Policy, *Sustainable Defense: More Security, Less Spending – Final Report of the Sustainable Defense Task Force of The Center for International Policy* (Washington, DC: June 2019); <http://comw.org/pda/sustainable-defense-more-security-less-spending/>.

that such costs will require an additional \$78 billion over the FYDP period, FY 2020-FY 2024. With a capped top line, these budget increases will require offsetting cuts to existing programs.²⁸

The administration has long stated its intention to pay for these new initiatives through cuts in overhead and infrastructure. Such efforts are commendable. However, while it is easy to criticize excess overhead, the specifics get messy and hard to implement.²⁹ For example, the administration has been unwilling to push for base closures, which is the most well-documented and widely supported mechanism for achieving overhead savings. The FY 2020 budget has few new initiatives and only small savings. The much-ballyhooed audit identified no savings because that is not its function.³⁰

To help close this gap, Secretary Esper has announced plans to institute a DOD-wide version of the “night court” process that he instituted in the Army to move resources from lower- to higher-priority activities (for further details on this initiative, see the discussion in the later section on civilians).

SUSTAINMENT OF PUBLIC AND POLITICAL SUPPORT

Ultimately, the extent of the defense effort depends on the level of support from the American people. Polling data gathered over the past two decades by Gallup records the shifting public attitudes towards national defense.³¹ The good news for defense is that there is little support for the notion that the United States is too strong. That opinion barely gets into double digits.

The opinion that the United States is not strong enough began rising in 2012, as the postwar drawdown took effect, and continued rising, with the increased threats from Russia, ISIS, and China becoming apparent in 2014.

“Not strong enough” dipped dramatically after 2017 and is now below “about right,” likely reflecting concerns about the Trump administration. Questions about the level of the defense budget elicit similar dynamics.

This level of public opinion would seem to support, though weakly, the path that the Trump administration is on but would not support further large increases. Public opinion could deteriorate if forces become engaged in unpopular conflicts.

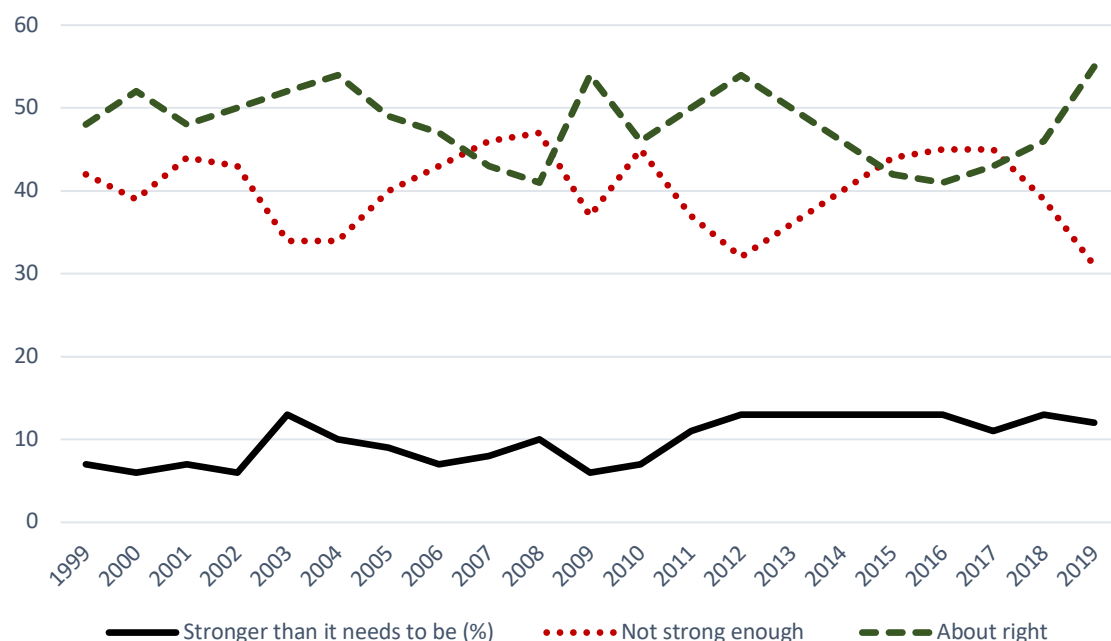
28. Congressional Budget Office, Long-Term Implications of the 2020 Future Years Defense Program (Washington, DC: August 2019), <https://www.cbo.gov/publication/55500>.

29. See, for example, Mark Cancian, “Bad Idea: Easy Savings from DOD Management Reform,” *Breaking Defense*, December 11, 2017, <https://breakingdefense.com/2017/12/41070/>. The piece, and several others, shows how savings are possible but face strong opposition and require investment of political capital.

30. Mark Cancian, “Why Auditing the Pentagon Audit Isn’t Turning up a Windfall of Waste,” *Forbes*, November 19, 2018, <https://www.forbes.com/sites/markcancian/2018/11/19/the-dod-audit-no-pot-of-gold-at-the-end-of-that-rainbow/#490a8f9f3230>.

31. Lydia Saad, “Demand Wanes for Higher Defense Spending,” Gallup Organization, March 12, 2019, https://news.gallup.com/poll/247622/demand-wanes-higher-defense-spending.aspx?g_source=link_newsv9&g_campaign=item_248153&g_medium=copy.

Figure 3: Shifting American Public Feelings on National Defense 1999-2019



Source: Values are percentages, in response to the question: “Do you, yourself, feel that our national defense is stronger now than it needs to be, not strong enough or about right at the present time?” Note – data from years 2013 and 2014 is absent. Original data from “In Depth: Topics A to Z Military and National Defense,” Gallup Organization, <https://news.gallup.com/poll/1666/military-national-defense.aspx>.

Congressional Action

In its FY 2020 action thus far, Congress has mostly supported the administration’s request, which is surprising given how the Democratic Party has moved to the left and focused on domestic programs, while prominent Democrats have expressed skepticism about defense spending—for example, Congressman Adam Smith (D-WA), chairman of the House Armed Services Committee, stated “I think the [defense budget] number’s too high,” and Senator (and presidential candidate) Elizabeth Warren (D-MA) suggested the need to “cut our bloated defense budget.”³²

THE BUDGET DEAL FOR FY 2020 AND FY 2021

The FY 2020 budget faced a challenge from the beginning because, unlike the FY 2019 budget, it was not covered by a bipartisan budget deal. The recently announced budget agreement resolved that uncertainty. The FY 2020 level, \$738 billion for national security (DOD base budget, war funding, plus nuclear programs in the Department of Energy), is above the \$733 billion that the administration had projected last year. It is not far from the president’s \$750 billion request, considering that \$7 billion of the gap was for border security, which was important to the White House but not as important to DOD.

The challenge will be FY 2021, the budget that DOD is now building. The budget agreement allows \$740.5 billion, an increase of only \$2.5 billion. With inflation running about 2 percent a year, just staying even would require a \$14 billion annual increase, and as noted earlier, many defense advocates cite a 3 to 5 percent real

32. For Adam Smith, Aaron Mehta, “Adam Smith Expects Future Defense Budgets to dip below \$716 Billion,” *Defense News*, September 5, 2018, <https://www.defensenews.com/smr/defense-news-conference/2018/09/05/adam-smith-expects-future-defense-budgets-to-dip-below-716-billion/>; Senator Elizabeth Warren, “It’s Time to Reduce Corporate Influence at the Pentagon,” Medium, May 16, 2019, <https://medium.com/@teamwarren/its-time-to-reduce-corporate-influence-at-the-pentagon-98f52ee0fcf1>.

increase as being required to meet the strategy. Some deep cuts will be needed just to get down to the agreed level, and then DOD will have to make further cuts to create some headroom for new programs. That may be a traumatic process for a Pentagon that has enjoyed several years of substantial growth.³³

THE END OF BCA CAPS?

The Budget Control Act of 2011 set budget caps for 10 years, a period that runs out in FY 2021. Because the latest budget deal includes FY 2021, the BCA caps appear to have finally exited the Washington stage. They are unlikely to return. The caps were instituted at a time when deficit hawks were powerful, and the public was worried about rising debt levels. Now, deficit hawks are much less influential. The president, the Republicans in the Senate, and the Democrats in the House have all made it clear that they value funding of their programs (defense and domestic, respectively) more than they are concerned about the deficit. Many commentators have pointed out that this is not sustainable for the long term and, indeed, projections by the Congressional Budget Office show rising deficits and debt.³⁴ However, as a nation, the United States has decided to enjoy the benefits of government spending now and hand this problem to our children and grandchildren.³⁵

33. Leo Shane and Joe Gould, "Budget deal gives a big funding boost to defense, but Republicans wanted more," *Military Times*, July 22, 2019, <https://www.militarytimes.com/news/pentagon-congress/2019/07/23/budget-deal-gives-a-big-funding-boost-to-defense-but-republicans-wanted-more/>.

34. Congressional Budget Office, *The 2019 Long-Term Budget Forecast* (Washington, DC: June 2019), <https://www.cbo.gov/system/files/2019-06/55331-LTBO-2.pdf>. Under the most likely scenario, that current policies for revenue, entitlements, and discretionary spending continue, debt will rise from 78 percent today to 219 percent of GDP by 2049.

35. For description of this "intergenerational child abuse," see Mark Cancian, "Goodbye sequestration, hello deficits: how the budget deal sticks our children with the bill," *Forbes*, August 3, 2019, <https://www.forbes.com/sites/markcancian/2019/08/03/goodbye-sequestration-hello-deficits-how-the-budget-deal-sticks-our-children-with-the-bill/#24d3bb086242>.

2 | Army

The U.S. Army's effort to grow its force structure has been stymied by recruitment challenges, making it difficult to expand for day-to-day operations, creation of new capabilities, and wartime surge. With modernization, the Army has increased production of proven systems and shifted billions into development of high priority programs to prepare the Army for great power conflict.

KEY TAKEAWAYS

- The Army has had difficulty in growing the force even modestly because of recruiting challenges. The regular force increases from 478,000 soldiers in FY 2019 to 480,000 in FY 2020 instead of reaching the planned 492,000. The reserve components essentially hold steady in FY 2020.
- The Army is restructuring to better meet the demands of great power conflict, converting two Infantry Brigade Combat Teams into Armored Brigade Combat Teams and adding some small cyber units. New kinds of units, like multidomain brigades, remain mostly conceptual.
- There is now less tension between regular Army and its reserve components as a result of closer consultations, higher overall budgets, and shared recruitment challenges.
- Army modernization is a mix of good and bad news: the Army increased production of proven systems and shifted \$31 billion over the five-year ("FYDP") into higher-priority modernization programs but is still several years away from having a new generation of systems in production.

Force Structure in FY 2020

Table 2: Army End Strength – Regular and Civilians

	Regular Army		Civilian Full-Time Equivalents (000s)
	<i>Brigade Combat Teams</i>	<i>Authorized End Strength</i>	
FY 2019 Enacted	31	487,500	197,010
FY 2019 Updated	31	478,000	197,010
FY 2020 Request	31	480,000	194,934

Source: BCT data in Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview: Fiscal Year 2020 Budget Request* (Washington, DC: Department of Defense, March 2019), Appendix A, Table A-4, A-2, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request_Overview_Book.pdf; End Strength data in Department of Defense, *Army FY2020 Budget Overview* (Washington, DC: March 2019), 6, <https://www.asafm.army.mil/Portals/72/Documents/BudgetMaterial/2020/Roll%20Out/Overview%20and%20Highlights/Army%20FY%202020%20Budget%20Overview.pdf>.

Table 3: Army End Strength – National Guard and Reserve

	Army National Guard		Army Reserve
	<i>Brigade Combat Teams</i>	<i>Authorized End Strength</i>	<i>Authorized End Strength</i>
FY 2019 Enacted	27	343,500	199,500
FY 2019 Updated	27	335,500	189,250
FY 2020 Request	27	336,000	189,500

Source: BCT data in Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview: Fiscal Year 2020 Budget Request*, Appendix A, Table A-4, A3; End Strength data in *Army FY2020 Budget Overview*, 6.

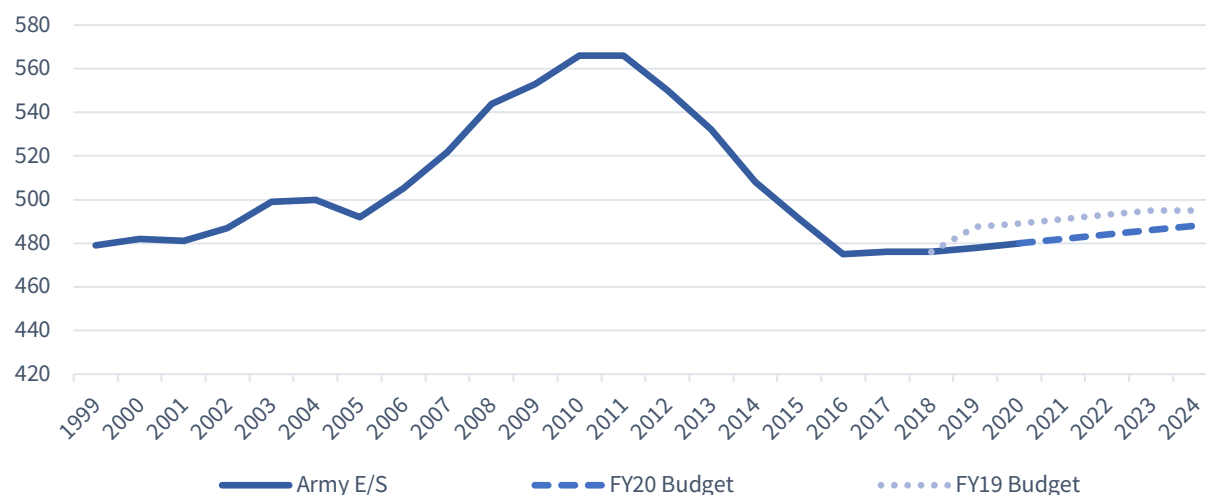
Army plans for force expansion collapsed this year. The Army had fought hard against plans in the Obama administration to drop to 980,000 soldiers, regular and reserve, or lower. FY 2019 plans called for expansion to 1,040,000 by FY 2023, and Army officials had talked about much higher levels. As recently as July 2017, General Milley said: “[B]ased on the tasks that are required, I believe that we need a larger Army . . . because of the tasks that are required. It’s not just some arbitrary number. We’ve done the analysis, and we think we need to be bigger.”³⁶ Army officials had implied a regular force of 500,000 to 510,000.

However, recruiting and retention problems have forced both the active and reserve components to scale back their plans. In FY 2020 the total Army will have an end strength of 1,005,500 and by FY 2024 will grow to only 1,016,500. Thus, the Army in the 2020s will be at about the level that it was before the post-9/11 expansion. To its credit, though, the Army did not reduce its standards but rather accepted a smaller size.³⁷

36. Mark Milley, “Speech to the National Press Club,” National Press Club, Washington, DC, July 27, 2017, http://www.press.org/sites/default/files/20170727_milley.pdf.

37. Meghann Myers, “After 2018’s Recruiting Shortfall, It Will Take A Lot Longer To Build The Army To 500k,” *Army Times*, March 14, 2019, <https://www.armytimes.com/news/your-army/2019/03/14/after-2018s-recruiting-shortfall-it-will-take-a-lot-longer-to-build-the-army-to-500k/>.

Figure 4: Regular Army End Strength 1999-2024 (000s)



Note: This and other historical charts begin with the year 1999 because it is before the 9/11 buildup but after completion of the post-Cold War reductions.

Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2020* (Washington, DC: Department of Defense, May 2019), Table 7-5: Department of Defense Manpower, 260-262, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf; Office of the Under Secretary of Defense (Comptroller), *PB 20 Budget Roll Out Brief* (Washington, DC: Department of Defense, March 2019), 12, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request.pdf.

The regular Army maintains 31 Brigade Combat Teams (BCTs) and 11 Combat Aviation Brigades (CABs), with no net change from FY 2019 to FY 2020. The Army National Guard will maintain its current force of 27 BCTs and 8 Combat Aviation Brigades (CABs). This is a change from the previous plan to deactivate a BCT and go down to 26 BCTs. The Army Reserve, which consists mostly of support units (“enablers”), retains two Theater Aviation Brigades (TABs).

The Army continues its reorganization of BCTs begun in 2014. Under the reorganization, the infantry and armored brigades add a third maneuver battalion. (Stryker brigades already had three maneuver battalions.) This reorganization makes brigades larger and more flexible but requires more soldiers.

The Army also continues implementing its plan to convert two infantry BCTs into armored BCTs, resulting in a total of 13 IBCTs, 11 ABCTs, and 7 SBCTs in the regular force and 19, 5, and 2, respectively, in the Guard. This infantry-to-armor shift arises from renewed tensions with Russia and a focus on near-peer conflicts unlike the counterinsurgency campaigns of the last 16+ years.

Internally, the Army continually moves structure around based on the output of its Total Army Analysis process, which sets the size and structure of all support and logistics elements. Most of these changes are below the level of outside visibility. DOD has, however, announced plans to reduce and restructure the military medical community, so that it focuses more on wartime requirements and less on peacetime care for dependents and retirees. This could make major changes to the Army’s (and all services’) medical establishments, but details are few, and Congress seems reluctant to go along.³⁸

38. Amy Bushatz, “Questions Remain As DOD Gets Ready to Cut 18,000 Medical Personnel,” *Military.com*, July 10, 2019, <https://www.military.com/daily-news/2019/07/10/questions-remain-dod-gets-ready-cut-18000-medical-personnel.html>.

With force structure expanding slightly and end strength goals scaled back, plans to increase unit personnel levels to 100 percent and eventually 105 percent have been shelved. Indeed, the Army will face challenges to avoid “hollowness.”

The Future Size and Shape of the Army

Three opposing dynamics pull the future size and shape of the Army. One is the guidance in the NDS to focus on great power conflicts with Russia and China. That implies a force equipped with advanced, and likely very expensive, technologies paid for, if necessary, by cuts to structure. Another is the day-to-day demand for forces to deploy to Afghanistan, Europe, and elsewhere. That implies a larger force that may not need the most advanced technologies. Finally, difficulties in recruiting and retention, as described earlier, may drive force size regardless of strategy.

In his FY 2020 posture statement, General Milley noted how busy the Army is, “providing Combatant Commanders over 179,000 Soldiers in more than 140 countries, including 110,000 Soldiers deployed on a rotational basis.” Of these troops, Milley highlighted that 30,000 were in the Middle East and Afghanistan, 17,000 forward-deployed in South Korea, and 8,000 in Europe supporting the European Deterrence Initiative.³⁹ The Army has handled these demands and eased stress on the force in several ways:

- Creation of the Security Force Advisory Brigades (SFABs) has eased deployment demands by substituting for standard BCTs. SFABs train, advise, assist, enable, and accompany operations with allied and partner nations, thus reducing the burden on BCTs, which would otherwise have to deploy in pieces for this mission. The FY 2020 budget builds toward five SFABs in the regular force and one in the National Guard.
- Continued mobilization of the reserve components fills gaps. The Army has consistently mobilized about 25,000 soldiers from the reserve components to meet deployment demands.

The Army had planned to grow end strength to spread deployment demands over more soldiers, but that is not feasible.

An opposing pressure is for modernization and building different kinds of capabilities. The most common scenarios for great power conflicts do not require large ground forces. The Pacific theater consists mainly of ocean and long distances. In the most challenging European scenario, the defense of the Baltic states, geography makes rapid deployment of large ground forces difficult.

General Milley has often stated his concern about Army readiness to fight a high-end conflict. While noting the Army’s progress in addressing readiness shortfalls from recent periods of sustained conflict and reduced military spending, Milley highlighted that “our near-peer competitors, however, capitalized on this period to advance their own positions by modernizing their militaries and reducing the overmatch we held for decades.”⁴⁰ RAND’s extensive wargaming of a Baltic invasion concluded, “the outcome was, bluntly, a disaster for NATO. Russian forces . . . were at the gates of or actually entering Riga, Tallinn, or both between 36 and 60 hours after the start of hostilities.”⁴¹

This high-end conflict implies a force, perhaps a smaller force, that has advanced systems for ground combat, fires, and aviation. It also implies a force that has different kinds of capabilities such as cyber,

39. Mark Milley, “On the Posture of the United States Army,” Testimony before the Senate Armed Services Committee, 116th Cong., 1st sess., March 26, 2019, https://www.army.mil/e2/downloads/rv7/aps/aps_2019.pdf?st.

40. Mark Milley, “On the Posture of the United States Army.”

41. David A. Shlapak and Michael W. Johnson, *Reinforcing Deterrence on NATO’s Eastern Flank: Wargaming the Defense of the Baltics* (Arlington, VA: RAND Corporation, 2016), http://www.rand.org/pubs/research_reports/RR1253.html.

electronic warfare, anti-ship/sea control fires, cruise and ballistic missile defense, and very long-range precision fires.⁴² Creating this force in an environment of constrained end strength will require cutting existing capabilities such as BCT's, a step the Army has not yet been willing to take.

The first of these new kinds of units to be fielded is cyber. The Army created cyber units quickly to get this new capability into the field and experiment with it. Although this engendered criticism from the Government Accountability Office that the Army had not fully analyzed the capability ahead of time, there is widespread support for the Army's effort to move quickly. However, the Army is having a hard time recruiting enough personnel with the right skills, so cyber units are only partly filled, despite their relatively small size (several hundred in total).⁴³

Other new kinds of units, like multi-domain brigades, remain conceptual, although the Army has published concepts and conducted experiments. Multi-domain units would integrate space, cyber, air, ground, and maritime "to execute simultaneous and sequential operations using surprise and the rapid and continuous integration of capabilities across all domains to present multiple dilemmas to an adversary."⁴⁴

Balance of Regular and Guard/Reserve Forces

Bottom line up front: Although the active/reserve mix has frequently been a source of tension in the Army, those tensions have eased recently as a result of closer consultation arising from the 2016 commission, higher budgets that benefit both components, and the difficulty that both components have in recruiting and retaining additional soldiers.

Tensions between regulars and reservists have existed since the beginning of the Republic. The two forces have different perspectives, histories, and cultures, so the resulting tensions are a challenge to be managed, not solved. This tension is particularly an issue for the Army because it has, by far, the largest reserve component, both in relative and absolute terms. For example, 52 percent of the total Army is in the reserve components, but only 35 percent of the total Air Force, 18 percent of the total Marine Corps, and 15 percent of the total Navy are in reserve components. Army reserve components are nearly twice the size of all the other reserve components put together (in FY 2019, 525,000 versus 275,000).

As the graph below shows, the active/reserve balance has shifted over time. Institution of the Total Force Policy in 1970, which called for increased reliance on the reserves, the initiation of the Volunteer Force in 1973, which raised the cost of military personnel, and the end of the draft in 1973, which cut off an easy supply of active duty personnel, caused the ratio to move away from an active-heavy force to parity between the components.

With the end of the Cold War, the ratio changed to a reserve heavy force as the regular force decreased more rapidly than the reserves.

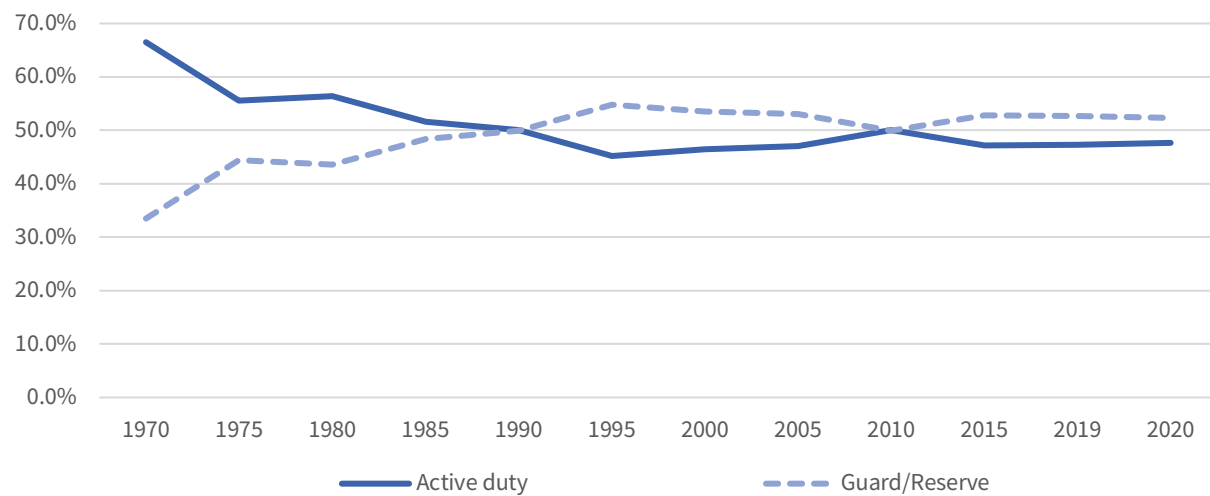
The ratio reached parity again with expansion of the regular force during the wars in Iraq and Afghanistan but has returned to what appears to be a strategically stable level: 48 percent regular, 52 percent Guard/reserve. Instead of large growth in either the regular or Guard/reserve force, the Army, and DOD in general, have turned to contractors, as discussed in a later section.

42. Jen Judson, "Multi-Domain Operations Task Force Cuts Teeth in the Pacific," Defense News, August 28, 2018, <https://www.defensenews.com/land/2018/08/28/multidomain-operations-task-force-cuts-teeth-in-pacific/>.

43. Sydney Freedberg, "Army Struggles To Man New Cyber/EW Units: GAO," Breaking Defense, August 16, 2019, <https://breakingdefense.com/2019/08/army-struggles-to-man-new-cyber-ew-units-gao/>.

44. "Multi-Domain Operations," U.S. Army Training and Doctrine Command, Oct 4, 2018, <https://www.army.mil/standto/2018-10-04>.

Figure 5: Army Force Mix Ratio 1970-2019



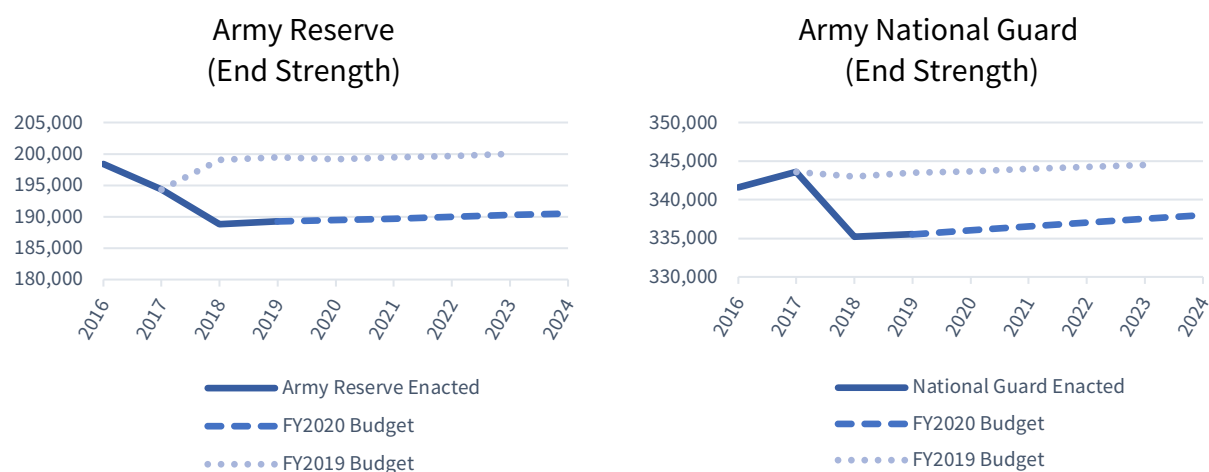
Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2020*, Table 7-5: Department of Defense Manpower, 260-262; Office of the Under Secretary of Defense (Comptroller), *PB 20 Budget Roll Out Brief*, 12.

Tensions between the components peak during drawdowns when constrained resources force difficult trade-offs. Thus, there was a crisis in the late-1990s during the post-Cold War drawdown and another in 2014 during the post-Iraq/Afghanistan drawdown. Key to easing recent tensions was the 2016 National Commission on the Future of the Army. The commission looked broadly at all the components and the total Army's needs and published a set of recommendations that all components could accept.⁴⁵ The recent budget increases have helped implement the commission's recommendations and eased tensions generally, as the Army does not need to make tradeoffs between the components.

The bad news this year is that plans for force expansion in the reserve components have collapsed, as they have with the regular Army, amid difficulties in recruiting and retention. As the charts below show, the Army Reserve had planned to increase to 200,000 and the Army National Guard to 343,000. Instead, both struggle to maintain their FY 2019 end strength.

45. National Commission on the Future of the Army, *Report to the President and Congress of the United States* (Washington, DC: January 2016), <https://fas.org/man/eprint/ncfa.pdf>.

Figure 6: Army Reserve and Army National Guard End Strength



Source: PB 20 Budget Roll Out Brief, 12; Office of the Undersecretary of Defense (Comptroller), *Fiscal Year 2019 Budget Request* (Washington, DC: Department of Defense, February 2018), 7, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/FY2019_Budget_Request.pdf; Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview: Fiscal Year 2020 Budget Request*; Office of the Undersecretary of Defense (Comptroller), *Request for Additional Fiscal Year 2017 Appropriations* (Washington, DC: Department of Defense, March 16, 2017), 7, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/marchAmendment/FY2017_Budget_Request.pdf.

Rather than increase size, the Reserve components have opted to increase readiness. The number of National Guard rotations to Combat Training Centers has increased from two to four, and the number of reserve component training days has increased. Nevertheless, both reserve components will suffer from understrength units as the force structure has not declined with the end strength plans.

The reserve components need to sustain their status as an operational reserve. On average, about 25,000 Army Reservists and Guardsmen are mobilized at any time, mainly supporting operations in Iraq and Afghanistan.⁴⁶ With high force demands on the Army continuing, this level of mobilization will likely persist indefinitely.

Modernization – Current and Future

Looked at broadly, Army modernization is a “good news, good news, bad news” story: the good news is that the Army continues production of proven systems and has a well-modernized force as a result. More good news is that the Army shifted \$31 billion over the FYDP period into higher-priority modernization programs. The bad news is that the Army is still several years away from having a new generation of systems in production to take it into the 2020s and beyond and set it up for combat against great power adversaries.

Modernizing the Current Force

In the near term, the Army is sensibly plugging its most serious capability gaps by upgrading the major systems it has and producing these systems at relatively high rates. As CSIS acquisition experts Andrew Hunter and Rhys McCormick point out, focusing on capabilities through upgrades rather than developing major new systems avoids the technical, budgetary, and political risk of relying on a few costly, high-profile programs.⁴⁷

46. Military Manpower Data Center, *Weekly Reserve Activation Reports* [limited distribution, not publicly available].

47. Rhys McCormick and Andrew Hunter, “The U.S. Army’s Next Big 5 Must Be Capabilities, Not New Platforms,” *Defense One*, July 25, 2017, <https://www.defenseone.com/ideas/2017/07/us-armys-next-big-5-must-be-capabilities-not-new-platforms/139714/?oref=d-river>.

Thus, the Army FY 2020 budget funds the latest versions of existing systems: the Abrams tank (M1A2C), the Bradley Fighting Vehicle (M2A4), the Stryker fighting vehicle (Double V-Hull, 30mm gun), the Paladin self-propelled howitzer (M109 PIM), the PATRIOT missile system (PAC-3 Missile Segment Enhancement), the UH-60 Blackhawk (M-model), the AH-64 Apache (E model), and the CH-47 Chinook (F-model). These programs run smoothly, produce equipment at known costs and on predictable schedules, and avoid acquisition scandals that in the past embarrassed the Army in front of Congress and the public.

Two relatively new programs are also in production: the Joint Light Tactical Vehicle, an armored light truck and replacement for the up-armored HMMWVs, and the Armored Multipurpose Vehicle, a replacement for the M113 armored personnel carrier.

The effect of this approach, combined with the large wartime procurements during the 2000s, is that the Army's force structure is filled with relatively new equipment. For example, the Apache fleet averages 8 years and the Chinook fleet 10 years.⁴⁸ Gone are prewar concerns about aging equipment fleets.

Finally, the Army's FY 2020 budget, like the other services, continues robust funding for munitions, for example, the Guided MLRS rocket, the Javelin antitank missile, and the 155mm artillery projectile. This reflects preparation for the intense combat that conflict with a great power would entail.

Creating the Future Force: Futures Command and "Night Court"

A long-standing concern about Army modernization is that there are no new systems coming online to replace the existing generation. This was the result of a "triple whammy": a missed procurement cycle due to program failures, a focus on near-term systems for wartime operations, and modernization funding reductions in the postwar drawdown.⁴⁹

The big news this year is that the senior Army leadership took a bold step toward rectifying this weakness by conducting "night court," a process by which they reviewed every program to decide its continuing relevance and thereby identified resources for new programs. The decisions shifted \$3.6 billion from lower- to higher-priority programs in the FY 2020 budget and \$31 billion over the FYDP period.⁵⁰ The process has received widespread acclaim in the national security community, although Congress has balked at a few of the cuts that the process made.

To bring fresh thinking into the Army's acquisition programs and to move programs forward more quickly, the Army created the Army Futures Command in July 2018. Headquartered in Austin, Texas, far from existing Army bases but close to civilian innovation centers, the command is intended to follow the rapid timelines of civilian innovators rather than those of the ponderous DOD acquisition system. So far, the command has produced a lot of process and discussion (nine cross-functional teams and an 11-step process) but no new programs. To be fair, the command just recently reached full operational capability, but expectations are high.

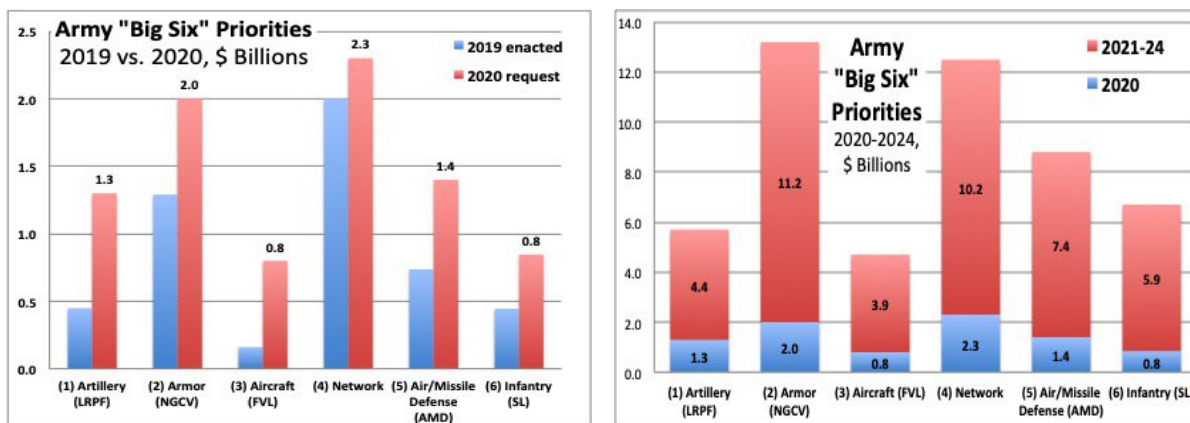
48. Congressional Budget Office, *Cost of Replacing Today's Army Aviation Fleet* (Washington, DC: May 2019), Table A-1, <https://www.cbo.gov/system/files/2019-05/55180-ArmyAviation.pdf>.

49. Rhys McCormick, "The Army Modernization Challenge: A Historical Perspective," Center for Strategic and International Studies, March 31, 2016, <http://fysa.csis.org/2016/03/31/the-army-modernization-challenge-a-historical-perspective>. For description of Army acquisition failures, see John M. McHugh, *Army Strong: Equipped, Trained, and Ready, Final Report of the 2010 Army Acquisition Review* (Washington, DC: Department of the Army, January 2011), http://www.rdecom.army.mil/EDCG%20Telecoms/Final%20Report_Army%20Acq%20Review.pdf.

50. Mark Esper, "Building the Army We Need," *Hill*, March 15, 2019, <https://thehill.com/opinion/national-security/433753-building-the-army-we-need>; Connie Lee, "News from AUSA Global: Army Seeks to Realign Additional \$10 Billion in Budget," *National Defense Magazine*, March 26, 2019, <https://www.nationaldefensemagazine.org/articles/2019/3/26/news-from-ausa-global-army-seeks-to-realign-additional-10-billion-in-budget>.

The Army has divided its development effort into six major priorities (sometimes known as “the big six”): Long Range Precision Fires (artillery), Next Generation Combat Vehicle (armor), Future Vertical Lift (aviation), Army Network, Air and Missile Defense, and Soldier Lethality (infantry). The chart below shows the effect of “night court” as investment in each of the priority areas has increased.

Figure 7: Funding for Army Modernization Priorities



Note: LRPF: Long-Range Precision Fires; NGCV: Next Generation Combat Vehicle; FVL: Future Vertical Lift. AMD: Air & Missile Defense; SL: Soldier Lethality.

Source: Sydney J. Freedberg, “Army ‘Big Six’ Ramp Up in 2021: Learning From FCS,” Breaking Defense, March 14, 2019, <https://breakingdefense.com/2019/03/army-big-six-ramp-up-in-2021-learning-from-fcs/>. These charts are used with permission from Freedberg and Breaking Defense.⁵¹

These development systems will generally strengthen existing unit structures like BCTs, but a few—like cruise missile defense and antiship munitions—may create entirely new kinds of units.

Army leadership identifies FY 2023-2024 as the time when budget emphasis shifts to modernization and FY 2028 as the year when fielding of new systems begins. That is pretty far into the future, and these programs will need to cross the so-called “valley of death” that separates a technology project from a fielded capability. The Army plans to use the flexible Other Transaction Authorities recently provided by Congress to bridge this gap. However, it will still need to find funds for procurement, which the Army’s chief resource manager called “unrealized bills out [in the future]” that we’re going to have to figure out how to resource.”⁵²

Described below are the major activities in each of the priority areas.

- **Air and missile defense.** A major focus here is options to upgrade short-range air defenses. During the Cold War, the Army had extensive force structure dedicated to short-range air defense to protect its forces against any enemy aircraft that got through the U.S. Air Force fighter screen. However, after the Cold War, these units were mostly deactivated, with only a few left in the Army National Guard. The new threat is not so much enemy aircraft as cruise missiles and UAVs. Many prospective adversaries have such capabilities, and the Army has few defenses. The Israeli system Iron Dome may

51. These charts from Breaking Defense show the increase and distribution of the Army’s modernization efforts in the FY2020 budget following the “night court” process. As Freedberg highlights in the first chart, “The Army is requesting \$8.6 billion in 2020—a \$3.6 billion increase over previous long-term plans—for its modernization priorities.” Further, as Freedberg highlights in the second chart, most of the increased funding will come in the years between 2021 and 2024, where “the priority programs will get \$57 billion. That’s a whopping \$33 billion increase—74 percent—over prior plans” and includes \$5 billion that is not yet allocated to specific programs.

52. Sydney Freedberg, “Can Army Control Costs of Its New Weapons?” Breaking Defense, Sept. 19, 2019, <https://breakingdefense.com/2019/09/can-army-control-costs-of-its-new-weapons/>

provide an interim capability. The first battery of Maneuver Short-Range Air Defense enters service in 2020. MSHORAD mounts a variety of missiles on 8×8 Stryker armored vehicles to protect frontline mechanized forces from drones, helicopters, and attack jets.

- **Long-range precision firepower.** A variety of programs explore ways to extend the range of current fires platforms, both cannon and missile. One potential new capability is an anti-ship missile for MLRS/HIMARS, which would give the Army a major role in a Pacific maritime campaign. The effect of these initiatives is to revive the artillery branch, which had been considered a “dead branch walking” during the years of stability operations when firepower was a lower priority.
- **Next generation combat vehicle.** Greatly desired by the armored community, the program is still in the demonstrator phase, previous efforts having failed to produce a viable program. A replacement for the Bradley is the highest priority with the Optionally Manned Fighting Vehicle. However, the next armored vehicle to appear will likely come out of the relatively mature “Mobile Protected Firepower” effort (i.e., a light tank). One supporting capability on the verge of being fielded is armor protection systems mounted on existing armored vehicles that would intercept antitank missiles.
- **Future vertical lift.** The Army is exploring a variety of technologies—Future Long-Range Assault Aircraft (FLRAA) for transport and the Future Attack Reconnaissance Aircraft (FARA) for improved armed reconnaissance capabilities—but none are yet ready for fielding.
- **Soldier lethality.** This covers enhancements, such as enhanced night vision goggles and new individual weapons and is linked to the department-wide Close Combat Lethality Task Force. The goal is to fund specialized equipment for “the close combat 100,000,”—those soldiers who actually close with the enemy—not the million-strong army.
- **Network.** A variety of programs will upgrade and safeguard networks, particularly constructing them so they can operate in a hostile cyber environment.

3 | Navy

The Navy in FY 2020 reflects the priorities of the department as a whole. It sustains the level of readiness built in the FY 2017-FY 2019 budgets and modernizes by increasing the production of existing ships, aircraft, and munition programs. Unlike the other services, the Navy is significantly expanding its force structure.

KEY TAKEAWAYS

- The Navy feels the capacity/capability tension acutely due to the high demands of day-to-day operations, long lead times, and high capital costs for weapons systems.
- In the face of this tension, the Navy is actively implementing force structure expansion plans, aiming to reach its 355-ship goal by FY 2034 through a mix of service life extensions and new construction.
- The Navy is also procuring unmanned surface and undersea vessels, with potentially revolutionary long-term force structure implications.
- Naval aviation inventories are stable and most modernization programs are operating smoothly; however, it is dogged by high costs to maintain its inventory and has been slow to field unmanned aerial vehicles.

The Navy in FY 2020 generally reflects the priorities of the department as a whole. It sustains the level of readiness built in the FY 2017–FY 2019 budgets and mostly modernizes by increasing production of existing ship, aircraft, and munition programs.

However, a major change is the acquisition of unmanned surface and subsurface vessels. Although these early acquisitions are essentially experimental, they could revolutionize naval combat in the long term by shifting the fleet balance to smaller, more numerous, and more dispersed systems. Thus, the Navy surface and subsurface fleet may be on the cusp of revolutionary change. Naval aviation, in contrast, remains focused on manned platforms.

The Navy feels the capacity/capability tension most acutely because of the high demands for its forces in day-to-day operations and the long lead times and high capital costs for its weapon systems. Therefore, it actually implements its force structure expansion plans, unlike the Army and Air Force, which have expansion plans but have had to defer implementation.

End Strength in FY 2020

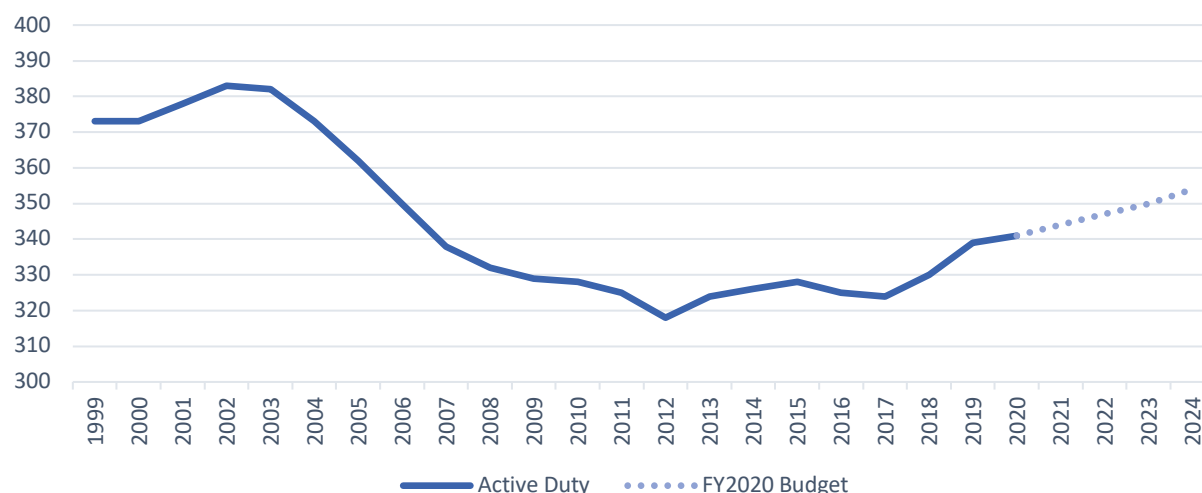
Table 4: Navy End Strength – Active, Reserve, and Civilians

	ACTIVE NAVY	NAVY RESERVE	CIVILIAN
	<i>End Strength</i>	<i>End Strength</i>	<i>Full-Time Equivalents</i>
FY 2019 ENACTED	335,400	59,100	192,702
FY 2020 REQUEST	340,500	59,000	195,502
CHANGE	+5,100	-100	+2,800

Source: *Highlights of The Department of the Navy FY 2020 Budget* (Washington, DC: Department of the Navy, 2019), <https://www.secnv.navy.mil/fmc/fmb/Documents/20pres/Budget%20Highlights%20Book.pdf>. PAA data in Figure 3.6, 3-6; Active End Strength data in Figure 2.1, 2-4; Reserve End Strength data in Figure 2.3, 2-5; Civilian data in Figure 2.10, 2-13.

The Navy continues to increase the number of personnel after hitting a low point of 318,000 active duty sailors in FY 2012. The Navy projects that active duty end strength will continue to grow, reaching 354,000 by FY 2024.

Figure 8: Navy Active Duty Manpower – 1999-2024

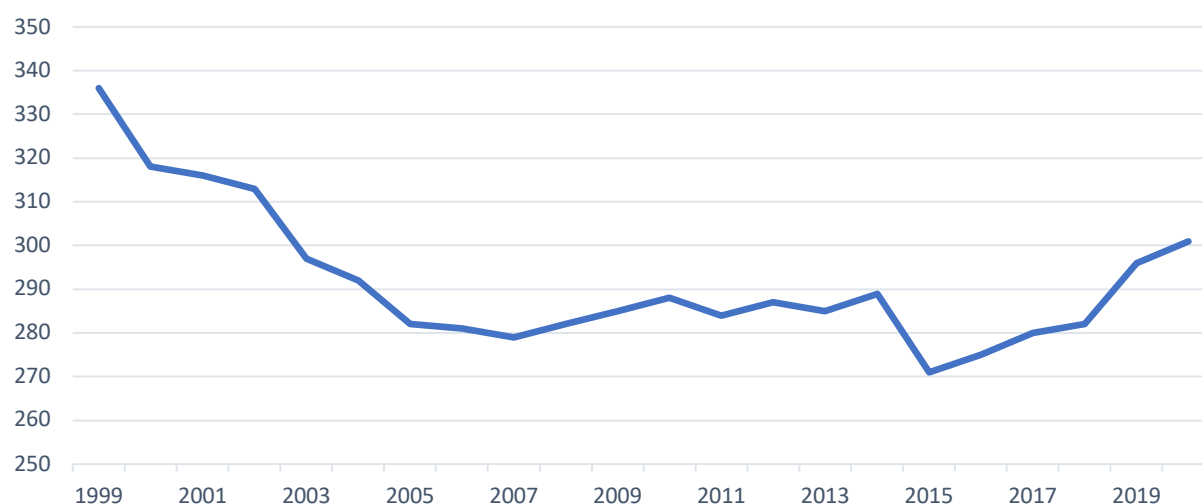


Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2020* (Washington, DC: Department of Defense, May 2019), Table 7-5: Department of Defense Manpower, 260-262, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf; Office of the Under Secretary of Defense (Comptroller), *PB 20 Budget Roll Out Brief* (Washington, DC: Department of Defense, March 2019), 12, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request.pdf.

Many of the additional active duty personnel will go to increasing the manning of existing ships. The Navy had reduced manning over the years, counting on technology and shore-based capabilities to offset smaller ship crews. Ship collisions showed that more sailors were needed to cover all the many tasks aboard ship and to allow proper training.⁵³ Additional sailors are also needed to man the new ships entering the fleet.

Fleet Size in FY 2020 and Beyond

Figure 9: Total Navy Active Ships – 1999-2020



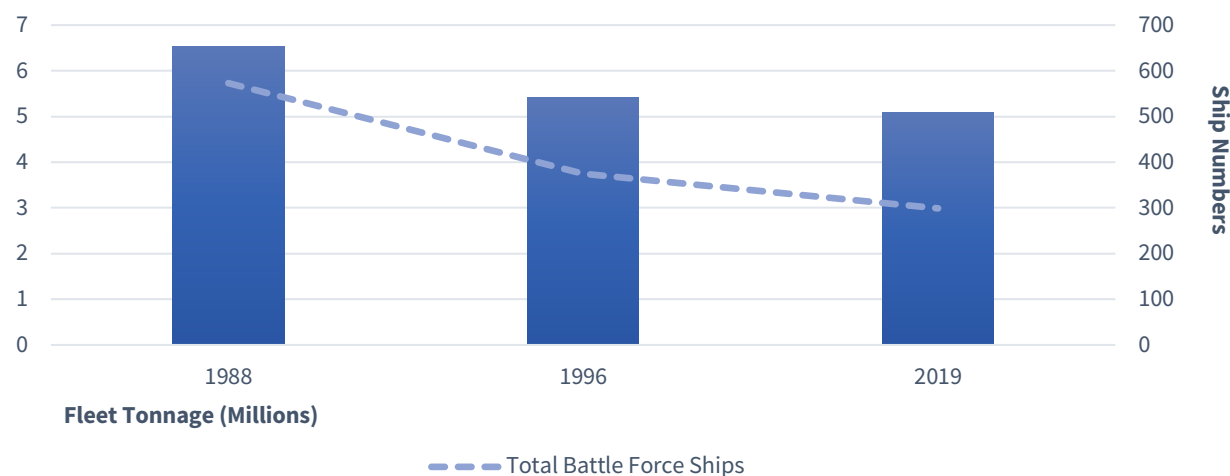
Source: Ship count 1999-2016 data from “U.S. Ship Force Levels: 1886 to Present,” Naval History and Heritage Command, <https://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html#2000>; Current and projected ship count from Department of the Navy, *FY 2020 President’s Budget* (Washington, DC: March 2019), 5, 15, <https://www.secnav.navy.mil/fmc/fmb/Documents/20pres/Roll-Out%20Brief.pdf>.⁵⁴

53. Sam LaGrone, “Fleet Forces: Navy Short 6200 at Sea Sailors Now to Meet New Manning Requirements,” US Naval Institute, February 26, 2019, <https://news.usni.org/2019/02/26/fleet-forces-navy-short-6200-at-sea-sailors-now-to-meet-new-manning-requirements>.

54. The sharp dip in ship count from 2014 to 2015 was due to the retirement of the last FFG-7 *Oliver Hazard Perry*-class frigates and to

After years of shrinkage, the fleet is growing as new ships are delivered, particularly the numerous Littoral Combat Ships (LCSs) and DDG-51 destroyers. (Rightly or wrongly, the ship count is often used as a measure of Navy capacity.)⁵⁵ The Navy projects that it will hit 296 ships by the end of FY 2019 and 301 ships at the end of FY 2020, up from its low point of 271 in 2015.

Figure 10: Ship Count and Tonnage of Navy Battle Force – 1988, 1996, 2019



Source: “U.S. Ship Force Levels: 1886 to Present,” Naval History and Heritage Command; Current ship count from Department of the Navy, *FY 2020 President’s Budget*, 5, 15; tonnage from Richard Sharpe, *Jane’s Fighting Ships 1988* (New York: Jane’s Information Group, 1988); Sharpe, *Jane’s Fighting Ships 1996* (New York: Jane’s Pub., 1996); Stephen Saunders, *Jane’s Fighting Ships 2019-2020* (New York: Jane’s Information Group, 2019); “U.S. Navy Ships,” U.S. Navy, https://www.navy.mil/navydata/our_ships.asp.

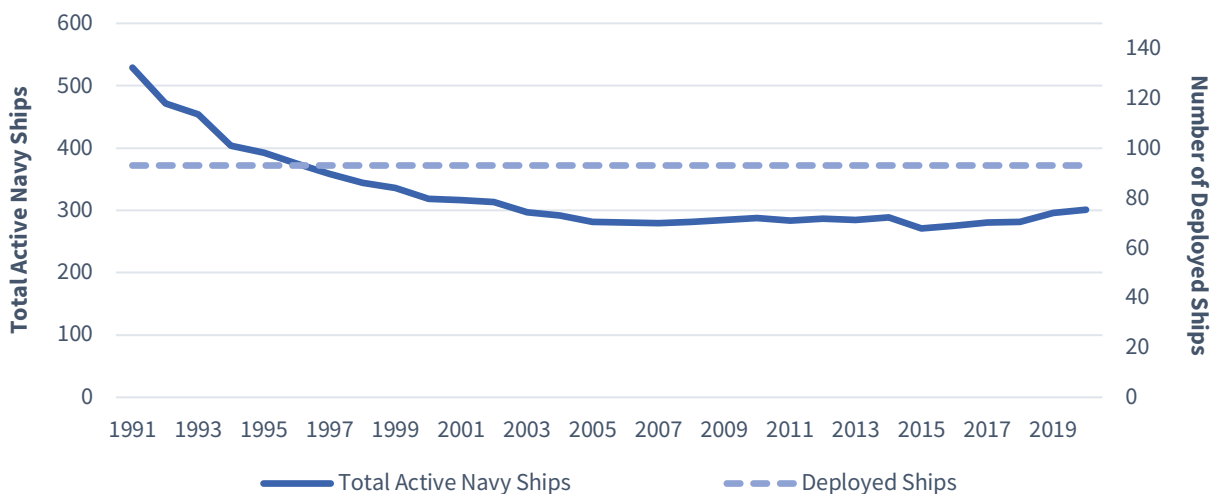
In part, the decline in ship numbers resulted from Navy decisions to buy bigger, and more expensive, ships. As the chart on tonnage shows, today’s fleet has about half the number of ships of 1988 (299 versus 565) but 78 percent of the tonnage. Today’s DDG-51 destroyer (Flight IIA) displaces 9,800 tons, twice the tonnage of a 1980s *Charles F. Adams*-class destroyer, and four times the tonnage of a World War II *Fletcher*-class destroyer (2,500 tons). Indeed, the DDG-51 has the tonnage of a World War II cruiser. The increased size produces greater capability, but ships can only be in one place at a time.

the Navy changing its counting rules briefly in 2014 to include, among others, Patrol Coastal craft and hospital ships in its ship force count. Sydney J. Freedberg, Jr., “Outrage On Capitol Hill As Navy Changes Ship-Counting Rules,” *Breaking Defense*, March 11, 2014, <https://breakingdefense.com/2014/03/outrage-on-capitol-hill-as-navy-changes-ship-counting-rules/>.

55. ADM James Winnefeld, for one, argues that focus on ship count distorts decisionmaking: James Winnefeld, “Charting a New Course for the U.S. Navy,” *Boston Globe*, November 8, 2015, <https://www.bostonglobe.com/opinion/2015/11/08/charting-new-course-for-navy/rJeaDKEDlZiXkpKEXIAFlN/story.html>.

The Stress of Current Operations

Figure 11: Navy Fleet Size and Deployment Levels



Source: “U.S. Ship Force Levels: 1886 to Present,” Naval History and Heritage Command; Current and projected ship count from, from Department of the Navy, *FY 2020 President’s Budget*, 5, 15.

Despite its slowly increasing size, the Navy is feeling a lot of stress. The average number of ships deployed has remained at the current level of 100 for three decades, even though the number of ships has declined over time. To meet deployment demands, the length of deployments has increased and the time between deployments has decreased. The need to deploy to Europe, a theater largely ignored since the end of the Cold War, adds to demands. To meet these new demands in Europe and the Atlantic, the Navy reactivated the Second Fleet headquarters in Norfolk.

The Navy reports that it can fulfill only about half of the theater commanders’ requests for Navy ships.⁵⁶ Because these theater requests are not resource constrained, it is unsurprising that the requests greatly exceed what is available.

Nevertheless, this shortfall engenders a concern that the Navy is too small for the tasks that it is being asked to perform. Highly-publicized gaps, such as the intermittent lack of a carrier in the Middle East, reinforce this perception.⁵⁷ Many naval strategists, such as Bryan McGrath of the Hudson Institute, argue that “size matters”: “Freedom of the seas’, a concept that is essential to both the security and prosperity of the United States and all other trading nations . . . is overwhelmingly associated with being there, which is a function of numbers (capacity).”⁵⁸

On the other hand, the *National Defense Strategy* (NDS) calls for a focus on great power conflict, specifies the need for high-end capabilities, downplays the need for force expansion, and states an intention to reduce day-to-day demands.

56. John M. Richardson, “Statement of Admiral John M. Richardson,” Testimony before the House Committee on Appropriations, Subcommittee on Defense, Hearing on the United States Navy and Marine Corps, 115th Cong., 2nd sess., January 18, 2018, <https://docs.house.gov/meetings/AS/AS03/20180118/106784/HHRG-115-AS03-Wstate-RichardsonJ-20180118.pdf>.

57. Lucas Tomlinson, “No US Carrier at Sea Leaves Gap In Middle East,” Fox News, December 30, 2017, <http://www.foxnews.com/us/2016/12/30/no-us-carrier-at-sea-leaves-gap-in-middle-east.html>. This gap was partially filled by an amphibious carrier and an earlier gap by a French carrier.

58. Bryan McGrath, “When It Comes to The Navy, Size Matters,” Real Clear Defense, August 3, 2017, <https://www.hudson.org/research/13804-when-it-comes-to-the-navy-size-matters>; also, Bryan McGrath, “Notes of Caution on the Navy’s Forthcoming Force Structure Assessment,” War on the Rocks, March 23, 2018, <https://warontherocks.com/2018/03/notes-of-caution-on-the-navys-forthcoming-force-structure-assessment/>.

One adjustment the Navy has made to the new strategy is to make ship deployments less predictable. Although maintenance and training cycles lock the window for deployments, the Navy has changed the location and timing of deployments to create some operational unpredictability that the NDS directs. Thus, the *Truman* carrier strike group sailed to the Arctic Circle and Europe, rather than the Middle East, and broke up the deployment by returning to Norfolk briefly.⁵⁹

The 355-Ship Fleet

Both the president and Congress have endorsed the Navy’s 355-ship goal (“It shall be the policy of the United States to have available, as soon as practicable, not fewer than 355 battle force ships”).⁶⁰

Compared with the 2014 goal of 308 ships, the Navy’s 355-ship goal added numbers in several categories but especially submarines (+18) and large surface combatants (+16). It focuses on existing and proven ship types and includes none of the nontraditional ships that some outside force structure proposals had proposed. The intention is to get ships built quickly, without the delay and risk of development programs.

Table 5: Comparison of Navy 355-ship and 308-ship Force Structure Goals

Ship Type	355-ship Goal	308-ship Goal
Ballistic Missile Submarines (SSBN)	12	12
Attack Submarines (SSNs)	66	48
Aircraft Carriers (CVNs)	12	11
Large Surface Combatants (CGs/DDGs)	104	88
Small Surface Combatants (FFs/LCSs)	52	52
Amphibious Ships	38	34
Combat Logistics Force	32	29
Expeditionary Fast transports and Support Base Ships	16	13
Command and Support Ships	23	21
Total	355	308

Achieving the 355-ship Goal

Achieving this 355-ship goal will require resources substantially above historical levels and even above the recent high shipbuilding budgets. The Navy’s 30-year shipbuilding plan calculates spending \$20.3 billion per year through FY 2024 and \$26 billion to \$28 billion beyond FY 2024.⁶¹ The Congressional Budget Office (CBO) found that “[the cost] for new-ship construction under the Navy’s 2019 shipbuilding plan is almost double the historical average of \$13.6 billion (in 2018 dollars). CBO’s estimate of \$28.9 billion per year for the full cost of the plan is 80 percent higher than the \$15.8 billion the Navy has received in annual appropriations, on average, over the past 30 years for all activities funded by its shipbuilding account.” Moreover, CBO also found that “the cost of operating and maintaining a 355-ship fleet over 30 years would be much greater than either the cost of purchasing the new ships or the recent budgets for operating

59. Megan Eckstein, “Navy leaders say dynamic force employment proving successful in Truman deployment,” US Naval Institute, November 22, 2018, <https://news.usni.org/2018/11/22/navy-leaders-say-dynamic-force-employment-proving-successful-truman-deployment>.
60. U.S. Congress, House, *National Defense Authorization Act for Fiscal Year 2018*, HR 2810, 115th Cong., 1st sess., December 12, 2017, Section 1025, <https://www.congress.gov/bill/115th-congress/house-bill/2810/text>.
61. Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020* (Washington, DC: DOD, March 2019), https://www.navy.mil/strategic/PB20_Shipbuilding_Plan.pdf.

today's fleet."⁶² The Congressional Research Service came to similar conclusions.⁶³ On an encouraging note, Congress has added about \$2 billion per year to the shipbuilding budget to help close this gap.

One way the Navy has proposed to close the gap between its fleet goal and its resources is to extend the life of existing ships by 5 to 19 years.⁶⁴ Therefore, it will increase the life of the DDG-51 class to 45 years and possibly push amphibious ships to 50 years. The service lives of other classes could likewise be lengthened. Keeping the hull, mechanical, and engineering systems going this long is likely possible, given appropriate maintenance. In the past, however, the Navy has retired ships early to free funds for new construction and because of concerns that the combat systems were becoming obsolete.

The Navy considered options to reactivate retired ships, especially the recently retired FFG-7 *Perry*-class but judged that the combat systems needed too much upgrading to make the reactivation worthwhile.⁶⁵

Gaps between available forces and requirements have also generated interest in "federated" approaches, that is, having allies and partners contribute niche capabilities so that the whole has a coherent set of capabilities.⁶⁶

The chart below shows the different projections for ship inventories from Navy 30-year shipbuilding plans. The FY 2017 projection, the last of the Obama administration, hit its 308-ship goal through the 2020s, then dipped below 300 for the remainder of the projection.

The Trump administration produced several shipbuilding options in its FY 2019 30-year shipbuilding plan. (There was no plan in FY 2018 since the Trump administration had just taken office.) The basic, sustainable FY 2019 option reached about 315 ships through the 2020s, then rose to about 340 but did not achieve 355 ships until the 2050s, outside the 30-year window. Since not meeting the Navy's (and the president's) goal was bureaucratically embarrassing, the Navy offered an "accelerated" option that used all available shipbuilding capacity (at a much higher cost) and reached 355 ships in 2040.⁶⁷

The higher budget cost was a major stumbling block, so the Navy proposed extending ship service lives. That greatly increased ship count starting in the late 2020s, reaching 355 ships by FY 2032. The 2020 plan adopts the FY 2019 extended service life plan, reaching a total of 355 ships in FY 2034 (though not of the exact distribution in the 355-ship FSA) and capping fleet size at that level. The FY 2020 plan is lower in the near term because of decisions this year to retire MCMs and cruisers (discussed later).⁶⁸

62. Eric Labs, *An Analysis of the Navy's Fiscal Year 2019 Shipbuilding Plan* (Washington DC: Congressional Budget Office, October 2018), 3, <https://www.cbo.gov/system/files/2019-01/54564-FY19Shipbuilding.pdf>. (CBO has not yet released its analysis of the FY 2020 shipbuilding plan).

63. Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues For Congress* (Washington, DC: Congressional Research Service, July 2019), <https://fas.org/sgp/crs/weapons/RL32665.pdf>.

64. Sydney Freedberg, "Keep Ships Longer To Boost Fleet Size: 355 Ships By 2035," *Breaking Defense*, June 20, 2018, <https://breaking-defense.com/2018/06/keep-ships-longer-to-boost-fleet-size-355-ships-by-2035/>.

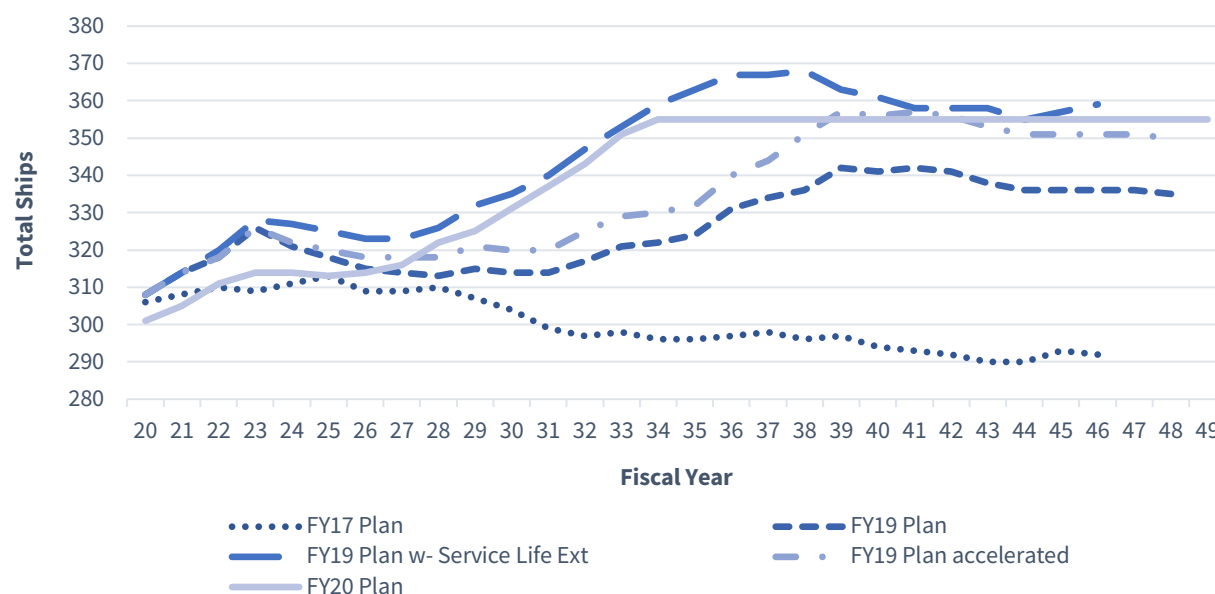
65. Sam LaGrone, "SECNAV Memo: Navy Won't Reactivate Perry Frigates for SOUTCOM Mission," *USNI News*, December 11, 2017, <https://news.usni.org/2017/12/11/secnav-memo-navy-wont-reactivate-perry-frigates-southcom-mission-will-send-ships-fight-drug-war-2018>.

66. For example, Kathleen Hicks, et al., *Undersea Warfare in Northern Europe* (Washington, DC: CSIS, July 2016), <https://www.csis.org/analysis/undersea-warfare-northern-europe>; Andrew Shearer, *Australia-Japan-U.S. Maritime Cooperation: Creating Federated Capabilities for the Asia Pacific*, (Washington, DC: CSIS, April 4, 2016), <https://www.csis.org/analysis/australia-japan-us-maritime-cooperation>; Mark Lawrence, *Tailoring the Global Network for Real Burden Sharing at Sea* (Washington, DC: CSIS, August 2015), <https://www.csis.org/analysis/tailoring-global-network-real-burden-sharing-sea>.

67. Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019* (Washington, DC: DOD, February 2018), https://www.secnav.navy.mil/fmc/fmb/Documents/19pres/LONGRANGE_SHIP_PLAN.pdf.

68. Ibid.

Figure 12: Navy Battle Force Inventories



Source: Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2017* (Washington, DC: Department of Defense, February 2016), <https://news.usni.org/2016/07/12/20627>; Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019* (Washington, DC: DOD, February 2018); Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*.

A New Force Structure Assessment

All of this carefully planned and deeply analyzed 355-ship fleet may soon be tossed out the window (or porthole). As noted earlier, all the services, the Navy included, have been criticized for not moving fast enough to align budgets and procurement plans with the national defense strategy. The Navy's concept of operations for great power conflicts is called "distributed operations," that is, having a large number of shooters with long-range munitions that would be dispersed around the battle area. However, the relatively small number of highly-capable but expensive ships in the Navy's current fleet does not fit well with this concept, a disconnect that has been evident for several years.

In its FY 2020 budget, the Navy takes the radical step of procuring unmanned surface and undersea vessels (USVs and UUVs). The FY 2020 budget proposes to procure two large USVs per year through FY 2024. These would be smaller than the smallest U.S. manned vessel (2,000 tons versus 3,200 tons for LCS) but about the size of European corvettes. The purpose is almost experimental (the unmanned vessels are purchased in the RDT&E account, not the shipbuilding account), the intention being to get the capability into the fleet quickly to better understand how it operates.⁶⁹

There are concepts and prototypes for medium USVs, building on experience from the DARPA funded Sea Hunter experiment and on the "Ghost Fleet" concept of outfitting commercial ships with weapons. There are also concepts for small USVs but no procurement plans for either medium or small USVs yet.⁷⁰

69. Sam LaGrone, "Navy Wants 10 Ship Unmanned Ghost Fleet to Supplement Manned Force," U.S. Naval Institute, March 13, 2019, <https://news.usni.org/2019/03/13/navy-wants-ten-ship-3b-unmanned-experimental-ghost-fleet>.

70. Robert D. Holzer and Scott Truver, "The U.S. Navy in Review," Naval Institute Proceedings, May 2019, <https://www.usni.org/magazines/proceedings/2019/may/us-navy-review>.

The planned medium and large UUVs are more like munitions than manned vehicles, being small and, as a result, funded in the Other Procurement, Navy appropriation. These systems could act like reconnaissance elements for manned submarines and, eventually, underwater strike assets. The FY 2020 budget and associated FYDP proposes to procure several varieties. One system, the MK-18 “Swordfish,” has been operating for several years.

The Navy is procuring “Extra Large UUVs” (called “Orcas”) that are the size of mini-submarines, two in FY 2020 and nine in the FYDP, all in the RDT&E account, reflecting their experimental nature.

The Navy plans to release a new force structure assessment in late-2019. Navy leaders have dropped hints that it will include new capabilities such as smaller ships and unmanned systems that are more adaptable to distributed operations. To pay for these new capabilities, the FSA might propose retiring legacy systems.⁷¹

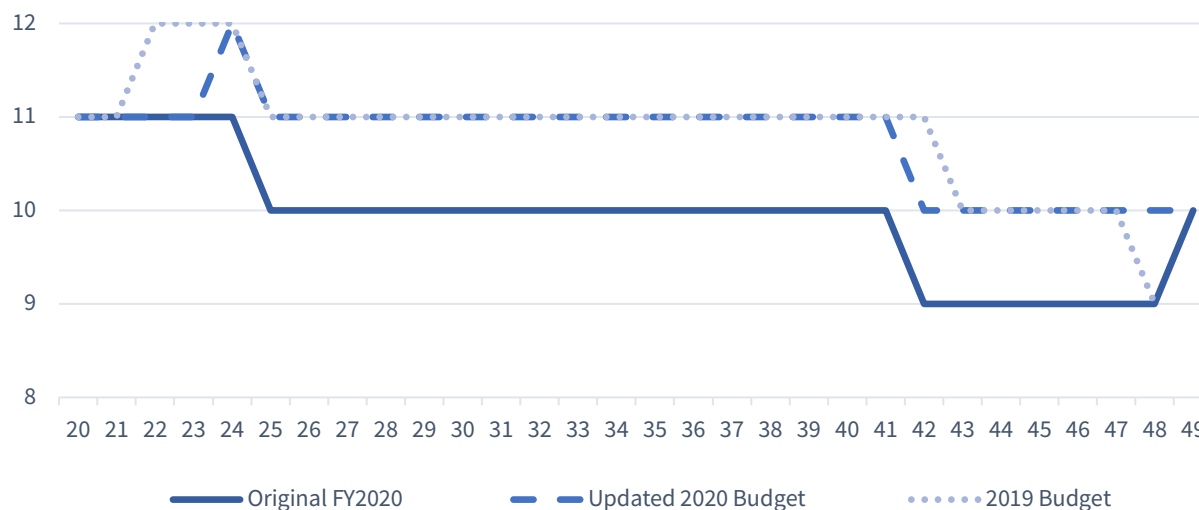
Navy Shipbuilding in FY 2020 and Beyond

The president’s budget proposed to construct 12 ships in FY 2020: one *Ford*-class CVN-78 carrier, three SSN-774 submarines, three DDG-51 destroyers, one FFG(X) frigate, and four auxiliaries (two T-AO 205 *Lewis*-class replenishment oilers and two T-ATS salvage and rescue ships), one fewer than what Congress finally enacted in FY 2019. This is the shipbuilding rate that would be needed to reach 355 ships over the long term. Shipbuilding projections in the FYDP average 11 new ships per year.

With the exception of the *Columbia*-class SSBN and the new FFG(X), Navy shipbuilding programs are in serial production and moving ahead without major issues (assuming the *Ford*-class carrier can get its elevators and catapults to work). The addition of unmanned surface ships, discussed earlier, is a major change and may be a signal for large changes to shipbuilding plans in the future.

CARRIERS

Figure 13: Projected Carrier Fleet Size – FY 2020-FY 2049



Source: Data from Long-Range Naval Inventory tables in the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019*; Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*. The Updated 2020 Budget removes the early retirement of the USS *Harry Truman* in 2024.⁷²

71. Megan Eckstein, “Navy: Next Force Structure Assessment Likely To Require More Small Combatants, Supply Ships,” USNI News, March 27, 2019, <https://news.usni.org/2019/03/27/navy-next-force-structure-assessment-likely-require-small-combatants-supply-ships>.

72. Occasional one-year dips or spikes in carrier numbers in 2027, 2040, and 2045 have been removed to better portray the long-term differences in the respective shipbuilding plans.

The size of the carrier force drives Navy force structure and budgets for two reasons: carriers and their escorts take up most of the shipbuilding budget, and providing aircraft for the carriers takes most of the aviation budget.

The long-running debate about carrier utility and survivability continues without resolution: are carriers versatile systems, providing a strong backbone for naval operations in peace and war or are carriers dinosaurs, too large and vulnerable to survive in great power conflicts?⁷³ Unfortunately, this question cannot be answered short of a major war. Caught between these two perspectives, the Navy's current carrier plans are a complete muddle.

On the one hand, a RAND study indicated that other carrier options might be attractive.⁷⁴ Several commentators, like Senator McCain in 2017, have proposed building smaller carriers on the *America*-class LDA hull. Undersecretary Thomas Modley stated that the \$13 billion cost of a *Ford*-class carrier was "unsustainable."⁷⁵

On the other hand, Huntington Ingalls Industries, the shipbuilder that builds nuclear carriers, proposed saving \$4 billion by constructing two carriers. Congress authorized the Navy to do this, and the Navy executed the two-carrier option in January 2019.⁷⁶ This double procurement had the effect of locking in the carrier force as currently configured for at least another decade.

Seeming to have second thoughts about the size of the carrier force, the Navy proposed retiring the USS *Harry Truman* (CVN-75) early, arguing that the funds freed up could be allocated to programs focused on the new strategy. However, the incongruity of buying new carriers while retiring existing carriers early was hard to justify. As a result, the Navy quickly reversed the decision.

LARGE SURFACE COMBATANTS

Large surface combatants (LSCs) are destroyers and cruisers.

DDG-51 Destroyers. The program is on track, with another three DDG-51s proposed for FY 2020. The program is transitioning to the Flight III configuration with a more powerful radar, called the AN/SPY-6 Air and Missile Defense Radar. The Navy is confident the radar is ready, and the technologies are deemed to be mature, but operational testing will be concurrent with production, so there's some risk.

DDG-1000 Zumwalt Destroyers. These three stealthy, high-technology destroyers (at 14,500 tons, larger than *Ticonderoga*-class cruisers) are an exception to the "smooth sailing" shipbuilding story. The total buy was cut in the 2000s from 32 to 3, with 47 percent cost growth. The lead ship was commissioned in 2016, but delivery was delayed to late 2019 because of a series of serious engineering casualties. The other two ships were similarly delayed. Further, the ships' 155mm guns, originally a primary justification for the ship, have lost much of their effectiveness with the cancellation of the long-range munition that they were to fire. The lead ship has still not joined the fleet.⁷⁷

73. Examples this year: Capt. Robert C. Bold, "Retiring the Truman Early Is a Necessary Strategic Decision," Naval Institute Proceedings, March 2019, <https://www.usni.org/magazines/proceedings/2019/march/retiring-truman-early-necessary-strategic-decision>; Matthew Reisener, "Navy Nightmare: America's Carriers Are in Trouble in the Next Great War," *The National Interest*, July 16, 2019, <https://nationalinterest.org/blog/buzz/navy-nightmare-americas-carriers-are-trouble-next-great-war-67122>; Loren Thompson, "10 Reasons a US Naval Aircraft Carrier Is One of the Safest Places to Be in a War," *Forbes*, May 21, 2019, <https://www.forbes.com/sites/lorenthompson/2019/05/21/ten-reasons-a-u-s-navy-aircraft-carrier-is-one-of-the-safest-places-to-be-in-a-war/#5422d04c2f7a>.

74. Bradley Martin and Michael McMahon, *Future Aircraft Carrier Options* (Santa Monica, CA: RAND Corporation, 2017), https://www.rand.org/pubs/research_reports/RR2006.html.

75. Justin Katz, "Modley: \$13B carriers are not affordable, but what's next is not clear," *Inside Defense*, February 14, 2019, <https://insidedefense.com/daily-news/modley-13b-carriers-are-not-affordable-whats-next-not-yet-clear>.

76. For a full discussion of the carrier debate, see Mark Cancian, *U.S. Military Forces in FY 2018: The Uncertain Buildup* (Washington, DC: CSIS, October 2017), 62, <https://www.csis.org/analysis/us-military-forces-fy-2018>.

77. Ronald O'Rourke, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress* (Washington, DC: Congress-

CG-47 Cruiser modernization. The Navy once again proposes to end the cruiser modernization program, decommissioning two ships in FY 2021 and four in FY 2022, arguing that the future fleet would have too many LCSs and that the life-extension was not worthwhile. Concerned about a shrinking ship inventory, Congress has repeatedly balked in the past, mandating that the Navy modernize all the ships under a “2/4/6” program (two ships entering modernization per year, the work lasting no more than four years, and a maximum of six ships in maintenance at any one time). Six ships have been inducted into the program so far with a seventh coming later this year.

Next generation LSC. Shipbuilding plans continue to show some version of a next-generation LSC but in the future beyond the FYDP-period, indicating that such plans are in flux pending the outcome of the next FSA.

SMALL SURFACE COMBATANTS

Small surface combatants (SSCs) are frigates, littoral combat ships, and mine countermeasures ships.⁷⁸

Such ships are extremely valuable for providing global presence and for executing missions that don’t require a large surface combatant like a DDG-51. During the Cold War, they had a wartime mission of escorting convoys. This mission disappeared after the Cold War but may reemerge in a great power conflict where adversaries can reach out extended distances and threaten U.S. sea lines of communication. In the Navy’s next FSA, the numbers of small surface combatants are expected to hold steady or increase to meet the needs of a more distributed naval force structure.

Navy plans are on track to go beyond the much-criticized LCS program and quickly institute a follow-on frigate program (FFG(X)) that will be multi-mission, like the earlier FFG-7-class, and not single-mission, like the LCSs. Prospective bidders were told to bring mature designs already in production to meet an FY 2020 procurement target. The FY 2020 budget, indeed, requests procurement of the Navy’s first FFG(X) frigate and does not request the procurement of any further LCSs (a total of 35 have been procured thus far).

The Navy’s 30-year shipbuilding plan shows procurement of two FFG(X)s every year from FY 2021-FY 2029, with one additional FFG(X) procured in FY 2030, a total of 20 frigates over 10 years to meet the 52 small surface combatant goal of the 355-ship navy outlined in the Navy’s 2016 Force Structure Assessment (FSA). The Navy intends to select a design by the end of FY 2020.

However, the Congress, impelled by both a desire to increase ship numbers and to avoid a production gap at the LCS shipbuilders, might add one last LCS in FY 2020 as it did in FY 2019 to avoid a production gap.

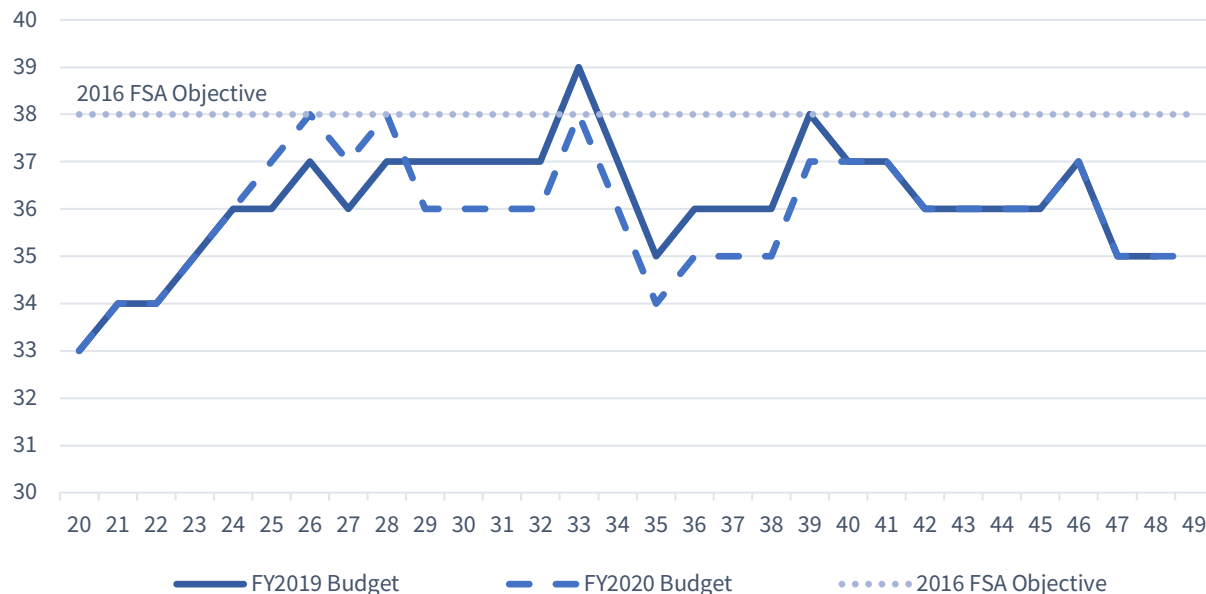
Because LCSs with mine countermeasure modules are now entering the fleet, the Navy proposes to phase out the Mine Countermeasures ships (MCM-1 Avenger-class), retiring all by 2023.

sional Research Service, June 18, 2019), <https://fas.org/sgp/crs/weapons/RL32109.pdf>.

78. The Navy includes patrol craft in this category but not in the battle force inventory and so are excluded here. The general rule is that ships must be able to deploy overseas on their own to count, and patrol craft are too small.

AMPHIBS

Figure 14: Projected Amphibious Assault Ships – FY 2020-FY 2049



Source: Data from Long-Range Naval Inventory tables in the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019*; Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*.

The amphibious fleet is in flux. On the one hand, the fleet size looks stable, with numbers gradually increasing toward the stated goal of 38 by the mid-2020s.

On the other hand, large amphibious ships appear vulnerable in a great power conflict, and the ability of the Navy and Marine Corps to execute a classic landing in the high-threat environment foreseen by the NDS seems doubtful. The goal of 38 large ships, which is built around the notion of a large amphibious landing, will almost certainly change in the next FSA. There are strong hints that the Navy will consider smaller amphibious ships, and General Berger, the new Marine commandant, has stated his support for such a change, as described in the Marine Corps section. That would be a major change in direction since, over many decades, the amphibious fleet has been trending toward larger and more capable ships, which are more efficient for moving Marine forces but expensive and limited in number.

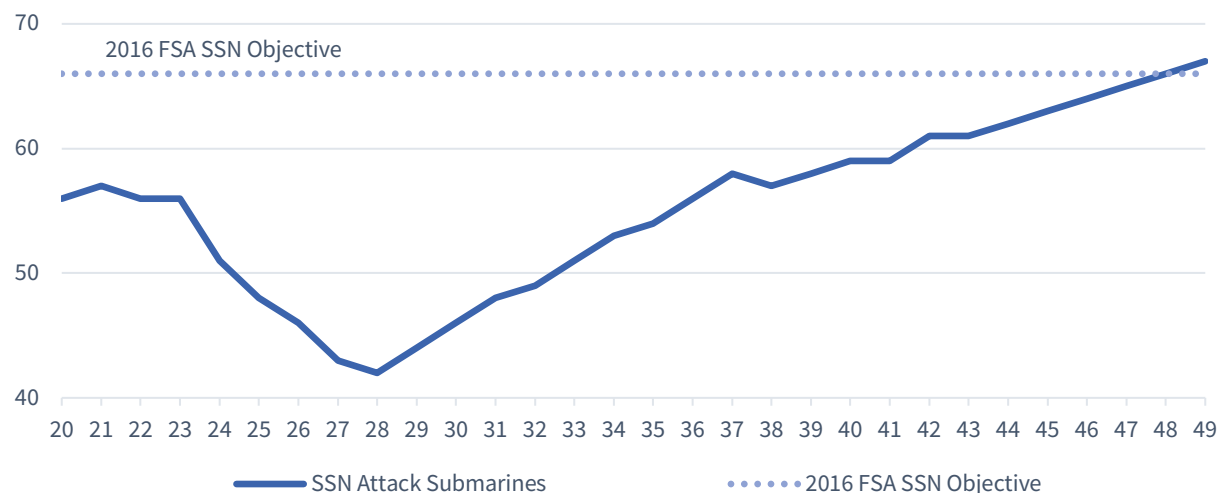
After funding the lead ship of the LPD-17 Flight II-class replacement for the LSDs in FY 2018, the Navy originally intended to skip a year, funding no amphibs in FY 2019 but planning to procure LPD-31 in FY 2020. However, the FY 2020 budget has now pushed off procurement of LPD-31 until FY 2021. Further, the Navy plans to procure only two LPDs through FY 2024, as opposed to four planned in the FY 2019 budget.⁷⁹ This pause may indicate that the Navy is rethinking the structure of its amphibious fleet.

79. Congressional Research Service, *Navy LPD-17 Flight II Amphibious Ship Program: Background and Issues for Congress* (Washington, DC: August 2019), Table I, 8, <https://fas.org/sgp/crs/weapons/R43543.pdf>.

Huntington Ingalls, currently the only builder of amphibious ships, has sought to lock in current amphibious shipbuilding plans by offering to cut costs for acceleration of the next LHA and for multiyear procurement of the LPD-17 Flight II.⁸⁰ So far, Congressional reaction has been mixed.

ATTACK SUBMARINES

Figure 15: Projected Attack Submarine Fleet (SSNs and SSGNs) – FY 2020-FY 2049



Source: Data from Long-Range Naval Inventory tables in the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*.

In the near term, the attack submarine fleet is stable. Numbers stay in the 50s, and the Navy builds new boats at the rate of two per year. The problem is long-term. Numbers dip in the late-2020s and early-2030s, bottoming at 42 boats, as Los Angeles-class boats built during the 1980s retire.⁸¹ This prospective submarine shortfall will happen at a time when Russian and Chinese submarines are becoming more capable and active.⁸² Retirement of the Ohio-class SSGNs in the late-2020s, which greatly reduces the undersea strike capability, exacerbates the shortfall.

The obvious solution is to build more submarines but having two submarine construction programs operating simultaneously puts pressure on both the shipbuilding account and the submarine industrial base. Nevertheless, the Navy now plans to continue building two attack boats every year, even in the years that it procures a Columbia-class boat. Incorporation of the Virginia payload module into new Virginia-class submarines, to address the undersea strike shortfall when the SSGNs retire, begins in FY 2019 but also increases the submarine's cost by about \$550 million.⁸³

80. Mallory Shelbourne, "HII Ready to Accelerate LHA-9 Construction Three Years Ahead of Navy Schedule," Inside Defense, March 15, 2019, <https://insidedefense.com/daily-news/hii-ready-accelerate-lha-9-construction-three-years-ahead-navy-schedule>; "Accelerating LPD Flight II Will Enhance Naval Capacity and Lethality," Huntington Ingalls Industries, <https://www.huntingtoningalls.com/lpd-flight-ii/>; Dan Gouré, "A Smart Acquisition Strategy That Can Revitalize the U.S. Amphibious Warfare Fleet," Real Clear Defense, May 18, 2019, https://www.realcleardefense.com/articles/2019/05/18/a_smart_acquisition_strategy_that_can_revitalize_the_us_amphibious_warfare_fleet_114434.html.

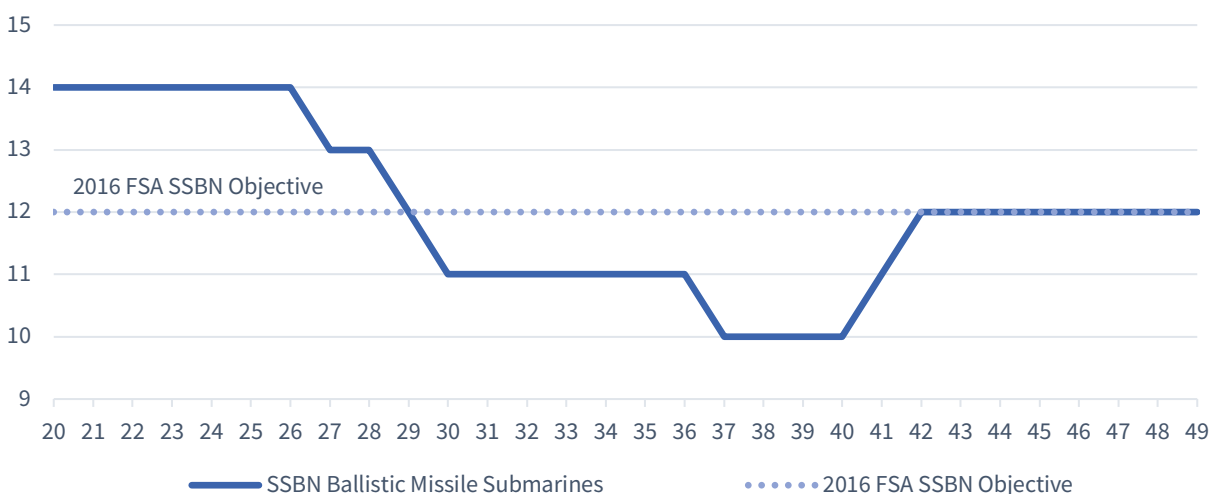
81. Chief of Naval Operations, *Report to the Congress on Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2019*.

82. For example, Kathleen H. Hicks, et. al., *Undersea Warfare in Northern Europe*.

83. Ronald O'Rourke, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress* (Washington, DC: Congressional Research Service, July 2018), <https://fas.org/sgp/crs/weapons/RL32418.pdf>.

BALLISTIC MISSILE SUBMARINES

Figure 16: Projected Ballistic Missile Submarine Fleet (SSBNs) – FY 2020-FY 2049



Source: Data from Long-Range Naval Inventory tables in the Chief of Naval Operations, *Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020*.

The Columbia-class SSBN program—which will replace the existing Ohio class—continues in development, with first ship authorization planned for FY 2021. The budget cost is substantial—\$2.3 billion in FY 2020 (RDT&E plus procurement)—so affordability of the program, long identified as a challenge for Navy shipbuilding, is becoming a near-term, rather than a long-term, issue.

GAO has questioned DOD’s cost estimate, citing overly optimistic labor assumptions and noting that lead ships have historically had an average of 27 percent cost growth.⁸⁴ A welding defect caused delays and additional cost. Thus, the sheer size of the program (\$127 billion in total, then-year dollars), the inherent risks in lead ships, and the program’s tight schedule impelled the CNO to direct “increased oversight” and create a senior acquisition position, a program executive officer, just for this program.⁸⁵ Nevertheless, this program may represent a “ticking time bomb” in the Navy’s shipbuilding budget.

Naval Aviation Modernization—The Future Air Arm

It has been said that the U.S. Navy comprises a complete military itself: a navy (with its ships), an army (with the Marine Corps), and an air force (with its air arm). Because naval aircraft provide the striking power of the aircraft carrier, the central weapon system in the U.S. Navy, aviation plays a larger role in the U.S. Navy than it does in other navies.

In FY 2020, naval aviation (Navy and Marine Corps) proposes to procure 148 aircraft of all kinds. Naval aviation procurement is in generally good shape with mature programs producing aircraft with few major issues. Inventories are stable. That is the good news.

The bad news is that the Navy faces ever higher costs to maintain its aircraft inventory and has been slow to field unmanned aerial vehicles (UAVs).

84. Government Accountability Office, *Columbia-Class Submarine Overly Optimistic Cost Estimate Will Likely Lead to Budget Increases* (Washington, DC: April 2019), <https://www.gao.gov/products/GAO-19-497>.

85. Justin Kurtz, “CNO: Navy Needs to Provide ‘Increased Oversight’ of Columbia Class Subprogram,” *Inside Defense*, September 5, 2018, <https://insidedefense.com/insider/cno-navy-needs-provide-increased-oversight-columbia-class-sub-program>; Total program cost from “Comprehensive Selected Acquisition Reports,” Department of Defense, <https://media.defense.gov/2018/Apr/03/2001898705/-1/-1/1/DECEMBER-2017-SAR-PRESS-RELEASE.PDF>.

FY 2020 PROCUREMENT

Table 6: Department of the Navy Aircraft Procurement in FY 2020

Fixed Wing	FY 2019 (Proposed)	FY 2019 (Enacted)	FY 2020
F-35C (CV)	9	15	20
F-35B (STOVL)	20	22	10
FA-18E/F	24	24	24
E-2D AHE	4	6	4
P-8A (MMA)	10	10	6
C-40A (USMC)	2	0	0
KC-130J	2	2	3
F-5	-	-	22
Rotary Wing			
CH-53K (HLR)	8	8	6
MV-22B / CMV-22B	7	13	10
AH-1Z	25	25	-
TH-57 Replacement (Navy)	-	0	32
VH-92A	6	6	6
UAV			
MQ-4C Triton	3	3	2
MQ-25 Stingray (NAVY)	-	-	-
RQ-21 (USMC)	-	-	-
MQ-9A Reaper (USMC)	0	0	3
Total	120	134	148

Source: Department of the Navy, *Highlights of the Department of the Navy FY 2020 Budget*, Office of Budget – 2019 (Washington, DC: Department of Defense, March 12, 2019), Figure 4.3, 4-5, <https://www.secnv.navy.mil/fmc/fmb/Documents/20pres/Budget%20Highlights%20Book.pdf>.

The Navy aviation procurement plan shows continuing production of mature systems: E-2D, P-8, KC-130, V-22B, and AH1-Z. All of these systems have been in production for many years. Congress increased Navy aircraft procurement by 10 percent in FY 2019, indicating its strong support.

Procurement of the CH-53K heavy-lift helicopter, a replacement for the Marine Corps, falls from nine in FY 2019 to six in FY 2020, reflecting Congressional concerns about the program's technical problems, cost growth, and schedule delay. Nevertheless, because the program is an upgrade to the existing CH-53E program rather than a completely new development, it has benefited from needing less development.

One piece of good news: there are no headlines about the new presidential helicopter. The previous attempt to develop a replacement for the aging presidential helicopter fleet ended in acquisition disaster, with large overruns, schedule slippage, and presidential criticism. Having learned from the previous experience, the current program (VH-92A) has moved through development with apparently few issues and is now entering production, with the first six funded in FY 2019 and six more requested in the FY 2020 budget. Thus, it often is with acquisition program management: bad management makes headlines, good management is invisible.

What stands out in the aviation plan, and is very different from the Air Force, is the continuing procurement of fourth (plus)-generation aircraft (FA-18 E/F) at the same time as procurement of fifth-generation aircraft (F-35B/C).

The Air Force stopped buying its fourth-generation F-15s and F-16s back in the 1990s and moved solely to fifth-generation aircraft, the F-22 and the F-35 (although, as discussed later, the Air Force has recently changed course, requesting eight F-15EXs in FY 2020). In contrast, the Navy invested in an enhanced fourth-generation aircraft—the F-18 in its E, F, and G models—to keep inventory numbers up. Indeed, the Navy plans to continue investing in the F-18 family with a “Block III” improvement, which will have an advanced cockpit, reduced observability, and longer life. As a result, the Navy’s tactical aviation fleet is much younger than the Air Force’s (16 years on average versus 29.2 years), and its inventory shortfalls are less acute.⁸⁶

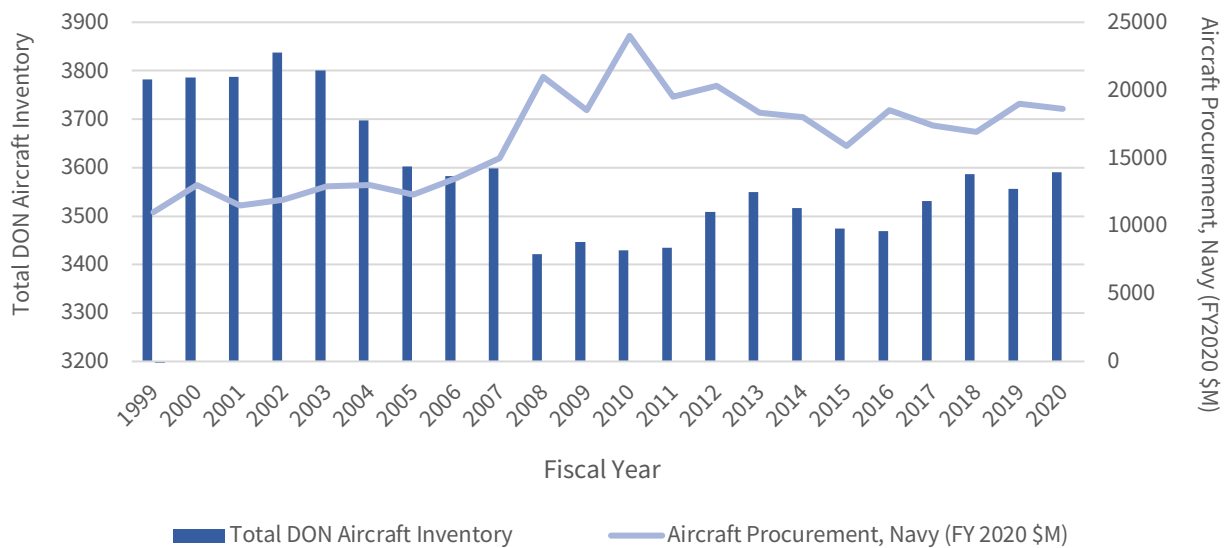
The policy issue is not whether a particular factory remains open (although that’s important to the Missouri Congressional delegation, where F-18s are manufactured). Rather, the policy issue is what kinds of conflicts the United States expects its aircraft to fight. Procuring a mix of fourth-generation and fifth-generation aircraft implies that some conflicts or phases of conflicts will not require the stealth and high-survivability of fifth-generation aircraft. Procuring a mix also increases total numbers since fourth-generation aircraft, being far into production, are less expensive. The Navy has taken this path. Current plans call for carriers to have two squadrons of F-18E/Fs and two squadrons of F-35Cs.

The Navy’s F-35C program has always been low-visibility because it is the last F-35 variant to enter production and is the smallest total buy. Continued procurement of the F-18, as noted above, allowed the Navy to hedge its bets and let the urgent requirements of the Air Force and Marine Corps take the brunt of the cost, schedule, and performance problems. The number of F-35Cs (the carrier version of the F-35) procured rises to 20 in FY 2020. The Navy declared initial operating capability in February 2019.

86. Navy figures represent an average for F-18A/B/C/D/E/F from “F/A-18E/F Super Hornet,” Aeroweb (A Forecast International Subsidiary), June 30, 2015, <http://www.bga-aeroweb.com/Defense/F-18-Super-Hornet.html>; Air Force figures from an average of the A-10, F-15C, F-15E, F-16C, and F-22 fleets from “The Air Force in Facts & Figures,” USAF Almanac, Air Force Association, June 2019, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2019/June%202019/0619_Equipment.pdf.

THE HIGH COST OF STABLE INVENTORIES

Chart 17: Department of the Navy Aircraft Inventory



Source: Department of the Navy, *FY 2017 Budget Estimates Data Book* (Washington, DC: Department of Defense, April 2016), 64, https://www.secnav.navy.mil/fmc/fmb/Documents/17pres/FY17_Data_Book.pdf; Updated with data from Department of the Navy, *Highlights of the Department of the Navy FY 2019* (Washington, DC: Department of Defense, 2018); and Department of Defense, *Fiscal Year (FY) 2020 Budget Estimates: Justification Book Volume 1 of 3: Aircraft Procurement, Navy* (Washington, DC: March 2019), https://www.secnav.navy.mil/fmc/fmb/Documents/20pres/APN_BA1-4_BOOK.pdf.

Threatening the long-term health of Navy aviation (and Marine Corps and Air Force aviation, as described later) is the high cost of just maintaining a stable inventory. As the chart above indicates, funding for procurement of naval aviation has increased by about 50 percent since the early-2000s to maintain a smaller inventory.

The reason is that each generation of aircraft costs more than the generation before it. For example, the E-2C cost \$112 million per aircraft (in FY 2019 dollars) when last procured in the early-2000s. Its replacement, the E-2D, has more powerful radar and enhanced command linkages but costs \$230 million (FY 2019 dollars).⁸⁷

THE (SLOW) FIELDING OF UAVS: TRITON AND MQ-25

Overall, Navy UAV procurement (3) in FY 2020 is far behind the Air Force's (12), and its UAV inventory (41) is even further behind the Air Force's (291, MQ-9 and RQ-4). Both reflect the Navy's relative emphasis on manned systems and, to some, a lack of interest in unmanned systems.

The MQ-4C Triton long-range surveillance UAV (a relative of the Air Force's RQ-4 Global Hawk) continues low-rate procurement in FY 2020 with three systems and significant (\$214 million) funding for development of upgrades. The system received some notoriety when the Iranians shot down one of the prototypes in June 2019.

87. E-2D costs from "Comprehensive Selected Acquisition Report," Department of Defense; E-2C costs from Obaid Younossi, et al., *The Eyes of the Fleet: An Analysis of the E-2C Aircraft Acquisition Options* (Santa Monica, CA: RAND Corporation, 2002), https://www.rand.org/content/dam/rand/pubs/monograph_reports/2009/MR1517.pdf; Escalation factors from Undersecretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2019* (Washington, DC: Department of Defense, April 2018), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/FY19_Green_Book.pdf.

The MQ-25 is the Navy's first carrier-capable unmanned aircraft, growing out of a series of experimental programs such as the Unmanned Carrier Launched Aerial Surveillance and Strike (UCLASS) program. In 2017, the Navy announced its plan to develop the aircraft as a tanker with some intelligence, reconnaissance, and surveillance (ISR) capabilities rather than a strike platform.

The good news is that in FY 2020, the Navy increases its funding commitment to \$684 million. It awarded the development contract to Boeing in August 2018, so the program is moving forward. Flight tests are planned to begin at the end of 2019, with initial procurement still planned for FY 2023 and fielding in FY 2026.

The bad news is that this is no longer a rapid acquisition program but will take a decade to get a significant capability into the field. Further, the refueling capability, while very useful, is not a strike capability. Many naval strategists have harshly criticized the Navy—"strategic malpractice of the highest order" in one commentary—for missing an opportunity to gain the advantages in dull, dirty, and dangerous missions that unmanned aircraft have and the range advantage of the MQ-25, after successive generations of naval aircraft have become shorter-ranged.⁸⁸

The controversy has died down as the program moves forward but will never go away. The Navy's tepid action with unmanned aviation systems stands in contrast with its bolder action with unmanned surface and subsurface systems.

Munitions as an Element of Strategy—Range and Precision

The Navy's warfighting problem is that it built platforms designed for regional conflicts and for operating close to the conflict. Its ships are highly-capable but large and few. Its tactical aircraft are very short-ranged. So, the Navy's challenge—and that of the other services, to a lesser degree—is how to use these existing systems against an adversary that can build a formidable defensive zone (often called an "anti-access area denial" zone).

The Navy's solution is to put long-range precision munitions on these existing weapons systems, both ships and aircraft. That allows assets to stay out of the most dangerous area but still participate in the fight.

Thus, the Navy has developed an "offensive missile strategy." Although the details are classified, the strategy purports to sustain current inventories, increase the capabilities of existing weapons, and develop new weapons. The president's FY 2020 budget buys for ships the latest version of tactical Tomahawk (Block IV), an upgraded Harpoon, and an over-the-horizon missile for LCS, and for aircraft the Long Range Anti-Ship Missiles (LRASM), essentially an adaptation of the Air Force's JASSM. The budget develops the more capable Offensive Anti-Surface Warfare (OASuW) Increment 2 missile and a Next-Generation Land Attack Weapon.⁸⁹

88. "Strategic malpractice" from Robert Martinage and Shawn Brimley, "The Navy's New Museum Drone and Strategic Malpractice," War on the Rocks, April 28, 2015, <http://warontherocks.com/2015/04/the-navys-new-museum-drone-and-strategic-malpractice/>; Similar criticisms have come from Bryan McGrath of the Hudson Institute and Jerry Hendrix of the Center for New American Security.

89. Megan Eckstein, "Navy Investing in Researching Next-Generation Missiles, Enhancing Current Ones," United States Naval Institute News, April 15, 2019, <https://news.usni.org/2019/04/15/navy-investing-in-researching-next-generation-missiles-enhancing-current-ones>; Statement of Honorable James F. Geurts, Lieutenant General Steven Rudder, and Rear Admiral Scott Conn, Senate Armed Services Committee, Seapower Subcommittee, 116th Cong., 1st sess., April 10, 2019, https://www.armed-services.senate.gov/imo/media/doc/Geurts_Rudder_Conn_04-10-19.pdf; In addition, other systems, such as stealthy long-range unmanned strike platforms have been advocated by others as means to argue the Navy's ability to penetrate A2/AD environments. Jerry Hendrix, *Filling the Seams in U.S. Long-Range Penetrating Strike* (Washington, DC: Center for a New American Security, August 2018), <https://www.cnas.org/publications/reports/filling-the-seams-in-u-s-long-range-penetrating-strike>.

4 | Marine Corps

The Marine Corps focuses on developing capabilities for great power conflict after two decades of conducting counterinsurgency ashore. End strength holds steady in FY 2020, with no significant growth in the foreseeable future, requiring tradeoffs of legacy capabilities to create new capabilities and potentially causing stress on the force as it continues to meet high day-to-day deployment demands.

KEY TAKEAWAYS

- The Marine Corps' end strength remains largely constant, holding at roughly 186,000 after expanding during the wars in Iraq and Afghanistan.
- Despite a continuing high operational tempo, the Marine Corps is choosing to pursue modernization over expanding force structure.
- New capabilities will therefore require offsets from legacy capabilities.
- General Berger's new guidance aims to restore the Marine Corps to its naval roots after two decades of operations ashore, invest in capabilities focused on great power conflict in the Pacific, and enhance individual fighting prowess.
- Marine Corps aviation continues to upgrade its platforms at a steady rate, leading to a newer and younger fleet. Although the Marine Corps procures three MQ-9 Reapers in FY 2020, it lags the other services in fielding UAVs.
- As part of General Berger's guidance, the Marine Corps is looking into smaller, more affordable amphibious ships and alternative platforms for amphibious operations.

Unique among the services, the Marine Corps comes out of the wars in Iraq and Afghanistan larger than it went in (186,100 today versus 172,600 in 1999). That growth has allowed it to maintain its traditional ground and aviation units and create new units for cyber and information warfare. Nevertheless, unlike the other three services, it grows little through FY 2024 and does not attempt to attain its previous goal of 194,000. That creates a tension in the future between creating additional new capabilities and maintaining traditional capabilities.

The National Defense Strategy (NDS) creates two further tensions. The first is the direction to create new capabilities for great power conflict, sacrificing force structure as necessary, while at the same time meeting demands to provide continuing high levels of forward deployments for global engagement and crisis response. The other tension is between preparing units for these day-to-day forward deployments or for great power conflict, the training and equipment being different for each.

The FY 2020 budget looks like a continuation of the existing Marine Corps' strategy, but guidance set by the new commandant, General David H. Berger, directs the Marine Corps to march off in a different direction, with important future changes to forces and equipment.

Force Structure in FY 2020

Table 7: Marine Corps – Active, Reserve, and Civilians

	<i>Marine Corps Active Authorized End Strength</i>	<i>Marine Corps Reserve Authorized End Strength</i>	<i>Civilian Full-Time Equivalents</i>
FY 2019 Enacted	186,100	38,500	21,582
FY 2020 Request	186,200	38,500	21,974
Change	+100	0	+392

Source: *Highlights of The Department of the Navy FY 2020 Budget* (Washington, DC: Department of the Navy, 2019), <https://www.secnv.navy.mil/fmc/fmb/Documents/20pres/Budget%20Highlights%20Book.pdf>; Active End Strength data in Figure 2.5, 2-8; Reserve End Strength data in figure 2.7, 2-10; Civilian data in Figure 2.10, 2-13.

The FY 2020 Marine Corps budget increases active duty end strength by only 100. In the past, the Marine Corps had talked about expanding the active force to about 194,000, but the FY 2020 budget projects only a small increase to 186,400 through FY 2024.⁹⁰ This lack of growth makes the Marine Corps unusual in that the other three services all plan to add at least some end strength, but it reflects the broader priorities of the NDS: fix readiness, then focus on modernization to prepare for a great power conflict; force structure comes last. General Berger doubles down on this budget strategy, saying: “If provided the opportunity to secure additional modernization dollars in exchange for force structure, I am prepared to do so.”⁹¹

Despite a lack of end strength growth, the Marine Corps, alone among the services, is coming out of the wars at a higher level (186,000) than it went in (172,600). Thus, despite the Marine Corps' long-standing concern (sometimes called paranoia) about maintaining its standing among the other services, it has been gaining ground over the long term.⁹²

90. On the higher target: Lee Hudson, “Marines Need 194,000 Troop Force to Meet Requirements,” *Inside Defense*, February 8, 2017, <https://insidedefense.com/daily-news/marines-need-194000-troop-force-meet-requirements>.

91. David Berger, *Commandant's Planning Guidance: 38th Commandant of the Marine Corps* (Arlington, VA: 2019), p. 6, https://www.hqmc.marines.mil/Portals/142/Docs/%2038th%20Commandant%27s%20Planning%20Guidance_2019.pdf?ver=2019-07-16-200152-700.

92. For a classic expression of the Marine Corps' concern in this regard, see the Introduction to Victor Krulak, *First to Fight: An Inside*

Marine Corps Reserve end strength stays level at 38,500, where it has been for many years. On the one hand, the retention and recruitment challenges of expanding are too great. (The Marine reserves got into some trouble in the past when they tried to expand over 40,000). On the other hand, the demands of maintaining a full division-wing structure prevent it from getting much smaller. General Berger's guidance hints at some flexibility here in the future: "We will explore the efficacy of fully integrating our reserve units within the Active Component, as well as other organizational options."⁹³

Marine Corps civilians increase, as with DOD civilians overall, a reflection of the focus on rebuilding readiness and the substitution of civilians for military personnel in support activities.

The budget maintains the three active-duty Marine Expeditionary Forces (MEFs): I and II MEFs located in the continental United States (California and North Carolina, respectively) and III MEF on Hawaii, Okinawa, and mainland Japan. It also maintains the reserve division-wing team, headquartered in New Orleans but spread over the entire country. (The reserve division-wing team lacks the headquarters to make it a MEF. Since the reserves are employed at lower unit levels, such a headquarters is not needed.) There is, however, some change at lower unit levels, as described below.

The Tension in Meeting Day-to-day Deployment Demands.

The previous commandant, General Robert Neller, appeared to downplay the stress of deployments. In previous years, his posture statement listed all the many deployments and exercises the Marine Corps participated in. The FY 2020 posture statement skipped that. General Neller did note that the Marines remain at a 1:2 deployment-to-dwell ratio when the goal is 1:3. In previous posture statements, he called this level of operational tempo "unsustainable." This year he called it "challenging." Neller called maintaining this ratio "a conscious, short-term decision" that entailed risk in a major contingency. It could only be remedied by a large increase in end strength or a decrease in commitments, neither of which he foresaw.⁹⁴ This is the first major tension about Marine Corps force structure: how to meet continuing high levels of day-to-day deployment requirements with limited forces.

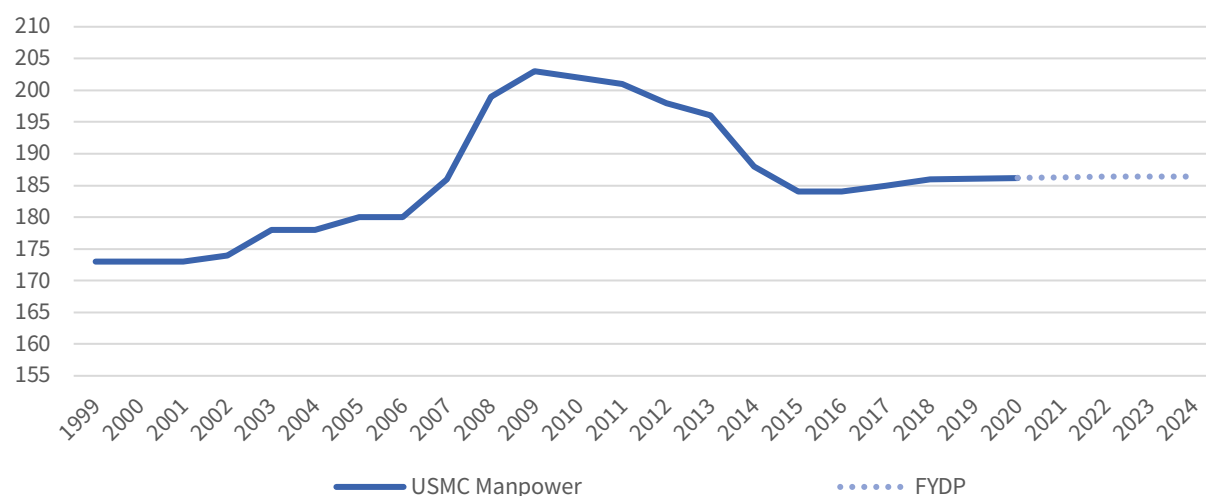
General Berger has indicated privately that he intends to "say no" to some missions to keep operating tempo down. This would allow the Marine Corps to achieve its desired 1:3 deployment-to-dwell ratio within existing end strength, but COCOM demands for forces and presidential priorities can make this unachievable.

View of the U.S. Marine Corps (Annapolis, MD: Naval Institute Press, 1984).

93. Berger, *Commandant's Planning Guidance*.

94. Robert Neller, "Posture of the Department of the Navy," Testimony to the Senate Armed Services Committee, 115th Cong., 2nd sess., April 19, 2018, p. 15, https://www.armed-services.senate.gov/imo/media/doc/Neller_04-09-19.pdf.

Figure 18: Marine Corps Active Duty End Strength 1999-2024 (000s)



Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY 2020* (Washington, DC: Department of Defense, May 2019), Table 7-5: Department of Defense Manpower, p. 260-262, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf; Office of the Under Secretary of Defense (Comptroller), *PB 20 Budget Roll Out Brief* (Washington, DC: Department of Defense, March 2019), p. 12., https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request.pdf.

The McKenzie Group of 2013 (named for its leader, then-Lieutenant General Kenneth F. McKenzie, now General McKenzie, commander of CENTCOM) argued that forward presence and crisis response were the Corps' primary force drivers.⁹⁵ This was not a new argument since forward deployments had long put strain on the Marine Corps, which maintained Marine Expeditionary Units (MEUs) in the Middle East/Indian Ocean and Pacific, as well as unit deployments to Okinawa and Australia and special purpose Marine Air-Ground Task Forces (SP-MAGTFs) globally.

Nevertheless, the Marine Corps did not ask for additional end strength in its budget or its \$2.1 billion unfunded requirements list.⁹⁶ The new commandant's guidance implicitly rejects this argument and is explicit that force structure might shrink in order to build capability for great power conflicts. Thus, this tension will continue.

New Force Structure

General Berger's guidance had three major themes: to reestablish the Marine Corps' naval roots after years of operations ashore in Iraq and Afghanistan; to build structure and weapons for great power conflict, particularly in the Pacific; and to maintain a high level of individual warfighting prowess. These themes expand on the Marine Corps force structure assessment of 2016-2017, called *Marine Corps Force 2025*, and appear in Marine Corps/Navy doctrinal publications *Marine Operating Concept*, *Littoral Operations in a Contested Environment* and *Expeditionary Advanced Base Operations*.⁹⁷ These concepts are consistent with the

95. Brian Buggeman and Ben Fitzgerald, *Crisis Response: Institutional Innovation in the United States Marine Corps* (Washington, DC: Center for a New American Security, Nov 2015), <https://www.cnas.org/publications/reports/crisis-response-institutional-innovation-in-the-united-states-marine-corps>. Robert Neller, "Posture of the Department of the Navy," Testimony to the Senate Armed Services Committee, 116th Cong., 1st sess., April 9, 2019, https://www.armed-services.senate.gov/imo/media/doc/Neller_04-09-19.pdf.

96. "Fiscal Year 2020 Marine Corps Unfunded Priority List," Defense Daily, https://www.defensedaily.com/wp-content/uploads/post_attachment/239637.pdf.

97. U.S. Marine Corps, *Marine Corps Operating Concept* (Washington, DC: Department of the Navy, September 2016), <https://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/young/MCCDC-YH/document/final/Marine%20Corps%20Operating%20Concept%20Sept%202016.pdf?ver=2016-09-28-083439-483>; "Littoral Operations in a Contested Environment," U.S. Marine Corps and U.S. Navy, 2017, <https://www.candp.marines.mil/Concepts/Subordinate-Operating-Concepts/Littoral-Operations-in-a-Contested-Environment/>;

NDS. They foresee a shift to distributed operations and the Marine Corps contributing to sea control in a naval campaign through shore-based aircraft and fires, not just projecting power ashore. How much force structure change these new concepts will involve will not be known until the Marine Corps conducts a future force structure assessment.

However, high-end capabilities have not been traditional Marine Corps strengths because the Marine Corps has typically focused on regional conflicts and small wars. Indeed, difficulty in recruiting enough cyber Marines caused the corps to create a “Marine Corps Cyber Auxiliary” to bring outside cyber expertise into the Marine Corps. These auxiliaries would be volunteers who would mentor and train Marines but would not participate in actual operations or wear the coveted eagle, globe, and anchor. Time will tell whether such a voluntary organization will be successful.⁹⁸

Dakota Wood, a retired Marine officer and senior analyst with the Heritage Foundation, proposed eliminating specialties that do not relate directly to the Marine Corps’ core mission in amphibious operations. That would mean pulling Marines out of cyber and special operations.⁹⁹ General Berger’s guidance barely mentions cyber and special operations, which may be a signal that these capabilities are not central to his new concept for the Marine Corps.

There is also a tension in training between the needs of routine forward deployment of Marine air ground task forces (e.g., low-intensity conflict; crisis response; peacekeeping operations; partner training) and the needs of a great power conflict (e.g., full-spectrum combat in a high threat environment; massive, long-range firepower). Having units switch back and forth is difficult for equipment and personnel. One Marine general noted that this might require two different kinds of units, but that would require a lot of force structure.¹⁰⁰ General Berger’s guidance rejects specialized units (“We cannot afford to build multiple forces optimized for specific contingency”), so this tension will remain.

Ground Forces

Table 8: Marine Corps Ground Force Structure

	<i>Marine Corps Active Infantry Battalions</i>	<i>Marine Corps Reserve Infantry Battalions</i>
FY 2019 Enacted	24	8
FY 2020 Request	24	8
Change	0	0

Source: Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview: Fiscal Year 2020 Budget Request* (Washington, DC: Department of Defense, March 2019), Appendix A, Table A-4, A-2, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request.pdf.

At the macro level, Marine Corps force structure does not show any changes. However, several important changes are occurring at lower levels of organization, driven by Marine Corps 2025 concepts to prepare for major wars. For the ground forces, these changes are enhancing cyber and information warfare and

“Expeditionary Advance Base Operations,” U.S. Marine Corps, 2018, <http://www.candp.marines.mil/Concepts/Subordinate-Operating-Concepts/Expeditionary-Advanced-Base-Operations/>.

98. “Marine Corps Establishes Volunteer Cyber Auxiliary to Increase Cyber Readiness,” Marine Corps, press release, May 13, 2019, <https://www.marines.mil/News/Press-Releases/Press-Release-Display/Article/1845538/marine-corps-establishes-volunteer-cyber-auxiliary-to-increase-cyberspace-readi>.

99. Dakota L. Wood, *Rebuilding America's Military: The United States Marine Corps – Refocusing the Corps on Its Primary Mission: Contributing to the Prosecution of Naval Campaigns* (Washington, DC: Heritage Foundation, March 21, 2019), https://www.heritage.org/sites/default/files/2019-03/SR211_0.pdf.

100. Brian Beaudreault in Megan Eckstein, “Marine Corps Wants Forces in US Ready to Surge for Major War,” U.S. Naval Institute, June 4, 2018, <https://news.usni.org/2018/06/04/34100>.

restructuring the infantry squad by adding a drone operator (with InstantEye mini-drone) and an assistant squad leader. The idea is to leverage emerging technology and provide more depth of leadership as infantry tasks become more complex.

The Marine Corps' ground modernization effort consists of a collection of small programs, from rifles to radios to engineer equipment and trucks. The largest by total program cost are the JLTV, a light armored truck developed jointly with the Army, and the Amphibious Combat Vehicle (ACV), the corps' third attempt to replace the 1970s-era Amphibious Assault Vehicles. Both are conventional and evolutionary and, as a result, are moving ahead smoothly.

The Marine Corps has a lot of concepts for future technology, such as antiaircraft and anti-cruise missile defenses and long-range precision missiles for the artillery. It has initiated a series of experiments called "Sea Dragon" and has been using one battalion (3rd Battalion, 5th Marines) to test new equipment and concepts. However, none of these capabilities are yet being procured in the budget.

Aviation Forces and Challenges

Table 9: Marine Corps Aviation Force Structure

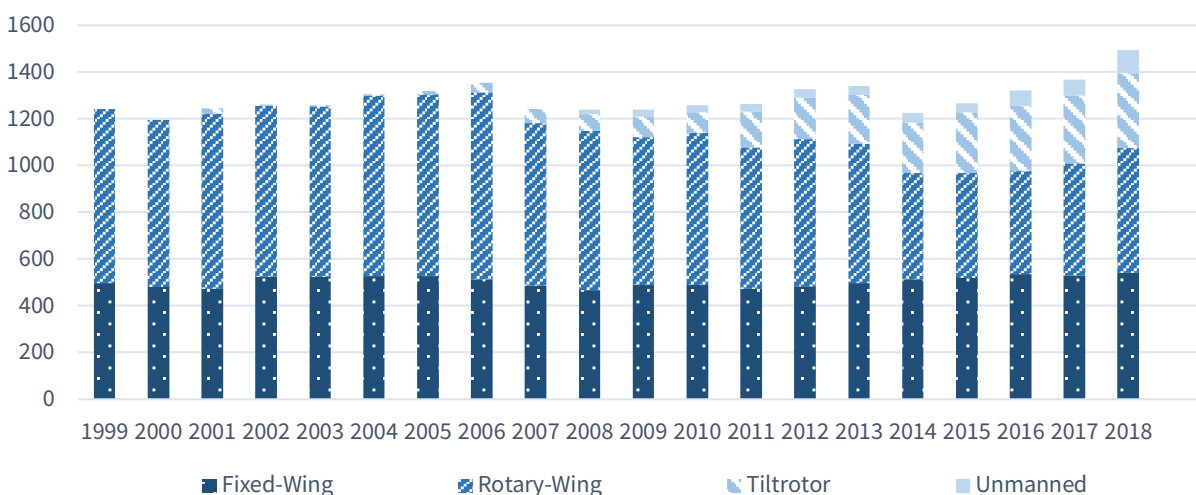
	<i>Total Force Aviation</i>		
	<i>Fixed-Wing Squadrons</i>	<i>Rotary-Wing Squadrons</i>	<i>Unmanned Aircraft Squadrons</i>
<i>FY 2019 Enacted</i>	22	36	4
<i>FY 2020 Proposed</i>	22	36	4
<i>Change</i>	0	0	0

Source: Fixed-wing squadrons include F-35B, F/A-18 A++/C, F/A-18D, F/A-18A++, AB-8B, KC-130J, and KC-130T. Rotary Wing includes MV-22B Osprey, AH-1Z, AH-1W, UH-1Y, and CH-53E. Unmanned Aircraft are squadrons of RQ-21A. Does not include Fleet Replacement Squadrons. Data based on current force PPA squadrons from the respective aircraft plans, including active and reserve components, *2019 Marine Aviation Plan* (Washington, DC: Department of Defense, 2019), <https://www.aviation.marines.mil/Portals/11/2019%20AvPlan.pdf>.

Marine aviation continues to upgrade platforms and incorporate new systems.¹⁰¹ The KC-130J, AH-1Z, and, finally, the F-35B are all in serial production. Funding for the MV-22 acquisition target of 360 aircraft has been completed, though deliveries will continue for the next few years. As noted in the Navy section, the CH-53K is in initial production, after experiencing development problems and some delays. The last EA-6B electronic countermeasures aircraft have retired, replaced by the organic capabilities in the F-35. The good news is that Marine aviation will have a lot of new aircraft in its inventory. The bad news is that there will be half a dozen squadrons in transition at any given time.

101. For details on all aspects of Marine aviation, see U.S. Marine Corps, *2019 Marine Corps Aviation Plan* (Arlington, VA: 2019), <https://www.aviation.marines.mil/Portals/11/2019%20AvPlan.pdf>.

Figure 19: Marine Corps Aircraft Inventory by Type



Source: Data from successive editions of International Institute for Strategic Studies, *Military Balance* (London, UK: Routledge, 1999-2019), <https://www.iiss.org/publications/the-military-balance>.

Aircraft inventories remain relatively stable with some growth in tiltrotor (as MV-22 deliveries continue) and unmanned aircraft. The rotary-wing fleet has mostly been recapitalized with the MV-22 and UH/AH-1 procurements so that it is modern and relatively young. The CH-53K program will complete that recapitalization. The fixed-wing fleet is in the process of recapitalization with the F-35. So, despite the high cost of contemporary aircraft, Marine aviation, unlike the Air Force, is in pretty good shape.

Nevertheless, questions arise about the structure of Marine aviation. General Berger raised the key issue: “It is unlikely that exquisite manned platforms represent a complete answer to our needs in future warfare.”

LAG IN FIELDING UAVS

One approach to meeting General Berger’s guidance would be to field lower-cost UAVs. However, the Marine Corps, having led the way on UAVs in the 1980s, now lags the other services in fielding UAVs. Fielding of the RQ-21 Blackjack

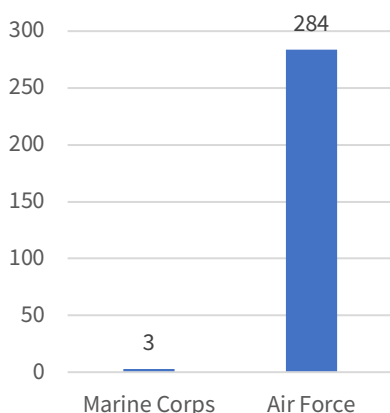
UAV will be completed in FY 2019 to 4 operational squadrons, having experienced difficulties in development and a reduction in planned quantities to 38.¹⁰² Located at regiment/MEU level, it will be capable of operating both ashore and from L-class ships. It performs reconnaissance and surveillance functions but has no attack capability.

The corps also fields a wide variety of smaller UAVs (RQ-11, -12, -20) for tactical reconnaissance and targeting and is experimenting aggressively with integrating such capabilities into small unit operations. None of these systems have attack capabilities, however.

Larger (group 4 and 5) UAVs for division/MEF level operations are still conceptual. To fill the gap in Afghanistan, the Marine Corps has contracted with General Atomics for a single orbit of Reaper (MQ-1) coverage. The Marine Corps requests three MQ-9 Reapers in the FY 2020 budget and another three in FY

102. Defense Operational Test and Evaluation, *RQ-21A Blackjack Unmanned Aircraft System* (Washington, DC: Department of Defense, January 2016), <http://www.dote.osd.mil/pub/reports/FY2015>; Justin Katz, “Marine Corps Manpower Shift Leads to Reduction in RQ-21 FY-19 Request,” *Inside Defense*, February 16, 2018, <https://insidedefense.com/insider/marine-corps-manpower-shift-leads-reduction-rq-21-fy-19-request>.

Figure 20: Marine Corps v. Air Force Armed UAVs in FY2020



Source: *Highlights of The Department of the Navy FY 2020 Budget* (Washington, DC: Department of the Navy, 2019), 4-5, <https://www.secnav.navy.mil/fmc/fmb/Documents/20pres/Budget%20Highlights%20Book.pdf>; *Budget United States Air Force Fiscal Year 2020 Budget Overview* (Washington, DC: Department of the Air Force, March 2019), 38, <https://www.saffm.hq.af.mil/Portals/84/documents/FY20/FY2020%20Air%20Force%20Budget%20Overview%20Book%20Final%20v3.pdf?ver=2019-03-13-082653-843>.

2021, but the MQ-9 is not yet an official program of record and conflicts with the conceptual UAVs.¹⁰³ General Berger vows to change this, saying that, “starting with POM-22 [the Marine Corps will] develop a much broader family of unmanned systems.”

Overall, the Marine Corps, like the Navy, is focused on manned aircraft and is far behind the Army and the Air Force in fielding UAV capabilities. General Berger’s guidance directs more attention to UAVs, but he faces decades of aviation culture.

Guam and Pacific Force Stationing

The Marine Corps is engaged in a long-term effort to ease the burden of its force footprint on Okinawa. What was once a rural and sparsely inhabited island has become crowded and developed. One element of this effort is moving forces off Okinawa, mainly to Guam, though also to mainland Japan, Hawaii, and the mainland United States. The current plan is for the number of Marines on Okinawa to be halved, to 11,500, by 2027.¹⁰⁴

The government of Japan is paying for much of the massive facility construction on Guam, but this construction has proved to be more expensive, complicated, and politically controversial than expected. Work moves forward, though, with more contracts awarded, and sections of the Marine Corps base are expected to be

completed this year.¹⁰⁵ The current target is for 4,000 Marines to be on Guam by 2024, though that timeline has slipped repeatedly.¹⁰⁶

The re-stationing effort also involves building a new air facility—called the Futenma replacement facility—in the less inhabited northern area of Okinawa at Camp Schwab. This project continues to move forward (slowly) despite opposition from local politicians, who complain that Okinawa bears too much of the burden of stationing U.S. forces. The project’s completion date was pushed to 2022, but recent reports about soil instability and potentially expensive fixes have cast doubt about the entire endeavor.¹⁰⁷

The entire re-stationing effort is a cautionary tale to those seeking to move U.S. forces around the Pacific. Although there are strong strategic reasons for such posture changes, actually executing them can be extremely challenging in the real world of local politics, regional tensions, and the inevitable difficulties involved with large-scale construction projects.

103. Yasmin Tadjdeh, “Reapers to Give Marine Corps New Set of War Fighting Tools,” *National Defense*, June 2019, p. 34-35, <https://www.nationaldefensemagazine.org/articles/2019/6/7/reapers-to-give-marine-corps-new-set-of-warfighting-tools>.

104. Matthew Burke, “Marines’ move from Okinawa to Guam could begin as early as October 2024, report says,” *Stars and Stripes*, May 16, 2019, <https://www.stripes.com/news/marines-move-from-okinawa-to-guam-could-begin-as-early-as-october-2024-report-says-1.581201>.

105. Ibid.; Matthew Burke, “Work on Guam’s \$8.7 Billion Portion of Pacific Realignment Gaining Momentum, Officials Say,” *Stars and Stripes*, August 14, 2018, <https://okinawa.stripes.com/news/work-guams-87-billion-portion-pacific-realignment-gaining-momentum-officials-say>.

106. “U.S. to start moving Okinawa-based marines to Guam in 2024,” *Japan Times*, April 27, 2017, https://www.japantimes.co.jp/news/2017/04/27/national/politics-diplomacy/u-s-start-moving-okinawa-based-marines-guam-2024/#.WZw_qsa1vct.

107. Paul Mcleary, “SecDef & Marines Want To Disperse Across Pacific, But It’s Hard,” *Breaking Defense*, August 29, 2019, <https://breakingdefense.com/2019/08/secdef-marines-want-to-disperse-across-pacific-but-its-hard/>.

By contrast to the slow and controversial moves on Okinawa and Guam, the Marine Corps' rotational deployments to Darwin, Australia continue into their ninth year without controversy, with six-month rotations on the ground. This year the rotational force reached the target of 2,500 Marines originally set by President Obama in 2011.¹⁰⁸ The rotations establish a U.S. presence in Southeast Asia and provide opportunities to train with the Australian defense forces. The rotations have continued through changes of administration in both Australia and the United States, so the politics look settled. The disadvantage is that the forces are a great distance from any likely conflict (2,500 miles from the South China Sea).

Special Purpose Marine Air Ground Task Forces (SP-MAGTFs)

Although not new, SP-MAGTF units represent a different capability for the Marine Corps. Traditionally, the smallest unit that the Marine Corps deployed was a MEU with about 2,200 Marines.¹⁰⁹ To provide rapid response and persistent presence in AFRICOM and CENTCOM and periodic theater engagement in SOUTHCOM, the Marine Corps established these land-based, special-purpose units, which are smaller than the MEU. That made them both more agile and easier to deploy, though at the cost of logistics and firepower.

Last year, the Marine Corps appeared to be backing away from SP-MAGTFs in order to use the assets elsewhere. Although there is no indication of such a shift this year, General Berger's desired alignment with the Navy raises questions about whether these land-based units will continue.

Amphibious Ships and Alternative Platforms

As noted in the Navy section, a major headline coming out of General Berger's guidance was the change in how the Marine Corps would think about amphibious ships. For many years, the Marine Corps had sized the amphibious requirement as the ability to carry two Marine Expeditionary Brigades in a wartime operation (34 ships), with 10 percent additional to cover ships in long-term maintenance (total requirement 38 ships).¹¹⁰ The Navy's 355-ship target included 38 amphibies, and the FY 2019 30-year shipbuilding plan achieved this level in the future, although as noted earlier, there is risk in the plan's affordability.

However, General Berger, like many others, noted that this approach produced a small number of very expensive, though very capable, ships. The resulting amphibious fleet was well suited for day-to-day forward deployments and regional conflicts but not well suited for distributed operations or operations in the highly contested environment that the NDS foresaw. Thus, General Berger's vision opens the possibility of building a different kind of amphibious ship ("smaller, low signature, affordable platforms"), perhaps LST size (about 5,000 tons versus 25,000 tons for the proposed LPD Flight II class).

The Navy and Marine Corps may also use non-amphibious ships, such as Maritime Prepositioning Force ships (TAK-Es), high-speed vessels (Expeditionary Fast Transports, EFPs), and mobile landing platforms/afloat forward staging bases (now called Expeditionary Sea Base, ESB and Expeditionary Transfer Dock, ESD).

General Neller mentioned experiments with such ships in his posture statement, and they are included

108. Seth Robson, "Australia-bound battalion will boost Marines' Darwin presence to 2,500," Stars and Stripes, April 25, 2019, <https://www.stripes.com/news/pacific/australia-bound-battalion-will-boost-marines-darwin-presence-to-2-500-1.578356>.

109. A Marine Expeditionary Unit (MEU) has a headquarters, a ground element (built around a reinforced infantry battalion), an aviation element (usually a reinforced medium rotary-wing squadron), and a logistics unit.

110. A Marine Expeditionary Brigade has the same elements as a MEU but is built around an infantry regiment and notionally has about 17,000 Marines. Thirty-eight ship requirement: U.S. Marine Corps, *Maritime Expeditionary Warfare: Annual Report 2017* (Alexandria, VA: August 2017), p. 11. <https://news.usni.org/2017/10/27/document-2017-u-s-maritime-expeditionary-warfare-report>; same statement of requirement is in the 2018 report, which is not available online.

explicitly in General Berger's guidance.¹¹¹ In the past, the Marine Corps argued that such ships lack the survivability needed for high-intensity conflict. Nevertheless, they do provide cargo storage, flight decks, and personnel berthing that could be used for training and engagement events with allies and partners. They also have the advantage of not being as large as regular ("L"-class) amphibious ships and therefore do not overwhelm some of the smaller navies with which they might work. The Navy is making modifications to some of these ships to allow them to accommodate Marine Corps aircraft and troops more easily.

111. Robert D. Holzer and Scott C. Truver, "The U.S. Navy In Review," U.S. Naval Institute, *Proceedings*, May 2017, <https://www.usni.org/magazines/proceedings/2017-05/us-navy-review>; Megan Eckstein, "3rd Marine Division Experimenting with Using MSC Ships in Higher Level Operations," U.S. Naval Institute News, January 12, 2016, <https://news.usni.org/2016/01/12/3rd-marine-division-experimenting-with-using-msc-ships-in-higher-level-operations>; Megan Eckstein, "Council Looking into Using JHSV as Afloat Command and Control Platform for Marines," U.S. Naval Institute News, November 6, 2015, <https://news.usni.org/2015/11/06/council-looking-into-using-jhsv-as-afloat-command-and-control-platform-for-marines>. These ships are receiving new designations as "E" or Expeditionary-class ships: MLP as Expeditionary Transfer Dock (ESD), JHSV as Expeditionary Fast Transport (EPF), and AFSB as Expeditionary Mobile Base (ESB).

5 | Air Force

The Air Force continues procurement and development of fifth generation aircraft to meet the demands of great power conflict while a high operational tempo has forced it to invest in readiness and aging legacy platforms. Thus, the Air Force is in effect driven to a high-low mix of capabilities.

KEY TAKEAWAYS

- Like the other services, the Air Force faces a high operational tempo while at the same time preparing to meet the demands of great power conflict. These pressures, when combined with delays and high costs in modernization programs, are driving the Air Force to a high-low mix, including procurement of F-15EXs and A-10s on the low end and procurement of F-35's and development of the B-21 on the high end.
- The Air Force is slowly addressing its aging aircraft problem as the fleet size stabilizes and new aircraft are delivered. However, the Air Force will experience historically high costs to maintain this inventory level in the future.
- Air Force procures only 12 MQ-9 Reapers in FY 2020, so the unmanned element of its aircraft inventory has plateaued at six percent of the force. This is driven partially by questions about how to adapt unmanned platforms for non-permissive environments of great power conflicts.
- The Air Force reaffirmed its 25 percent expansion goal to reach 386 operational squadrons but takes no steps to reach this goal in FY 2020.
- Nuclear forces require a greater share of the Air Force budget as Reagan era systems reach the end of their service lives and, as a result, nuclear modernization generates some opposition.
- Driven by concerns about space as a new warfighting domain, Congress has put forward bills for an independent Space Force (Senate) or a Space Corps (House). Either way, ripping this new organization out of existing institutions will be a traumatic experience for the Air Force.

Force Structure in FY 2020

Table 10: Air Force End Strength – Active and Civilians

	Air Force Active		Civilian Full-time Equivalents
	<i>Combat Coded Squadrons</i>	<i>Authorized End Strength</i>	
FY 2019 Planned	41	329,100	172,100
FY 2020 Request	41	332,800	174,600
Change	0	+3,700	+2,500

Note: Combat coded squadrons = fighter and bomber squadrons with a wartime mission; Air Force is moving toward a new sizing metric—operational squadrons—which includes fighters, bombers, airlift, intelligence/surveillance/reconnaissance, command and control, special operations, space, cyber, missile, and personnel recovery squadrons. By that metric, there are currently 312 squadrons.

Source: Department of Defense, *United States Air Force Budget Overview Fiscal Year 2020* (Washington, DC, March 2019), p. 5, <https://www.saffm.hq.af.mil/Portals/84/documents/FY20/FY2020%20Air%20Force%20Budget%20Overview%20Book%20Final%20v3.pdf?ver=2019-03-13-082653-843>; Squadron and civilian data from Office of the Under Secretary of Defense (Comptroller), *Defense Budget Overview* (Washington, DC: March 2019), p. 2-9, A-3, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request_Overview_Book.pdf.

Table 11: Air Force End Strength – Reserve and Air National Guard

	Air Force Reserve		Air National Guard	
	<i>Combat Coded Squadrons</i>	<i>Authorized End Strength</i>	<i>Combat Coded Squadrons</i>	<i>Authorized End Strength</i>
FY 2019 Planned	3	70,000	20	107,100
FY 2020 Request	3	70,100	21	107,700
Change	0	+100	+1	+600

Source: Department of Defense, *United States Air Force Budget Overview Fiscal Year 2020*, p. 5. Squadron data from Office of the Under Secretary of Defense (Comptroller), *Defense Budget Overview*, A-3.

The active force remains at 41 combat coded squadrons—fighter and bomber squadrons with a wartime mission. The Air National Guard adds one squadron to get back to the 21 it had in FY 2018.

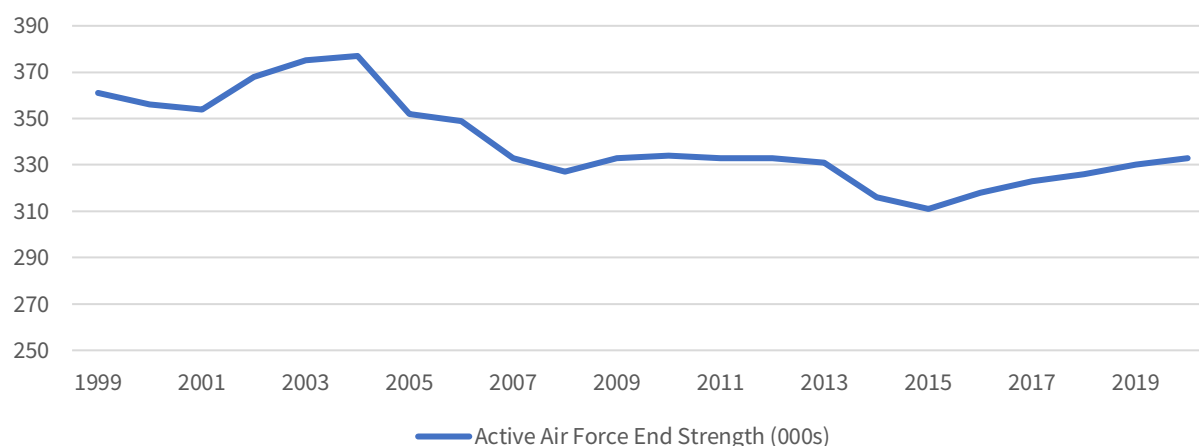
The budget increases end strength for all three components above the FY 2018 level. The active-duty force has the largest increase, primarily for additional equipment maintainers to improve readiness, but also to increase nuclear, special warfare, cyber, and intelligence personnel. The Air Force plans to fix a serious pilot shortfall by adding 1,480 new pilots in its FY 2020 budget, although it is still not expected to fully resolve the shortage this year. The increase in the Air Force reserve components is small, but it is the only service reserve component that gets larger in FY 2020.¹¹²

A bright spot is active/reserve relations. By working closely with its reserve components, and giving them at least a small end strength increase, the Air Force avoided the internal conflicts that had marred earlier budgets and required a 2014 force structure commission to make peace.¹¹³

112. Stephen Losey, “Air Force budget calls for 510K airmen; 1,480 new pilots in 2020,” *Air Force Times*, March 12, 2019, <https://www.airforcetimes.com/news/your-air-force/2019/03/12/air-force-budget-calls-for-510k-airmen-1480-new-pilots-in-2020/>.

113. National Commission on the Structure of the Air Force, *Report to the President and Congress of the United States* (Washington, DC: January 2014), <https://policy.defense.gov/Portals/11/Documents/hdasa/AFForceStructureCommissionReport01302014.pdf>.

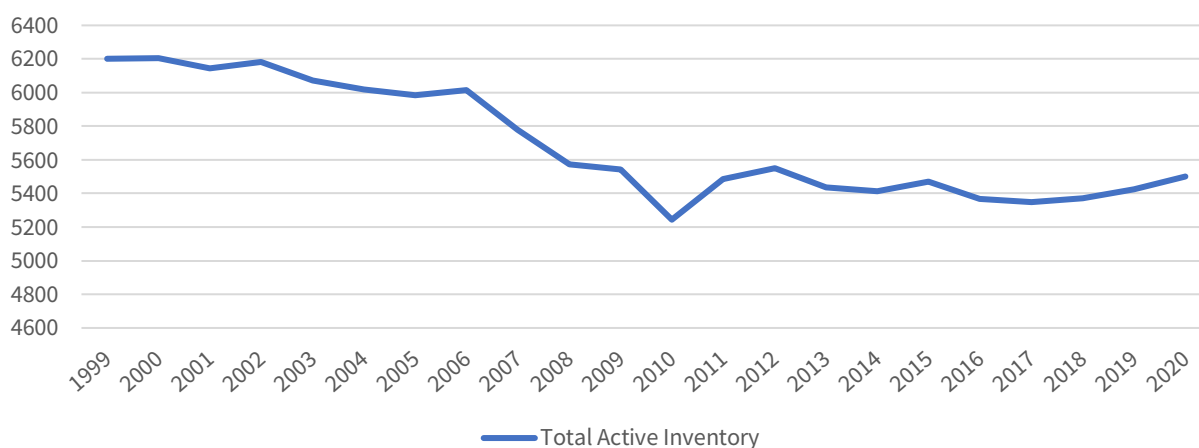
Figure 21: Air Force – Active End Strength 1999-2020



Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY2020* (Washington, DC: May 2019), Table 7-5: Department of Defense Manpower, p. 260-262, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf.

As the chart above shows, end strength rose in the wake of the invasions of Afghanistan and Iraq. After 2004, however, the Air Force adopted a strategy of retiring older aircraft and reducing personnel to shift funds to modernization. Active-duty end strength fell from a high of 377,000 to a low of 316,000. Critics argued that this decrease had harmed readiness and gutted the pilot inventory, causing the problems that the Air Force is now trying to fix.¹¹⁴ Thus, the Air Force began increasing end strength in FY 2016.

Figure 22: Air Force – Aircraft Inventory



Source: Department of Defense, *United States Air Force Budget Overview Fiscal Year 2020*, p. 5.

The Air Force struggles with the long-term challenge of maintaining its force structure with increasingly capable, but increasingly expensive, aircraft. As the chart above indicates, total aircraft numbers have declined since 2000 despite increasing budgets. Even as inventories decreased, average aircraft age has increased (to 29.2 years).¹¹⁵

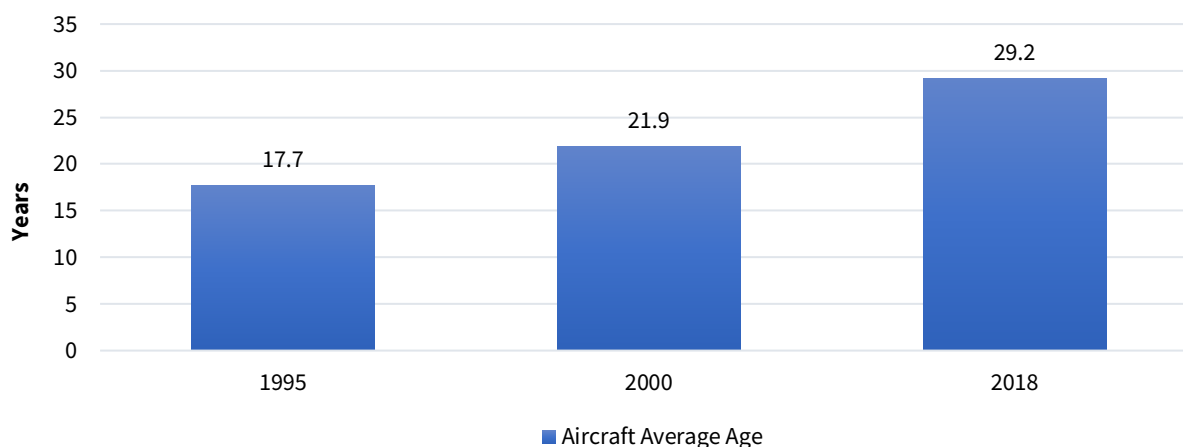
114. Mike Benitez, “Air Force in Crisis, Part II: How Did We Get Here?” War on the Rocks, March 8, 2018, <https://warontherocks.com/2018/03/air-force-in-crisis-part-ii-how-did-we-get-here/>.

115. Numbers measured by Total Active Inventory (TAI), that is, aircraft assigned to operating forces, as well as for test and maintenance. It includes primary, backup, and attrition reserve aircraft.

This happened because the Air Force plan to move rapidly to an all fifth-generation fighter/attack fleet collapsed in the early-2000s when the F-22 buy was curtailed at 187 aircraft and the F-35 program was delayed many years because of development problems. Further, the B-2 program procured only 21 aircraft instead of the planned 132, and other modernization programs were delayed as budgets shrank in the 1990s and the strategic focus shifted to the lower threat air environments of regional conflicts. As a result, the Air Force purchased few aircraft for almost two decades.

The good news is that fleet size has stabilized and aging overall has stopped as new aircraft enter the force. The bad news is that the procurement cost of just maintaining the current inventory will rise far above historical aircraft procurement budget levels through the 2030s.¹¹⁶

Figure 23: Air Force – Aircraft Average Age



Source: “USAF Almanac 2019,” *Air Force Magazine* 102, no. 6 (June 2019): p. 56, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2019/June%202019/AFM_June2019%20Full%20Issue.pdf; “USAF Almanac 2001,” *Air Force Magazine* 84, no. 5 (May 2001): 55-58, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2001/May%202001/0501facts_figs.pdf; “USAF Almanac 1996,” *Air Force Magazine*, 79, no. 5 (May 1996): 56-60, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/1996/May%201996/0596facts_figures.pdf. 2000 and 1995 years calculated by averaging the average age of the active, reserve, and air national guard fleet aircraft.

Some fleets are in relatively good shape: the transport fleet (21 years) because of acquiring C-17s, the special operations fleet (14 years) because of the C-130Js, and the UAVs/RPVs (8 years) because of large wartime purchases. Other fleets are old: fighter/attack (27 years old, on average), bomber (43 years), tanker (52 years), helicopter (29 years), and trainers (31 years).¹¹⁷ All the older fleets (except for some specialty aircraft) have programs in place for modernization, but the programs have been delayed, are expensive, and may take years to fully implement.

Stephen Kosiak, a long-time budget commentator, argues that these trends arise from deliberate choices: “[H]istorical trends in the US military’s force structure and modernization plans are largely the result of policy and programmatic choices made by DOD and service leadership. Contrary to widely held belief . . . the size and shape of today’s forces are not simply a byproduct of budgetary or other pressures beyond DOD’s control.”¹¹⁸

116. Edward Keating, David Arthur, and Adebayo Adejeji, *The Cost of Replacing Today’s Air Force’s Fleet* (Washington, DC: Congressional Budget Office, December 2018), <https://www.cbo.gov/system/files/2018-12/54657-AirForceAviationFunding.pdf>.

117. Fleet age numbers current as of September 30, 2018, from “USAF Almanac 2019,” p. 59.

118. Steven M. Kosiak, *Is the US Military Getting Smaller and Older? And How Much Should We Care?* (Washington, DC: Center for a New American Strategy, June 2017), <https://s3.amazonaws.com/files.cnas.org/documents/CNASReport-SmallerOlderMilitary-Final.pdf?mtime=20170310154527>.

Operational Tempo—and the Tension with Warfare at the High End

Like the other services, the Air Force notes how busy it is. In her budget testimony, Secretary Wilson noted that the Air Force had 21,000 airmen deployed in over 179 locations around the globe, conducting over 50,000 sorties and 3,400 precision strikes last year in the campaigns against ISIS and 44,000 more sorties in Afghanistan. These are in addition to 60 sorties conducted by Air Force bombers in the Indo-Pacific and increased efforts at NATO interoperability and readiness through the European Deterrence Initiative (EDI). The Air Force is effectively conducting an air war in the Middle East while still meeting its other global commitments.¹¹⁹

RAND noted that “since the 1990s, the US military has operated at a tempo more akin to war than peace” and found that “prolonged operations are driving contemporary [Air Force] capacity shortfalls” and that these would continue in the four notional futures that RAND analyzed.¹²⁰

Despite this high operational tempo, the National Defense Strategy (NDS) calls on the Air Force to give priority to the demands of great power competition. While recognizing the need to meet threats from terrorist groups and regional adversaries, the NDS focuses on challenges from China and Russia: “Long-term strategic competitions with China and Russia are the principal priorities for the Department, and require both increased and sustained investment, because of the magnitude of the threats they pose to U.S. security and prosperity today, and the potential for those threats to increase in the future.”¹²¹

General David Goldfein, Air Force Chief of Staff, described the Air Force’s dichotomy: “to defeat a peer threat while being able to deter a near-peer threat . . . and simultaneously being able to maintain campaign momentum against violent extremism . . . at a moderate level of risk.” The Air Force Future Operating Concept also noted this dichotomy: “The future Air Force will retain tailored numbers of high-end assets to operate against adversaries that pose advanced threats. . . . To conduct follow-on sustained operations, or a sustained irregular warfare effort in a permissive or semi-permissive environment, the Air Force forces will primarily use lower-cost/lower-capability assets.”¹²² This drives the Air Force to procure a variety of capabilities.

The F-15EX, A-10, OA-X, and the Purpose of Airpower

Until the FY 2020 budget, the Air Force had purchased its last fourth-generation aircraft in FY 2001, unlike the Navy, which had continued to buy fourth-generation F-18s. Now the Air Force is pursuing several programs that produce capacity rather than high capability. Collectively, these decisions—coupled with the F-35 procurement plateau, described below—indicate a new leaning toward a high-low mix, a substantial change from the Air Force’s previous focus on capability and the high-end conflicts that drove it.

- **F-15EX:** A major change in the FY 2020 budget is that the Air Force proposes buying a new version of the F-15E dual-role aircraft, the F-15EX. Although the procurement cost is only about 10 percent lower than the F-35’s currently (in part a result of the F-35s higher production rate), the sustainment cost of an F-15EX is projected to be about 40 percent lower, and therefore the fleet will be more sustainable.

119. U.S. Air Force, *USAF Posture Statement Fiscal Year 2020* (Washington, DC: March 2019), https://www.af.mil/Portals/1/images/posturestatement/FY20_POSTURE_STATEMENT_OMB_Cleared_12MAR_1310L.pdf. Last year, Secretary Wilson stated the Air Force conducted 172,000 sorties and 98,000 precision strikes against ISIS. U.S. Air Force, *USAF Posture Statement Fiscal Year 2019* (Washington, DC: March 2018), https://www.af.mil/Portals/1/documents/1/FY19_AF_POSTURE_STATEMENT_HIGH_RES.PDF, p. 1.

120. Alan Vick, Paul Dreyer, and John Speed Myers, *Is the Air Force Flying Force Large Enough? Assessing Capacity Demands in for Alternative Futures* (Santa Monica, CA: RAND Corporation, 2018), https://www.rand.org/pubs/research_reports/RR2500.html.

121. DOD, *A Summary of the 2018 National Defense Strategy: Sharpening the American Military’s Competitive Edge*, January 2018 (Washington, DC: 2018), p. 2, <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.

122. Department of the Air Force, *Future Operating Concept: A View of the Air Force in 2035* (Washington, DC: September 2015), p. 10, <https://www.af.mil/Portals/77/documents/AFD-151207-019.pdf>.

Further, the time needed for units to transition from legacy aircraft to the F-15EX is much shorter than the two years needed for the more complicated transition to the F-35A. Thus, the Air Force will have more squadrons available for operations.

The proposal has been controversial, with the Air Force having been pushed into the procurement by the Office of the Secretary of Defense and many airpower advocates criticizing any procurement of fourth-generation aircraft as a step backward. However, Congress seems inclined to go along with the plan.¹²³

Numerically, this is a minor shift since the Air Force proposes to buy only eight F-15EXs in FY 2020 and 80 through the FYDP. During this period, the Air Force will buy 3.5 times as many F-35s. Nevertheless, it is a major shift in acquisition strategy and opens the possibility for a larger shift in the future.

- **A-10s:** The Air Force has surrendered to the will of the Congress (and to real world operations) by re-winging the A-10 fleet and extending fleet life into the late-2030s rather than retiring the fleet in the near term.¹²⁴
- **Legacy aircraft:** Buying F-15 EXs will allow the Air Force to retire the oldest legacy aircraft more quickly. The Air Force will also upgrade and extend the lives of F-16C aircraft and F-15C/D/Es; thus, the FY 2020 budget allocates \$850 million to modify A-10s, F-15s, and F-16s.
- **OA-X:** The Air Force continues dithering with off-the-shelf light attack aircraft (called “OA-X”). The concept is that such an aircraft would be better for missions in low-threat environments because it would be less expensive to operate, reduce wear on high-end aircraft, and have more focused training. The Air Force suspended the program last year, then put \$35 million in the FY 2020 budget for testing and some procurement funds in future budgets, FY 2022-FY 2024, skipping FY 2021.¹²⁵ However, the Air Force has not established a formal acquisition program, so the OA-X’s future is uncertain. SOCOM expressed its disappointment, arguing to field this capability. The Congress has supported the program, appropriating \$100 million to the program for procurement in FY 2019.¹²⁶

This shift from an all high-end fleet to an implicit high-low mix arose from three strategic questions, the first two of which have bedeviled the Air Force from its earliest days:

- *What kinds of conflicts should the Air Force prepare for: those with anti-access/area denial (A2/AD) environments or a spectrum of air environments, including those with less-demanding environments?* For 18 years in Afghanistan and even longer in Iraq, the Air Force has operated intensively but in relatively permissive environments. That allowed unchallenged power projection, forward bases to be used as sanctuaries, low combat attrition, and assured communications. In these lower threat air environments, the Air Force can use legacy aircraft extensively and therefore keep them in the inventory longer. For conflicts against great powers like China and Russia, with their A2/AD capabilities, the Air Force would need to develop and field advanced capabilities. The NDS emphasizes the latter. A high-low mix is a compromise to meet either eventuality.

123. John Tirpak, “F-15EX: Careful What You Don’t Ask for,” *Air Force Magazine*, April 2019, <http://www.airforcemag.com/MagazineArchive/Pages/2019/April%202019/F-15EX-Careful-What-You-Dont-Ask-For.aspx>.

124. Stephen Losey, “A-10 re-winging completed, will keep Warthog in the air until late 2030s,” *Air Force Times*, August 13, 2019, <https://www.airforcetimes.com/news/your-air-force/2019/08/13/a-10-re-winging-completed-will-keep-warthog-in-the-air-until-late-2030s/>.

125. Rachel Cohen, “OA-X Projected to Cost More Than \$1 Billion Through 2024,” *Air Force Magazine*, March 18, 2019, <http://www.airforcemag.com/Features/Pages/2019/March%202019/OA-X-Projected-to-Cost-More-Than-1-Billion-Through-2024.aspx>.

126. Heather Venable, “The Little Airplane That Couldn’t? The Air Force’s Light Attack Message,” *War on the Rocks*, March 4, 2019, <https://warontherocks.com/2019/03/the-little-airplane-that-couldnt-the-air-forces-light-attack-message/>; Courtney Albom, “Air Force Programs \$400 Million in FY DP to Buy Light Attack Aircraft,” *Inside Defense*, March 13, 2019, <https://insidedefense.com/daily-news/air-force-programs-400m-fydp-buy-light-attack-aircraft>.

- *How can airpower achieve the greatest effects?* Will the greatest effects come from attacks close to friendly front lines—that is, through close air support and battlefield interdiction? The ground forces are strong advocates here, arguing that these effects are immediate and tangible.¹²⁷ Specifically designed aircraft like the A-10 are both cheaper and more effective for these missions than multirole stealth aircraft like the F-35.¹²⁸ Airpower advocates argue that the greatest effect comes from the deep attack of strategic targets, but flying these missions requires extensive self-protection capabilities. The Air Force has historically leaned toward the latter for a variety of organizational and doctrinal reasons.¹²⁹ The debate goes far beyond this monograph.
- *What is the value of stealth in modern air warfare?* Stealth—needed to penetrate heavily defended airspaces—is expensive to develop, procure, and then sustain.¹³⁰ Further, there is an operational penalty. Because stealthy aircraft must fly “clean” to remain stealthy, they cannot carry external munitions or fuel tanks. Proponents argue that the cost and performance tradeoffs are worthwhile because of rising air threats.¹³¹ The Center for Strategic and Budgetary Assessments (CSBA) built an entire Air Force structure around the need to increase stealth capabilities (as well as long-range capabilities) in its congressionally-directed force structure study.¹³² Opponents argue that only a small part of the fleet needs to be stealthy, while the rest can be non-stealthy. This has been the prevailing perspective since the end of the Cold War, when the United States faced only regional adversaries.¹³³

Even with the Trump administration’s higher budgets, the Air Force does not have enough money to buy a pure fifth-generation force that can fill out its entire force structure. On the other hand, it does have enough money to buy some fifth-generation aircraft, maintain a viable legacy force, and perhaps buy some new capabilities like a light attack aircraft. The FY 2020 budget heads down this path. However, if budgets go down, even this high-low mix may not be viable.

The Curse of Short Range

A new concern about the Air Force tactical aviation fleet is that it is too short ranged. The F-35, for example, has a combat range of about 680 miles, more than the F-16 but less than the F-15E and much less than the old F-111, which had twice the combat range (1330 miles). During the Cold War, short range was

127. Scott Beauchamp, “An Infantryman’s Defense of the A-10,” Task and Purpose, February 29, 2016, <http://taskandpurpose.com/infantrymans-defense-10>.

128. Mandy Smithberger, “Congress Questions Air Force’s Commitment to Close Air Support,” Project on Government Oversight, March 26, 2016, <http://www.pogo.org/strauss/issues/weapons/2016/congress-questions-air.html>.

129. The literature on close air support versus strategic attack is extensive. For a recent example, see Phil Haun and Colin Johnson, “Breaker of Armies: Airpower in the Easter Offensive and the Myth of Linebacker One and Two in the Vietnam War,” *International Security* 40, no. 3 (Winter 2015/16): 139–78, https://www.mitpressjournals.org/doi/abs/10.1162/ISEC_a_00226?journalCode=isec.

130. Technically not “stealth” but “low observability” since nothing is actually invisible. The additional cost of stealth is difficult to estimate since aircraft are bought in different quantities, have different characteristics beyond stealth, and costs can include different elements (like development). One data point is from the Navy, which is buying both fourth generation F-18E/Fs and fifth generation F-35s. The average recurring procurement cost of F-35B/Cs over the life of the program is about 30 percent more than an F-18 in FY 2020. Adding non-recurring costs for manufacturing and development would greatly increase the cost differential.

131. Jeff Harrigan and Max Morosko, “Fifth Generation Air Combat: Maintaining the Joint Force Edge,” Mitchell Institute for Aerospace Studies, The Mitchell Forum, no. 6, July 2016, http://docs.wixstatic.com/ugd/a2dd91_bd906e69631146079c4d082d0eda1d68.pdf; Loren Thompson, “Trump Defense Team inherits Bad Ideas About Air Power from The Obama Years,” *Forbes*, February 2, 2017, <https://www.forbes.com/sites/lorenthompson/2017/02/01/trump-defense-team-inherits-bad-ideas-about-air-power-from-the-obama-years>.

132. Mark Gunzinger et al., *An Air Force for An Era of Great Power Competition* (Washington, DC: Center for Strategic and Budgetary Assessments, 2019), <https://csbaonline.org/research/publications/an-air-force-for-an-era-of-great-power-competition>.

133. Mike Pietrucha, “The U.S. Air Force and Stealth: Stuck on Denial Part I,” *War on the Rocks*, March 24, 2016, <http://warontherocks.com/2016/03/stuck-on-denial-part-i-the-u-s-air-force-and-stealth>; Mike Benitez, “Stealth Is King, the World Is Flat,” *War on the Rocks*, May 19, 2016, <https://warontherocks.com/2016/05/stealth-is-king-the-world-is-flat/>.

not a problem because the forward fighter bases in NATO were close to the front line. It was not a problem after the Cold War because adversaries did not have strong antiair capabilities, and as a result, U.S. tactical aircraft could refuel as often as they needed.

However, in prospective conflicts with China and Russia, operational range matters. The Pacific is vast, and U.S. bases in Europe, even forward bases in Eastern Europe, are still far from potential battlefields in, for example, the Baltic states. Further, airbases are vulnerable as never before, so U.S. aircraft may need to be based further away from their targets, and adversary air defenses may make aerial tanking risky.

As a result, many analyses recommend actions to increase standoff range and reduce vulnerability: an emphasis on bomber forces because of their long range; the curtailment of F-35 procurements because of their short range; the dispersion of basing; and the development of long-range strike, especially unmanned systems. For example, in a congressionally-directed study, the CSBA recommended, “the Air Force should rebalance its combat forces in favor of long-range, penetrating bombers.” The CSBA also recommended developing a new, long-range fighter/attack aircraft (“penetrating counter air”) to substitute for some F-35 inventory.¹³⁴ Similarly, in another congressionally-directed study, the MITRE Corporation recommended “an increase in available long-range aircraft and bases [to] strengthen the conventional deterrence posture of U.S. forces.”¹³⁵

The Navy suffers from the same range limitation but has the advantage of being able to move its airfields (carriers) around, so this affects the Air Force more intensely.¹³⁶

*Piloted versus Unpiloted (or “Manned versus Unmanned”)*¹³⁷

For the Air Force, this revolution is over. Whereas the Navy’s efforts to integrate unmanned aircraft into its aviation fleet are still controversial, slow, and limited, as described in this project’s corresponding chapter on the Navy, the Air Force incorporation of unmanned aircraft into its force structure—after strong resistance during the 1990s and early-2000s—has become routine.

However, the Air Force has stalled in its effort to bring remotely piloted aircraft (RPA) into the force. The RPA proportion of the force has leveled off at 5–7 percent for 10 years and current procurement plans show no change in the future. The FY 2020 budget procures only 12 additional MQ-9 Reapers, the follow-on aircraft to MQ-1 Predators, which retired in March, and no additional RQ-4 Global Hawks. By contrast, the budget procures 88 manned aircraft.¹³⁸

The Air Force is experimenting with “loyal wingman” RPAs and one, “Valkyrie,” is in testing. At some point in the future, this might change the balance. However, this is not yet an official “program of record.”¹³⁹

134. Gunzinger et al., *An Air Force for An Era of Great Power Competition*, p. xi

135. MITRE Corporation, *US Air Force Aircraft Inventory Study: Unclassified Report*, <http://www.airforcemag.com/DocumentFile/Documents/2019/MITRE-USAF-Aircraft-Inventory-Study.pdf?>; This is the unclassified version of a longer classified report on the Air Force aircraft force structure, directed by the Congress.

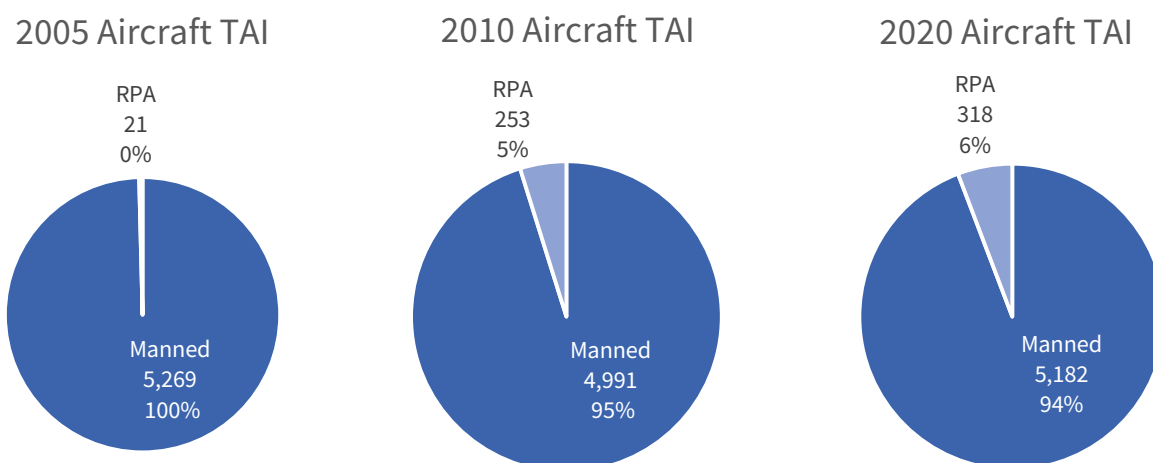
136. See Jerry Hendricks, *Retreat from Range: The Rise and Fall of Carrier Aviation* (Washington, DC: Center for a New American Security, October 2015), <https://www.cnas.org/publications/reports/retreat-from-range-the-rise-and-fall-of-carrier-aviation>.

137. The Air Force is emphatic that these are aircraft and are not “unmanned” but are instead “remotely piloted.” Hence, the Air Force uses the term “Remotely Piloted Aircraft.” There are cultural reasons for this distinction, the Air Force being run by pilots. However, there is also a substantive argument in that, although there are no humans in the aircraft itself, there is a large ground-based support structure to launch, fly, and recover the aircraft.

138. Department of the Air Force, *Air Force Justification Book Volume 1 of 2, Aircraft Procurement*, p. x-xiii.

139. Aaron Gregg, “Air Force Completes First Flight of Valkyrie Unmanned Fighter Jet,” *Washington Post*, March 6, 2019, <https://www.washingtonpost.com/business/2019/03/07/air-force-completes-first-flight-test-valkyrie-unmanned-fighter-jet/>.

Figure 24: RPA versus Manned Aircraft, 2005, 2010, 2020



Source: Department of Defense, *United States Air Force Budget Overview Fiscal Year 2020*, p. 38; “USAF Almanac 2011,” *Air Force Magazine* 94, no. 5 (May 2011): p. 48, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2011/May%202011/0511facts_figs.pdf; “USAF Almanac 2006,” *Air Force Magazine* 89, no. 6 (May 2006): p. 63, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2011/May%202011/0511facts_figs.pdf; Air Force Almanac, Aircraft Total Active Inventory, 2019, 2010, 2005; 2020 numbers taken from the *Air Force FY2020 Budget Overview*, Appendix, Air Force Total Aircraft inventory.

Another major issue is whether to buy RPAs for permissive or non-permissive environments.¹⁴⁰ Reapers can only operate in permissive environments. That has been fine for the kinds of conflicts the United States has fought recently. However, in a conflict with a high-end competitor like Russia or China, these aircraft would be vulnerable because of their slow speed, high visibility, and lack of defensive systems. The issue was illustrated dramatically in July 2019 when the Iranians shot down a Navy RQ-4.

The question, then, is twofold. First, are there concepts of operation that would enable current UAVs to contribute to a high-end warfighting campaign? Second, should the Air Force develop and procure stealthy and likely largely autonomous UAVs to operate inside these challenging air defense environments? One stealthy unmanned aircraft, the RQ-170 Sentinel, an Air Force/CIA collaboration is known to exist because one was shot down over Iran in 2011 and exhibited to the public. A possible SR-72, an optionally manned successor to the SR-71, is also rumored to be in development.¹⁴¹

One insight into possible aviation futures came from the Air Force’s decision to cancel the recapitalization program for JSTARS (E-8C), the airborne platform that uses radars to discern movement on the ground. The Air Force judged that the aircraft, slow and with predictable flight paths, would not be survivable in great power conflicts and so decided to replace it with a battle management system that leveraged distributed networks. Such a change to one program is interesting but limited. However, if this kind of reasoning were applied across the board—for example, to tankers and airborne command and control—then many of the Air Force’s large aircraft would potentially be replaced by other approaches.

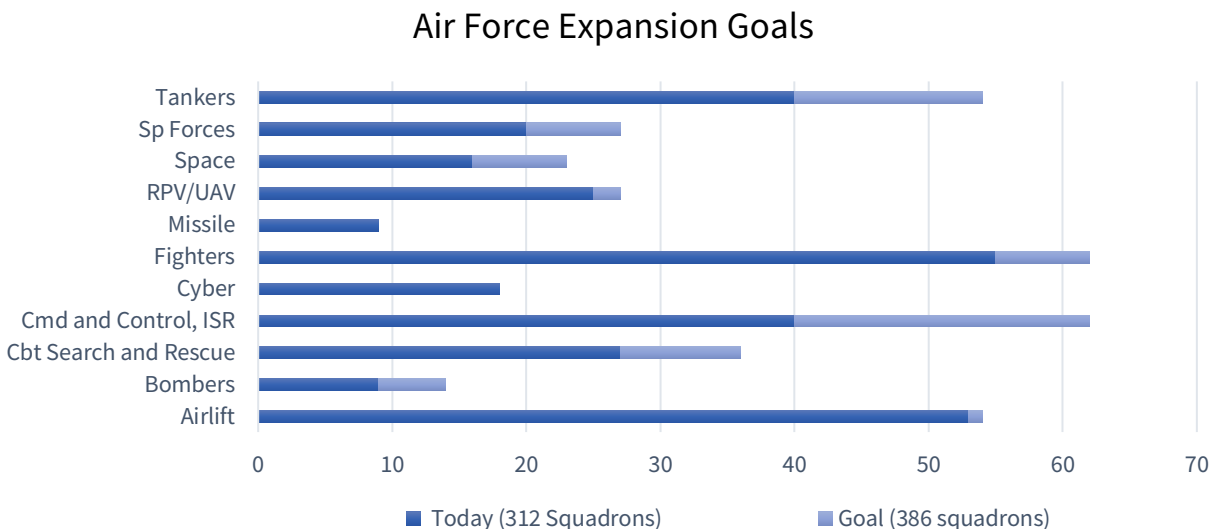
140. Mark Pomerleau, “Can the MQ-9 Reaper operate in contested environments?” C4ISRnet, October 4, 2016, <http://www.c4isrnet.com/unmanned/uas/2016/10/04/can-the-mq-9-reaper-operate-in-contested-environments>.

141. Guy Morris, “Pictures: Lockheed Martin RQ-170 Sentinel Sighting in California,” *Aviation Week*, March 5, 2018, <http://aviation-week.com/defense/pictures-lockheed-martin-rq-170-sentinel-sighting-california>; James Clark, “The SR 71 Blackbird’s Ultrasecret Successor May Scream across the Sky Sooner Than Expected,” *Task and Purpose*, September 29, 2017, <https://taskandpurpose.com/sr-71-blackbird-successor-demonstrator>.

Air Force Expansion Proposal

Last year, then-Secretary of the Air Force Heather Wilson proposed a 25 percent increase in force structure, describing it as “the Air Force we need” (see chart below).¹⁴² This would increase the Air Force from 312 operational squadrons to 386. Much of the growth is in enabling capabilities like tankers, special forces, space, and especially command-and-control, intelligence, surveillance, and reconnaissance, which provide the precision targeting that long-range munitions require.

Figure 25: Air Force Expansion by Mission Category



Source: Air Force, *Restoring Readiness: FY2020 Posture* (Washington, DC: April 2019), https://www.af.mil/Portals/1/documents/5/FY20_Posture_Statement.pdf?ver=2019-04-04-092535-083×tamp=1554384341518.

In FY 2020, the Air Force reaffirmed this goal.¹⁴³ General Goldfein’s posture statement declared, “our analysis [has] produced an unmistakable conclusion: The Air Force is too small for what our nation needs. We currently have 312 operational squadrons . . . To implement the National Defense Strategy and prevail over our highest priority competitors, we determined that the Air Force must grow to 386 operational squadrons.” The statement went on to note that the National Defense Strategy Commission also found that the Air Force needs “greater capacity in an era of great power competition” and that the present Air Force, which had evolved from 20 years of counterinsurgency and counterterrorism operations, could not meet these new demands.¹⁴⁴

Details about how the calculation was done and the operational concepts behind the larger force requirement are not publicly available. The unclassified Air Force report to Congress references “combatant commander requirements, wargames, and joint force simulations” but provides no numbers or details. Interestingly, the report does note that “the maximum of the two stacked demands (competition or war) determined the peak demand for each operational squadron category.” That means that for some fleets the day-to-day operational demands set the fleet size and not the wartime demands.¹⁴⁵

142. Chuck Broadway, “SecAF Wilson provides Air Force update,” U.S. Air Force, September 17, 2018, <https://www.af.mil/News/Article-Display/Article/1635645/secaf-wilson-provides-air-force-update/>; Full speech linked here: <https://spacepolicyonline.com/wp-content/uploads/2018/09/SECAF-AFA-Speech-FInal-Sep-17-2018-AF-We-Need.pdf>.

143. U.S. Air Force, *USAF Posture Statement Fiscal Year 2020*.

144. Ibid.

145. *Fiscal Year 2018 National Defense Authorization Act Section 1064 Study: Aircraft Inventories for the Air Force*, March 2019, <http://>

CSIS estimated that the additional annual cost of this expanded force would be about \$37 billion, and up to 94,000 additional personnel, active and reserve, when all the indirect and overhead impacts are included.¹⁴⁶ However, as noted earlier, the Air Force takes no steps in FY 2020 to reach this expansion goal, unlike the Navy and its 355-ship goal.

Aircraft Modernization: The Future Force

The Air Force has programs in place to modernize the individual fleets, but this modernization has been delayed and will take time, and as a result, today's aging fleets will be around for a long while.

B-21 AND THE BOMBER FORCE

The B-21 Raider program continues in development with budget demands rising from \$2.3 billion in FY 2019 to \$3 billion in FY 2020. Because the B-21 has a mid-2020s fielding date ("IOC"), the legacy B-52s, B-1s, and B-2s will comprise the bomber force for many years to come. That force continues to age (currently 43 years on average), though a variety of upgrade programs keep the aircraft flying and operationally relevant, for example, new engines for the B-52s and a new defensive system for the B-2s.

F-35 AND THE FIGHTER FORCE

The Air Force requests 48 aircraft in FY 2020, about the same as for the last four years, although Congress routinely increases the buy (to 56 in FY 2019) out of a concern that the aircraft are being fielded too slowly. Forty-eight may be the long-term procurement level, rather than the 60 aircraft per year that the Air Force has planned.

After several years of making good progress in maturing technologies, the program has still not achieved the planned levels of reliability and capability. The annual report of the director of Operational Test and Evaluation (DOT&E) highlighted that many of the criticisms from its 2017 report remained unaddressed. For example, the report noted that "The operational suitability of the F-35 fleet remains at a level below Service expectations. Similar to the 2017 DOT&E report, most suitability metrics remained nearly the same throughout 2018 or moved only within narrow bands." Moreover, cybersecurity testing revealed that "vulnerabilities identified during earlier testing periods still had not been remedied." The DOT&E also found that fleet-wide average availability "is below the program target value of 60 percent and well below planned 80 percent needed for efficient conduct." Other issues, such as "unacceptable" gun accuracy for the F-35A and durability of the F-35B, which was well under 8,000 flight hours and expected to begin reaching service life limit in 2026, were also noted.¹⁴⁷

Age of the fighter/attack force has increased from 8 years at the end of the Cold War in 1991 to 26 years today, while numbers have decreased from 4,000 in 1991 to 1,981 (total) today. Kosiak's observation is applicable here. Both fleet aging and reduced numbers result from an Air Force decision to cease production of fourth generation aircraft (F-15s and F-16s) in the 1990s and instead wait for production

www.airforcemag.com/DocumentFile/Documents/2019/Air%20Force%20FY18%20NDAA%20Section%201064%20Study.pdf; Air Force Chief of Staff General Dave Goldfein noted that the war-gaming that went into the 386 number would be elaborated in closed hearings with Congress, and that apart from the fact that some 3,000 iterations were conducted, more could not be revealed in an unclassified setting. Kyle Rempfer, "The 386-squadron goal is still lean compared to Desert Storm days, Air Force chief says," *Air Force Times*, February 19, 2019, <https://www.airforcetimes.com/news/your-air-force/2019/02/20/the-386-squadron-goal-is-still-lean-compared-to-desert-storm-days-air-force-chief-says/>; The absence of detailed studies on how 386 was determined and how exactly it will be reached has been repeatedly noted, John Lehman, "386! Go On Air Force. Say it Loud. Now!" *Breaking Defense*, March 19, 2019, <https://breakingdefense.com/2019/03/386-go-on-air-force-say-it-loud-now/>.

146. Mark Cancian, "Air Force 386 Squadron Plan: Hallucination Or Negotiating Tactic?" *Breaking Defense*, September 26, 2018, <https://breakingdefense.com/2018/09/air-force-386-squadron-plan-hallucination-or-negotiating-tactic/>.

147. Director of Operational Test and Evaluation, *FY 2018 Annual Report* (Washington, DC: Department of Defense, December 2018), p. 23-36, <https://www.dote.osd.mil/pub/reports/FY2018/pdf/dod/2018f35jsf.pdf>.

of the fifth generation (F-22s and F-35s). This was the opposite of the Navy's decision. Unfortunately, production of the F-22 was curtailed at 187 aircraft during the budget drawdown in the late-2000s, and the F-35 was delayed many years from its original schedule.

Fielding of new F-35s is beginning to ease the aging of the fleet (as will production of F-15EXs). Nevertheless, at 48 aircraft per year, it would take another 29 years to reach the F-35 inventory objective of 1,763—FY 2049. Even at 60 aircraft per year, the Air Force goal, it would take 23 years—FY 2043. The average age of the fighter/attack fleet will, therefore, remain high for a long time, perhaps indefinitely.

NEXT GENERATION AIR DOMINANCE (NGAD)

Coming up over the horizon is NGAD, the next-generation fighter/attack program for both the Navy and Air Force (known in the Navy as FA-XX). Sometimes seen as a sixth-generation fighter, the program is not yet well defined, including perhaps manned and unmanned systems, as well as sensors and munitions. Funding in the FY 2020 budget reaches \$1 billion. How this program shakes out will have a profound effect on the shape of the future Air Force and, indeed, may determine whether manned aircraft are a dying capability or whether they have decades of continuing relevance.

KC-46 AND THE TANKER FORCE

The KC-46 will replace the Air Force's aging tanker force, the current KC-135 tankers having an average age of 57 years and the KC-10s 34 years. The program was thought to be low risk since the airframe is a variant of Boeing's widely used 767.

However, the program has been troubled from the beginning, with first delivery not occurring until January 2019, three years late. Production deficiencies and problems with the refueling boom caused the Air Force to withhold \$360 million of payments recently until the deficiencies were corrected.¹⁴⁸ Boeing, the contractor, continues to execute the fixed price contract that it greatly underbid and on which the company is taking large losses (\$3.6 billion so far).¹⁴⁹ That underbidding strategy appears to have paid off, however, as the Air Force announced that it would not recompet the contract after the current buy but would procure more KC-46s.

The bottom line is that the KC-46 program is still not quite ready, and the current tanker fleet of KC-10s and KC-135s will be around for a lot longer.

STRATEGIC MOBILITY

The NDS focus on great power conflict appeared to raise the possibility of wartime attrition being a concern for sizing the strategic airlift and sealift fleets. Russia and China can threaten sea and air lines of communication in a way that regional threats, like Iran or North Korea, cannot. Many outside analyses had pointed to this new threat.¹⁵⁰ That would drive inventory requirements higher.

However, the most recent strategic mobility study, *Mobility Capabilities and Requirements Study 2018*, completed in February 2019, did not address this potential challenge and found that the fleets were sized

148. Colin Clark, "Air Force Gets Tough with Boeing, Withholds \$360 Million," *Breaking Defense*, July 24, 2019, <https://breakingdefense.com/2019/07/air-force-gets-tough-with-boeing-withholds-360-million-from-kc-46/>; "KC-46 Tanker Modernization: Aircraft Delivery Has Begun, but Deficiencies Could Affect Operations and Will Take Time to Correct," Government Accountability Office, June 12, 2019, <https://www.gao.gov/products/GAO-19-480>.

149. Garrett Reim, "Boeing losses in KC-46A Programme Continue to Rise," *Flight Global*, February 12, 2019, <https://www.flightglobal.com/news/articles/boeing-losses-in-kc-46a-programme-continue-to-rise-455679/>.

150. Sydney Freedberg, Jr., "U.S. Needs More Tankers, Transports Since Russia and China Can Shoot Them Down," *Breaking Defense*, September 21, 2017, <https://breakingdefense.com/2017/09/more-tankers-transport-needed-since-russia-china-can-shoot-them-down-everhart>.

adequately. The major concerns were recapitalization of the aging tanker and sealift fleets.¹⁵¹ DOD appeared to be ignoring this potential problem.

However, Congress was not ignoring the problem and raised a number of questions about the analysis. In response, the United States Transportation Command, or TRANSCOM, is doing an unprecedented follow-on study that broadens the analysis by tying it to “campaigning and combat analysis” and extending the time horizon beyond 2023. Interim results will be ready by June 2020, in time for CSIS’s military forces analysis next year, and final results will be available in January 2021.¹⁵²

Nuclear Enterprise

The ICBM force has declined from 450 to the New START limit of 400. The bomber force holds steady at 157 total (TAI). The direction of the nuclear enterprise was laid out in the DOD’s Nuclear Posture Review (NPR), published in February 2018. The NPR affirmed the need for the nuclear triad to deter nuclear and non-nuclear aggression and assure allies and partners.

Further, the NPR highlighted the “the increasing need for this diversity and flexibility” as “one of the primary reasons why sustaining and replacing the nuclear triad and non-strategic nuclear capabilities, and modernizing NC3, is necessary now.”¹⁵³

However, after nearly three decades of low public visibility and relatively low cost, the nuclear enterprise is getting more attention because the systems acquired during the Reagan buildup of the 1980s are now reaching the end of their service lives and must be replaced. That brings opposition from arms-control advocates. Table 3 shows the most controversial nuclear modernization programs.

These programs—with the B-21 bomber and the *Columbia*-class submarine—contribute to the nuclear modernization bow wave that DOD faces in the 2020s and 2030s and which will require DOD to either trim programs or increase the proportion of the budget allocated to nuclear forces.¹⁵⁴

One piece of good news: In response to scandals several years back and several outside reviews, the Air Force (and the Navy) are continuing their efforts to improve the standards and quality of their nuclear enterprise, both personnel and operations. The absence of any recent incidents may indicate some success.

A “Space Force?”

The great issue about space this year, like last year, is whether, and how, to create a “space force” separate from the Air Force. The concept is to give space, now one of the five domains of warfighting (with land, sea, air, and cyber), increased attention. The issue appeared to have subsided last year when Congress declined to create such an organization in the face of determined opposition from the Air Force and DOD. However, the issue resurfaced over the summer of 2018 when President Trump expressed his intention to create a “space corps” of some sort. Now, the department has fallen into line and proposed creating a “space force” as an independent service initially under the Department of the Air Force but eventually under its own military department.

151. “Mobility Capabilities and Requirements Study (MCRS) 2018,” United States Transportation Command, February 2019, <http://www.airforcemag.com/DocumentFile/Documents/2019/MobilityCapabilitiesRequirementsStudy2018.pdf>.

152. Courtney Albon, “TRANSCOM Crafting Follow-On Capability Study with a Broader Scope,” Inside the Pentagon, October 2, 2019, <https://insidedefense.com/daily-news/transcom-crafting-follow-capability-study-broader-scope>.

153. DOD, *Nuclear Posture Review* (Washington, DC: Department of Defense, February 2018), <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

154. Todd Harrison and Evan Montgomery, *The Cost of U.S. Nuclear Forces: From BCA to Bow Wave and Beyond*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2015), <http://csbaonline.org/search/?x=0&y=0&q=harrison>.

Table 12: Nuclear Modernization Programs (\$ millions)

Program	FY 2019 enacted	FY 2020 proposed	Comment
<i>Ground-Based Strategic Deterrent (GBSD)</i>	414.4	570.4	GBSD has been controversial among arms-control advocates and some budget hawks who see it as unnecessary and would reduce the nuclear forces to a “dyad” or even a “monad.”
<i>Long-Range Standoff (LRSO) weapon</i>	664.9	712.5	LRSO, a nuclear-armed cruise missile, has been controversial because bombers already have one nuclear munition, the B61 bomb.
<i>B61 tail kit program</i>	233.8	108.4	Designed to increase the accuracy of the B61 nuclear bomb, the program faces some opposition because of concerns that it makes nuclear warfighting more viable.

Note: Additional funding for an Analysis of Alternative is provided in the DOE NNSA budget for the development of a low yield SLCM called for in the 2018 NPR.

Source: Office of the Under Secretary of Defense (Comptroller), *Program Acquisition Cost by Weapon System* (Washington, DC: Department of Defense, March 2019), https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Weapons.pdf; Department of Energy, *FY 2020 Congressional Budget Request: National Nuclear Security Administration, Vol. I* (Washington, DC: March 2019), p. 73; National Nuclear Security Administration, *FY 2020 Congressional Budget Request* (Washington, DC: Department of Energy, March 2019), <https://www.energy.gov/sites/prod/files/2019/04/f62/doe-fy2020-budget-volume-1.pdf>.

Congress seems inclined to go along in some way. The Senate authorization act essentially follows the DOD proposal but makes the unrealistic provision that all additional billets come out of the Air Force. The House authorization act creates a “space corps” that does not quite rise to the level of an independent service but does have representation on the joint chiefs of staff. Some compromise will be developed in the fall of 2019 for the final NDAA.

If a separate service were created, it would have profound effects on DOD’s internal organization, especially the Air Force, which would give up many organizations and personnel to create the new military service. A “space force” would also redefine the nature of military service since its personnel would be essentially noncombatants whose mission was to develop, launch, and control satellites from the continental United States.

Munitions as an Element of Strategy: Volume for the Long War

All the services are buying more munitions. Many analyses show that U.S. forces would expend large amounts of munitions in a great power conflict. Thus, the Air Force budget procures a lot of munitions, especially air-to-ground munitions.

Procurement of munitions may not hold up if budgets decline. The downside of munitions acquisition is that they are sterile; that is, once procured, they go on the shelf to be used in case of conflict. If there is no conflict that requires their use, then the services must pay to dispose of the munitions at the end of their useful life. Munitions are not visible and, therefore, may not contribute significantly to deterrence. For this reason, many U.S. allies and partners do not have large munitions stocks despite the wartime requirement.

Program	FY 2020 request (#)
JDAM	37,000
Small Diameter Bombs (SDB-I and II)	7,078/ 1,175
Joint Air-to-Surface Standoff Missile (JASSM)	430
AIM-9X Sidewinder	355
AIM120D Advanced Medium-Range Air-to-Air Missiles (AMRAAM).	220
Hellfire Missile	3,859
Advanced Precision Kill Weapon System (APKWS)	5,400

Source: Air Force, “Defense-Wide Justification Book Volume 1, Procurement of Ammunition,” JDAM, p. 71, 80; APKWS, p. 3, 7; Air Force, “Defense-Wide Justification Book Volume 1, Procurement of Missiles,” SDB I and II, p. 85, 95, 97, 105; JASSM, p. 23, 37; AIM-9X Sidewinder, p. 49, 62 (*MAX production rate is 1,400 [per Manufacturer location] missiles of any mix required); AMRAAM, p. 63, 73; Predator Hellfire Missile, p. xi.

By contrast, aircraft, ships, and vehicles get used every day; their visibility creates a perception of U.S. capability in potential adversaries and thus adds to deterrence. As a result, there is always pressure to buy platforms rather than munitions.

6 | SOF, Civilians, Contractors, and Nukes

Military forces include not just those in the services but also the Special Operations Forces (SOF), DOD Civilians, Contractors, and National Security Organizations Outside DOD such as the National Nuclear Security Administration. The key takeaways of each of these areas is summarized below.

KEY TAKEAWAYS

Special Operations Forces (SOF)

- SOF is gradually expanding, continuing to depend on Overseas Contingency Operations (OCO) funding, and increasing organizational independence.
- SOF is also facing a new disturbing theme of ethical misconduct by its personnel.

DOD Civilians

- Despite administration skepticism about the federal bureaucracy, DOD civilians are planned to increase by 5,200 in FY 2020.
- Secretary Mark Esper is conducting a “night court” budget review of the mostly civilian defense agencies, with results to be reflected in the FY 2021 budget.

Contractors

- Contractors have become a permanent part of the federal workforce but remain controversial due to enduring questions about cost and what government should or should not do.
- Operational contractors also continue to play a vital role in CENTCOM, holding a 1.5 to 1 ratio with military personnel.

National Security Organizations Outside DOD

- The National Nuclear Security Administration, which supports DOD nuclear missions and activities as part of Department of Energy, is emphasizing the administration’s nuclear modernization priorities by increasing funding for weapons activities and naval reactors.

Special Operations Forces (SOF)

Three themes continue—gradual force growth, dependence on overseas contingency operations (OCO) funding, and increasing organizational independence. Stress on the force, though continuing, has eased. Unfortunately, a new and disturbing theme—ethical misconduct—has emerged.

Table 13: Special Operations Forces – Military, Civilians, and Contractors

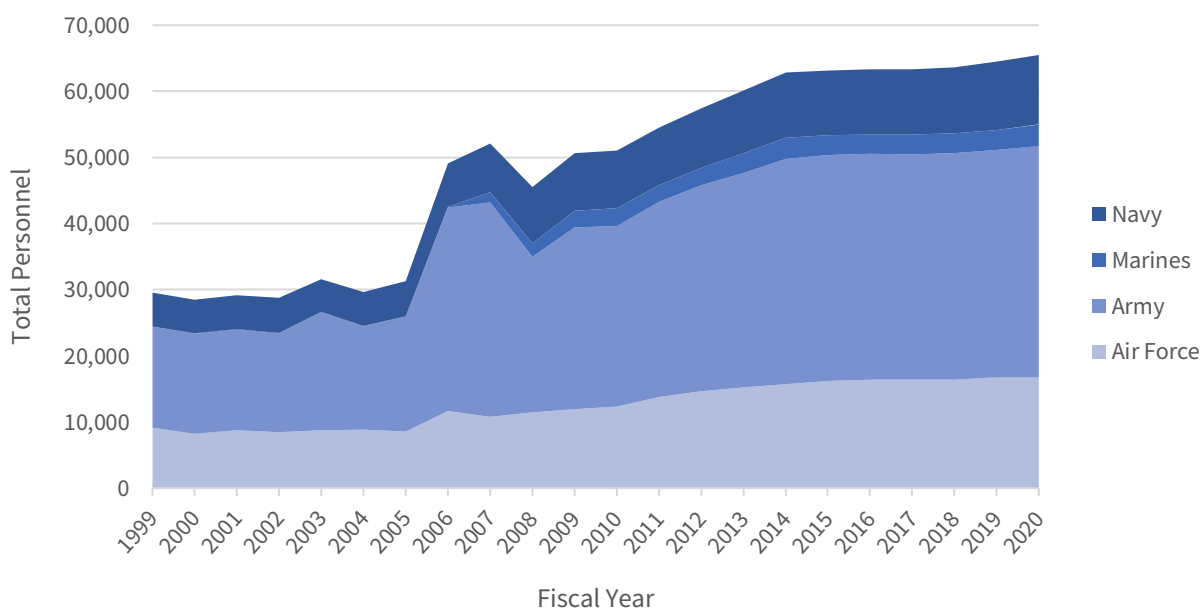
	<i>FY 2019 Enacted</i>	<i>FY 2020 Request</i>	<i>Change</i>
Military End Strength (active and reserve)	65,152	66,559	+1,407
Civilian FTEs	6,466	6,651	+185
Contractors	5,698	6,014	+316

Note: The Special Operations Command's (SOCOM) military and civilian personnel are reported in the respective service tables. These numbers are therefore not additional to what is shown in the service numbers.

Source: Department of Defense, *Fiscal Year (FY) 2020 President's Budget, Operation and Maintenance, Defense-Wide United States Special Operations Command* (Washington, DC: March 2019), II. Force Structure Summary, 791-792, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/budget_justification/pdfs/01_Operation_and_Maintenance/O_M_VOL_1_PART_1/SOCOM_OP-5.pdf.

FORCE GROWTH

Figure 26: SOCOM Military Personnel, 1999 to 2020, Active and Reserve Component



Source: Data for 2008-2020 comes from the Force Structure Summary tables in the yearly *President's Budget Operation and Maintenance, Defense-Wide United States Special Operations Command*; Data for 2001-2007 comes from the Military Personnel sections of the respective Operation and Maintenance Overviews (Washington, DC: 2001-2007).

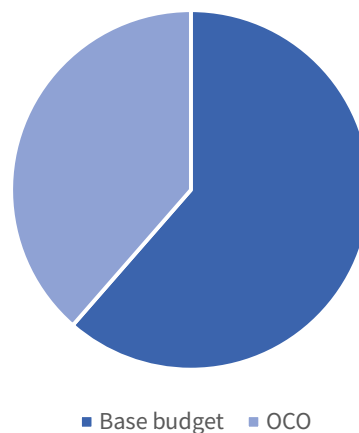
The SOF are prepared for their assigned missions by U.S. Special Operations Command (SOCOM), which consists of service component commands from each of the four services—Army (Ranger Regiment, special operations aviation, Delta Force), Navy (SEALs, explosive ordnance disposal), Air Force (special purpose aircraft and control teams), and Marine Corps (one “Raider” regiment). Joint Special Operations Command and seven Theater Special Operations Commands conduct operations. SOCOM develops joint doctrine and has the Joint Special Operations University, while extensive service-specific school and doctrine activities reside within the service components.

SOCOM grew greatly in size during the wars, from 29,500 military personnel in 1999 to 65,152 today.¹⁵⁵ It is now approaching the size of the British Army Regular Forces (78,400 in 2019).¹⁵⁶ This large post-2001 increase was in response to DOD steadily increasing the number and type of missions SOCOM is expected to carry out. SOCOM has provided DOD's core counterterrorism capabilities, in addition to providing forces for other SOCOM missions such as direct action, foreign internal defense, irregular warfare, and civil affairs. Demand for all these missions has grown, not just in Central Command (CENTCOM) but globally as well.

SOCOM continues to grow as it picks up even more missions (described below) and seeks to reduce stress on its personnel by spreading operational commitments over a larger force.¹⁵⁷ The challenge, as the Congressional Research Service observes, will be, "How much larger US SOCOM can grow before its selection and training standards will need to be modified to create and sustain a larger force."¹⁵⁸ The history of special forces in other countries has often been of expansion, as the desirable traits of such forces are recognized, followed by the eventual attainment of a size where quality cannot be sustained. Then, a new elite group ("special" special forces) is created to regain the quality that has been lost through expansion. It is worth watching for such a phenomenon in SOCOM, although so far there is no indication of the emergence of such units.

RISKS: DEPENDENCE ON OCO FUNDING, ALIGNMENT WITH NEW STRATEGY, PERSONNEL STRESS

Figure 27: SOCOM Funding



Source: DOD, *Fiscal Year (FY) 2020 President's Budget, Operation and Maintenance, Defense-Wide United States Special Operations Command*, p. 785.

SOCOM is highly dependent on OCO funding. For FY 2020 it has requested \$3.8 billion in OCO, 39 percent of its total funding and three times the department's rate overall (9 percent).¹⁵⁹ This heavy usage occurs because of SOCOM's extensive wartime operations, because SOCOM is allowed to fund global counterterrorism operations in OCO, unlike the military services, and because many base budget elements

155. Government Accountability Office (GAO), *SPECIAL OPERATIONS FORCES: Opportunities Exist to Improve Transparency of Funding and Assess Potential to Lessen Some Deployments*, GAO-15-571 (Washington, DC: July 2015), <http://www.gao.gov/products/GAO-15-571>.

156. "UK Armed Forces Quarterly Service Personnel Statistics," Ministry of Defense, July 1, 2019, 4-5, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/824753/201907_-_SPS.pdf.

157. Budget data for SOCOM is less available for FY 2019 than for previous years, perhaps reflecting DOD's new policy of not releasing data that could be useful to potential adversaries.

158. Andrew Feickert, *U.S. Special Operations Forces: Background and Issues for Congress*, CRS Report RS21048 (Washington, DC: Congressional Research Service, April 13, 2018), 2, <https://fas.org/sgp/crs/natsec/RS21048.pdf>.

159. Raymond Thomas, testimony before the House Armed Services Committee, Subcommittee on Emerging Threats and Capabilities, February 15, 2018, https://www.socom.mil/Documents/Posture%20Statements/2018%20USSOCOM%20Posture%20Statement_HASC%20Final.pdf.

like personnel are funded in the service budgets.¹⁶⁰ Ninety percent of SOCOM's OCO funding is for enduring activities.¹⁶¹ Fortunately for SOCOM, OCO appears to be relatively secure, with no major effort to eliminate it without compensating increases to the base budget.

Dependence on OCO funding raises the broader question of SOCOM alignment with the new National Defense Strategy (NDS). SOCOM's current operations focus on terrorism and stability operations and demand all of its attention. There is little bandwidth available to think about or prepare for the kind of great power conflicts that the new strategy gives priority to. Indeed, General Thomas's testimony, unlike those of the service chiefs, barely mentions great power conflict and the demands it might place on the force. In the near term, this gap is not a major problem since there is strong support for SOCOM's current operations. Indeed, SOCOM increases its relative budget share in the FY 2020 budget.¹⁶²

However, this misalignment could become a longer-term challenge if day-to-day operations decline. Travis Sharp notes that "under the NDS [SOCOM's counterterrorism operations] should consume fewer resources and SOF's budget share should shrink accordingly."¹⁶³ Although SOCOM's capabilities are broadly useful, how their application would change from a stability operation/regional conflict to a great power conflict needs considerable thought.

High operational tempo (OPTEMPO) plagued SOCOM in the past, putting stress on personnel and their families, resulting in retention challenges and an increase in suicides. Previous posture statements had highlighted this challenge. In recent years, General Thomas (SOCOM commander until March 2019) has set a different tone. This year he stated: "Based on updated Department of Defense guidance, SOF formations are now focused on achieving a *minimum* of a 1:2 ratio and with the exception of a few critical skill sets and career fields, the vast majority of the SOF deploy at or above the deployment-to-dwell ratio of 1:2."¹⁶⁴

So, stress is still high but not the crisis it was previously. This easing results from the increasing force size, which spreads deployments over more units and fills shortfalls in critical fields; a decrease in deployment levels as demands decrease in the Philippines and Syria/Iraq; and SOCOM's mitigation efforts through Preservation of the Force and Family programs.

INCREASING ORGANIZATIONAL INDEPENDENCE

Special operations forces have two management headquarters: the assistant secretary of defense for special operations forces (ASD (SO/LIC)), which oversees policy, and SOCOM, which oversees operations and also has many organizational and administrative functions, such as procurement of special operations unique items and monitoring of SOF personnel careers.

There have been two broad trends over time: increasing organizational independence and gaining additional missions.

Organizational independence is seen in the authorities that SOCOM-ASD (SO/LIC) has received for equipment acquisition, oversight of promotions, career management, and establishment of policy. The

160. "Funding Policy for Overseas Contingency Operations," Letter from Steven Kosiak, Associate Director of the Office of Management and Budget, to Robert Hale, Under Secretary of Defense (Comptroller), September 9, 2010, <http://asafm.army.mil/Documents/OfficeDocuments/Budget/Guidances/omb-gd.pdf>.

161. Thomas, testimony before the Senate Armed Services Committee, February 14, 2019.

162. Sharp calculates that special operations forces as a budget category increases its share of DOD budget by .3 percent. Travis Sharp, *Did Dollars Follow Strategy? Analysis of the 2020 Defense Budget Request* (Washington, DC: Center for Strategic and Budgetary Assessment, 2019), 20, https://csbaonline.org/uploads/documents/FY_2020_Budget_WEB.pdf.

163. *Ibid.*, 21.

164. Thomas, testimony before the Senate Armed Services Committee, February 14, 2019, 4.

effect, and explicit congressional intent, was to make special operations forces like a separate service. The ASD (SO/LIC) now has authorities like those of a service secretary for exercising administrative and policy control over designated forces. Indeed, in DOD's *Defense Budget Overview*, SOCOM is listed separately, along with the military services, in the description of readiness recovery (see Chapter 3).¹⁶⁵

In the last few years, SOCOM received new missions as DOD's coordinating authority for: Countering Violent Extremist Organizations; Countering Weapons of Mass Destruction, transferred from USSTRATCOM; and transregional Military Information Support Operations capability. In effect, the additional missions make SOCOM a "global COCOM," with activities that reach into the regional COCOMs without being fully subordinate to them.

These actions recognize the prominent role of special operations forces in recent and continuing conflicts. However, the new structure further weakens the already tenuous connection between the services and their special operations personnel. The new authorities and independent role may also create tension with the ASD (SO/LIC)'s nominal boss, the under secretary for policy. It will take time to sort out the new relationships.

ETHICAL CHALLENGES

In the last year, ethical misconduct has emerged as a new and disturbing theme for the SOF, raising broader questions about SOF personnel attitudes and marring the reputation of the SOF, especially the SEALs. A description of some of the worst offenses follows:

- Two SEALs were convicted of murdering an Army Green Beret in Africa in 2017.
- Navy SEAL Edward Gallagher was accused of several crimes, including the murder of civilians, but was found not guilty of most charges when other SEALs appeared to close ranks behind him to cover up the offenses.
- A platoon from SEAL Team Seven was sent home from deployment in Iraq because of drinking and alleged sexual misconduct.
- Special Forces Major Matthew Golsteyn was charged with murdering a Taliban bombmaker taken prisoner in 2010, in what has become a high-profile and politically charged case.¹⁶⁶
- Two Green Berets pled guilty to charges of trafficking 90 lbs. of cocaine from Columbia in 2018.¹⁶⁷
- A soldier from the Army 7th Special Forces Group in 2018 was charged with raping two young girls while they were at his home near Eglin Air Force Base.¹⁶⁸

The head of the SEALs, RADM Colin Green, has ordered a cultural review, as has General Richard Clark, current SOCOM commander.¹⁶⁹ In his spring testimony, General Thomas argues that 99.9 percent of special

165. For a detailed description of these changes, see Mark Cancian, "What Happened in Congress?" *Defense 360*, January 10, 2017, <https://defense360.csis.org/national-security-reform-happened-congress>; and the update, Mark Cancian, "What Really Matters in the Defense Authorization Act and What Didn't Get Done," *Breaking Defense*, August 3, 2018, <https://breakingdefense.com/2018/08/what-really-matters-in-the-defense-authorization-act-what-didnt-get-done/>.

166. Todd South, "Army Green Beret major pleads not guilty to Afghan murder charge," *Army Times*, June 27, 2019, <https://www.armytimes.com/news/your-army/2019/06/27/army-green-beret-major-pleads-not-guilty-to-afghan-murder-charge/>; Elliot Ackerman, "Even a War Hero Is Not Above the Law," *New York Times*, December 17, 2018, <https://www.nytimes.com/2018/12/17/opinion/matthew-golsteyn-trump.html>.

167. Meghann Myers, "Two Army Green Berets plead guilty in plot to smuggle 90 pounds of cocaine from Colombia," *Army Times*, January 4, 2019, <https://www.armytimes.com/news/your-army/2019/01/04/two-army-green-berets-plead-guilty-in-plot-to-smuggle-90-pounds-of-cocaine-from-colombia/>.

168. Meghann Myers, "7th Special Forces Group soldier arrested for raping two children," *Army Times*, April 20, 2018, <https://www.armytimes.com/news/your-army/2018/04/20/7th-special-forces-group-soldier-arrested-for-raping-two-children/>.

169. Courtney Kube, "Head of U.S. Special Operations Forces Orders Review of Culture After SEALs, Other Scandals," *NBC News*, August 12, 2019, <https://www.nbcnews.com/news/military/head-u-s-special-operations-forces-demands-review-culture-af>.

operations personnel act appropriately.¹⁷⁰ However, there may be a deeper problem—that special operators consider themselves “special” and therefore not restricted by the rules that bind other servicemembers. The outcome of the SOCOM and SEAL reviews will shed light on this new and disturbing problem.

DOD Civilians

Despite administration proposals to decrease the number of civilians in non-defense/domestic agencies, the administration proposes to continue increasing the number of DOD civilians. This increase occurs because civilians help readiness, most being in maintenance and supply functions, not in headquarters (as is often believed). The bad news is that the administration proposes a civilian pay freeze, and some benefits would be cut.

Table 14: Department of Defense Civilians

	DOD Civilians <i>(direct budget)</i>	Total DOD Civilians <i>(Including Foreign Direct Hires)</i>
FY 2019 Enacted	752,600	767,400
FY 2020 Request	757,800	772,600
Change	+5,200	+5,200

Note: Full-time equivalents. Total includes U.S. and foreign direct hires, excluding classified activities, OCO funded, and indirect hires.

Source: Office of the Undersecretary of Defense (Comptroller), *Defense Budget Overview: Fiscal Year 2020 Budget Request* (Washington, DC: March 2019), Figure 2.3, 2-9, 6-18. https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/fy2020_Budget_Request_Overview_Book.pdf.

The United States is unusual in that it has a large number of civilians working in its military establishment where other countries have military personnel. DOD’s civilians perform a wide variety of support functions in intelligence, equipment maintenance, medical care, family support, base operating services, and force management. The department does this because civilians provide long-term expertise, whereas military personnel rotate frequently. Further, the civilian personnel system, for all of its limitations, is more flexible than the military system in that civilian personnel do not need to meet the strict standards for health, fitness, combat skills, and worldwide assignments that military personnel do.

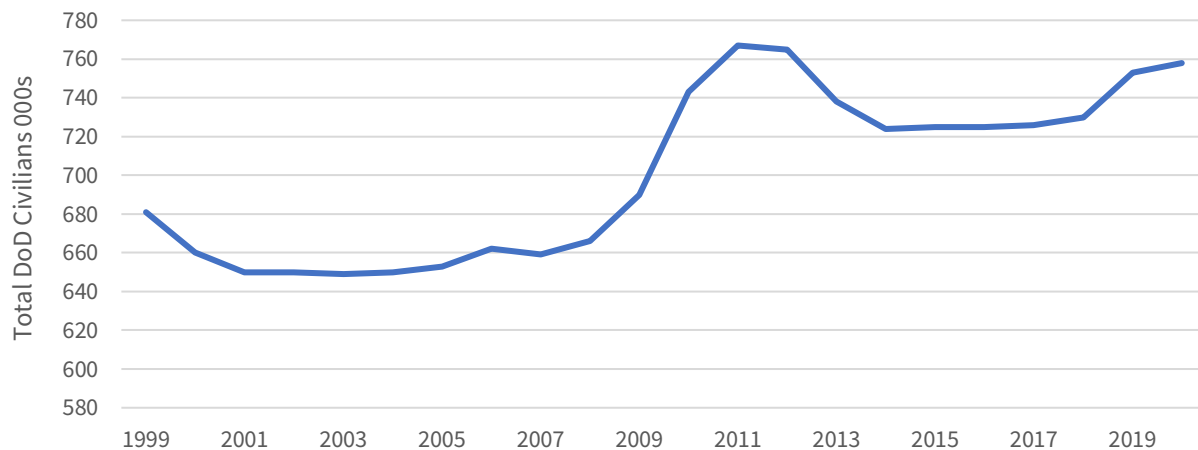
Civilians are often viewed as “overhead” who staff Washington headquarters. In fact, most civilians (96 percent) are outside Washington. Only about 4 percent (31,000) work in management headquarters, and only 27,000 of these work in Washington. DOD argues that civilians “are key to warfighter readiness, essential enablers to DoD’s mission capabilities and operational readiness, and critical to supporting our All-Volunteer Force and their families.” Nevertheless, DOD acknowledges concerns about the size of “overhead,” explaining that it “recognizes the continued need for agency reform, increased efficiencies, and ensuring Defense resources are aligned to FY 2020 Defense Budget mission priorities.”¹⁷¹

ter-n1041456.

170. Thomas, testimony before the Senate Armed Services Committee, February 14, 2019, 5.

171. Under-Secretary of Defense (Comptroller), *Defense Budget Overview: United States Department of Defense Fiscal Year 2020 Budget Request*, 2-8, 9.

Figure 28: Total DoD Civilians – 1999-2020



Source: Office of the Under Secretary of Defense (Comptroller), *National Defense Budget Estimates for FY2020*, Table 7-5: Department of Defense Manpower, 260-262.

Also controversial has been the long-term increase in the number of civilians. Although the number came down from the wartime peak as part of the postwar drawdown, it did not return to pre-conflict levels and has crept up again. Proponents cite several reasons for this:

- A long-standing initiative to move functions from higher-cost, and difficult to recruit, military personnel to lower-cost civilian personnel;
- An Obama administration effort to “insource” activities that had previously been done by contractors. Although the effort was shown to not save money, it did ensure that “inherently governmental activities” were done by government employees; and
- Recent DOD efforts to remedy readiness shortfalls, for example, in maintenance and supply, which require more people.

However, some commentators look at this increase as bureaucratic bloat and argue that it represents evidence that civilian personnel levels are not closely overseen.

CIVILIAN PAY FREEZE

Once again, the administration has proposed a pay freeze for all government civilians, whereas the military would get a 3.1 percent increase. Breaking parity in pay raises is becoming the norm again after many years where military and civilian pay increases were the same. This disparity would continue in the future as the military is projected to receive pay raises of 2.6 percent in FY 2021-FY 2024, whereas civilians would receive 2.1 percent.¹⁷² Congress has frequently been more supportive of civilians, however, as the House passed a 3.1 percent increase for FY 2020 and the Senate approved a 2.6 percent raise. The administration appears to have accepted this.

The administration also proposes increased retirement contributions and longer probationary periods.

172. Under-Secretary of Defense (Comptroller), *National Defense Budget Estimates For FY 2020 (Green Book)*, Table 5 – 12, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2020/FY20_Green_Book.pdf.

FEDERAL GOVERNMENT REORGANIZATION

The administration released its proposals for government reorganization in March 2018.¹⁷³ The only element directly affecting DOD was a proposal to transfer security clearance investigations back to DOD, which is scheduled to happen on October 1, 2019. Government-wide, the major proposal in the FY 2020 budget was to merge the Office of Personnel Management (OPM) and the General Services Administration (GSA). OPM is the agency that everyone loves to hate because it implements all the regulations about the civil service. Congress is balking at the merger, however.

“CYBER EXCEPTED SERVICE” DENIED

The Trump administration had proposed creation of a “cyber excepted service” to access the specialized skills needed for cyber operations without going through the cumbersome civil service hiring processes. DOD has frequently sought such exceptions to increase flexibility in civilian personnel management. In general, Congress has been skeptical about granting such exceptions and denied appropriations for this initiative.

CIVILIAN EXPEDITIONARY CORPS—CONTINUING BUT SMALL

Secretaries of defense from Rumsfeld to Mattis have wanted to make DOD civilians more expeditionary—that is, able to deploy overseas in support of combat operations. This reduces dependence on contractors, eases stress on military personnel, and helps ensure that government employees conduct inherently governmental activities. DOD did take steps to give deployed civilian employees comparable benefits to military personnel in areas such as family separation, disability, medical care, and tax benefits. It established an Expeditionary Civilians program manager and recently updated its directive on implementing the program.¹⁷⁴

However, this effort remains small. Only about 1,000 government civilians are in Afghanistan, compared to 15,000 military personnel and 27,000 contractors. There is no mechanism for involuntary deployments, civilians deploy individually and thus leave vacancies in their parent organizations, and, unlike for military personnel, such assignments are not considered career-enhancing.¹⁷⁵

“NIGHT COURT” IS COMING TO DEFENSE AGENCIES

As secretary of the army, Secretary Esper conducted a process called “night court,” whereby he and other senior leaders, civilian and military, reviewed all of the Army’s programs to identify savings that could then be transferred to programs that were higher priority in support of the NDS.¹⁷⁶ Secretary Esper proposes to do that now for DOD as a whole, only focusing on defense-wide activities, mainly the defense agencies and field activities—otherwise known as the “fourth estate.”¹⁷⁷ The specific issues and process are as of yet unclear, but the intention is to put the results into the FY 2021 budget. Since defense-wide activities are staffed mostly by civilians, any reductions would particularly affect the civilian workforce.

Any changes coming out of this process would be on top of changes coming out of parallel management reform processes, such as the “921 plan,” a congressionally directed reform of DOD enterprise business operations. Such reform efforts have been nearly continuous because of a belief that DOD overhead is

173. White House, *Delivering Government Solutions in the 21st Century* (Washington, DC: June 2018), p. 51-56, <https://www.white-house.gov/wp-content/uploads/2018/06/Government-Reform-and-Reorg-Plan.pdf>.

174. DOD, *Department of Defense Expeditionary Civilian Workforce (DTM-17-004)* (Washington, DC: updated January 2, 2019), <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dtm/DTM-17-004.pdf?ver=2019-01-02-072423-843>.

175. JP Lawrence, “Surge of DOD Civilian Employees Is Needed in Afghanistan, Mattis Says,” *Stars and Stripes*, July 11, 2018, <https://www.stripes.com/news/surge-of-dod-civilian-employees-is-needed-in-afghanistan-mattis-says-1.536874>.

176. For a description of “night court,” see Mark Cancian, “Mark Esper Is About To Put Every Pentagon Program Through The Ringer,” *Forbes*, July 24, 2018, <https://www.forbes.com/sites/markcancian/2019/07/24/theres-a-new-sheriff-in-the-pentagon/#40bf23f87e74>.

177. Deputy Secretary of Defense, “Defense Wide Review,” DOD, memo, August 2, 2019 https://admin.govexec.com/media/gbc/docs/pdfs_edit/norquistmemo.pdf.

excessive, but the results have been modest in the face of opposition by agency advocates, the need to invest political capital to make change, and the fact that many agencies were originally created as efficiency measures. Standby for a full description in next year's report.¹⁷⁸

Contractors

Contractors have become a permanent element of the federal workforce. Spending on service contractors is substantially above the prewar level. Operational or battlefield contractors outnumber military personnel in the CENTCOM region (53,000 to 35,000), and the ratio of contractors to military personnel has increased from 1:1 in 2008 to 1.5:1 today.

Nevertheless, both service and operational contractors remain controversial because of unresolved questions about cost and the appropriate delineation of functions.

SERVICE CONTRACTORS

These contractors provide services to the government and are distinct from contractors who provide products.

Table 15: Service Contractor Numbers by Organization

Organization	Number of Service Contractors
Dept. of the Army	151,848
Dept. of the Navy	199,022
Dept. of the Air Force	123,985
Office of the Secretary of Defense	5,778
Joint Staff	1,075
Combatant Commands	13,238 (of which SOCOM has 9,864)
Defense Agencies/Field Activities	66,293
Total	561,239

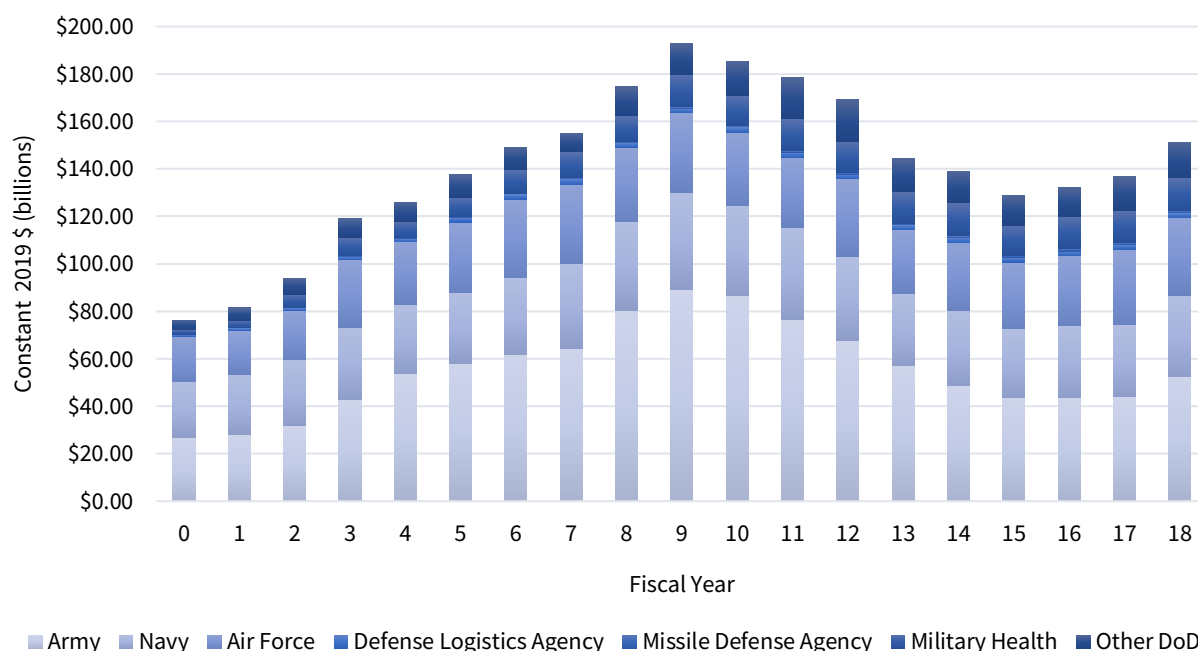
Note: Excludes intelligence agencies and six agencies for which data are not yet available.

Source: "FY15 DoD Services Contract Inventory," Inventory of Service Contractors, 2015, https://www.acq.osd.mil/dpap/cpic/cp/inventory_of_services_contracts.html. (The last year for which full data are available.)¹⁷⁹

178. For lack of results, see GOA, *Defense Management: Observations on DOD's Business Reform Efforts and Plan* (Washington, DC: September 2019), <https://www.gao.gov/assets/710/701129.pdf>; for the difficulty in achieving reforms, see Joe Gould, "Esper's Pledge to Trim Pointless Programs Will Test His Political Clout," *Defense News*, August 30, 2019, <https://www.defensenews.com/2019/08/30/espers-pledge-to-trim-pointless-programs-will-test-his-political-clout/>.

179. The Inventory of Service Contractors last provided a version of this excellent summary table in their 2015 annual report to Congress. However, in 2016 they changed the measures for this summary table, and in 2017 and following years they dropped it entirely. For the purposes of tracking the relative growth of service contractors, it would be helpful if Defense Pricing and Contracting produced summary tables comparable to the above 2015 table in the future.

Figure 29: DOD Service Contract Obligations



Source: FPDS, CSIS analysis.

CSIS has analyzed these contracts in detail in Figure 29, showing how service contract obligations increased from \$77 billion in 2000 to \$193 billion at their peak in FY 2009 (all in FY 2019 dollars). Although service contract obligations have declined since their peak, they are still substantially above the prewar levels and have started to increase again, with \$151 billion worth of obligations recorded in FY 2018.¹⁸⁰

In response to this long-term increase, DOD is trying to give these contracts the kind of oversight that product contracts have received. DOD has, therefore, established categories of service contracts, “S-CATs,” patterned on the “ACATs” for weapon systems, and established procedures for reviewing them, especially the largest contracts (DODI 5000.74, Defense Acquisition of Services). The military services have stood up Service Requirement Review Boards to identify redundancies and improve contract value.¹⁸¹

Service contractors are controversial because they raise questions about what the government should do and what the private sector should do. On the one hand, government regulations (OMB Circular A-76) state that only government employees should conduct “inherently governmental” activities. On the other hand, the same document states the government should not compete with its citizens and therefore should buy from the private sector whenever it can.¹⁸²

Outsourcing had been an element of the Clinton and Bush administrations’ “reinventing government” initiatives, but in 2008-2010 the Democratic-dominated Congress effectively shut this effort down, and then the Obama administration blocked conversions permanently. This shutdown occurred partly as

180. Andre Rhys McCormick and Samantha Cohen, “Defense Acquisition Trends, 2018: Defense Contract Spending Bounces Back,” CSIS, *CSIS Brief*, September 13, 2018, <https://www.csis.org/analysis/acquisition-trends-2018-defense-contract-spending-bounces-back-executive-summary>.

181. Tony Bertuca, “DOD Tries to Better Manage \$145 billion in Services Contracts as GAO Preps Report,” *Inside Defense*, January 20, 2016, <http://nges.insidedefense.com/daily-news/pentagon-tries-better-manage-145b-services-contracts-gao-preps-report>.

182. White House, *OMB Circular A-76: Performance of Commercial Activities* (Washington, DC: 1999), <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A76/a076.pdf>.

a result of concerns about disruptions to the workforce, partly because of questions about the actual achievement of savings, and partly in response to complaints by unions anxious to protect their members' jobs. The Obama administration believed that it would save money by bringing activities in-house. However, these savings did not materialize when all of the costs of "insourcing" were considered, and the effort ended. Thus, the balance between contractors and the federal workforce has reached a position of stasis—that is, there are restrictions against moving in either direction.

This stasis is driven in part by unresolved questions about relative costs between the two sectors. Some argue that government is inherently less expensive because it does not need to make a profit. Others argue that government is generally more expensive because it does not need to compete and to be efficient to remain in business. Where commentators come down depends strongly on their views about government and the private sector, with Republicans generally relying more on the private sector and Democrats more on government.

The analytic problem arises from indirect costs. Private-sector prices must include all these costs if an organization is to remain in business over the long term. In government, these costs are widely distributed, so their identification and allocation are difficult.¹⁸³ A valid comparison requires developing fully-burdened costs—that is, personnel costs with all benefits and support included. DOD and the broader community have made progress on theoretical constructs about what costs to include, but actual numbers do not exist.

There is broad agreement, however, that DOD and the government as a whole do not have a clear strategy for allocating activities among the different elements of its workforce: active duty military, reserve military, government civilians, and contractors. Organizations as diverse as the Project on Government Oversight, the Defense Business Board, and CSIS have made this point.¹⁸⁴ While there is extensive literature on the active/reserve mix, there is much less on government civilians and contractors, largely because of the lack of an assessment of the full costs of each workforce element.

OPERATIONAL CONTRACTORS

Table 16: Department of Defense Military and Contractor Personnel in USCENTCOM Area of Responsibility, 2019

	<i>Total Military</i>	<i>Total Contractors</i>	<i>U.S. Citizens</i>	<i>Third-Country Nationals</i>	<i>Local/Host-Country Nationals</i>
<i>Afghanistan Only</i>	16,000	27,457	10,648	11,077	5,732
<i>Iraq/Syria Only</i>	11,000	7,475	3,229	2,753	1,493
<i>Other Locations</i>	~8,000	18,427	8,117	10,229	81
<i>AOR Total</i>	35,000	53,359	21,994	24,059	7,306

Note: Data excludes forces afloat and classified data for Iraq, Iran, Kuwait, and Syria.

Source: Contractor data from Deputy Assistant Secretary of Defense (Program Support), *Contractor Support of U.S. Operations in the CENTCOM Area of Responsibility* (Washington, DC: Department of Defense, June 2019), http://www.acq.osd.mil/log/PS/CENTCOM_reports.html; Military personnel data from Under Secretary of Defense (Comptroller), *Defense Budget Overview FY 2020*, 6-4; "Military and Civilian Personnel by Service/Agency and Country/Location," Defense Manpower Data Center, March 2019.

183. Jacques S. Gansler, William Lucyshyn, and John Rigilano, *Toward a Valid Comparison of Contractor and Government Costs* (College, Park, MD: University of Maryland, Center for Public Policy and Private Enterprise, February 2012), <https://calhoun.nps.edu/bitstream/handle/10945/54492/UMD-CE-11-209.pdf?sequence=1&isAllowed=y>.

184. Defense Business Board, *Focusing a Transition: Challenges Facing The New Administration* (Washington, DC: DOD, 2016), <http://dbb.defense.gov/Portals/35/Documents/Reports/2016/DBB%20Transition%20Report%202016%20-%2020160920.pdf>; Mark Cancian, "Reforming the Civilian Workforce: Two Carrots and Two Sticks," *Defense360*, January 11, 2017, <https://defense360.csis.org/reforming-the-civilian-workforce-two-carrots-and-two-sticks>; Scott Amey, "Pentagon Misses The Target When It Comes To Its Workforce," *Defense One*, April 17, 2017, <http://www.defenseone.com/ideas/2017/04/pentagon-misses-target-when-it-comes-its-workforce/137074>.

Operational support contractors (OSC) now form a permanent element of the U.S. forces overseas, along with active duty personnel, reservists, and government civilians. Contractor numbers in CENTCOM have tracked consistently with the level of operations since 2008, when reporting began. With operations in Afghanistan and Iraq/Syria at a relatively low level and stronger controls and oversight in place, contracting scandals have virtually ceased, and the use of battlefield contractors has receded into the background as a political issue.

Although the widespread and routine use of operational contractors remains controversial in some quarters—Rachael Maddow, the MSNBC commentator, criticized “[reliance] on a pop-up army . . . of greasy, lawless contractors”¹⁸⁵—use for logistics and administrative functions has become routine in contemporary operations because of the limited numbers of military personnel.¹⁸⁶ As a result, some analysts have suggested expanding the use of contractors as military manpower becomes increasingly stretched.¹⁸⁷ DOD may have no choice, since force structure increases are modest, as described earlier, and are focused on combat units. This limited force expansion may be strategically sound but drives a greater need for contractor support. Further, administrations routinely put caps on the number of military personnel that can be in theater, but these caps do not include contractors. Thus, contractors can expand the range of military activities without breaking administration policy.

As the table above shows, contractors in CENTCOM outnumber military personnel overall. They outnumber military personnel in Afghanistan and approach the number of military personnel in Iraq. Forty percent are U.S. citizens.

In the last year, contractor numbers have increased everywhere in CENTCOM, although this was not part of any announced policy. As with much policy regarding contractors, DOD may have backed into it as a result of pressures to keep the number of military personnel low and to reduce the visibility of the military effort.

- In Afghanistan, contractor numbers continue to increase, from 26,922 in 2018 to 27,457 today, as the Trump administration’s mini-surge took hold in an effort to stave off defeat.
- In Iraq/Syria, the number of contractors also increased, from 5,323 in 2018 to 7,475 today, consistent with an increase in military personnel.
- Contractors in other CENTCOM locations also increased, from 17,000 to 18,407.

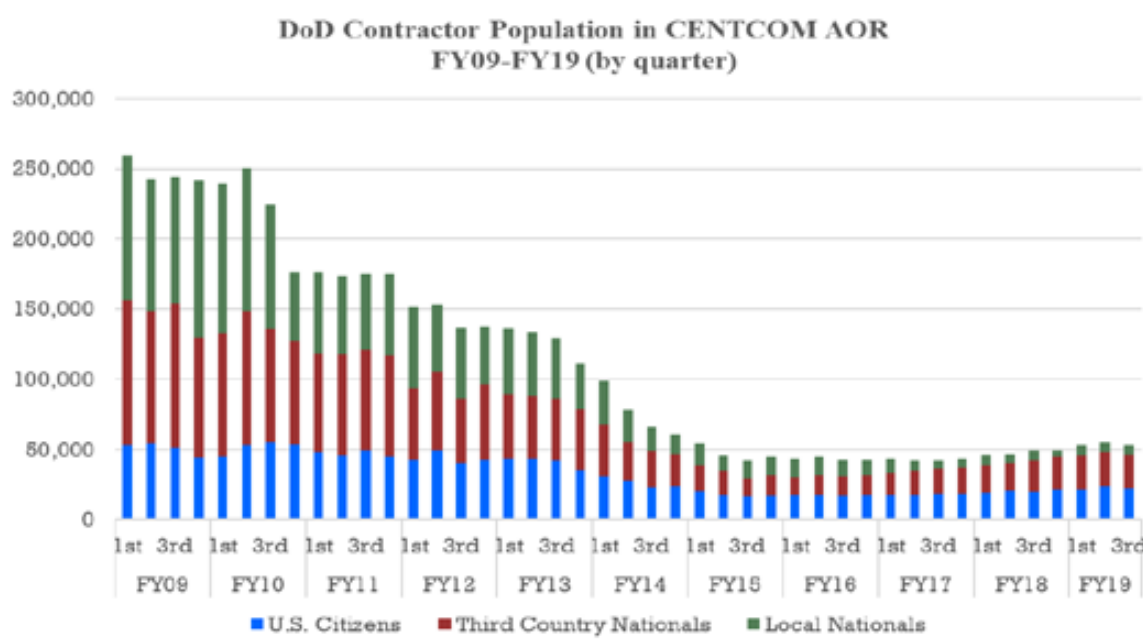
An additional 7,000 contractors in Iraq/Syria work for organizations outside DOD, presumably for the Department of State, U.S. Agency for International Development (USAID), and the intelligence community, and a similar number do such work in Afghanistan.

185. Rachael Maddow, *Drift: The Unmooring of American Power* (New York, NY: Crown Publishing, 2012), 186–87.

186. Mark Cancian, “Contractors: The New Element of Military Force Structure,” *Parameters* 38, no. 3 (Autumn 2008), 61–77, <https://ssi.armywarcollege.edu/pubs/Parameters/articles/08autumn/cancian.pdf>.

187. Richard E. Wagner, *Optimizing Defense Use of Contract Services to Mitigate the Threat of a Hollow Force* (Carlisle, PA: U.S. Army War College Press, 2016).

Figure 30: Contractors in CENTCOM FY 2008-FY 2019



Source: “Contractor Support of U.S. Operations in the USCENTCOM Area of Responsibility,” DOD, June 2019, https://www.acq.osd.mil/log/PS/.CENTCOM_reports.html/5A_Jul_2019_Final.pdf.

As the chart above indicates, total contractor numbers are down from the peak in 2008/2009. After increasing for several years, they now may have stabilized. The ratio of military to contractors has also changed personnel. Whereas in the past, the ratio was close to 1:1, the ratio for Afghanistan/Iraq/Syria today is 1 military to 1.3 contractors (1:1.5 for CENTCOM overall).¹⁸⁸ This is down from 1:1.6 in 2017, reflecting a greater relative increase in the number of military personnel. The ratio will likely climb back up if the number of military personnel declines as a result of a peace agreement or policy shift.

About half of contractors perform logistics/maintenance functions and most of the rest do base operations and administrative tasks. A small number of contractors do combat-related tasks. Of the 34,932 contractors in Iraq, Syria, and Afghanistan, 6,056 are in security functions, and of these, 2,639 are in Personnel Security Detachments (PSDs), all in Afghanistan. This latter function is highly sensitive because these contractors carry weapons, interact with the civilian population routinely, and have committed highly publicized abuses in the past.

PSDs are now required to conform to either the U.S. or international standard for PSD training, recruiting, and conduct. The industry is participating through its professional organizations—the Professional Services Council and the International Peace Operations Association, among others. The fact that no incidents have arisen recently indicates that the oversight and controls instituted in the last decade have been effective.¹⁸⁹

188. Commission on Wartime Contracting, *Transforming Wartime Contracting: Controlling Costs, Reducing Risks*, (Washington, DC: August 2011), p. 200, 205, <http://www.acq.osd.mil/dpap/pacc/cc/cowc.html>.

189. Whitney Grespin, “Well Behaved Defense Contractors Seldom Make History,” War on the Rocks, April 21, 2016, <http://warontherocks.com/2016/04/well-behaved-defense-contractors-seldom-make-history>.

Table 17: Contractor Numbers in Iraq/Syria and Afghanistan by Function, June 2019

Category	Iraq and Syria	Afghanistan Only	Total
Base	1,405	3,468	4,873
Construction	531	1,845	2,376
IT/Communications Support	321	927	1,248
Logistics/Maintenance	2,631	8,761	11,392
Management/Administrative	404	1,511	1,915
Medical/Dental/Social Services	15	69	84
Other	45	626	671
Security	621	5,435	6,056
Training	22	1,401	1423
Translator/Interpreter	979	1,897	2,876
Transportation	501	1,517	2,018
Total	7,475	27,457	34,932

Source: “Contractor Support of U.S. Operations in the USCENTCOM Area of Responsibility,” DOD.

DOD recognizes that operational contractors are a permanent element of its force structure. As a result, DOD has standardized and institutionalized the contracting process that supports both conflicts and peacetime needs, such as natural disasters and humanitarian assistance. Some actions DOD has taken are to conduct operational contracting exercises, to incorporate operational contract support into combatant command plans, and to gather lessons-learned systematically.

National Security Organizations Outside DOD

Congress’s budget category for national security (“050”) is 95 percent DOD. However, about \$30 billion a year goes to other national security organizations. A major part of these organizations produces products and services for DOD.

Further, the BCA budget caps put these organizations and DOD in a zero-sum situation. Because DOD has by far the largest budget, any increases in these non-DOD programs require reductions by DOD, so DOD has an interest in their cost and management.

THE NATIONAL NUCLEAR SECURITY ADMINISTRATION (NNSA)

The NNSA is part of the Department of Energy (DOE), but its activities support DOD nuclear missions and activities. It has four major elements:

1. Weapons activities, which develop, produce, and maintain a safe, secure, and effective nuclear weapons stockpile through a highly skilled engineering and scientific workforce. This work is conducted by the well-known weapons labs Los Alamos, Sandia, and Lawrence Livermore and production facilities, such as Y-12 in Tennessee and PANTEX in Texas; thus, the NNSA provides the nuclear weapons that complement the nuclear delivery systems that DOD develops, procures, and operates;
2. Nonproliferation, which reduces the threat posed by nuclear proliferation and terrorism, including safeguarding unsecured or excess nuclear and radiological materials, both domestic and international;
3. Naval reactors, which develop and support (but do not build) nuclear propulsion for the U.S. Navy; and

4. A federal workforce, which oversees the entire enterprise. This workforce staffs NNSA's Washington headquarters and liaison offices at nuclear labs and production facilities around the country, but most of NNSA's workforce (96 percent) belongs to contractors, not directly to the federal government.

The FY 2020 budget continues to emphasize military programs, consistent with the administration's priorities for a "hard power" approach.

Table 18: FY 2018, FY 2019, FY 2020 NNSA Budgets (billions)

	<i>FY 2018 Enacted</i>	<i>FY 2019 Enacted</i>	<i>FY 2020 Request</i>	<i>\$ Change FY 2019 vs. FY 2020</i>	<i>Percentage Change FY 2019 vs. FY2020</i>
<i>Weapons Activities</i>	10.6	11.1	12.4	1.3	+11.8
<i>Defense Nuclear Nonproliferation</i>	1.99	1.93	1.99	.6	+3.3%
<i>Naval Reactors</i>	1.62	1.79	1.65	.14	-8%
<i>NNSA Federal Workforce</i>	.4	.41	.43	.02	+5%
<i>Total</i>	14.61	15.23	16.47	2.06	+14

Source: Department of Energy, *FY 2020 Congressional Budget Request, National Nuclear Security Administration: Federal Salaries and Expenses, Weapons Activities, Defense Nuclear Nonproliferation, Naval Reactors* (Washington, DC: March 2019), Vol. 1, 3, <https://www.energy.gov/sites/prod/files/2019/04/f62/doe-fy2020-budget-volume-1.pdf>.

Weapons Activities

The major part of the budget increase goes to weapons activities. This represents the ramping up of the nuclear modernization effort, a commitment the Obama administration made in ratifying the New START treaty in 2010. The Obama administration argued that reducing the level of operational weapons was prudent when coupled with modernization of the remaining weapons, platforms, and supporting nuclear infrastructure. The Trump administration continued and expanded this nuclear modernization effort. As its Nuclear Posture Review (NPR) explained, "Nuclear weapons have and will continue to play a critical role in deterring nuclear attack and in preventing large-scale conventional warfare between nuclear-armed states for the foreseeable future. U.S. nuclear weapons not only defend our allies against conventional and nuclear threats, they also help them avoid the need to develop their own nuclear arsenals. This, in turn, furthers global security."¹⁹⁰

The NPR reaffirmed the need for a triad. For NNSA this meant continuing life extension programs for warheads that were at the end of their service life (such as the B61 and the W76-0), expanding maintenance efforts on the existing weapons stockpile, and starting new weapons developments such as the development of low-yield nuclear weapons to counter a perceived Russian threat of limited nuclear strikes as part of an escalate to de-escalate strategy. These low-yield nuclear weapons included a short-term modification of an existing SLBM warhead and a longer-term redevelopment of a low-yield nuclear SLCM (which was previously retired per the 2010 NPR).¹⁹¹

Development of low-yield nuclear weapons and a warhead for a cruise missile replacement garnered opposition from arms-control groups, even though the current budget amounts are small (\$10 million in FY 2020) for low-yield nuclear warheads. These programs had not been part of the original Obama nuclear

190. Department of Defense, *Nuclear Posture Review* (Washington, DC: February 2018), p. iii, <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

191. *Ibid.*, 2, 7-9.

modernization plan and were criticized as unnecessary and destabilizing.¹⁹² For FY 2020, the Democratic-controlled House has opposed these new programs, while the Republican-controlled Senate has supported them, leaving resolution to the authorization conference.

NNSA has a history of poor cost control on its major acquisition projects. (See, for example, discussion below of the Mixed Oxide Facility.) In weapons activities, two programs, the B61 and W88 have recently acknowledged schedule delays and increased costs of a combined \$720 million to \$850 million.¹⁹³ Areas of long-term cost risk include the nuclear weapons life extension programs; the multi-billion-dollar Uranium Production Facility at Y-12 and the Chemistry and Metallurgy Research Replacement Nuclear Facility at Los Alamos; the replacement for MOX, if there is one; domestic uranium enrichment for tritium production; PS-4 replacement/enlargement for plutonium storage at Los Alamos; and the replacement Spent Fuel Handling Facility and associated labs.

Nonproliferation

Nonproliferation activities slowed, as the easiest materials to access and dispose of have been exhausted and the remaining materials are in countries where agreements are difficult. It also reflects the cancellation of the Mixed Oxide (MOX) facility. Intended to dispose of 34 tons of weapons plutonium, the MOX facility had its cost balloon from \$1.9 billion in the 2001 initial estimate to \$50 billion in the most recent estimate. The Trump administration, following the Obama administration's proposal, has cancelled the facility for the nonproliferation mission in favor of a less expensive dilute and dispose approach for the 34 tons of plutonium.¹⁹⁴ In response to the South Carolina congressional delegation's strong support for the now-cancelled MOX project, NNSA is repurposing the partly completed MOX facility for nuclear weapons plutonium pit manufacturing. (Pits are the core of an implosion nuclear weapon.)¹⁹⁵

Naval Reactors

The large increase (60 percent since FY 2014) reflects the final stages of the Ford-class reactor development, the peak of the Columbia-class Trident replacement reactor development, and the construction of a large spent fuel handling facility to accommodate the first-ever dismantling of large aircraft carrier reactors, as the Ford-class replaces the Nimitz-class. It also reflects efforts to extend the life of existing submarine classes, particularly the Los Angeles-class, as part of the Navy's effort to increase ship numbers, as described earlier.

Federal Workforce

As with DOD's civilian workforce, NNSA's civilian workforce bucks the trend of reductions, growing slightly from 1,737 Full-Time Equivalents (FTEs) at the end of FY 2019 to 1,753 FTEs by the end of FY 2020. This reflects the need to expand oversight commensurate with the expansion of agency activity.

192. For a few examples among many, see Steven Pifer, "Stop the low-yield Trident nuclear warhead," *The Hill*, June 8, 2019, <https://thehill.com/opinion/national-security/447514-stop-the-low-yield-trident-nuclear-warhead>; and Adam Mount, *The Case against New Nuclear Weapons* (Washington, DC: Center for American Progress, May, 2017), <https://cdn.americanprogress.org/content/uploads/2017/05/03135057/TheCaseAgainstNewNukes-report1.pdf>.

193. Mallory Shelbourne and Sara Sirota, "NNSA: Air Force, Navy nuke schedule delays to cost nearly \$1 billion," *Inside Defense*, September 25, 2019, <https://insidedefense.com/daily-news/nnsa-air-force-navy-nuke-schedule-delays-cost-nearly-1-billion>.

194. "DOE Terminates Troubled MOX Project," *Arms Control Association*, <https://www.armscontrol.org/act/2018-11/news-briefs/doe-terminates-troubled-mox-project>; Recent legal losses by South Carolina indicate that the project's cancellation will not be stopped. Brad Kutner, "Panel Rejects Bid to Stop SC Nuke Plant Closure," *Courthouse News Service*, January 9, 2019, <https://www.courthousenews.com/panel-rejects-bid-to-stop-sc-nuke-plant-closure/>; For more on the Dilute and Dispose approach, see the NNSA's report, *Surplus Plutonium Disposition Dilute and Dispose Option Cost Estimate Report* (Washington, DC: Department of Energy, May 2018), <https://s3.amazonaws.com/ucs-documents/global-security/dilute-and-dispose-independent-cost-estimate-4-18.pdf>.

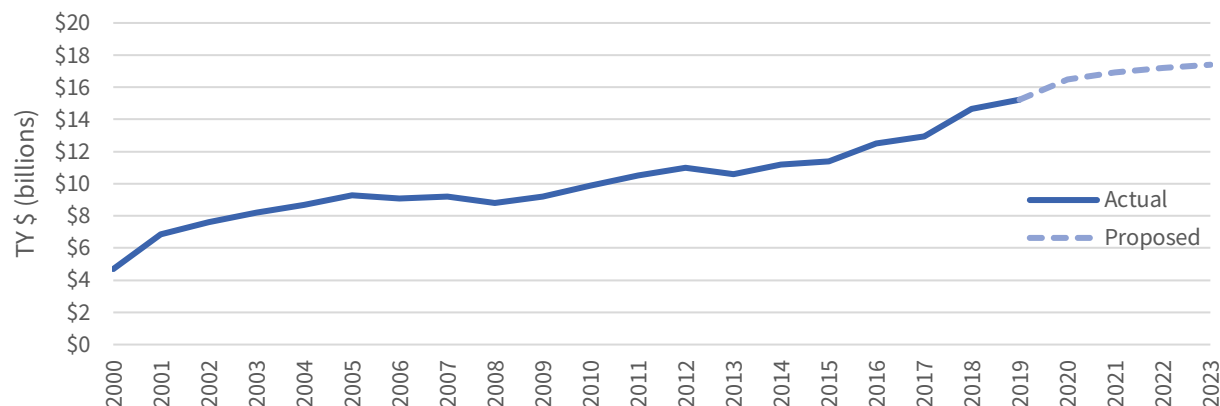
195. Mark Cancian, "The \$50-Billion Earmark: Time to Cut Our Losses," *Breaking Defense*, November 30, 2016, <http://breakingdefense.com/2016/11/the-50-billion-earmark-time-to-cut-our-losses>.

Structural Tensions

NNSA's organizational arrangement has always been uncomfortable. It constitutes about half of the DOE's total budget but is semi-autonomous and not fully under the DOE's control. Most of its products support DOD, with a Nuclear Weapons Council acting as the link between the two organizations. The weapons labs use their technically independent status to lobby Congress for their programs in a way that other government labs cannot. Given these tensions, reorganization proposals are continuous, though none appeared this year.¹⁹⁶

Long-term Risks

Figure 31: NNSA Historical Funding



Source: Department of Energy, *FY 2020 Congressional Budget Request, National Nuclear Security Administration*, 3.

Because the BCA budget cap puts the NNSA and DOD in a zero-sum budget situation, any cost overruns that the NNSA suffers must be paid by DOD. This dynamic causes constant tension because the NNSA has a poor record of cost control on major projects (see MOX, above, but there are many others). One piece of encouraging news: NNSA Administrator Lisa Gordon-Hagerty testified in the FY2020 budget hearings that the Uranium Processing Facility project remains on track to finish within its \$6.5 billion cost ceiling and at the planned FY 2025 completion date.¹⁹⁷

OTHER NATIONAL SECURITY ORGANIZATIONS AND SPECIAL FUNDS

Table 19: Funding for Other National Security Organizations (\$, million)

	2019 Enacted	2020 Proposed
DOE Environmental Cleanup & Other Defense Activities	6,884	6,567
Defense Nuclear Facilities Safety Board	31	29.5
FBI	5,061	5,185
Other	3,166	2,944
CIA Retirement Fund	514	514

Source: "DOE FY2020 Budget in Brief," DOE, March 2019, p. 12, https://www.energy.gov/sites/prod/files/2019/03/f60/doe-fy2020-budget-in-brief_0.pdf; Environmental Cleanup; Defense Nuclear Facilities Safety Board, *FY 2020 Congressional Budget Request* (Washington, DC: March 18, 2019), 2, https://www.dnfsb.gov/sites/default/files/document/17636/DNFSB%20FY2020%20Congressional%20Budget%20Request_FINAL.pdf.

196. In 2017 OMB Director Mick Mulvaney floated the idea of transferring NNSA to DOD, a change that would profoundly alter how the weapons labs operated. However, that proposal did not gain traction and disappeared.

197. Lisa E. Gordon-Hagerty, Testimony before the Subcommittee on Strategic forces, Senate Committee Armed Services Committee, 116th Cong., 1st sess., May 8, 2019, https://www.armed-services.senate.gov/imo/media/doc/Gordon-Hagerty_05-08-19.pdf.

These are the other activities that Congress includes in the national security budget activity. There is no need to analyze each of these activities in detail, but a few observations are worth making:

- DOE's environmental cleanup is the largest of these other activities. It does just what the name suggests: pays to clean up deactivated facilities, mostly at the weapons laboratories. Many of these sites dated back to the Manhattan Project and nuclear buildup of the 1950s and were closed at the end of the Cold War. It is a long-term, and extremely expensive, effort.
- The FBI funding covers the agency's efforts in counterterrorism and constitutes about 40 percent of the FBI's total budget. The rest is funded through the Department of Justice.
- The CIA retirement fund is a reminder that the agency's budget is hiding somewhere in DOD's funding. This is the only unclassified reference to it.

About the Author

Mark Cancian (Colonel, USMCR, Ret.) is a senior adviser with the CSIS International Security Program. He joined CSIS in April 2015 from the Office of Management and Budget, where he spent more than seven years as chief of the Force Structure and Investment Division, working on issues such as Department of Defense budget strategy, war funding, and procurement programs, as well as nuclear weapons development and nonproliferation activities in the Department of Energy. Previously, he worked on force structure and acquisition issues in the Office of the Secretary of Defense and ran research and executive programs at Harvard University's Kennedy School of Government. In the military, Colonel Cancian spent over three decades in the U.S. Marine Corps, active and reserve, serving as an infantry, artillery, and civil affairs officer and on overseas tours in Vietnam, Desert Storm, and Iraq (twice). Since 2000, he has been an adjunct faculty member at the Johns Hopkins School of Advanced International Studies, where he teaches a course on the connection between policy and analysis. A prolific author, he has published over 40 articles on military operations, acquisition, budgets, and strategy and received numerous writing awards. He graduated with high honors (*magna cum laude*) from Harvard College and with highest honors (Baker Scholar) from Harvard Business School.

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