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U.S. Military Forces in FY 2019

The Buildup and Its Limits

AUTHOR
Mark F. Cancian

CSIS | CENTER FOR STRATEGIC &
INTERNATIONAL STUDIES

A Report of the
CSIS INTERNATIONAL SECURITY PROGRAM

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Center for Strategic & International Studies
1616 Rhode Island Avenue, NW
Washington, D.C. 20036
202-887-0200 | www.csis.org

Roman & Littlefield
4501 Forbes Boulevard
Lanham, MD 20706
301-459-3366 | www.roman.com

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“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 2019 budget and in the security environment are shaping the size and composition of the force and what those changes mean in terms of cost, strategy, and risk.

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Budget Timeline

This paper is based on the President's Budget proposal for FY 2019, presented to Congress on May 22, 2017, on the congressional appropriations and authorization acts for FY 2019, which have both (!) been passed before the beginning of the fiscal year, on the FY 2018 enacted budget, and on historical documents where needed. It does not include any actions taken after the midterm election of 2018.

Executive Summary

Overview of Military Services

The Trump administration's FY 2019 budget proposal laid out a set of priorities.

- Fix readiness, so that forces meet a minimum standard.
- Increase modernization by expanding production of existing systems and enhancing R&D for future systems but not launching major new programs.
- Increase capabilities by upgrading existing systems and buying more munitions, particularly long-range and precision munitions.
- Expand force structure, but modestly.

To pay for these initiatives, the FY 2019 defense budget rose 14 percent above the FY 2017 level. However, the budget is projected to be flat in real terms after FY 2019, requiring internal offsets to pay for any future initiatives.

The choices showed that there is no escaping the tradeoff among readiness, modernization, and force structure. The Trump administration, like the Obama administration before it, has clearly chosen modernization (capability) over force structure (capacity), but the press of operational demands is pushing the services towards a high-low mix in order to cover both.

The buildup is guided by the administration's National Defense Strategy (NDS), which received a lot of support in the Congress and in the broader national security community. The major challenge that it identified—long-term competition with China and Russia—was consistent with what the Obama administration had been discussing after 2014 and with 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 military forces:

- The budget, forces, and programs did not change as much as the new strategy required.
- The buildup needed to include more force structure expansion.
- The strategy focused too much on great power conflict and downplayed the more likely demands of counterterrorism.
- The strategy was too forward engaged.

The future poses three risks to the administration's plans:

- The lack of real growth in future budgets will hamper the launching of further initiatives.
- A possible return of BCA caps in FY 2020 will make the entire strategy unachievable.
- A softening of public, and then political, support could undermine both budgets and an engagement strategy.

In its FY 2019 action, the Congress mostly supported the administration's request but made some changes stemming from the belief that DOD had not moved aggressively enough in realigning its budget with the

new strategy. Indeed, the Trump administration has hinted that major changes could occur in the FY 2020 budget, but the exact nature of those changes is unclear.

ARMY

There are two major takeaways about Army plans. The first is the modest size of force growth. The regular force will increase to 487,500 regular soldiers in FY 2019 with an FY 2023 goal of 495,000, about 10,000 soldiers higher than the pre-9/11 level.

Force expansion in the reserve components is small, only 500 for the Army National Guard and 500 for the Army Reserve by FY 2023, which means that 87 percent of Army force expansion is in the active component. Normally, this would engender some grumbling from the politically powerful reserves, but the Army leadership has apparently worked closely with them, focusing on mutually agreed initiatives to improve readiness, rather than increase size.

The future size and shape of the Army are being pulled by two opposing dynamics. One is the guidance in the NDS to focus on great power conflicts with Russia and China. That implies a smaller force equipped with advanced, and likely very expensive, technologies. The other 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.

The target of 495,500 in FY 2023 for the regular force appears to be a compromise between the two dynamics—force growth and modernization—allowing some growth but not as much as previously planned.

The second takeaway is that Army modernization continues to be a classic good news, bad news story. The good news is that Army procurement and RDT&E funding are now higher than the prewar levels of 2000. Thus, the Army is able to increase production of proven systems and has a well-modernized force as a result. The bad news is that, although the Army has many potentially important technologies in development, it does not yet have a new generation of systems in procurement to take it into the 2020s and beyond.

NAVY

The Navy in FY 2019 reflects the priorities of the department as a whole. It sustains the level of readiness built in the FY 2017 and FY 2018 budgets. It modernizes by increasing production of existing ship, aircraft, and munition programs. It is developing new technologies but does not formally begin any major programs. It expands force structure more than the other services because of pressure to meet combatant commander requirements.

After years of shrinkage, the Navy is growing as new ships are delivered, particularly the numerous Littoral Combat Ships (LCSs) and DDG-51 destroyers. The Navy projects that it will hit 299 ships by the end of FY 2019, up from its low point of 275 in 2016. The “sustainable” long-term plan reaches 342 ships by the late FY 2030s before easing off. Although most projections of future fleet size do not meet the significantly enlarged and highly visible target of 355 ships, the Navy appears to be comfortable with the path that it is on.

Ship numbers must be treated with caution, however. Today's fleet may have only half the number of ships of the 1980s, but it has about 80 percent of the tonnage because contemporary ships are much larger than their earlier counterparts.

The Navy feels the capacity/capability tension most acutely because of the high demands of its forces in day-to-day operations and the long lead times and high capital costs for its weapon systems. To resolve this tension, it has focused on a medium-term strategy, that is, building a larger number of existing platforms. This reflects a compromise between near-term and long-term strategies. The former would increase less expensive ships and aircraft for day-to-day operations, and the latter would reduce forces in order to invest in new, advanced capabilities, which take a long time to deliver.

In FY 2019, naval aviation (Navy and Marine Corps) proposed to procure 120 aircraft of all kinds, and the Congress increased this to 135. Naval aviation procurement has mostly mature programs producing aircraft with few major issues. Inventories are stable. That's a success.

A challenge is that the Navy faces ever higher costs to maintain its aviation inventory and has been slow to field unmanned aerial vehicles (UAVs).

MARINE CORPS

Unique among the services, the Marine Corps comes out of the wars significantly larger than it went in (186,100 today v. 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. Nevertheless, the Marine Corps will be unable to grow to its previous goal of 194,000, and that creates a tension between creating additional new capabilities and maintaining traditional capabilities. Indeed, along among the services, the Marine Corps does not grow at all through the FYDP period.

The lack of growth 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 forces for the former are light, trained for crisis response missions and peacetime engagement, and in high demand by combatant commanders. Forces for the latter are heavy, trained for intense combat, and are the focus of the new strategy.

Marine aviation continues to upgrade platforms and field new capabilities in the F-35B and CH-53K. As with naval aviation as a whole, readiness is improving but will take several more years to attain satisfactory levels.

Having led the department with the introduction of UAVs in the 1980s, the Marine Corps now lags behind the other services with relatively few UAV systems fielded, although there are plans to do more in the future.

A cloud on the horizon is the Senate's concern about the future viability of amphibious assaults. Although this concern did not appear explicitly in the final authorization act, it shows a lack of support for a foundational Marine Corps capability.

AIR FORCE

The Air Force has had to modify its traditional focus on modernization for high-end conflicts. Readiness shortfalls require higher manpower levels, primarily additional maintainers and pilots. This manpower increase began in 2016 and is a change to the Air Force's long-term trend of decreasing manpower to maintain the pace of modernization.

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. RPVs, now a full element of the force structure, also help extend capacity.

Just as this report was finishing up, Secretary of the Air Force Heather Wilson proposed a 25 percent increase in force structure, describing it as "the Air Force we need." Details, however, about how the structure size was calculated and the operational concepts behind the larger force requirement are not publicly available. The next budget cycle will determine whether this proposal gets traction. Cost will be high, though, about \$37 billion per year, depending on assumptions, and up to another 93,000 personnel.

Delays, high costs, and slow fielding of modernization programs like the F-35 and KC-46 mean that today's aging fleets will be around for a long while. Collectively, these forces have driven the Air Force to a high-low mix, a substantial change from the Air Force's previous focus on high-end conflicts.

SPECIAL OPERATIONS FORCES

Three themes continue: gradual force growth (at 65,000, approaching the size of the British Army, 81,500), dependence on OCO funding (at 33 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.

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). Other good news for civilians is that last year's hiring freeze has been partially lifted, most political appointees are in place (at least in DOD), and civilians will receive a 1.9 percent pay raise despite the administration proposing a pay freeze. However, requirements to reduce headquarter size affects civilian positions in Washington.

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 \$132 billion in FY 2017, service contracts are substantially above the prewar level and have started to increase again after postwar decreases. 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 (49,000 to 36,000) and the ratio of contractors to military personnel has increased from 1:1 in 2008 to 1.8:1 today. With stronger controls and oversight in place, contracting scandals have ceased and the use of battlefield contractors has receded into the background as a political issue.

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

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 2019 budget emphasizes military programs, consistent with the administration's priorities for a "hard power" approach. In FY 2019, Weapons Activities and Naval Reactors increase while non-proliferation activities decrease.

This represents the ramping up of the nuclear modernization and infrastructure recapitalization efforts, commitments the Obama administration made in ratifying the New START treaty in 2010. From FY 2013 to FY 2018, Weapons Activities increased from \$7.0 billion to \$10.6 billion and Naval Reactors increased from \$1.0 billion to \$1.6 billion, while non-proliferation activities decreased from \$2.2 billion to \$2.0 billion. The FY 2019 budget continues these trends.

1 | Introduction: The Buildup and Its Limitations

Publication of the FY 2019 budget showed the scale of the Trump administration's defense buildup. In FY 2019 the defense budget rose 14 percent above the FY 2017 level, the transition year from the Obama administration, thus allowing some closing of the gap that opened between strategy and resources. This level was codified in the bipartisan budget agreement with the Congress. However, the budget is flat in real terms after FY 2019, requiring internal offsets to pay for any future initiatives.

The budget also showed the administration's priorities:

- Fix readiness, so that forces meet a minimum standard. Readiness is vital for maintaining current capabilities and deterrence but is extremely expensive and perishable. At some point, improving readiness cuts into modernization and force structure.
- Increase modernization, to fill gaps and sustain the current structure. Modernization is especially needed to compete with great powers such as Russia and China. The budget expands production of existing systems and 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.
- Expand force structure, but modestly. This represented a conscious decision to focus on high-end conflict and take risk in meeting day-to-day demands for ongoing operations, presence, and crisis response.

The choices showed that there is no escaping the tradeoff among 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. The last administration often characterized the choice as capacity versus capability. The Trump administration, like the Obama administration before it, has clearly chosen capability, at least in theory. The press of operational demands is pushing the services towards a high-low mix in order to cover both.

The Administration's Strategy

Last year, the size and shape of the Trump administration defense buildup were unclear. The administration's first budgets, FY 2017 and FY 2018, were limited to those years and did not include either outyear top lines or decisions about the nature of the buildup. They were aimed at fixing immediate readiness problems.

The administration's National Security Strategy (NSS), issued in December 2017, and National Defense Strategy (NDS), issued in January 2018, describe the tradeoffs that it made and the rationale for military forces that it plans.¹ 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

¹ "A New National Security Strategy for a New Era," December 18, 2017, <https://www.whitehouse.gov/articles/new-national-security-strategy-new-era/>. "A Summary of the 2018 National Defense Strategy of the United States: Sharpening the American Military's Competitive Edge", <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>

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 terrorism. These are the same threats that Secretary Carter described at the end of last administration,² but the order has changed. Whereas Carter had put Russia first, the Trump administration puts China first. This makes sense in context. Further, the strategy puts greater emphasis on China and Russia than the other three threats.

Secretary Carter was reacting to the 2014 Russian takeover of Crimea and move into the Ukraine. Thus, Russia appeared to be the most immediate threat. However, Russia is economically weak (with an economy only as large as Spain’s) and is facing demographic collapse. 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.

Most strategists argue 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 five-fold, from 2.2 percent to 12.2 percent over the same period.³

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 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 North Korea or Iran. 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 decline or even a multipolar world.

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

³ Hal Brands, *Dealing with Allies in Decline* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017), p. 22, https://csbaonline.org/uploads/documents/ALLIES_in_DECLINE_FINAL_b.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 2019 Budget	FY 2023 FYDP Plan
<i>Army manpower (regular/reserve)</i>	421,000/	450,000/	540,000/	487,500/	495,000/
	498,000	530,000	[563,000]*	543,000	544,000
<i>Army brigade combat teams (AC/RC)</i>	53 (27/26)	58 (30/28)	68 (40/28)	57 (31/26)	57 (31/26)
<i>Navy carriers</i>	10	11	12	11	12
<i>Navy ships</i>	274	309	350	299	326
<i>Air Force TacAir A/C (4th/5th generation)</i>	1,015 (668/347)	1,101 (699/402)	1,310 (837/473)	1,141 (961/180)	~1,200*** (900/300)
<i>USMC manpower</i>	175,000	180,000	242,000 (!)**	185,000	186,400

Sources: BCA caps and Obama FYDP—Quadrennial Defense Review 2014, http://archive.defense.gov/pubs/2014_quadrennial_defense_review.pdf ; Trump campaign—September 7, 2016 speech in Philadelphia on national security, <https://thehill.com/blogs/pundits-blog/campaign/294817-transcript-of-donald-trumps-speech-on-national-security-in> ; FY 2019 budget and FY 2023 plan—FY 2019 Defense Budget Overview, https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2019/FY2019_Budget_Request_Overview_Book.pdf

*Not specified in Trump's speech but taken from the Heritage Foundation 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 such a large increase was intended.

***Estimated. The Air Force is moving to a different metric—operational squadrons—but data are not yet fully available.

The table shows the evolution of force structure plans.

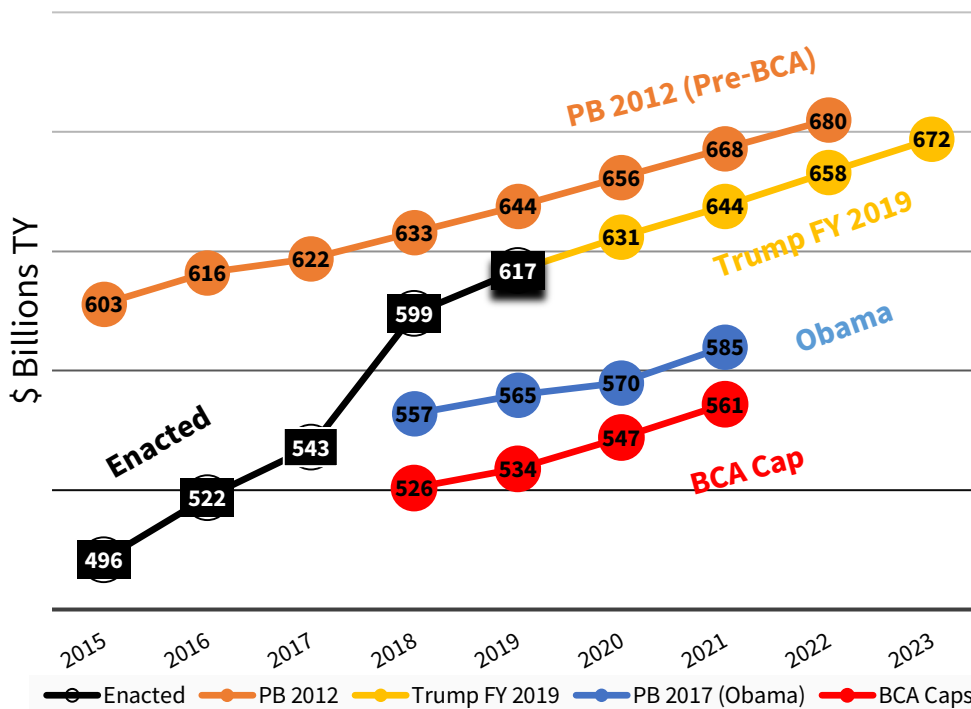
- In the left column is the force structure that would result if the caps set by the Budget Control Act of 2011 (BCA) were imposed. This projection comes from the Obama administration's 2014 Quadrennial Defense Review, which was emphatic that such a reduced force structure would be inadequate to execute the planned strategy, and nothing has changed to alter that judgment. The United States would need to implement a different strategy if it were constrained to these forces. It could not maintain the level of forward deployments that the strategy requires—in Eastern Europe to deter the Russians, in the Middle East to continue engaging ISIS and the Taliban, and in the Pacific to face a rising China—nor could it execute the war plans on the timelines currently envisioned.

- The next column shows the last plans of the Obama administration. While higher than the BCA Level, these levels were still not adequate to implement the 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 2019 in the president’s budget proposal.
- The final column on the right shows the long-term force structure targets described in the FY 2019 budget proposal. These reflect the tradeoffs required by even an expanded budget. Force structure was third priority, and the modest increases in the administration’s plans reflect that reality. The chapters on the individual services discuss the specifics of each services’ forces.

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 strategy depend on the future of the budget. To its credit, the administration put resources against its strategy, with a 14 percent increase from FY 2017 to FY 2019. This increase was much larger than most defense experts had expected.⁴ The chart below shows the evolution of the DOD budget forecasts.

Chart 1: Enacted base budgets FY 2015-FY 2019 and forecasts



⁴ For a sampling of expert forecasts, see Tony Bertuca, “Budget Analysts Bearish on Defense Spending - It’s Not Christmas in July,” *Inside Defense*, January 23, 2017, <https://insidedefense.com/daily-news/budget-analysts-bearish-defense-spending-its-not-christmas-july>; Mackenzie Eaglen, *2018 Defense Budget Defers Buildup For Austerity*, (Washington, DC: American Enterprise Institute, June 2017), <http://www.aei.org/publication/2018-defense-budget-defers-buildup-for-austerity>; Katherine Blakeley, *A Defense Buildup In the Near Term*, Center For Strategic And Budgetary Assessments, July 2017, <http://csbaonline.org/about/news/a-defense-buildup-in-the-near-term>.

Gates 201: 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 2019: The Trump fiscal projection in the FY 2019 budget. After the large increases in FY 2016, FY 2017, and FY 2018, the forecast levels off in constant dollar terms. (The forecast appears to increase because this chart is in then-year dollars, which include inflation.)

Obama FY 2017: The projection in the FY 2017 budget, the last budget that the Obama administration produced. It represents the fiscal level that DOD had built forces and programs to before receiving new guidance from the Trump administration.

BCA caps: This represents the floor. Successive budget compromises have modified the caps, including for FY 2018 and FY 2019, but they are unchanged in FY 2020 and FY 2021, and this represents a continuing uncertainty (described later). The caps cease after FY 2021.

Criticisms and Competing Visions

The NDS received a lot of support in Congress and in the broader national security community. The challenges that it identified were consistent with what the Obama administration had been discussing after 2014 and with 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 budget, forces, and programs did not change as much as the new strategy required.
- The buildup needed to include more force structure expansion.
- The strategy focused too much on great power conflict and downplayed the more likely demands of counterterrorism.
- The strategy was too forward engaged.

NOT ENOUGH CHANGE IN THE BUDGET

The major criticism of the administration's plans, made across the political spectrum, is that they 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 the strategy requires.

- Robert Work, former deputy secretary of defense, and Elbridge Colby, former deputy assistant secretary of defense, argued that DOD “needs to implement urgent change at significant scale.”⁵
- Kathleen Hicks of CSIS noted that, “[S]igns of real change are modest. There has been no indication of a pending package of major legislative initiatives, no request to reduce excess infrastructure, no revived joint experimentation hub with associated institutional leadership and

⁵ Robert O. Work and Elbridge Colby, “The Pentagon must modernize before it's too late,” *Washington Post*, September 17, 2018, https://www.washingtonpost.com/opinions/the-pentagon-must-modernize-before-its-too-late/2018/09/17/8a9ab1e8-b1fe-11e8-aed9-001309990777_story.html.

funds, no policy-significant breakthroughs in defense-to-defense relations, and no fundamental overhaul of the sclerotic defense contracting process.”⁶

- Susanna Blume, a senior fellow at the Center for a New American Security, was blunter: “The Trump administration has missed its best chance to reshape the force in accordance with the strategy” by failing to “emphasize the advanced capabilities required to maintain the US technological edge against [Russia and China]” and instead “investing too heavily in legacy systems.”⁷ Similarly, Frank Hoffman and Molly Dineen of National Defense University argued for more focus on the Pacific and “strategic triage” elsewhere.⁸
- The American Enterprise Institute put out a commentary that made the same argument: “PB19 [the president’s budget 2019] changes are evolutionary, not revolutionary – it does not buy the force required to execute the national defense strategy.”⁹
- Finally, the Center for Strategic and Budgetary Assessments (CSBA) has argued for many years that DOD should focus on “leap ahead” technologies and warfighting concepts, particularly long-range precision strike in order to deal with the anti-access/area denial strategies capabilities of Russia and China and to move away from legacy systems like aircraft carriers and short-range fighters like the F-35. It made this argument most recently in a force structure and budget exercise that it conducted with other think tanks.¹⁰

Most importantly, the Congress expressed its concern in the NDAA: “The strategy, and its implications for the size, structure, shape, mission, and employment of the joint force, were not completed in time to fully inform the President’s fiscal year 2019 budget request. As the Department continues to implement changes from the National Defense Strategy, the conferees recommend the Department conduct further analytical work in order to facilitate the implementation of the strategy.” To help the department with this analytical work, the Congress has required that DOD produce a report on the department’s highest priority missions.¹¹

This caution by the services may reflect a judgment that the current budget increase will 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. The effect, however, is the same: little change in budgets despite the new strategy.

⁶ Kathleen Hicks, *Defense Outlook 2018* (Washington, DC: CSIS, February 2018), <https://www.csis.org/analysis/defense-outlook-2018>.

⁷ Susanna Blume, “What’s Wrong with the Defense Department 2019 Budget Request – and What Congress Can Do to Fix It,” *War on the Rocks*, May 15, 2018, <https://warontherocks.com/2018/05/whats-wrong-with-the-defense-departments-2019-budget-request-and-what-congress-can-do-to-fix-it/>.

⁸ Frank Hoffman and Molly Dineen, “How Much Is Enough? Matching Ends With Means At The Pentagon,” *War on the Rocks*, August 30, 2018, <https://warontherocks.com/2018/08/how-much-is-enough-matching-ends-with-means-at-the-pentagon/>.

⁹ Mackenzie Eaglen, “In Brief: Defense Budget Peaks in 2019, Underfunding the National Defense Strategy,” *American Enterprise Institute*, May 17, 2018, <http://www.aei.org/publication/defense-budget-peaks-in-2019-underfunding-the-national-defense-strategy/>.

¹⁰ Jacob Cohn and Ryan Boone, ed., *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>. Note: for all the think tanks, the proposals represent the ideas of the team members and not the official position of the organizations.

¹¹ House of Representatives Committee on Rules, *Joint Explanatory Statement for the FY 2019 National Defense Authorization Act*, <https://rules.house.gov/sites/republicans.rules.house.gov/files/JointExplanatory%20Statement.pdf>.

MORE FORCE EXPANSION

Strategists tend to focus on great power competition and are therefore drawn to high-end conflicts and the modernization necessary to conduct them. However, the press of ongoing conflicts, allied desires for engagement, and the need to respond rapidly to crises pushes against such a strategy. The world appears to be in a state of persistent conflict that has demanded a continuing U.S. response.¹² As many experts point out, physical presence is needed to meet these demands and to exercise global leadership; virtual presence is actual absence.¹³

Demands for forces increase operational tempo. DOD has a global force management process to prioritize force requests and allocate forces to meet them so that they do not 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.¹⁴ Further, the national leadership often directs deployments and commitments in response to global events despite intentions to reduce demands.

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

- Heritage argues that “the smaller the force, the greater the risk it runs of not being able to meet current security demands while also preparing for the future.”¹⁵ It has proposed a large expansion: 50 regular Army brigades, about 350 Navy ships, 36 active duty Marine Corps battalions, and 1,200 active duty Air Force fighter/attack aircraft.¹⁶ This built on Heritage’s detailed *Index of U.S. Military Strength*,¹⁷ which assessed the U.S. military’s ability to meet warfighting. It rated the Navy, Marine Corps, and Air Force capabilities as “marginal” and the Army as “weak.”
- The American Enterprise Institute has similarly recommended a broad expansion of forces to cover a “three-theater” demand. This includes a regular Army of 600,000, a Marine Corps of over 200,000, and a Navy of 12 carrier battle groups/12 amphibious groups. 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 \$140 billion above the Trump administration’s planned FY 2019 budget.¹⁸

The competing demands of a high-end conflict and day-to-day deployment of forces push the military services towards a high-low mix; that is, a part of the force that incorporates advanced, and often very expensive, technologies and another less expensive part that can cover less demanding threats, such as

¹² See, for one example among many, James Thomas before the Senate Armed Services Committee *Reshaping the U.S. Military*, 115th Cong., 1st sess. (February 16, 2017), <https://www.armed-services.senate.gov/hearings/17-02-16-reshaping-the-us-military>.

¹³ For example, Thomas Donnelly before the Senate Committee on Armed Services, *Peers, Near-Peers, and Partial Peers: Making Sense of America’s Balance-of-Power Interests*, 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>.

¹⁴ 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).

¹⁵ Dakota Wood, *Rebuilding America’s Military: Thinking about the Future* (Washington, DC: Heritage Foundation, 2018), p. 11, <https://www.heritage.org/defense/report/rebuilding-americas-military-thinking-about-the-future>.

¹⁶ “Defense” in *Solutions 2016* (Washington, DC: Heritage Foundation, 2016), 157–165, <http://solutions.heritage.org/wp-content/themes/heritage/pdf/Solutions-2016.pdf>.

¹⁷ Dakota Wood, ed., *2017 Index of U.S. Military Strength* (Washington, DC: Heritage Foundation, 2016), <http://index.heritage.org/military/2017>.

¹⁸ Thomas Donnelly et al., *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>.

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 with regard to particular decisions, such as the Air Force's decision to retain the A-10 and the Navy's decision to continue the frigate program.

TOO FOCUSED ON GREAT POWER CONFLICT

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 for response 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."¹⁹ While the NDS does include terrorism as a threat, it also notes that "Interstate strategic competition, not terrorism, is now the primary concern in U.S. national security."²⁰

As noted in the service sections of this report, the forces dedicated to counterterrorism and irregular warfare have not been reduced. However, the training of general-purpose forces has been almost 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."²¹

TOO FORWARD ENGAGED

Potentially disruptive is the president's often-stated desire to avoid overseas entanglements, restructure alliances, and put more responsibility onto allies. These frustrations emerged strongly in the president's comments during the June NATO summit conference.²²

The Cato Institute has consistently expressed similar views, rejecting the current strategy of engagement and forward deployments and instead proposing 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."²³

Cato's strategy would reduce forward deployments and cut the Army, Air Force, and Marine Corps by a third, and the Navy relatively less, 25 percent, in order to retain the ability to deploy globally when needed. Reserves would be reduced relatively less to maintain a surge capability. These changes would cut \$1.1 trillion out of the 10-year budgets for 2018-2027.²⁴

¹⁹ Seth G. Jones, "America's Counterterrorism Gamble," CSIS, July 2018, <https://www.csis.org/analysis/americas-counterterrorism-gamble>.

²⁰ NDS, 1.

²¹ 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/>.

²² For example, Jeremy Diamond, "Trump Opens NATO Conference with Blistering Criticism of Germany, Labels Allies 'Delinquent,'" CNN, July 11, 2018, <https://www.cnn.com/2018/07/10/politics/donald-trump-nato-summit-2018/index.html>.

²³ Christopher A. Preble, "Adapting to American Decline," *New York Times*, April 21, 2018, <https://www.nytimes.com/2018/04/21/opinion/sunday/adapting-to-american-decline.html>.

²⁴ From a think tank budget exercise, results described in Jacob Cohn and Ryan Boone, ed., *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>.

Risks

The future poses three risks to the administration's plans, all related to the budget: the lack of real growth in future budgets, a possible return of BCA caps in FY 2020, and the uncertainty of continuing public and political support.

LACK OF REAL GROWTH IN FUTURE BUDGETS

As the budget chart indicates, there are no big increases in future budgets after FY 2019. Indeed, in constant dollar terms (the chart is in nominal or inflated dollars) future defense budgets are flat. This is not all bad. The administration decided to give defense its budget increase up front and not gradually, so DOD benefits from higher near-term budgets.

Nevertheless, flat budgets mean that any future initiatives must be offset by cuts to other programs, and there will certainly be demands for new initiatives. For example, defense officials have met criticisms about the lack of change in budgets by saying that the FY 2020 budget will contain the needed changes.

There are likely to be "fact of life" bills that must be paid. For example, O&M funding may continue to increase in real terms, perhaps to pay for rising health care costs. These budget increases will require offsetting cuts to existing programs.

The administration's stated strategy is to pay for these new initiatives through cuts in overhead and infrastructure. Deputy Secretary Patrick Shanahan has several groups looking at ways to conduct DOD operations more efficiently.²⁵ Such efforts are commendable. However, while it is easy to criticize waste and duplication, the specifics get messy and hard to implement. For example, the administration has been unable, and recently unwilling, to push for base closure, which is the most well-documented and widely-supported mechanism for achieving overhead savings.²⁶

POSSIBLE RETURN OF BCA CAPS IN FY 2020

The budget agreement of 2018 sets funding levels for defense and domestic spending for FY 2018 and FY 2019. However, BCA caps still exist for FY 2020 and FY 2021. As my colleague Todd Harrison explains, avoiding deep BCA cuts requires some government-wide budget agreement that changes or eliminates the caps. In the past, such agreements have always been achieved, but often at the last minute and below the level for defense desired by the administration.²⁷

²⁵ Jim Garamone, "DoD Seeks to Make Civilian Agencies More Productive, Efficient," DOD News, April 24, 2018, <https://dod.defense.gov/News/Article/Article/1502049/dod-seeks-to-make-civilian-agencies-more-productive-efficient/>.

²⁶ 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.

²⁷ Cited in Ben Werner, "Pentagon, Defense Industry Brace for Expected Dip in Future Funding," *USNI News*, August 22, 2018, https://news.usni.org/2018/08/22/pentagon-defense-industry-brace-for-funding-declines?utm_source=USNI+News&utm_campaign=fd7bc861d0-USNI_NEWS_DAILY&utm_medium=email&utm_term=0_Odd4a1450b-fd7bc861d0-230434977&mc_cid=fd7bc861d0&mc_eid=a9d1d00a3f.

UNCERTAINTY OF PUBLIC AND POLITICAL SUPPORT

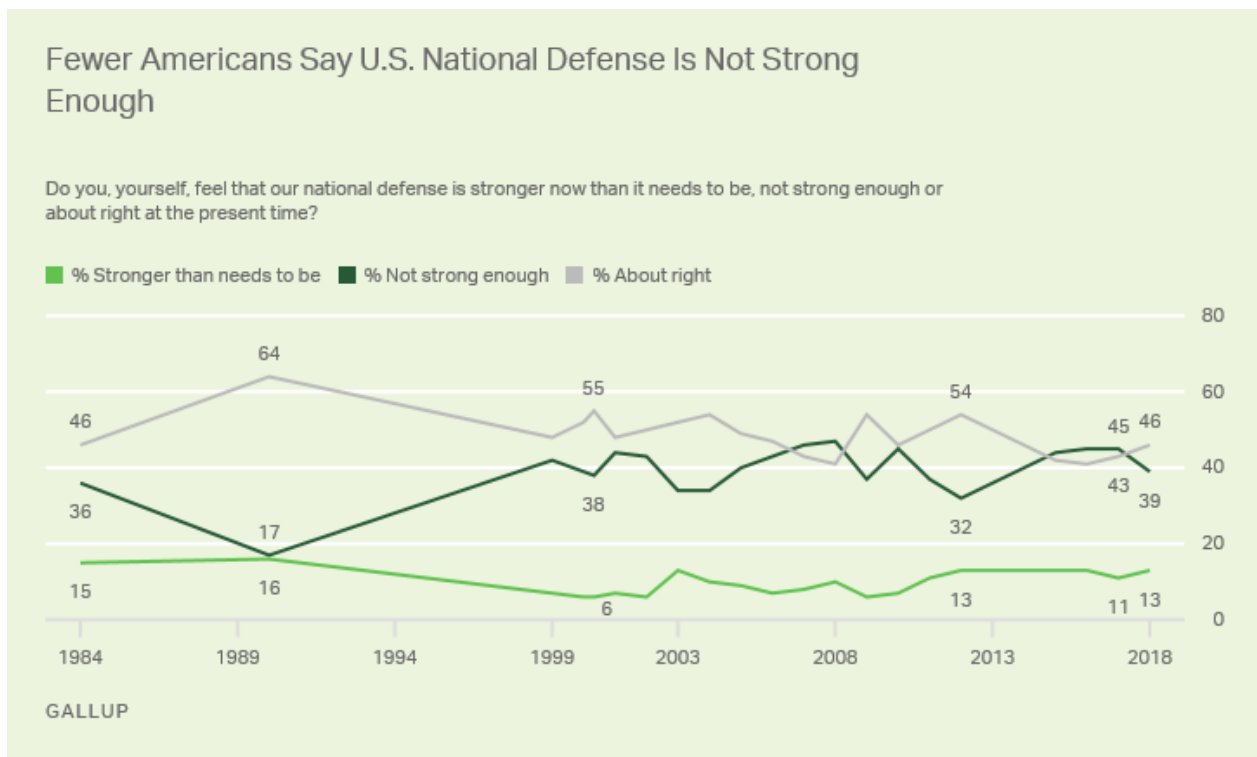
Ultimately, the extent of the defense effort depends on the level of support from the U.S. public. The chart below shows public attitudes towards national defense.²⁸ The good news for defense is that there is little support for the notion that the United States is too strong. That opinion barely gets 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 with the rising threats from Russia, ISIS, and China becoming apparent in 2014.

“Not strong enough” recently dipped below “about right,” likely reflecting the view that recent budget increases had met the need. Questions about the level of the defense budget elicit similar dynamics.

This level of public support would seem to support the path that the Trump administration is on but would not support further large increases. Support could deteriorate if the public became convinced that the money was not well spent, as happened during the Reagan administration with various acquisition scandals, or if forces become engaged in unpopular conflicts.

Chart 2: Public opinion on national defense 1984-2019



A related cloud on the horizon is the movement of the Democratic Party to the left, its focus on domestic programs, and its newly rising skepticism about defense spending after a period of bipartisan agreement on budgets. Recently, Representative Adam Smith, the ranking minority member of the House Armed Services Committee, said: “I think the [\$716 billion fiscal year 2019 defense topline] is too high, and it's

²⁸ Frank Newport, “Americans Not Convinced U.S. Needs to Spend More on Defense,” Gallup Organization, February 21, 2018, <https://news.gallup.com/poll/228137/americans-not-convinced-needs-spend-defense.aspx>.

certainly not going to be there in the future.” He questioned the desire to maintain global military primacy and the modernization of nuclear weapons.²⁹

Congressional Action

In its FY 2019 action, the Congress mostly supported the administration’s request, which was not surprising since the top line had been set in the bipartisan budget agreement in February. Nevertheless, there were some changes. The largest changes stemmed from the congressional belief that DOD had not moved aggressively enough in realigning its budget with the new strategy. Thus, the Congress increased development funds, the number of ships constructed, and procurement of new systems such as the F-35. It paid for these increases by small cuts to a variety of programs, mainly for technical reasons such as slowness to obligate funds, and by cuts to coalition support programs.

²⁹ Tony Bertuca, “US Should Cut Defense Spending and Not Cling to Notions of Post-WWII Dominance,” Inside Defense, September 5, 2018, <https://insidedefense.com/daily-news/smith-us-should-cut-defense-spending-and-not-cling-notions-post-wwii-dominance>.

2 | Overview of the Military Services

With publication of the administration's strategy and the establishment of a five-year top line, the services have had the guidance needed to develop a long-term program and force structure. These programs share key attributes that are driven by the strategy:

- Maintenance of the minimum level of readiness that had been established in the FY 2017 and FY 2018 budgets.
- Increased procurement of systems already in production.
- Expanded R&D efforts on promising new technologies but no major new acquisition programs established.
- Enhancement of capabilities through upgrades to existing systems and munitions.
- Some increases in force structure, though small.

3 | Army

There are two major takeaways about Army plans. The first is the modest size of force growth. The regular force will increase to 487,500 regular soldiers in FY 2019 with an FY 2023 goal of 495,000, about 10,000 soldiers higher than the pre-9/11 level. The reserve components do not increase at all in FY 2019 and only by 1,000 in total by FY 2023.

The second is that Army modernization continues to be a classic good news, bad news story: robust funding of existing systems and many promising technologies in development but few new systems in production to take it into the 2020s and beyond.

Force Structure in FY 2019

Table 2: Army End Strength – Regular and Civilians

	Regular Army		Civilian Full-Time Equivalent (000s)
	Brigade Combat Teams	End Strength	
FY 2018 Enacted	31	483,500	194,800
FY 2019 Proposed/Enacted	31	487,500	194,800
Change	0	+4,000	0

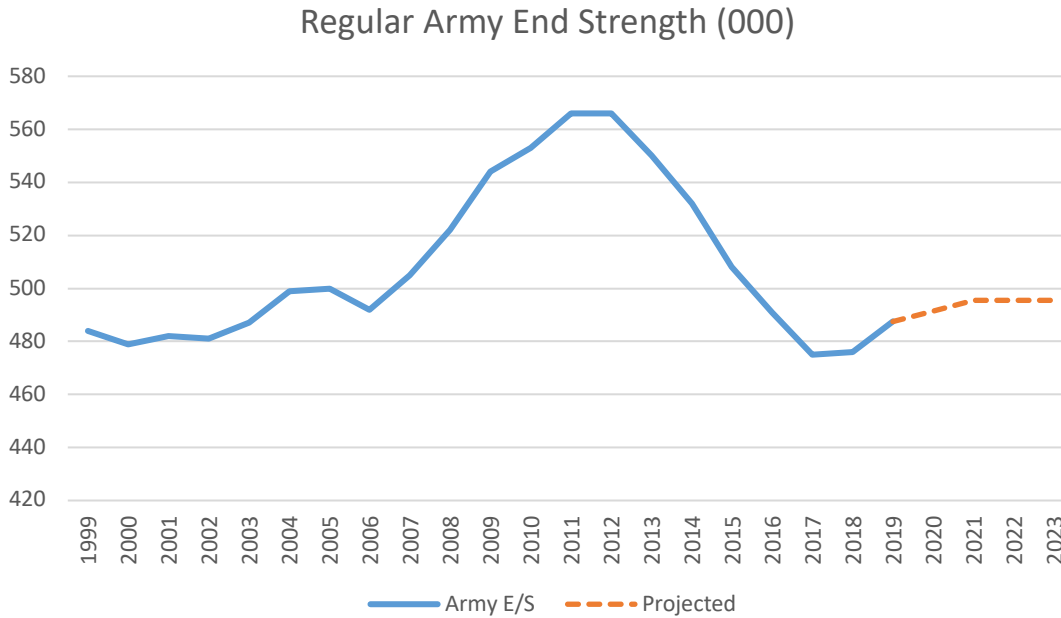
Table x: Army End Strength – National Guard and Reserve

	Army National Guard		Army Reserve
	Brigade Combat Teams	End Strength	End Strength
FY 2018 Enacted	26	343,500	199,500
FY 2019 Proposed/Enacted	26	343,500	199,500
Change	0	0	0

Figures are for end of fiscal year.

The Army ended its postwar drawdown in 2016 at a total end strength of 1,015,385, despite plans in the Obama administration to drop to 980,000, and has come back up since then, pushed by congressional adds above the president’s request (8,000 in FY 2017 and 7,000 in FY 2018). The Army in FY 2019 will be at about the level that it was before the post-9/11 expansion.

Chart 3: Regular Army End Strength 1999-2019



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.

The Regular Army maintains 31 Brigade Combat Teams (BCTs) and 11 Combat Aviation Brigades (CABs) with no net change from FY 2018 to FY 2019. The Army National Guard will maintain its current force of 26 BCTs and 8 Combat Aviation Brigades (CABs). The Army Reserve, which consists mostly of support units (“enablers”), retains two Theater Aviation Brigades (TABs) and holds an end strength of 199,500 in FY 2018.

The Army has used the end strength gained since 2017 in several ways:³⁰

- *Retaining units to be inactivated.* Thus, the brigade in Alaska, which the Army had planned to reduce to a battalion task force, will be retained as a BCT. The combat aviation brigade in Korea will be retained as well as some smaller support units.
- *Creating new units.* The Army has activated its first two security force assistance brigades (of a planned six, five active duty and one in the National Guard). In FY 2019, it will activate three more. (The Guard brigade remains to be activated.) The brigades (“SFABs”) are designed to “train, advise, and assist” foreign forces in both peace and war and replace the ad hoc efforts used previously. They will also sustain the lessons learned of stability operations even as the Army as a whole reorients towards high-end conflicts.
- *Increasing the manning of existing units.* This greatly improves readiness as units do not need to be cross-leveled before deploying, that is, have shortfalls filled with personnel from other units, thereby disrupting several units in a cascade effect. General Milley notes that increased manning

³⁰ “Department of the Army announces force structure decisions for fiscal year 2017,” U.S. Army Public Affairs, June 15, 2017, https://www.army.mil/article/189082/department_of_the_army_announces_force_structure_decisions_for_fiscal_year_2017.

combined with a decrease in non-deployable rates has doubled the number of BCT's in the highest state of personal readiness.³¹

- *Adding personnel to the support base.*

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.

Finally, the Army 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.

The Future Size and Shape of the Army

The future size and shape of the Army are being pulled by two opposing dynamics. One is the guidance in the National Defense Strategy to focus on great power conflicts with Russia and China. That implies a force equipped with advanced, and likely very expensive, technologies. The other 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.

The target of 495,500 for the regular force, achieved in 2021 and continuing thereafter, appears to be a compromise between the two dynamics.

A year ago, Army officials argued that the Army was too small. In July 2017, General Milley said: “[B]ased on the tasks that are required, I believe that we need a larger Army. And I know others, my teammates on the Joint Staff, also think the same of the Navy, Air Force, and Marines, 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 . . .”³² Army officials had implied a size of 500,000 to 510,000, with President Trump, as a candidate, setting a target of 540,000.

Deployment demands on the Army continue. In his FY 2019 posture statement, General Milley noted how busy the Army is with 178,000 soldiers serving combatant commanders worldwide in a variety of missions. Deployments to Europe under the European Deterrence Initiative (renamed from European Reassurance Initiative) have increased and deployments to Iraq and Afghanistan have not decreased. The Army has handled these demands and eased stress on the force in several ways:

- End strength growth spreads deployment demands over more soldiers.
- Creation of the SFABs has eased deployment demands by substituting for standard BCTs.
- Continued mobilization of the reserve components fills gaps.

An opposing pressure is for modernization. General Milley has often stated his concern about Army readiness to fight a high-end conflict, foreseeing that the Army would be “outgunned, outranged, and

³¹ Senate Armed Services Committee, *Statement by the Honorable Mark T. Esper and General Mark A. Milley*, 115th Cong., 2nd sess. (April 12, 2019), https://www.armed-services.senate.gov/imo/media/doc/Esper-Milley_04-12-18.pdf.

³² General Mark Milley, “Speech to the National Press Club,” National Press Club, July 27, 2017, http://www.press.org/sites/default/files/20170727_milley.pdf.

outdated on a future battlefield with near-peer competitors.”³³ RAND’s extensive war gaming 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.”³⁴

A conflict in the Baltics would be vastly different not only from the counterinsurgency campaigns of Iraq and Afghanistan but also from the conventional theater campaigns of Desert Storm in 1991 and Operation Iraqi Freedom in 2003. Indeed, it would look like old Cold War scenarios on the inter-German border—with NATO outnumbered facing massive adversary firepower—though on a much smaller scale and with lower stakes (defense of NATO’s periphery v. defense of NATO’s heartland).

As a result, the Army is experimenting with a new organization that could replace the brigade combat team—the multi-domain task force—that brings into the organization capabilities that were typically not there, such as cyber and signals intelligence.³⁵ However, efforts to produce a new combat organization will take many years to evolve.

Hanging over the entire discussion is uncertainty about the future of budgets. General Milley has been emphatic that end strength should not grow beyond what can be fiscally supported over the long-term.³⁶ End strength is expensive. Since 2001, pay per service member grew about 50 percent in constant dollars.³⁷ As a result, it takes more money to support the same number of soldiers and even more to expand the force. (Todd Harrison’s *Analysis of the FY 2019 Budget* covers personnel costs in depth.)

Balance of Regular and Guard/Reserve Forces

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 is particularly an issue for the Army because it has, by far, the largest reserve component, both in relative and absolute terms. For example, 53 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. Army reserve components are twice the size of all the other reserve components put together (in FY 2018, 543,000 v. 278,000).

As the graph below shows, the institution of the Total Force Policy in 1970, which called for increased reliance on the reserves, 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 shift towards the reserves. The ratio changed to parity 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: essentially 53 percent regular, 47 percent Guard/reserve. Instead of large growth in either the regular or

³³ General Mark Milley before the Senate Armed Services Committee, *Hearing on the Fiscal Year 2018 National Defense Authorization Budget Request from the Military*, 115th Cong., 1st sess. (May 25, 2017).

³⁴ 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.

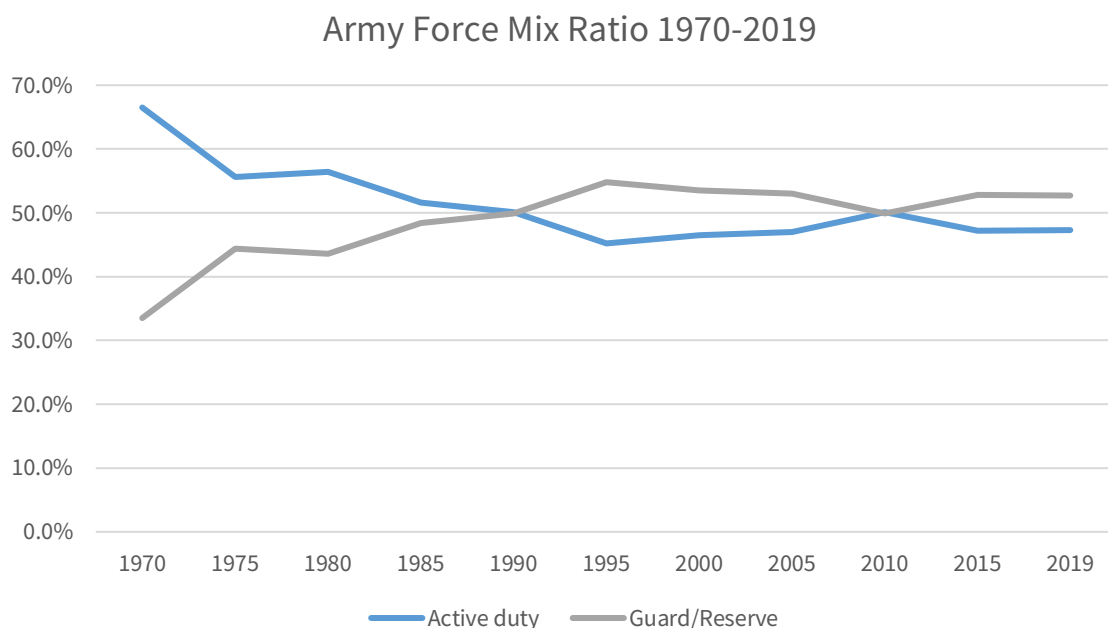
³⁵ Jen Judson, “Multi-Domain Operations Task Force Cuts Teeth in the Pacific,” *Defense News*, August 28, 2018, <https://www.defensenews.com/land/2018/08/28/multidomain-operations-task-force-cuts-teeth-in-pacific/>.

³⁶ Todd C. Lopez, “Milley: Larger Army without funding to support it would be ‘hollow force,’” *Army News Service*, January 13, 2017, https://www.army.mil/article/180612/milley_larger_army_without_funding_to_support_it_would_be_hollow_force.

³⁷ Robert F. Hale, statement before the Senate Armed Services Committee, Subcommittee on Personnel, *Hearing on Active, Guard, Reserve and Civilian Personnel Programs*, 112th Cong., 2nd sess. (March 28, 2012). Hale said, “Since 2001, the cost of military and pay and benefits has grown by over 87 percent (30 percent more than inflation), while Active Duty end strength has grown by about three percent.” Calculations vary depending on treatment of accruals for TRICARE and retirement, the mobilization of reservists, and personnel costs in war funding, but all methods show large cost increases.

Guard/reserve force, the Army, and DOD in general, have turned to contractors, as discussed in a later section.

Chart 4: Army Force Mix Ratio



Tensions between the components peak during drawdowns when difficult tradeoffs must be made. 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.³⁸ The recent budget increases have helped implement the commission's recommendations and have further eased tensions.

Force expansion in the reserve components is small, only 500 for the Army National Guard and 500 for the Army Reserve by FY 2023, which means that 87 percent of Army force expansion is in the regular component. Normally, this would engender some grumbling from the politically powerful reserves, but the Army leadership has apparently worked closely with them. Instead of increased size, the reserve components opted for increased readiness. The number of National Guard rotations to Combat Training Centers will increase from two to four, and the number of reserve component training days increased.

As a result of these and other initiatives, the readiness of the Army's reserve components is improving. The reserve components can thus 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.³⁹ With high force demands on the Army continuing, this level of mobilization will likely persist indefinitely.

³⁸ National Commission on the Future of the Army, *Report to the President and Congress of the United States*, January 28, 2016, <https://fas.org/man/eprint/ncfa.pdf>.

³⁹ Military Manpower Data Center, *Weekly Reserve Activation Reports* [limited distribution]

So, the sharp public disagreements of four years ago have ceased, at least for the moment. Of course, tensions between the regular Army and the reserve components could return if budgets become tight again.

Modernization—Current and Future

Army procurement and RDT&E funding are now in the recovery phase after postwar lows.⁴⁰

- The Army's procurement request for FY 2019 was \$26.8 billion, including OCO, and Congress increased this to \$27.1 billion, a \$6 billion increase over FY 2018. Although this is down substantially from the wars' high point in 2008 of \$80 billion (all figures in FY 2019 constant dollars), it is higher than the level has been in five years, higher than the level in 2000 before the wars began (\$14.7 billion), and substantially higher than levels during the procurement holidays of the 1990s (averaging about \$12 billion per year).
- Similarly, the RDT&E request was \$10.5 billion, and the Congress bumped this up to \$11.4 billion. This is \$2.5 billion above the FY 2018 level, down from a wartime high of \$12.4 billion in FY 2008 but higher than it has been for five years, much higher than the low level of the late 1990s (averaging \$7.4 billion), and higher than the long-term Army average level (\$9 billion).

Looked at broadly, Army modernization continues to be a classic good news, bad news story: the good news (beyond recovery of historical funding levels) is that the Army is able to increase production of proven systems and has a well-modernized force as a result. The bad news is that the Army does not have a new generation of systems in development to take it into the 2020s and beyond and for conventional combat against great power threats. 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.⁴¹

MODERNIZING THE CURRENT FORCE

Given where it is, the Army is sensibly plugging its most serious capability gaps with near-term, lower-cost systems, upgrading the major systems it has, and exploring—but not committing to—major new programs. As Army Secretary Esper said, "We need to continue to modernize and do so incrementally . . . Long strides rather than big leaps."⁴² All these near-term initiatives are aimed at improving the Army's capabilities in high-end conflicts, with a specific focus on Russia. 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.⁴³

⁴⁰ Data from Office of the Under Secretary of Defense, "National Defense Budget Estimates For FY 2019 (Green Book)," tables 2-1 and 6-16, April 2018, <http://comptroller.defense.gov/Budget-Materials/Budget2019>; Average levels from Rhys McCormick and Andrew Hunter, *The Army Modernization Imperative* (Washington, DC: CSIS, May 2017), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/170530_Hunter_ArmyModernization_Web.pdf?2300luRM4PwJBi4XRuDpVRMndOnunc.

⁴¹ Rhys McCormick, "The Army Modernization Challenge: A Historical Perspective," CSIS, March 31, 2016, <http://fysa.csis.org/2016/03/31/the-army-modernization-challenge-a-historical-perspective>.

⁴² Sydney Freedberg, "Army Hopes for \$6.8B from FY18 Budget deal, 70% Modernization," *Breaking Defense*, February 21, 2018, <https://breakingdefense.com/2018/02/army-hopes-for-6-5b-from-fy18-budget-deal-70-for-modernization/>.

⁴³ Rhys McCormick and Andrew Hunter, "The U.S. Army's Next Big 5 Must Be Capabilities, Not 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/>.

Thus, the Army FY 2019 budget funds the latest versions of existing systems: the Abrams tank (M1A2C), the Bradley fighting vehicle (M2A4), the Stryker fighting vehicle (Double V-Hull), 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, with future Block 2). 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 the Congress and the public.

The budget also funds two programs just entering production:

- The Joint Light Tactical Vehicle, an armored light truck and replacement for the up-armored HMMWVs.
- The Armored Multipurpose Vehicle, a replacement for the M113 armored personnel carrier but larger, with more armor and power.

Finally, the Army's FY 2019 budget, like the other services, continues the increased 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 a conflict with a great power would entail.

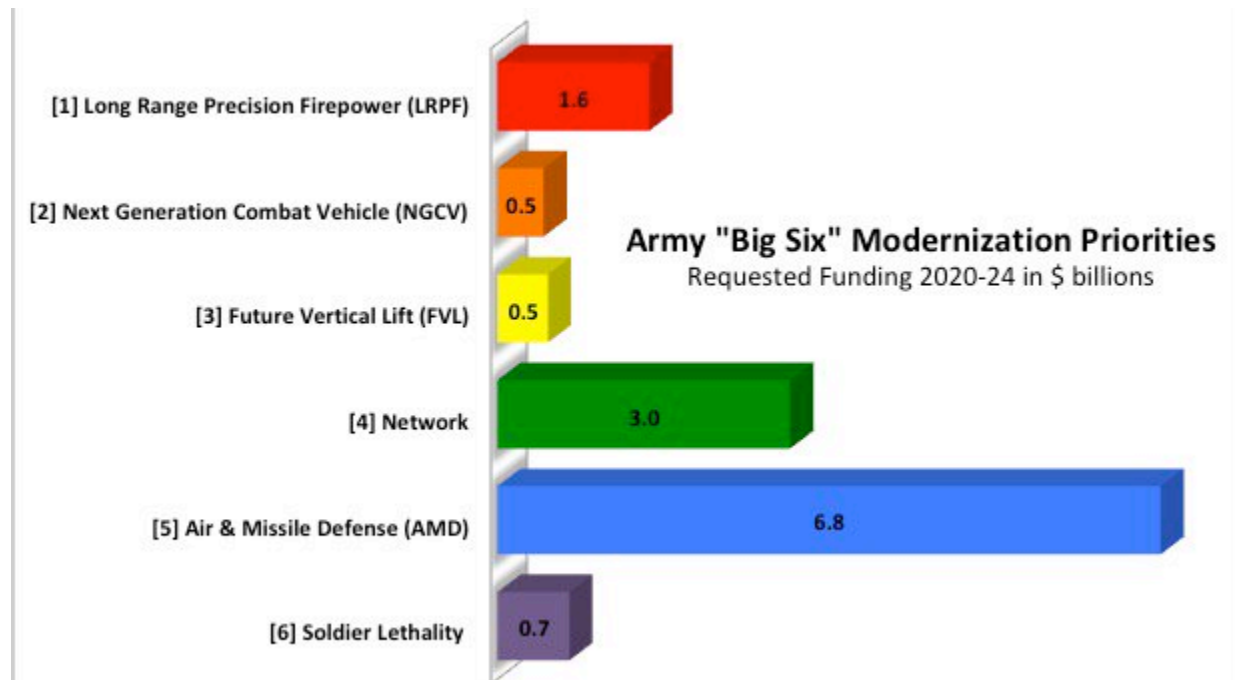
CREATING THE FUTURE FORCE

The bad news is that the Army does not yet have long-term programs in place for the 2020s and beyond. In the 2000s, the Army was not successful—in fact, it was spectacularly unsuccessful—in establishing the next generation of systems. All told, the Army had 22 programs canceled during the period 1995–2010 at a cost of \$32 billion with little to show for the investment. An Army report concluded: “Broadly it can be said that the Army has not succeeded as an institution . . . with its acquisition investment strategy.”⁴⁴ These failures cost the Army a modernization generation.

To break with this recent history of acquisition failure, the Army has created the Army Futures Command in Austin, Texas, placing it outside existing Army bases but close to civilian innovation centers. The command is intended to bring fresh thinking into the Army's acquisition programs and to move programs forward more quickly along the timelines that civilian innovators follow rather than the ponderous DOD acquisition system. Time will tell whether this radically different approach to modernization bears fruit or withers on the vine.

⁴⁴ 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.

Chart 5: Funding for Army Modernization Priorities



Source: Sydney Freedberg, "The Army Says It Needs to Billion Dollars More per Year," *Breaking Defense*, May 8, 2018, <https://breakingdefense.com/2018/05/army-needs-2b-a-year-more-for-big-six-52-for-air-missile-defense/>.

The Army has divided its R&D effort into six major priorities (sometimes known as "the big six"). It has many active programs, as described below, that could turn into procurement programs. The Army's stated intention is to be fully modernized by 2028. News reports indicate that the Army may cut funding in FY 2020 for a variety of legacy systems such as the Bradley Fighting Vehicle and H-60 helicopters in order to reinvest the funds in R&D for the next generation of systems.⁴⁵

However, Army leadership identifies 2023 as the year when priority shifts to modernization. That's 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.⁴⁶

- *Air and missile defense.* More than half of R&D goes into this area, likely because the technologies are most ready for production. 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.
- *Long-range precision firepower.* A variety of programs explore ways to extend the range of current fires platforms, both cannon and missile. One new potential capability: an anti-ship missile for

⁴⁵ Roxana Tiron, "Army Mulls \$31.6 Billion Shift of Armor, Copters In War Plan," *Bloomberg*, Sept 24, 2018, <https://about.bgov.com/blog/army-mulls-31-6-billion-shift-armor-copters-war-plan/>.

⁴⁶ Sydney Freedberg, "Army Secretary Esper's 10 Year Plan Is a Big Bet on Budget," *Breaking Defense*, June 6, 2018, <https://breakingdefense.com/2018/06/sec-esper-10-year-plan-is-a-big-bet-on-budget/>.

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 has been the highest priority, but Army officials talk about a possible family of vehicles. (Beware the ghost of FCS!) The next armored vehicle to appear will likely come out of the “Mobile Protected Firepower” effort (i.e., a light tank). One supporting capability on the verge of being fielded: armor protection systems mounted on existing armored vehicles that would intercept antitank missiles.
- *Future vertical lift.* The Army is exploring a variety of technologies to replace existing helicopters, but none are yet ready for fielding.
- *Soldier lethality.* These cover enhancements such as improved night vision goggles and new individual weapons and are linked to the department-wide Close Combat Lethality Task Force. The goal is to fund specialized equipment for “the close combat 100,000,” 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.

4 | Navy

The Navy in FY 2019 generally reflects the priorities of the department as a whole. It sustains the level of readiness built in the FY 2017 and FY 2018 budgets. It modernizes by increasing production of existing ship, aircraft, and munition programs. It conducts research and development on prospective new systems but does not formally begin any new 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 expands force structure more than the other services but does not meet the significantly enlarged and highly visible target of 355 ships.

Force Structure in FY 2019

Table 3: Navy End Strength – Active, Reserve, and Civilians

	Active Navy				Navy Reserve	Civilian Full-Time Equivalents
	Ships	Carrier Strike Groups	Aircraft (PAA)*	End Strength	End Strength	
FY 2018 Enacted	282**	11	2,328	327,900	59,000	187,900
FY 2019 Proposed/Enacted	299	11	2,362	335,400	59,100	190,642
Change	+16	0	+34	+7,500	+100	+2,742

Data from Highlights of The Department of the Navy FY 2019 Budget (Washington, DC: Department of the Navy, 2018), http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/Highlights_book.pdf.

* PAA stand for Primary Authorized Aircraft; that is, aircraft in units.

** As of August 30, 2018.

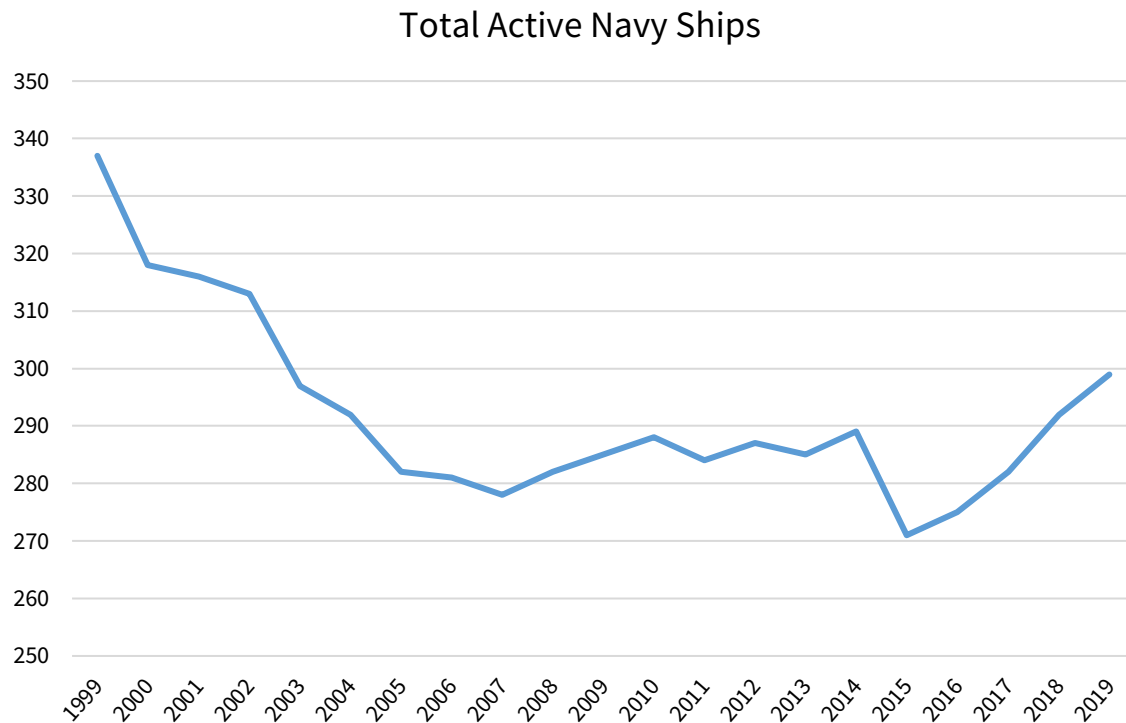
After years of shrinkage, the Navy is growing as new ships are delivered, particularly the numerous Littoral Combat Ships (LCSs) and DDG-51 destroyers. (Rightly or wrongly, the ship count is often used as a measure of Navy capacity.⁴⁷) The Navy projects that it will hit 299 ships by the end of FY 2019, up from its low point of 271 in 2015. As a reflection of this increased size, the Navy will increase its active duty end strength, reserve end strength (slightly), and civilian workforce.

Many of the additional active duty personnel will go to increasing the manning on existing ships. The Navy had reduced manning over the years, counting on technology and shore-based capabilities to offset smaller ship crews. Last year's ship collisions in the Pacific showed that more sailors were needed to cover all the many tasks aboard ship and to allow for proper training.⁴⁸

⁴⁷ ADM James Winnefeld, for one, argues that focus on ship count distorts decisionmaking, "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/rJeaDKEDiZiXkpKEXIAFIN/story.html>.

⁴⁸ John M. Richardson before the Senate Armed Services Committee, *Fiscal Year 2019 Navy Budget*, 115th Cong., 2nd sess. (19 April 2018), https://www.armed-services.senate.gov/imo/media/doc/Richardson_04-19-18.pdf.

Chart 6: Total Navy Active Ships 1999-2019



Ship count from Naval History and Heritage Command, "U.S. Navy Ship Force Counts: 1886 to Present," <https://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html#2000>.

The Stress of Current Operations

Despite its slowly increasing size, the Navy is feeling a lot of stress. The average number of ships deployed has remained at the current 100 for two decades even though the number of ships has declined over time and the length of deployments has lengthened.⁴⁹ The need to deploy to Europe, a theater that had been largely ignored since the end of the Cold War, adds to demands. To meet these new demands, the Navy recently reactivated the Second Fleet headquarters in Norfolk.

Theater commanders say they only receive about half of their requests for Navy ships.⁵⁰ The Navy in response says that it would need a fleet of 450 ships to fully meet the theater requests.⁵¹ 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,

⁴⁹ Department of the Navy, "FY 2019 Budget Press Briefing," 2018, http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/DON_Press_Brief.pdf.

⁵⁰ John M. Richardson before the House Committee on Appropriations, Subcommittee on Defense, *Hearing on the United States Navy and Marine Corps*, January 18, 2018.

⁵¹ Chief of Naval Operations ADM Jonathan Greenert, cited in, Kris Osborn, "CNO Tells Congress the US Needs 450-Ship Navy," *Military.com*, March 12, 2015, <http://www.military.com/daily-news/2014/03/12/cno-tells-congress-the-us-needs-450-ship-navy.htm>.

reinforce this perception.⁵² 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).”⁵³

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

As a result, the Navy feels the presence/warfighting tension more acutely than other services. This tension appears, for example, in the initial guidance from the Secretary of the Navy Richard Spencer: “The Department of the Navy will . . . deliver combat-ready Naval forces to win conflicts and wars while maintaining security and deterrence through sustained forward presence.”⁵⁴ In other words, the Navy will do both, apparently with equal emphasis.

The tension also appears in recent and rather pointed Navy statements that it wants to reduce the number of ships tied down by day-to-day missile-defense missions in Europe and the Pacific.⁵⁵

In part, this gap results 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 v. 565), but it has 78 percent of the tonnage. Today’s DDG-51 destroyer (Flight IIA) weighs 9,800 tons, twice the tonnage of a 1980s Charles F. Adams-class destroyer, and four times the size 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 tonnage produces greater capability, but ships can only be in one place at one time.

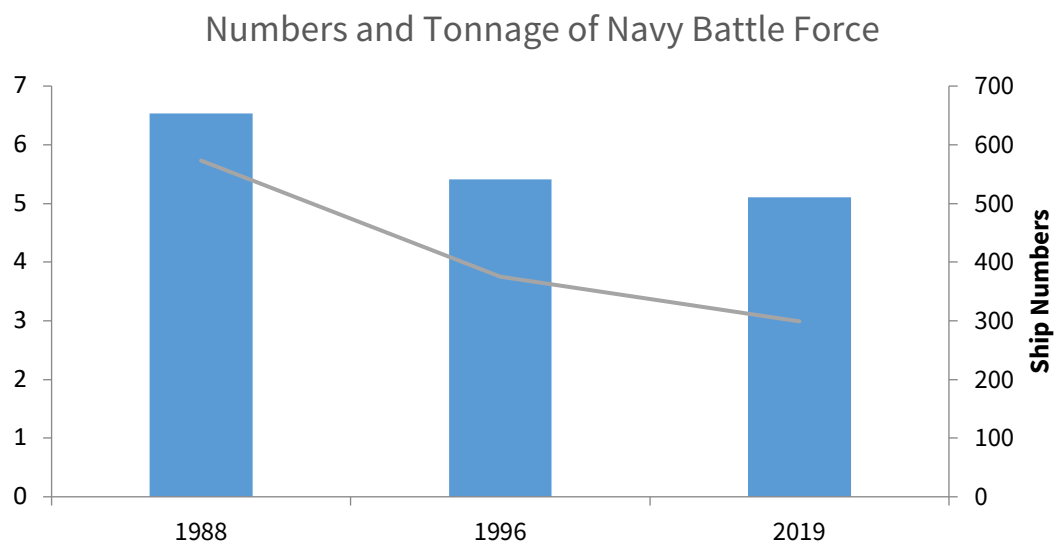
⁵² Sam LaGrone, “U.S. Aircraft Carrier Deployments at 25 Year Low as Navy Struggles to Reset Force,” U.S. Naval Institute, Sept 26, 2018, <https://news.usni.org/2018/09/26/aircraft-carrier-deployments-25-year-low>; Lucas Tomlinson, “No US Carrier at Sea Leaves Gap In Middle East,” Fox News, December 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.

⁵³ 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/>.

⁵⁴ Richard V. Spencer, “Department of the Navy Mission, Vision, and Priorities,” Navy Live, August 29, 2017, <http://navylive.dodlive.mil/2017/08/29/secnavs-letter-to-the-force-department-of-the-navys-mission-vision-and-priorities>.

⁵⁵ David Larter, “Navy Is Fed up with Ballistic Missile Defense patrols,” Defense News, June 16, 2018, <https://www.defensenews.com/naval/2018/06/16/the-us-navy-is-fed-up-with-ballistic-missile-defense-patrols/>.

Chart 7: Total Tonnage of Navy Battle Force—1988, 1996, 2019



Fleet Tonnage

Ship count from Naval History and Heritage Command; tonnage from Janes Fighting Ships 1988, 1996, 2019 and U.S. Navy “Ship Data,” https://www.navy.mil/navydata/our_ships.asp

The Future Size and Shape of the Navy

Last year was the year of naval force structure assessments. With the prospect of a defense budget increase and a new administration, several think tanks developed proposals for future Navy structure. These ranged from 321 to 414 ships and several contained nontraditional systems such as unmanned ships, small carriers, and expendable missile craft.⁵⁶

With the Navy's publication of a 355-ship goal and the president's explicit support for that goal, that debate has ceased, at least in the near term. To further cap debate, the Congress stated that, “It shall be the policy of the United States to have available, as soon as practicable, not fewer than 355 battle force ships.”⁵⁷

Compared with the 2014 goal of 308 ships, the Navy's 355-ship goal added numbers in every category 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 of the force structure proposals had proposed. The intention is to get ships built quickly, without the delay and risk of development programs.⁵⁸

⁵⁶ For details on the different proposals, see Mark Cancian, *U.S. Military Forces in FY2018* (Washington, DC: CSIS, 2017), 48-50.

⁵⁷ *FY 2018 National Defense Authorization Act*, Section 1025.

⁵⁸ Sydney J. Freeberg Jr., “Build More Ships, But Not New Designs: CNO Richardson On McCain Plan,” *Breaking Defense*, January 17, 2017, <http://breakingdefense.com/2017/01/build-more-ships-but-not-new-designs-cno-richardson-to-mccain>.

Table 4: 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

The Navy, like the rest of the department, has been criticized for not moving fast enough to adapt to the new strategy. The future fleet does not have any unmanned vessels or expendable missile craft, nor does it build a strong defense against mines, which, since the end of World War II, have thwarted more Navy operations than any other adversary capability.

In the Navy’s defense, the shipbuilding program does greatly increase capabilities against ballistic missiles. Further, the Navy’s \$1.5 billion unfunded requirements list for FY 2019 focuses on a wide variety of capability upgrades for existing ships.⁵⁹ Finally, the Navy has a wide variety of unmanned prototypes for mine sweeping, surface vessels, and underwater systems. These are reaching maturity. A new force structure assessment, planned for FY 2019, may include some of these capabilities.

Unfortunately, this 355-ship goal is unachievable with the resources in the administration’s projections. As the Congressional Budget Office (CBO) concluded last year: “[M]eeting the 355-ship objective would cost the Navy an average of about \$26.6 billion (in 2017 dollars) annually for ship construction, which is more than 60 percent above the average amount the Congress has appropriated for that purpose over the past 30 years and 40 percent more than the amount appropriated for 2016.” Operating costs would increase by \$38 billion or 67 percent. The Congressional Research Service came to similar conclusions.⁶⁰

Faced with criticism that its plan did not meet the president’s goal, the Navy proposed to close this gap between its goal and its resources by extending the life of existing ships by 5 to 19 years.⁶¹ 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 a 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 in order to free funds for new construction and because of concerns that the combat systems were becoming obsolete.

⁵⁹ Sam LaGrone and Megan Eckstein, “Navy, Marine Corps request modest \$1.7 billion in unfunded requirements to Congress,” U.S. Naval Institute, February 27, 2018, <https://news.usni.org/2018/02/27/navy-marine-corps-request-modest-1-7b-in-unfunded-priorities-list-to-congress>. The total unfunded requirements list for the Department of the Navy is \$1.7 billion with \$1.5 billion going to the Navy and \$200 million going to the Marine Corps.

⁶⁰ Congressional Budget Office, *Comparing a 355-Ship Fleet With Smaller Naval Forces* (Washington, DC, 2018); Congressional Budget Office, *Costs of Building a 355-Ship Navy* (Washington DC: 2017), <https://www.cbo.gov/publication/52632>; Ronald O’Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues For Congress* (Washington, DC: Congressional Research Service, June 2017), <https://fas.org/sgp/crs/weapons/RL32665.pdf>.

⁶¹ Sydney Freedberg, “Keep Ships Longer To Boost Fleet Size: 355 Ships By 2035,” *Breaking Defense*, June 20, 2018, <https://breakingdefense.com/2018/06/keep-ships-longer-to-boost-fleet-size-355-ships-by-2035/>.

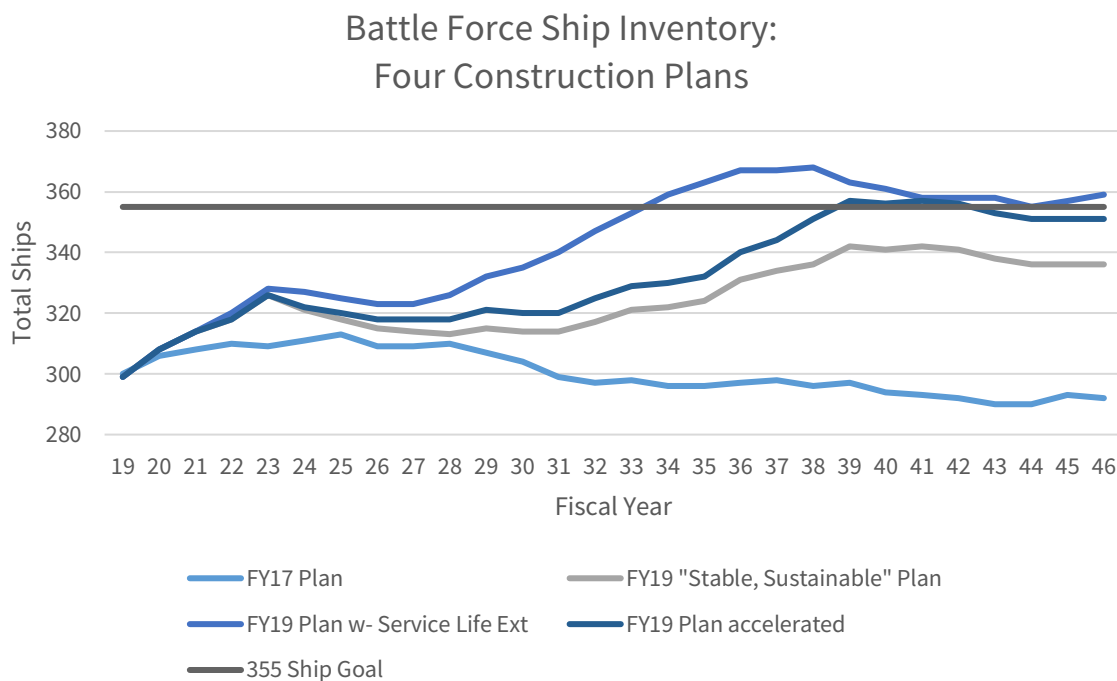
The Navy considered, but ultimately rejected, options to reactivate retired ships, especially the recently-retired FFG-7 Perry class. The Navy judged that the combat systems needed too much upgrading to make the reactivation worthwhile.

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.⁶²

The chart below shows the different projections for ship inventories from Navy 30-year shipbuilding plans. The projections are very similar to FY 2023, the end of the FYDP, reaching the 326 ships as the large number of ships currently under construction, particularly LCSs, are delivered. The Navy plans to increase its active duty personnel to 344,800 to provide crews and support.

After FY 2023, the paths diverge. The basic (“sustainable”) plan does not achieve 355 ships until the 2050s, outside the 30-year window. The accelerated plan, which has even higher costs, achieves 355 ships in 2040. Extending ship service lives greatly accelerates achievement of the goal. All of these projections are above the last projections in the Obama administration (FY 2017). For now, this gap between goal and affordability remains unresolved, but the Navy appears comfortable with the path it is on.

Chart 8: Navy Battle Force Ship Inventories



⁶² For example, Kathleen Hicks, et al., *Undersea Warfare in Northern Europe* (Washington, DC: CSIS, July 2016), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160721_Hicks_UnderseaWarfare_Web.pdf; Andrew Shearer, *Australia-Japan-U.S. Maritime Cooperation: Creating Federated Capabilities for the Asia Pacific*, (Washington, DC: CSIS, April 2016), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/160401_Shearer_AustJapanUSMaritime_Web.pdf; Mark Lawrence, *Tailoring the Global Network for Real Burden Sharing at Sea* (Washington, DC: CSIS, August 2015), https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/150824_Lawrence_BurdenSharingSea_Web.pdf.

Navy Shipbuilding in FY 2019 and the FYDP

The president's budget proposed to construct 10 ships in FY 2019: three DDG-51 destroyers, two SSN-775 submarines, one LCS, and four auxiliaries (two fleet tankers, one salvage and rescue ship, and one Expeditionary Support Base Ship). This is one more ship than the proposal in FY 2018 but three fewer than what the Congress finally enacted. It is a relatively small number considering the discussion of fleet expansion (about 12 ships a year would be needed to build towards a fleet of 355) but reflects the constraints of even an enlarged budget. Shipbuilding projections in the FYDP show 10 new ships per year, rising to 13 in FY 2023.

Congress, however, added three ships (two LCSs and one EPF Fast Transport) because of these concerns about slow growth towards the goal.

Most Navy shipbuilding programs are in serial production and moving ahead without major issue.

- *Aircraft Carriers.* The long-running debate 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?⁶³ Unfortunately, this question cannot be answered short of a major war. Thus, although a RAND study indicated that other carrier options might be attractive, the Navy has opted to continue production of large nuclear carriers.⁶⁴ Indeed, Huntington Ingalls Industries, the shipbuilder that builds nuclear carriers, proposed saving money by authorizing construction of two carriers. Although the Congress allowed the Navy to do this, the cost has been too great, and the Navy is pursuing the single carrier option.⁶⁵
- *LCS/Frigate.* Navy plans are on track to go beyond the much criticized LCS program and quickly institute a follow-on frigate program (FF(X)). The bidders were told to bring mature designs already in production. In FY 2019, the Navy proposed buying only one LCS during this transition. The first FF(X) is planned for FY 2020. However, the Congress, impelled by both a desire to increase ship numbers and to avoid a production gap at the LCS shipbuilders, will likely add another ship.
- *Ohio Replacement Program/Columbia-Class Submarine.* The Ohio Replacement Program remains on track in development, with first ship authorization planned for FY 2021. The budget cost is substantial—\$3.7 billion in FY 2019 (RDT&E plus procurement), a \$1.8 billion jump over the FY 2018 request—so affordability of the program, long identified as a challenge for Navy shipbuilding, is becoming a near-term, rather than a long-term, issue. Further, the sheer size of the program (\$127 billion in total) and its tight schedule impelled the CNO to direct “increased oversight.”⁶⁶
- *Attack submarines (SSN-775 Virginia-class).* In the near term, the attack submarine fleet is fine. Numbers stay above the 48-boat requirement, 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 41 boats as Los Angeles-class boats built during the 1980s retire.⁶⁷ This prospective submarine

⁶³ Examples this year: Dave Majumdar, “Would Navy Aircraft Carriers Be Useless in a War Against Russia?” *The National Interest*, June 20, 2018; U.S. Naval Institute, “Naval Aviation Focus: The Carrier Debate Continues,” *Proceedings* 144, no. 9 (September 2018), <https://www.usni.org/magazines/proceedings/2018-09>.

⁶⁴ Bradley Martin and Michael McMahon, *Future Aircraft Carrier Options* (Santa Monica, CA: RAND, 2017), https://www.rand.org/pubs/research_reports/RR2006.html.

⁶⁵ For a full discussion of the carrier debate, see Cancian, *FY 2018 Military Forces*, 62.

⁶⁶ Justin Kurtz, “CNO: Navy Needs to Provide ‘Increased Oversight’ of Columbia Class Subprogram,” *Inside Defense*, September 5, 2018; total program cost from Department of Defense, *Selected Acquisition Reports for December 31, 2017*, <https://media.defense.gov/2018/Apr/03/2001898705/-1/-1/1/DECEMBER-2017-SAR-PRESS-RELEASE.PDF>.

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

shortfall will happen at a time when Russian and Chinese submarines are becoming more capable and active.⁶⁸ 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 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, to address the undersea strike shortfall, begins in FY 2019 but also increases the submarine's cost by about \$550 million.⁶⁹

- *DDG-51 Destroyers*. The program is on track, with another three DDG-51s proposed for FY 2019. 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.
- *Cruiser modernization*. The Navy has surrendered to the Congress and accepted the "2/4/6" plan, which mandates that two ships go into modernization at a time, the work last no more than four years, and no more than six ships be in maintenance at any given time.⁷⁰ The Navy had wanted to retire some or all of these 22 older cruisers. Concerned about a shrinking ship inventory, the Congress balked, mandating that all the ships be modernized.
- *Amphibs*. After funding the lead ship of the LPD-17 Flight II-class replacement for the LSDs in FY 2018, the Navy skips a year, funding no amphibs in FY 2019.
- *DDG-1000 Zumwalt Destroyers*. These stealthy, high-technology destroyers (at 14,500 tons, larger than Ticonderoga-class cruisers) are an exception to the "smooth sailing" shipbuilding story. The lead ship was commissioned in 2016, but delivery was again delayed, to early FY 2019, and cost growth continues. The other two ships were similarly delayed. Further, the lead ship had a series of serious engineering casualties on its initial voyages.⁷¹

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. The Congress showed its support by increasing aircraft procurement in FY 2019 from 120 to 137.

⁶⁸ For example, Kathleen H. Hicks, Andrew Metrick, and Lisa Sawyer Samp, *Undersea Warfare in Northern Europe* (Washington, DC: CSIS, July 2016), <https://www.csis.org/analysis/undersea-warfare-northern-europe>.

⁶⁹ Ronald O'Rourke, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, CRS Report RL32418 (Washington, DC: Congressional Research Service, July 2018), <https://fas.org/sgp/crs/weapons/RL32418.pdf>.

⁷⁰ Sean Stackley, Acting Secretary of the Navy before the Senate Armed Services Committee, *Posture of the Department of the Navy*, 115th Cong., 1st sess. (June 15, 2017).

⁷¹ Ronald O'Rourke, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, CRS Report RL32109 (Washington, DC: Congressional Research Service, July 2018), <https://fas.org/sgp/crs/weapons/RL32109.pdf>.

FY 2019 PROCUREMENT

Table 5: Department of the Navy aircraft procurement in FY 2019

Fixed Wing	FY 2018	FY 2019	FY 2019 (Enacted)
F-35C (CV)	4	9	15
F-35B (STOVL)	20	20	22
FA-18E/F	14	24	24
E-2D AHE	5	4	6
P-8A (MMA)	7	10	10
C-40A (USMC)	-	2	0
KC-130J	2	2	2
Rotary Wing			
CH-53K (HLR)	4	8	8
MV-22B / CMV-22B	6	7	14
AH-1Z	22	25	25
TH-57 Replacement (Navy)	-	-	-
VH-92A	-	6	6
UAV			
MQ-4 Triton	3	3	3
MQ-25 Stingray (NAVY)	-	-	-
RQ-21 (USMC)	4	-	-
Total	91	120	135

Navy aviation procurement 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.

The CH-53K heavy lift helicopter replacement for the Marine Corps ramps up production. The program has had some cost growth and delay but has benefited from being an upgrade to the existing CH-53E program.

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. 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 F-35C fifth-generation aircraft.

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. 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 v. 25 years), and its inventory shortfalls are less acute.⁷²

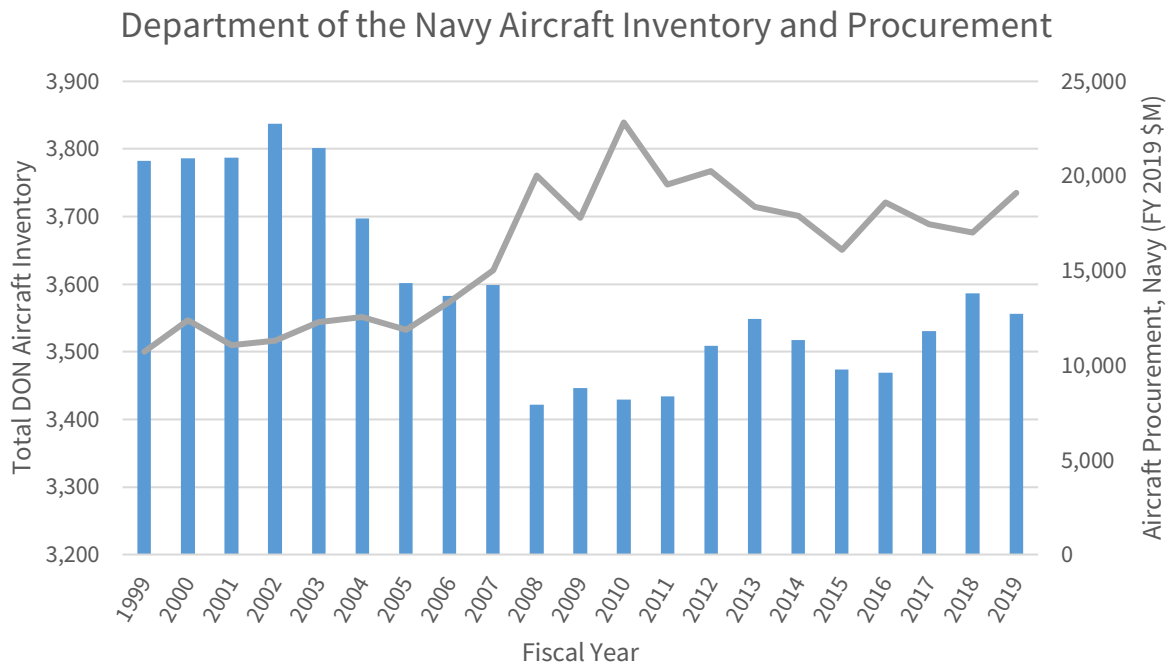
⁷² Navy figures represent an average for F-18A/B/C/D/E/F from “F/A-18E/F Super Hornet,” Aeroweb (A Forecast International Subsidiary), June 30, 2015, <http://www.bga-aeroweb.com/Defense/F-18-Super-Hornet.html>; Air Force figures from an average of the

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 will be less demanding and not require the stealth and high survivability of fifth-generation aircraft. The effect of buying a mix also is to increase 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 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 procured in FY 2019 rises to nine, after having dropped to four in FY 2018, and plans call for continued increases in the future as the “C” model reaches maturity.

THE HIGH COST OF STABLE INVENTORIES

Table 6: Department of the Navy Aircraft Inventory

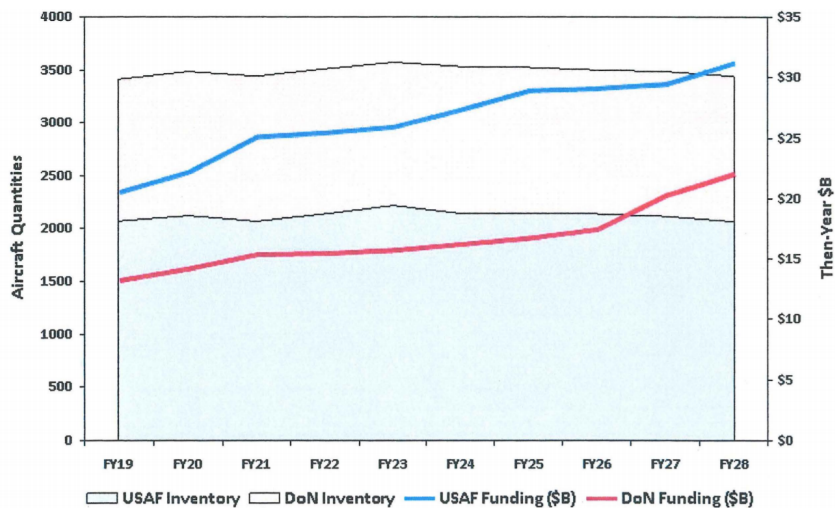


Source: Department of the Navy FY 2017 Budget Estimates Data Book, p.64; Updated with data from Highlights of the Department of the Navy FY 2019 Budget, http://www.secnav.navy.mil/fmc/fmb/Documents/19pres/Highlights_book.pdf

A-10, F-15C, F-15E, F-16C, and F-22 fleets from the Air Force Association, “The Air Force in Facts & Figures,” *Air Force Magazine*, June 2018, http://www.airforcemag.com/MagazineArchive/Magazine%20Documents/2018/June%202018/Almanac_2018_Facts%20and%20Figures.pdf.

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

Chart 9: Navy and Air Force Aircraft Inventory and Funding, FY19-FY28



Source: DOD, Annual Aviation Inventory and Funding Plan Fiscal Years (FY) 2019-2048, March 2018, available from https://insidedefense.com/sites/insidedefense.com/files/documents/2018/may/05172018_air.pdf

The chart above, from the DOD Aviation Plan, shows that the future holds the same. Navy (and Air Force) funding for the fighter/attack portion of their fleets must increase by about 50 percent in the next decade (30 percent in constant dollars) to maintain a constant inventory. The reason is that each generation of aircraft cost 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).⁷³

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

Overall, Navy UAV procurement (3) in FY 2019 is far behind the Air Force's (29), and its UAV inventory (63) is even farther behind the Air Force's (372, MQ-1/9 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 2019 with three systems and significant (\$234 million) funding for the development of upgrades.

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

⁷³ E-2D costs from Department of Defense, *Selected Acquisition Reports for December 31, 2017*; 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, 2002), https://www.rand.org/content/dam/rand/pubs/monograph_reports/2009/MR1517.pdf; escalation factors from *National Defense Budget Estimates for FY 2019*.

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 2019 the Navy nearly triples its funding commitment to \$684 million. It awarded the development contract to Boeing so the program can move forward, with initial procurement 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 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.⁷⁴

The controversy has died down as the program moves forward but will never go away.

⁷⁴ “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 come from Bryan McGrath of the Hudson Institute and Jerry Hendrix, then at the Center for New American Security.

5 | Marine Corps

Unique among the services, the Marine Corps comes out of the wars larger than it went in (186,100 today v. 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. Nevertheless, unlike the other three services, it does not grow at all through FY 2023 and does not attain its previous goal of 194,000. That creates a tension between creating additional new capabilities and maintaining traditional capabilities.

Force Structure in FY 2019

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

	Marine Corps Active End Strength	Marine Corps Reserve End Strength	Civilian Full-Time Equivalents (000s)
FY18 Enacted	186,000	38,500	21,100
FY19 Proposed/Enacted	186,100	38,500	21,600
Change	+100	0	+500

The FY 2019 Marine Corps budget increases active duty end strength by only 100. The Marine Corps had talked about expanding the active force to about 194,000, but the FY 2019 budget projects an increase to only 186,400 by FY 2023.⁷⁵ This makes the Marine Corps unusual in that the other three services all plan to add at least some end strength. The small increase reflects the broader priorities of the NDS: fix readiness, then focus on modernization to prepare for a great power conflict; force structure comes last. Nevertheless, alone among the services, the Marine Corps is coming out of the wars at a higher level (186,000) than it went in (172,600).

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 division-wing structure prevent it from getting much smaller.

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 positions.

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

⁷⁵ On the higher target: Lee Hudson, "Marines Need 194,000 Troop Force to Meet Requirements," *Inside Defense*, February 8, 2017.

Orleans but with units spread over the entire country.⁷⁶ There is, however, a lot of change at lower unit levels, as described below.

The commandant noted in his posture statement how busy the Marines were: 62 joint, bilateral, and multinational exercises. In his posture statement, the Commandant calls this level of operational tempo “unsustainable.”⁷⁷ The McKenzie Group of 2013 (named for its leader, LtGen Kenneth F. McKenzie) argued that forward presence and crisis response were the Corps’ primary force drivers.⁷⁸ Nevertheless, the Marine Corps did not ask for additional end strength in its unfunded requirements list. The only items on the Marine Corps unfunded requirements list were \$236 million in military construction projects, down from \$3.2 billion in FY 2018. This reduction in unfunded requirements may reflect the large budget increase received and a recognition that requests for further increases were not politically viable.⁷⁹

New Force Structure

To cope with the changed strategic environment and evolving methods of conducting military operations, the Marine Corps conducted a force structure assessment in 2016-2017, called “Marine Corps Force 2025.” A major theme is that, after 15 years of operations ashore in Iraq and Afghanistan, the Marine Corps needs to refocus on its naval roots and full-spectrum operations. The commandant talks about a “5th generation Marine Corps” that incorporates new technologies and new organizations. He also talks about the need to “fight to get to the flight” and thus supports a broad range of naval capabilities.⁸⁰ These strategic concepts appear in Marine Corps/Navy doctrinal publications *Marine Operating Concept*, *Littoral Operations in a Contested Environment*, and *Expeditionary Advance Base Operations*.⁸¹

These concepts are consistent with the NDS. However, high-end capabilities have not been traditional Marine Corps strengths. Indeed, difficulty in recruiting enough cyber Marines has caused the Corps to consider reducing standards for that field by waiving boot camp and military skills training—a highly controversial proposal in a service that prides itself on a warrior ethos.⁸²

⁷⁶ The reserve division-wing team has all the major combat elements of a MED—a division, aircraft wing, and logistics group—but lacks the headquarters to make it a MEF. Since the Marine reserves are employed at lower unit levels, such a headquarters is not needed.

⁷⁷ General Robert Neller before the Senate Armed Services Committee, *Posture of the United States Marine Corps*, 115th Cong., sess. 2 (April 19, 2018), 15.

⁷⁸ LtCol 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>.

⁷⁹ General Robert Neller before the Senate Armed Services Committee, *Posture of the United States Marine Corps*.

⁷⁹ Sam LeGrone and Megan Eckstein, “Navy, Marines request modest \$1.7 billion in unfunded priorities list to Congress,” U.S. Naval Institute News, February 27, 2018, <https://news.usni.org/2018/02/27/navy-marine-corps-request-modest-1-7b-in-unfunded-priorities-list-to-congress>.

⁸⁰ Sydney Freedberg, “Marines Need Submarines: Commandant Neller on Major War,” *Breaking Defense*, February 9, 2018, <https://breakingdefense.com/2018/02/marines-need-submarines-commandant-neller-on-major-war/>.

⁸¹ U.S. Marine Corps, *Marine Corps Operating Concept* (Washington, DC: September, 2016),

[https://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/young/MCCDC-](https://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/young/MCCDC-YH/document/final/Marine%20Corps%20Operating%20Concept%20Sept%202016.pdf)

[YH/document/final/Marine%20Corps%20Operating%20Concept%20Sept%202016.pdf](https://www.mccdc.marines.mil/Portals/172/Docs/MCCDC/young/MCCDC-YH/document/final/Marine%20Corps%20Operating%20Concept%20Sept%202016.pdf); U.S. Marine Corps and U.S. Navy, *Literal Operations in a Contested Environment* (Washington, DC: 2017),

<https://marinecorpconceptsandprograms.com/sites/default/files/concepts/pdf-uploads/LOCE%20full%20size%20edition.pdf>; U.S.

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

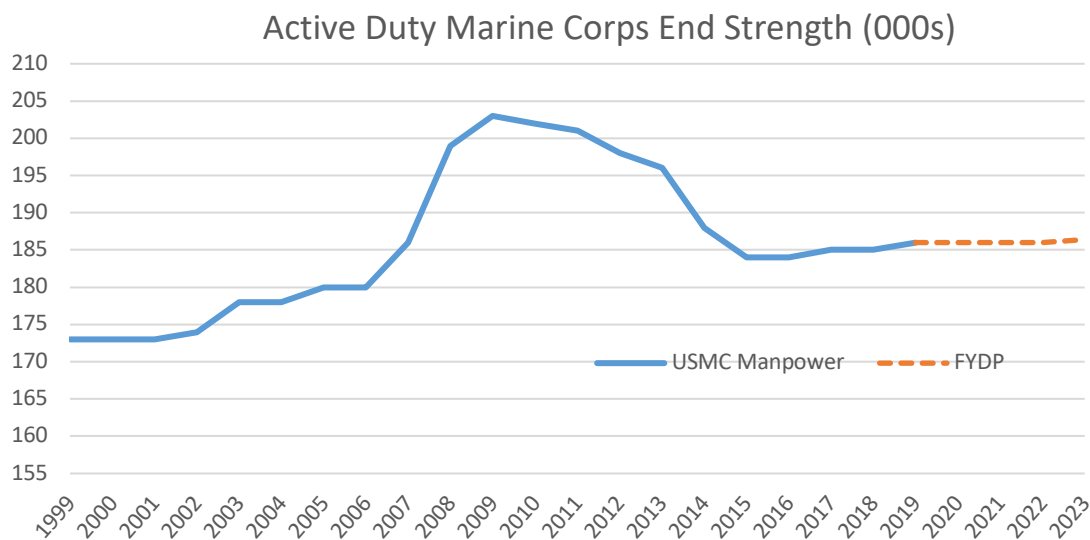
⁸² Jeff Schogol, “Every Marine a Rifleman No More?” *Marine Corps Times*, May 7, 2017,

<https://www.marinecorpstimes.com/news/your-marine-corps/2017/05/07/every-marine-a-rifleman-no-more>; Mark Cancian, “Drop Standards For Cyber Warriors?” *Proceedings* 143, no. 7, (July 2017), <https://www.usni.org/magazines/proceedings/2017-07/drop-marine-standards-cyber-warriors>.

There is also a tension in structure and training between what is needed for routine forward deployment of Marine air ground task forces and the needs of a high-end major conflict. As one Marine general noted, this may require two different kinds of units.⁸³ However, maintaining two kinds of units requires a lot of force structure, having some units switch back and forth, which is difficult for equipment and personnel. So this will remain a tension.

A related tension will be how to allocate scarce personnel between building new capabilities for future high-end conflicts and maintaining traditional ground and aviation capabilities. The higher manpower goal of 194,000, specified in *Marine Corps Force 2025*,⁸⁴ would have allowed the Corps to do both, but the small manpower growth now planned may force tough choices. General Neller and the NDS are focused on high-end modern warfare and, if pressed, would give that priority. However, the press of current crises and ongoing operations, such as conflicts in Afghanistan and Iraq, puts demands on traditional capabilities and capacity, and these may be the more pressing in the near term.

Chart 10: Marine Corps Active Duty End Strength 1999-2019



A final cloud on the horizon is the Senate’s concern about roles and missions. In its FY 2019 NDAA bill, the Senate had directed a major study, with very pointed language about the need to transition to unmanned platforms and concerns about the future viability of amphibious assaults. These concerns seemed directly aimed at the Marine Corps. The final bill still contains a roles and missions study but with much less specific language. Nevertheless, the Senate remains concerned that DOD in general, and the Marine Corps in particular, are not changing fast enough to align with the NDS.⁸⁵

⁸³ LtGen Brian Beaudreault, Deputy Commandant for Plans, Policies, and Operations, in Megan Eckstein, “Marine Corps Wants Forces in US Ready to Surge for Major War,” USNI News, June 4, 2018, <https://news.usni.org/2018/06/04/34100>.

⁸⁴ Lee Hudson, “Marines Need 194,000-troop Force to Meet Requirements,” Inside Defense, Feb 7, 2017, <https://insidedefense.com/daily-news/marines-need-194000-troop-force-meet-requirements>.

⁸⁵ Sydney Freedberg, “SASC Seeks Sweeping Role and Missions Report: Wither the Marines?” Breaking Defense, June 6, 2018, <https://breakingdefense.com/2018/06/sasc-seeks-sweeping-roles-missions-report-wither-the-marines/>.

Ground Forces

Table 8: Marine Corps Ground Force Structure

	Marine Corps Active Infantry Battalions	Marine Corps Reserve Infantry Battalions
FY18 Enacted	24	8
FY19 Proposed	24	8
Change	0	0

At the macro level, Marine Corps force structure does not show any changes. However, several important changes occur at lower levels of detail, driven by *Marine Corps 2025* concepts to prepare for major wars (though there is not yet any definitive statement about what the future force will look like). For the ground forces, these changes are as follows:

- *Cyber and information warfare.* Last year the Corps established a three-star billet for information operations, created 13 cyber mission teams, and restructured the MEF Headquarters Group into a MEF Information Group, which has expanded capabilities for electronic warfare, intelligence, and data fusion.⁸⁶
- *Artillery.* Adds another HIMARS battalion for long-range fires.
- *Infantry squad.* The infantry squad, the basic building block of the Marine Corps, gets smaller by one Marine (from 13 to 12) and replaces two squad members with 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' largest (total program cost) ground modernization programs are the JLTV, a joint vehicle program with the Army, and the Armored Combat Vehicle (ACV). JLTV has been developed successfully and is in its third and last year of low-rate initial production. The Corps is increasing its buy to 1,642 in FY 2019. The ACV is the Corps' third attempt to replace the 1970s-era Amphibious Assault Vehicles. The last major attempt, the Expeditionary Fighting Vehicle, was canceled in 2011 after the Corps spent \$3 billion. In this attempt, the Corps is taking an evolutionary approach, phasing its requirements, and not asking for technologically challenging high-water speed, at least not initially. In FY 2019, the Corps will buy 30 vehicles as part of low-rate initial production.

The Marine Corps has a lot of concepts for future technology, such as anti-aircraft 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 (3d Battalion, 5th Marines) to test new equipment and concepts.

⁸⁶Lee Hudson, "Neller Updates First Fragmentary Order, Creates New Three-Star Billet," Inside Defense, February 7, 2017, <https://insidedefense.com/insider/neller-updates-first-fragmentary-order-creates-new-three-star-billet>.

Aviation Forces and Challenges

Table 9: Marine Corps Aviation Force Structure

	Total Force Aviation
	Fixed Wing TacAir/ Rotary Wing Squadrons
FY18 Enacted	21/39
FY19 Proposed	21/39
Change	0/0

Note: Includes Fleet Replacement Squadrons.

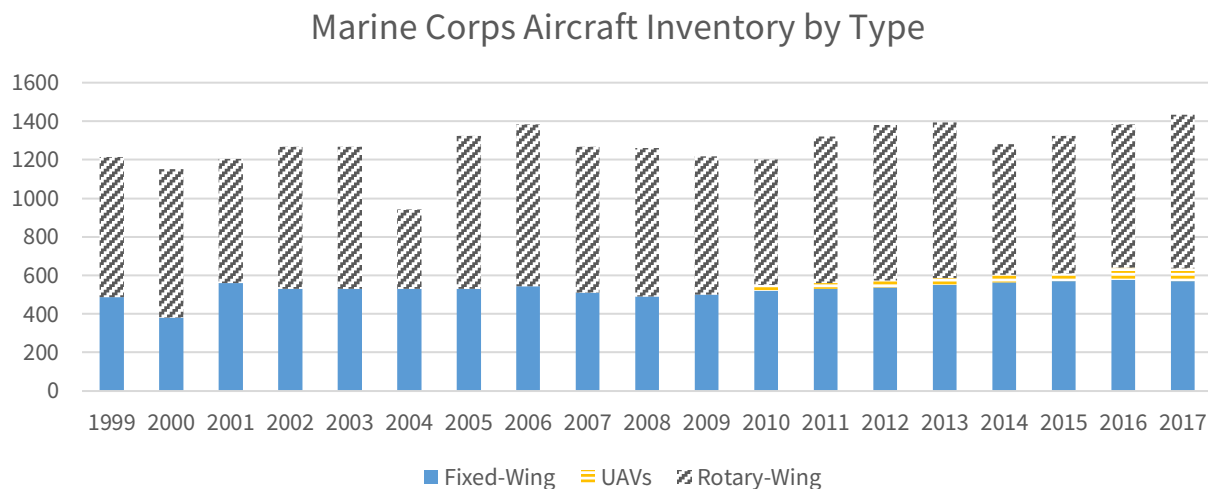
Marine aviation continues to upgrade platforms and incorporate new systems.⁸⁷ The KC-130J, AH-1Z, and, finally, the F-35B are all in serial production. In late September, the Marine Corps F-35 fleet had two firsts, one good, one bad: first use in combat (in Afghanistan against Taliban targets) and first crash (on a training mission in Beaufort, NC).

Funding for the MV-22 target acquisition 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, having begun procurement last year. The last EA-6B electronic countermeasures aircraft will retire in FY 2019, replaced by the organic capabilities in the F-35. Marine aviation will have a lot of new aircraft in its inventory, but there will be half a dozen squadrons in transition at any given time.

Readiness, which has plagued Marine aviation for the last several years, has turned around although it has not yet reached desired goals. The commandant noted in his posture statement that Marine aviation will achieve “acceptable” readiness in FY 2020 and full readiness in FY 2022. Nevertheless, aviation readiness will likely be a challenge for the foreseeable future as funding for legacy aircraft is cut back while newly fielded aircraft, particularly the F-35, will take time to achieve full readiness and, in any case, will be very expensive to operate, although they bring significant additional capabilities.

⁸⁷ For details on all aspects of Marine aviation, see *2018 Marine Aviation Plan*, U.S. Marine Corps, 2018 <http://www.aviation.marines.mil/Portals/11/2017%20MARINE%20AVIATION%20PLAN.pdf>.

Chart 11: Marine Corps Aircraft Inventory



Source: Data from successive editions of the International Institute for Strategic Studies' Military Balance, 1999-2017, <https://www.iiss.org/publications/the-military-balance>.

Aircraft inventories remain relatively stable, although the high cost of the F-35 will present affordability challenges. The Senate made its concerns apparent when it added \$100 million for the Marine Corps to participate in the Air Force's program to develop a light attack aircraft. This was the opposite direction from where the Marine Corps intended to go, a less expensive aircraft designed for low-intensity conflicts rather than highly capable and expensive aircraft for major power conflicts. Although the provision did not make it into the final authorization bill, the issue is still out there.⁸⁸

The Marine Corps, having led the way on UAVs in the 1980s, now lags in fielding UAVs. Fielding of the RQ-21 Blackjack UAV will be completed in FY 2019 to four operational squadrons, having experienced difficulties in development and a reduction in planned quantities.⁸⁹ 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 smaller UAVs (RQ-11,12,20). Larger (group 4 and 5) UAVs for division/MEF level operations are still conceptual. To fill the gap in Afghanistan, the Marine Corps is contracting with General Atomics for a single orbit of Reaper (MQ-1) coverage.⁹⁰ 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.⁹¹

⁸⁸ Shawn Snow, "Is a Light Attack Aircraft Coming to the Corps?" *Marine Corps Times*, June 4, 2018, <https://www.marinecorpstimes.com/news/your-marine-corps/2018/06/04/is-a-light-attack-aircraft-coming-to-the-corps/>.
⁸⁹ The Office of the Director, Operational Test and Evaluation, *RQ-21A Blackjack Unmanned Aircraft System*, 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>.
⁹⁰ Joseph Trevithick, "It's Official, Contractor-Owned MQ-9 Reaper Drones Will Watch Over Marines In Afghanistan," *The War Zone*, June 20, 2018, <http://www.thedrive.com/the-war-zone/21663/its-official-contractor-owned-mq-9-reaper-drones-will-watch-over-marines-in-afghanistan>.
⁹¹ Olivia Garand, "Marine Corps Aviation: Let the 'Guardian Angel' Be Your Moneyball and the VMUs Your Oakland As," *War On The Rocks*, July 31, 2017, <https://warontherocks.com/2017/07/marine-corps-aviation-let-the-guardian-angel-be-your-moneyball-and-the-vmus-your-oakland-as>; plus several in recent issues of the *Marine Corps Gazette*, such as, Maj. Scott Cuomo, "'Guardian Angel' UAS:

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 mainland United States. 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 let this year.⁹² The current target is for 4,000 Marines to be on Guam by 2024, though that timeline has slipped repeatedly, and for the number of Marines on Okinawa to be halved, to 11,500, by 2027.⁹³

The re-stationing effort also involves building a new air facility—called the Futenma replacement facility—in a less inhabited area of Okinawa. This project is moving forward (slowly) despite opposition from local politicians like the recently elected governor, who complain that Okinawa bears too much of the burden of stationing U.S. forces.⁹⁴

In contrast to the slow and controversial moves on Okinawa and Guam, the Marine Corps' rotational deployments to Darwin, Australia, continue into their seventh year without controversy, with six-month rotations of about 1,200 Marines each. 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.

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

Although not new, these units represent a different capability for the Marine Corps. Traditionally, the smallest unit that the Marine Corps deployed was a Marine Expeditionary Unit (MEU) with about 2,200 Marines. 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, smaller than the MEU. That made them both more agile and easier to deploy, though at the cost of logistics and firepower. However, these light units do not fit well with notions about high-end conflict, so the future of this capability may be in doubt.

Amphibious Ships and Alternative Platforms

Consistent with its re-energized naval orientation, the Marine Corps has strongly stated its support for an amphibious fleet of 38 ships, up from the current 32. This fleet can carry two MEBs of Marines in a wartime situation (34 ships), with 10 percent additional to cover ships in long-term maintenance.⁹⁵ The

Transforming the MAGTF and Naval Services," *Marine Corps Gazette* 101, no. 9 (September, 2017), <https://www.mca-marines.org/gazette/guardian-angel-uas>.

⁹² 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>.

⁹³ "U.S. to start moving Okinawa-based marines to Guam in 2024," *The 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.

⁹⁴ Motoko Rich, "US Marines Son Wins Okinawa Election on Promise to Oppose Military Base," *New York Times*, September 30, 2018, <https://www.nytimes.com/2018/09/30/world/asia/okinawa-governor-election-us-base.html>.

⁹⁵ U.S. Marine Corps, *Maritime Expeditionary Warfare: Annual Report 2018*, August 2018, p. 11, <https://www.mccdc.marines.mil/Units/Seabasing/Annual-Report/>.

Navy's 355-ship target includes 38 amphibs, and the FY 2019 30-year shipbuilding plan does achieve this level in the future, but, as noted earlier, there is risk in the plan's affordability.

Fifty four ships would be needed to meet all near-term Combatant Commander demands, so the Marine Corps and Navy have been experimenting with using other kinds of ships, such as Maritime Prepositioning Force ships (TAK-Es), high-speed vessels (EFPs), and afloat forward staging bases (ESBs/ESDs), and the Commandant cited such experiments in his posture statement.⁹⁶ The Marine Corps emphasizes that the ships do not have the survivability needed for high-intensity conflict, but they do provide cargo storage, flight decks, and personnel berthing that can 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 don't overwhelm some of the smaller navies with which they might work. The Navy is making modifications to some ships to allow them to accommodate Marine Corps aircraft and troops more easily.

⁹⁶ Robert D. Holzer and Dr. Scott C. Truver, "The U.S. Navy In Review," *Proceedings* 143, no. 5 (May 2017), U.S. Naval Institute, <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).

6 | Air Force

The Air Force has had to modify its traditional focus on modernization for high-end conflicts in order to fix readiness shortfalls and maintain legacy forces to meet a continuing high level of operations. The result, when combined with delays and high cost in modernization programs like the F-35 and KC-46, is that the Air Force is being driven to a high-low mix. The recent Air Force proposal to expand structure by 25 percent reflects a compromise, both expanding forces and modernizing.

Force Structure in FY 2019

Table 10: Air Force End Strength – Active and Civilians

	Air Force Active		Civilian Full-Time Equivalents
	Combat Coded Squadrons	End Strength	
FY 2018 Enacted	40	325,100	171,900
FY 2019 Proposed/Enacted	42	329,100	171,900
Change	+2	+4,000	--

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

	Air Force Reserve		Air National Guard	
	Combat Coded Squadrons	End Strength	Combat Coded Squadrons	End Strength
FY 2018 Enacted	3	69,800	21	106,600
FY 2019 Proposed/Enacted	3	70,000	20	107,100
Change	0	+200	-1	+500

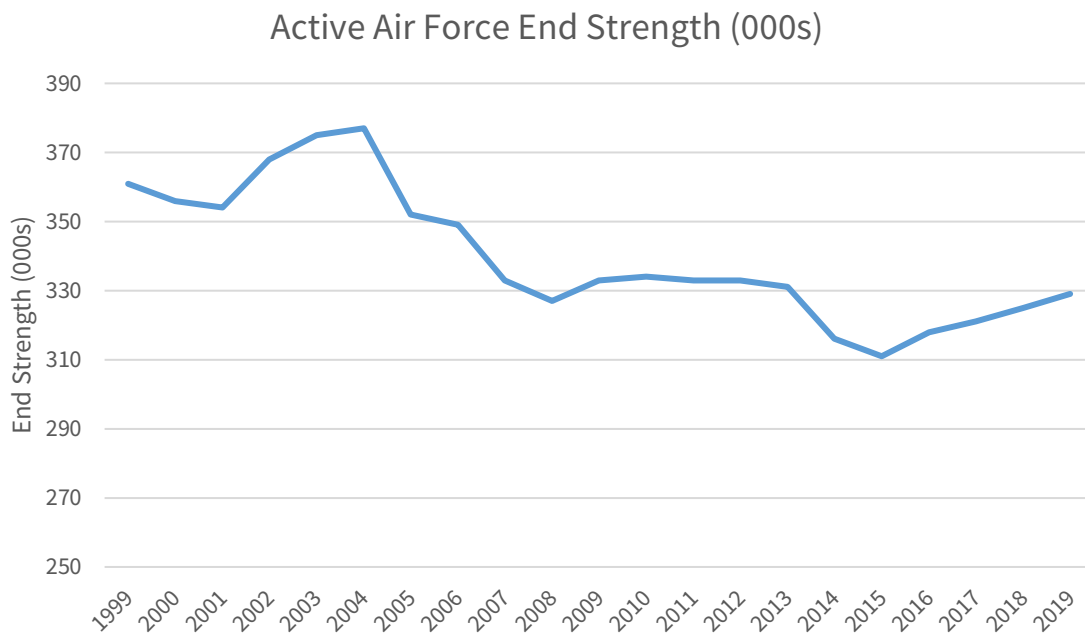
Note: Combat coded squadrons = fighter and bomber squadrons with a wartime mission; Air Force is moving towards a new metric—operational squadrons, which includes fighters, bombers, airlift, intelligence/surveillance/reconnaissance, command and control, special operations, space, cyber, missile, and personnel recovery squadrons. By that metric there are currently 301 squadrons.

The active force adds two squadrons of F-35s as these enter the force while the life of legacy aircraft is extended. The Air National Guard loses one squadron.

The budget increases manpower for all three components above the FY 2018 level, although, as with the Army, most of the increase goes to the active duty force. The reason for the higher manpower levels is primarily additional equipment maintainers to improve readiness, but also cyber and intelligence personnel. The Air Force also plans to fix a serious pilot shortfall, although thus far programs to do this have produced mixed results.

As the chart below shows, this manpower increase began in 2016. Manpower levels rose in the wake of the invasions of Afghanistan and Iraq. After 2004, however, the Air Force adopted a strategy of decreasing manpower to shift funds to modernization. Active duty manpower fell from a high of 377,000 to a low of 316,000. Critics argued that the manpower decreases had harmed readiness and gutted the pilot inventory, causing the problems that the Air Force is now trying to fix.⁹⁷

Chart 12: Air Force – Active End Strength 1999-2019



Nevertheless, the Air Force struggles with the long-term challenge of maintaining its force structure with increasingly capable, but increasingly expensive, aircraft. As the chart below indicates, total aircraft numbers declined until 2011 when inventories leveled out.⁹⁸ This stability was achieved by keeping more legacy aircraft in service. As a result, average aircraft age has increased (to 26 years). The good news is that fleet aging overall will stop in FY 2019 as new aircraft enter the force, but the average age remains high.

⁹⁷ 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/>.

⁹⁸ Numbers measured by Total Active Inventory (TAI), that is, aircraft assigned to operating forces as well as for training, test, maintenance and attrition reserve.

Chart 13: Air Force Aircraft Inventory

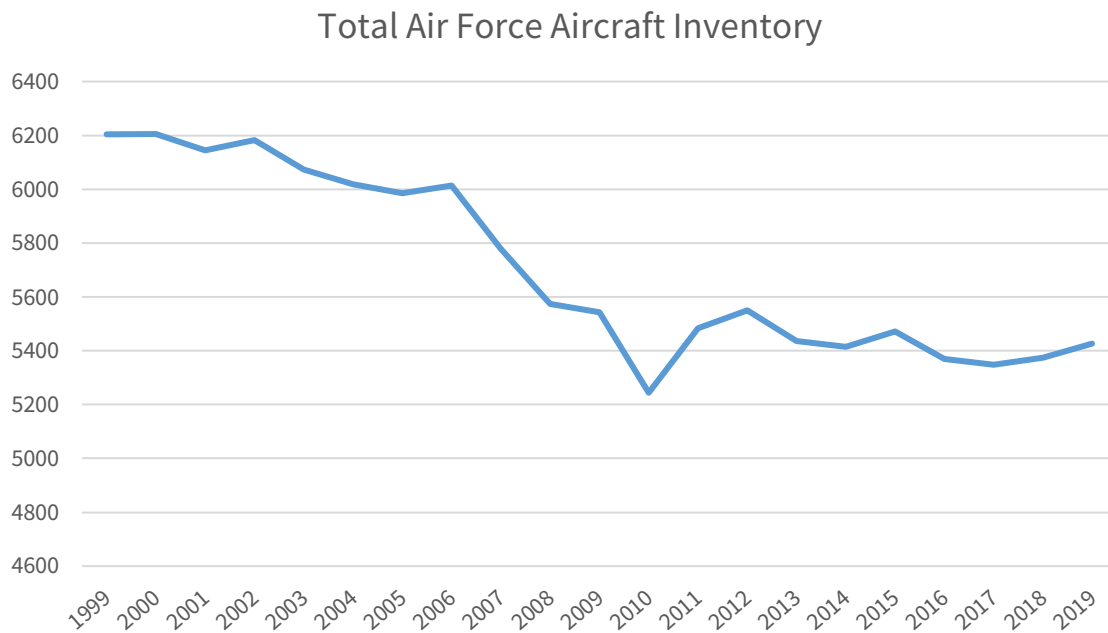
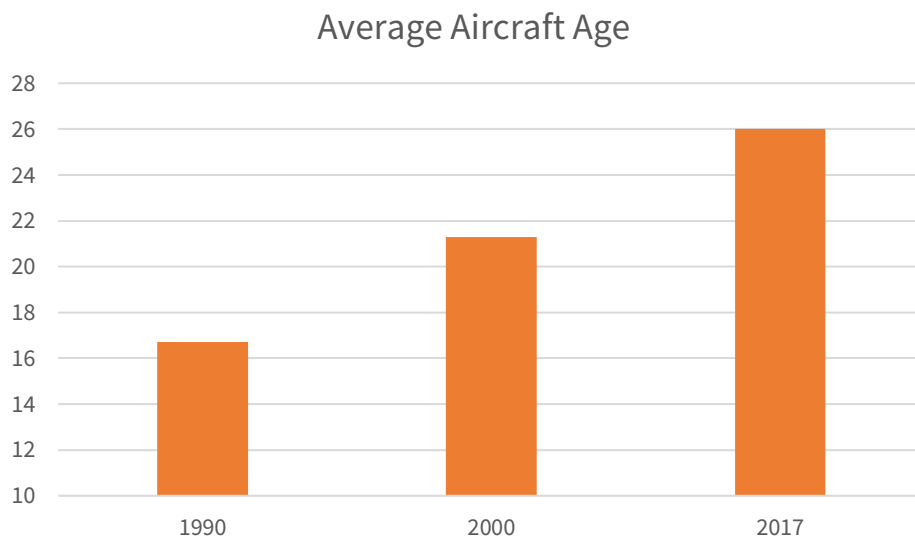


Chart 14: Air Force Aircraft Average Age



As Stephen Kosiak, a former OMB official and long-time budget commentator, points out: “[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.”⁹⁹ For the Air Force, both aging and reduced numbers result from a series of decisions on modernization. Some fleets are in relatively good shape: the transport fleet (20 years) because of acquiring C-17s, the special operations fleet (13 years) because of the C-130Js, and the specialty fleet (ISR/BM/C3) because of UAVs/RPVs. Other fleets are old: fighter/attack (26 years old, on average), bomber (42 years), tanker (51 years), helicopter (28 years), and trainers (30 years).¹⁰⁰ All these older fleets have programs in place for modernization, but the programs have been delayed, are expensive, and may take years to fully implement.

In addition to the inventory/aging dynamic, Todd Harrison and Seamus Daniels describe a force structure/readiness death spiral whereby escalating operations and support costs produce a smaller force, which in turn produces high OPTEMPO and stress, which leads to higher costs and smaller forces, etc.¹⁰¹ Although not included in the Air Force’s public statements, breaking out of this dynamic may have been part of the rationale for the proposed expansion.

A bright spot is active/reserve relations. By working closely with its reserve components, and giving them at least a small manpower increase, the Air Force avoided the internal conflicts that had marred earlier budgets and required a 2015 force structure commission to make peace.

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

Like the other services, the Air Force notes how busy it is—172,000 sorties and 98,000 precision strikes last year, transporting 1 million personnel and 38 million pounds of warfighting equipment, and conducting 25,000 ISR missions. The posture statement notes, “The projected mismatch between demand and available resources has widened.”¹⁰² The Air Force is, in effect, conducting an air war in the Middle East while still meeting its other global commitments.

Further, the Air Force, like the Army and Navy, has become more active in Europe, mainly through EDI. It has increased air patrols over the Baltic, deployed to Eastern Europe for training with allies, and reversed the planned withdrawal of F-15s from the United Kingdom. ERI/EDI budgets have been requesting funds for air base projects, mainly in Eastern Europe, so the groundwork is literally being laid for future engagements and, if necessary, rapid reinforcement.

RAND noted that “since the 1990s, the U.S. 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 these would continue in the four notional futures that RAND analyzed.¹⁰³

This high level of operations pushes the Air Force (as with the other services) to increase capacity, even at the cost of capability, though higher budgets allow some increase in both. Indeed, the Air Force Future Operating Concept explicitly 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

⁹⁹ 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://www.cnas.org/publications/reports/is-the-u-s-military-getting-smaller-and-older>.

¹⁰⁰ Fleet age numbers from the Air Force Association’s *The Air Force in Facts and Figures*.

¹⁰¹ Todd Harrison and Seamus Daniels, *Analysis of the FY 2019 Defense Budget* (Washington, DC: CSIS, September 2018), 49, <https://www.csis.org/analysis/analysis-fy-2019-defense-budget>.

¹⁰² U.S. Air Force, *USAF Posture Statement Fiscal Year 2019*, March 14, 2018, p. 1, https://www.af.mil/Portals/1/documents/1/FY19_AF_POSTURE_STATEMENT_HIGH_RES.PDF.

¹⁰³ 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, 2018), https://www.rand.org/pubs/research_reports/RR2500.html.

sustained operations, or a sustained irregular warfare effort in a permissive or semi-permissive environment, the Air Force forces primarily will use lower-cost/lower-capability assets.”¹⁰⁴

The A-10, Legacy Aircraft, and the Purpose of Airpower

Like the Navy with cruiser modernization, the Air Force has surrendered to the will of the Congress (and to real world operations) by extending the life of the A-10 fleet to 2025. The Air Force will also upgrade and extend the lives of F-16C aircraft and F-15C/D/Es. Indeed, the FY 2019 budget allocates \$1.1 billion to modification of the A-10s, F-15s, and F-16s, a 1/3 increase over FY 2018.

The Air Force has gone further, conducting demonstrations of 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—being less expensive to operate, reducing wear on high-end aircraft, and allowing for more focused training. The experiments have continued even though one of the test aircraft crashed in July. The Congress appropriated \$100 million to the program for procurement in FY 2019. The Air Force says that it has put a \$2.4 billion placeholder in the FY 2019 FYDP to buy light attack aircraft.¹⁰⁵

Collectively, these decisions—coupled with the F-35 procurement plateau, described below—indicate a new leaning towards a high-low mix, a substantial change from the Air Force’s previous focus on capability and the high-end conflicts that drove it. This shift arose from three strategic questions, two of which have bedeviled the Air Force from its earliest days:

- *What kinds of conflicts should the Air Force prepare for: those with less-demanding air environments or those with A2/AD environments?* For 16 years, the Air Force has operated intensively but in relatively permissive environments. That allowed unchallenged power projection, forward bases as sanctuaries, low combat attrition, and assured communications. In these less-demanding air environments, the Air Force can use legacy aircraft extensively and therefore keep them in the inventory longer. For conflicts against sophisticated adversaries like China and Russia, with their A2/AD capabilities, it needs to develop and field advanced capabilities. The NDS clearly focuses on the latter. A high-low mix is a compromise to hedge against either eventuality.
- *How can airpower achieve the greatest effects? Will the effects come from attacks close to friendly front lines—that is, through close air support and battlefield interdiction?* The ground forces have strong opinions here, arguing that these effects are immediate and tangible.¹⁰⁶ Specifically designed aircraft like the A-10 are both cheaper and more effective for these missions than multirole stealth aircraft like the F-35.¹⁰⁷ Air power traditionalists argue that the greatest effect comes from deep attack of strategic targets, which requires extensive self-protection capabilities. The Air Force has historically leaned toward the latter for a variety of organizational and doctrinal reasons.¹⁰⁸ The debate goes far beyond this monograph.

¹⁰⁴ 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>.

¹⁰⁵ Jeremiah Gertler, “Air Force OA-X Light Attack Aircraft Program,” Congressional Research Service, August 23, 2018, <https://fas.org/sgp/crs/weapons/IF10954.pdf>; Colin Clark, “SecAF: Don’t Expect Large Budget Increases after 2019; \$2.4 Billion Set for Light Attack,” *Breaking Defense*, February 16, 2018, <https://breakingdefense.com/2018/02/secaf-dont-expect-large-budget-increases-after-2019-2-4b-set-for-light-attack/>.

¹⁰⁶ Scott Beauchamp, “An Infantryman’s Defense of the A-10,” *Task and Purpose*, February 29, 2016, <http://taskandpurpose.com/infantrymans-defense-10>.

¹⁰⁷ 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>.

¹⁰⁸ The literature on close air support v. 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.

- *What is the value of stealth in modern air warfare?* A stealth aircraft costs significantly more than the latest version of a legacy aircraft, even putting aside the multibillion-dollar upfront development.¹⁰⁹ 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.¹¹⁰ Opponents argue that only a small part of the fleet needs to be stealthy while the rest can be non-stealthy, and that stealth may provide less protection as sensors improve.¹¹¹

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. If budgets go down, the Air Force will face some painful tradeoffs.

Piloted v. Unpiloted (or “Manned v. Unmanned”)

Whereas the Navy’s efforts to integrate unmanned aircraft into its aviation fleet are still controversial, slow, and limited, as described earlier, the Air Force incorporation of unmanned aircraft into its force structure—after strong resistance during the 1990s and early 2000s—has become routine.

The FY 2019 budget procures 29 additional MQ-9 Reapers, the follow-on aircraft to MQ-1 Predators, which retired in March. It maintains a force capable of 60 unmanned aircraft combat lines/air patrols. The Air Force continues efforts to improve recruiting and retention for pilots of unmanned aircraft, and it has greatly increased the number of such pilots that it trains.

Two questions remain regarding Air Force UAVs. The first is what to call them. 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.

The second issue is whether to buy UAVs/RPAs for permissive or non-permissive environments.¹¹² Reaper can only operate in permissive environments. That has been fine for the kinds of conflicts the United States has been involved with recently. However, in a conflict with a high-end competitor like Russia or China, these aircraft would be too vulnerable to survive if employed using current concepts of operation. The question, then, is twofold. First, are there concepts of operation that would enable current UAVs to

¹⁰⁹ How much more is difficult to estimate since aircraft are bought in different quantities and have different characteristics beyond stealth. One data point is from the Navy, which is buying both fourth generation F-18E/Fs and fifth generation F-35s. The F-35s cost about 50% more (in FY 2018, F-18E/F \$90 million; F-35B/C \$145 million). See Department of Defense *FY 2018 Budget Estimates* (Washington, DC: May 2017), http://www.secnav.navy.mil/fmc/fmb/Documents/18pres/APN_BA1-4_BOOK.pdf.

¹¹⁰ MajGen Jeff Harrigian and Col Max Morosko, “Fifth Generation Air Combat: Maintaining the Joint Force Edge,” *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>.

¹¹¹ 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 Pietrucha, “Rediscovering Low Altitude: Getting Past the Air Force’s Over-commitment to Stealth,” *War on the Rocks*, April 7, 2016, <http://warontherocks.com/2016/04/rediscovering-low-altitude-getting-past-the-air-forces-overcommitment-to-stealth>.

¹¹² 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>.

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 stealth unmanned aircraft, the RQ-170 Sentinel, an Air Force/CIA collaboration, is known to exist since one was shot down over Iran in 2011 and exhibited to the public.¹¹³ There are indications that other such aircraft may exist, but there is little in the open literature.¹¹⁴

One insight into possible aviation futures came from the 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 is applied across the board—for example, to tankers and airborne command and control—then many of the Air Force’s large aircraft will potentially be replaced by other approaches.

Air Force Expansion Proposal

Just as this report was finishing up, 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). 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.

General David Goldfein, Air Force chief of staff, described the rationale as being driven by the National Defense Strategy: “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 sees the additional forces being primarily for a high-end conflict with China or Russia. Something new with a high-end conflict, that was not present with the regional conflicts of the past, is the possibility of attrition; that is, the Air Force could lose a lot of aircraft in a conflict and would need to have additional forces ready to replace them.

This is speculation, however. Details about how the calculation was done and the operational concepts behind the larger force requirement are not publicly available. These will need to be laid out clearly and explained convincingly for the expansion to get traction. The FY 2020 budget process, both internal to DOD and external with the Congress, will determine whether the expansion competes effectively for funding.

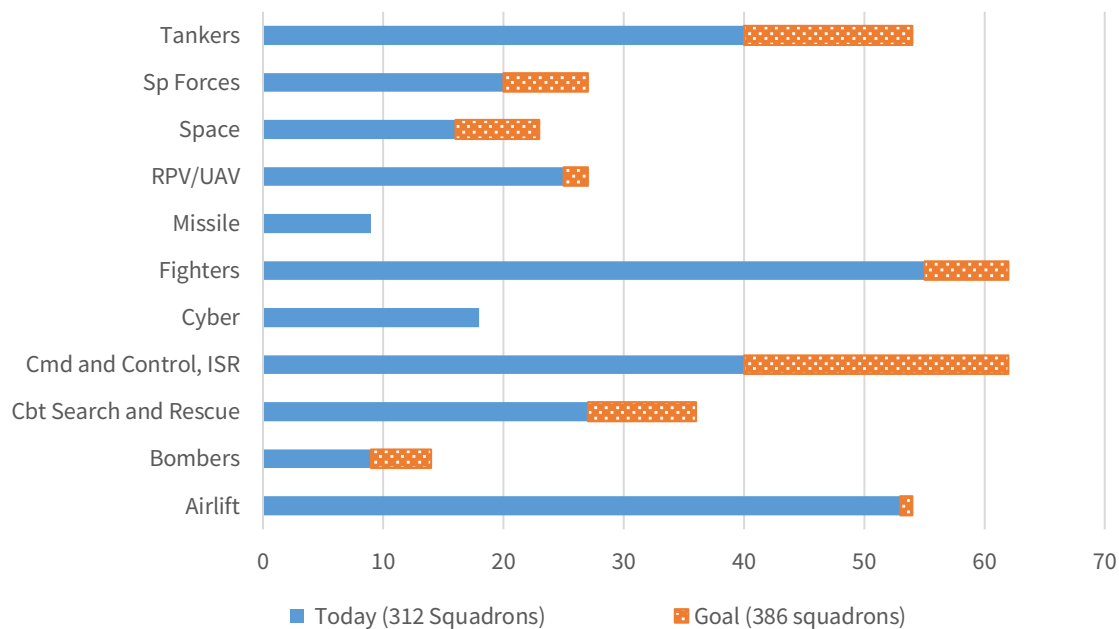
Using CSIS’s Force Cost Calculator, I estimated that the annual additional cost would be about \$37 billion and require up to 94,000 additional personnel, active, and reserve. This is a rough estimate, using many assumptions. A precise estimate would require many clarifying details. The bottom line is clear, however: such an expansion would be very expensive.¹¹⁵

¹¹³ Guy Morris, “Pictures: Lockheed Martin RQ-170 Sentinel Sighting in California,” *Aviation Week*, March 5, 2018, <http://aviationweek.com/defense/pictures-lockheed-martin-rq-170-sentinel-sighting-california>.

¹¹⁴ James Clark, “The SR-71 Blackbird’s Ultra-secret Successor May Scream across the Sky Sooner Than Expected,” *Business Insider*, September 29, 2017, <http://uk.businessinsider.com/the-sr-71-blackbirds-ultra-secret-successor-may-soon-hit-the-skies-2017-9?r=US&IR=T>.

¹¹⁵ 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/>.

Chart 15: Air Force Proposed Expansion by Mission Category



Aircraft Modernization—The Future Force

The Air Force has programs in place to modernize its individual aircraft 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 \$2.0 billion in FY 2018 to \$2.3 billion in FY 2019. 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 42 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 requested 48 aircraft in FY 2019, about the same as for the last two years. The Congress increased this to 56 out of a concern that the aircraft was being fielded too slowly.

After several years 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 had many criticisms, for example: “The operational suitability of the F-35 fleet remains below requirements and is dependent on workarounds that would not meet Service expectations in combat situations.” Aircraft life may be less than 8,000 hours because of poor durability test results, cyber vulnerabilities continue, and weapons delivery testing showed “deficiencies.” Although about 300 aircraft

have been procured, the program has not yet been through its operational tests, which are scheduled to begin in late CY 2018.¹¹⁶

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 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. Nevertheless, at 56 aircraft per year it would take another 26 years to reach the inventory objective of 1,763—FY 2045. Even at 80 aircraft per year, the Air Force goal, it would take 18 years—FY 2037. The average age of the fighter/attack fleet will, therefore, remain high for a long time, perhaps indefinitely.

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 56 years and the KC-10s 33 years. The program was thought to be low-risk since the airframe is a variant of Boeing's widely used 767.

However, the program continues to be troubled, with first delivery postponed again, now to late 2018 because of delays in flight testing and problems with the refueling boom. GAO estimates that the first 18 aircraft will not be delivered until May 2019.¹¹⁷ Boeing, the contractor, continues to execute the fixed price contract that it greatly underbid and on which the company is taking large losses (\$2.6 billion so far).¹¹⁸ That underbidding strategy appears to have paid off, however, as the Air Force announced that it would not re compete the contract after the current buy but would procure more KC-46s.

The bottom line is that the current tanker fleet of KC-10s and KC-135s will be around for a lot longer.

One possible future disruption is on the horizon: The Air Force is beginning to think about the next strategic mobility study, which is conducted every five years or so by Transportation Command, the Joint Staff, and the Cost Assessment and Program Evaluation office on the secretary's staff. New this time is the possibility of attrition being factored in for tankers and the strategic airlift fleet. This arises because of Russia and China's anti-aircraft capabilities. That will drive inventory requirements higher. Indeed, whether tankers can operate at all in high threat environments is unclear. The study will not begin until 2019, so there will be a lot of discussion over the next two years.¹¹⁹

¹¹⁶ Director, Operational Test and Evaluation, *FY 2017 Annual Report* (Washington, DC: January 2018): 48 – 59, <http://www.dote.osd.mil/pub/reports/FY2017/pdf/other/2017DOTEAnnualReport.pdf>.

¹¹⁷ Government Accountability Office, "KC-46 Tanker Modernization: Program Cost a Stable, but Schedule May Be Further Delayed," April 2018, <https://www.gao.gov/products/GAO-18-353>.

¹¹⁸ Valerie Insinna, "Another KC-46 Delivery Slip Puts Pressure on Boeing to Meet Contract Obligations," *Defense News*, March 7, 2018, <https://www.defensenews.com/air/2018/03/07/another-kc-46-delivery-slip-puts-pressure-on-boeing-to-meet-contract-obligations/>.

¹¹⁹ 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>.

Munitions

One area where the Air Force is clearly expanding capability is with munitions, particularly long-range and precision munitions. This increases the lethality of all platforms, both new and legacy. The FY 2019 budget buys JDAM at the maximum sustainable rate and makes large procurements of Small Diameter Bombs (SDB-I and II), Joint Air-to-Surface Standoff Missile-Extended Range (JASSM-ER), and Hellfire. The Air Force continues procuring AIM-9X Sidewinder and AIM120D Advanced Medium-Range Air-to-Air Missiles (AMRAAM). The Congress shaved the funding for some of these munitions programs, but the relatively high funding levels continued.

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 DOD's Nuclear Posture Review (NPR), published in February.¹²⁰ The NPR affirmed the need for the nuclear triad, which is good news for the Minuteman III replacement, called the Ground-Based Strategic Deterrent (GBSD). This program 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 "monad." GBSD funding increases from \$216 million in FY 2018 to \$345 million in FY 2019.¹²¹

The NPR supported acquisition of the Long Range Standoff (LRSO) weapon, a nuclear-armed cruise missile, which has and been controversial because bombers already have one nuclear munition, the B61 bomb. The program goes forward with \$615 million proposed for FY 2019.

Finally, the B61 tail kit program, designed to increase accuracy of the B61 nuclear bomb, also continues to move forward.

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 it to either trim programs or increase the proportion of the budget allocated to nuclear forces.¹²²

Finally, 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 Corps?"

The central issue about space this year, like last year, has been whether to create a "space corps" 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 the Congress declined to create such an organization in the face of determined opposition from the Air Force and the

¹²⁰ Department of Defense, *Nuclear Posture Review* (Washington, DC: February 2018),

<https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

¹²¹ For a discussion of GBSD, its background and alternative ways forward, see Todd Harrison, *Options For The Ground-Based Leg of The Nuclear Triad* (Washington, DC: CSIS, September 2017), <https://www.csis.org/analysis/options-ground-based-leg-nuclear-triad>.

¹²² 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>.

Department of Defense. However, the issue resurfaced over the summer when President Trump expressed his intention to create a “space corps” of some sort. Now, the department has fallen into line and is doing studies about options. However, opposition is growing in the Congress and elsewhere, particularly over whether the benefits justify the amount of new overhead that would be required.¹²³

If a separate service were created, it would have profound effects on DOD’s internal organization and decisionmaking and, its proponents contend, DOD’s force structure and budgets.¹²⁴

¹²³ Joe Gould, “Failure to Launch? Trump Space Force Faces Senate Skeptics,” *Defense News*, August 17, 2018, <https://www.defensenews.com/congress/2018/08/17/failure-to-launch-trumps-space-force-faces-senate-skeptics/>.

¹²⁴ For a detailed discussion of the “space corps,” see a series of CSIS space-related events and reports, including Todd Harrison, “Is Congress Creating a Military Space Corps?” CSIS, November 8, 2017, <https://www.csis.org/analysis/congress-creating-military-space-corps>; John Hamre, moderator, “Securing Space: a Discussion on the U.S. Space Force,” September 10, 2018, <https://www.csis.org/events/securing-space-discussion-us-space-force>; Todd Harrison, moderator, “How to Organize Military Space,” CSIS, September 16, 2017, <https://www.csis.org/events/how-organize-military-space>.

7 | Special Operations Forces (SOF)

Three themes continue—gradual force growth, dependence on OCO funding, and increasing organizational independence. Stress on the force, though continuing, appears to have eased.

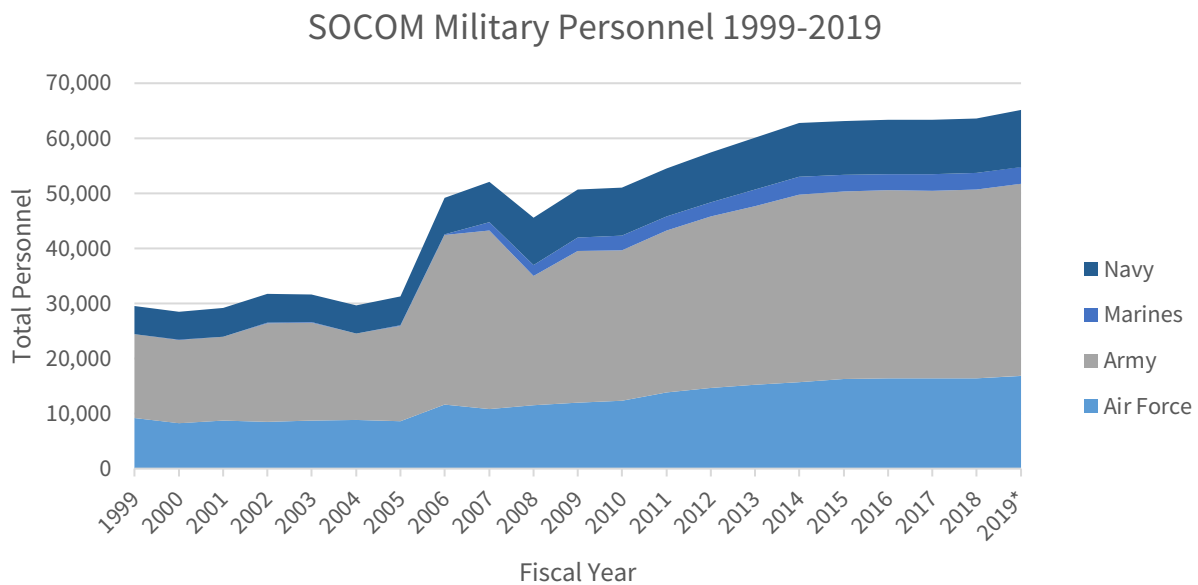
Table 12: Special Operations Forces – Military, Civilians, Contractors

	<i>FY 2018 Enacted</i>	<i>FY 2019 Proposed/Enacted</i>	<i>Change</i>
Military End Strength (active and reserve)	63,579	65,152	+1,573
Civilian FTEs	6,424	6,552	+128
Contractors	5,648	5,698	+50

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 in the service numbers.

Force Growth

Chart 16: SOCOM Military Personnel, 1999 to 2019, AC and RC



SOF consists of six elements. First, there are forces from each of the services: Army (Ranger Regiment, special operations aviation, Delta Force), Navy (SEALs, explosive ordnance disposal), Air Force (special purpose aircraft and control teams), Marine Corps (one regiment). Then, there is a headquarters (Joint Special Operations Command) and support activities such as a school and doctrine organization.

SOCOM grew greatly in size during the wars, from 29,500 military personnel in 1999 to 65,152 today, and, unlike the military services, experienced no post-war decline in size.¹²⁵ It is now approaching the size of the British Army (81,500 in 2018). This large post-2001 increase has been in response to increased demands for its core missions of direct action, foreign internal defense, irregular warfare, and civil affairs and for new missions such as providing DOD's core counterterrorism capabilities.

SOCOM continues to grow as it picks up more missions (described below) and seeks to reduce stress on its personnel by spreading operational commitments over a larger force.¹²⁶ 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."¹²⁷ The history of special forces in other countries has often been of expansion, as the desirable traits of such forces are recognized, but 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 USSOCOM, although so far there is no indication of the emergence of such units.

Dependence on OCO Funding

General Thomas acknowledged that SOCOM is "well resourced," with a proposed budget increase of \$1.6 billion from FY 2018 to FY 2019. However, SOCOM is highly dependent on OCO funding. For FY 2019 it has requested \$4.6 billion in OCO, 33 percent of its total funding, three times the department's rate overall (9 percent).¹²⁸ This heavy usage occurs because SOCOM is allowed to fund global counterterrorism operations in OCO, unlike the military services.¹²⁹ Ninety percent of SOCOM's OCO funding is for enduring activities.¹³⁰ Fortunately for SOCOM, OCO appears to be relatively secure with no major effort to eliminate it without compensating increases to the base budget. Indeed, the Trump administration has stated that in FY 2020 it will move \$50 billion of OCO funding into the base with a compensating increase in the base. If that happens, then SOCOM's long-term funding prospects will be stabilized.

Increasing Organizational Independence

Special operations forces have two management headquarters: the assistant secretary of defense for special operations forces (ASD/SOLIC), which oversees policy, and Special Operations Command, which oversees operations and also has some administrative functions such as procurement of special operations unique items.

SOCOM received two additional missions last year: coordinating authority for transregional terrorist organizations and Countering Weapons of Mass Destruction synchronization, transferred from USSTRATCOM. In effect, the additional missions make SOCOM a "global COCOM," with activities that

¹²⁵ Government Accountability Office, *Special Operations Forces: Opportunities Exist to Improve Transparency of Funding and Assess Potential to Lessen Some Deployments*, GAO-15-571 (Washington, DC: GAO, July 2015), <http://www.gao.gov/products/GAO-15-571>.

¹²⁶ Budget data for USSOCOM 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.

¹²⁷ Andrew Feickert, *U.S. Special Operations Forces: Background and Issues for Congress* (Washington, DC: Congressional Research Service, April 2018), p. 2, <https://fas.org/sgp/crs/natsec/RS21048.pdf>.

¹²⁸ USSOCOM, *SOCOM FY 2019 Posture Statement* (Washington, DC: U.S. Special Operations Command, February 2018), https://www.socom.mil/Documents/Posture%20Statements/2018%20USSOCOM%20Posture%20Statement_HASC%20Final.pdf.

¹²⁹ Steven Kosiak, Associate Director of the Office of Management and Budget, "Funding Policy for Overseas Contingency Operations," Letter to Robert Hale, Under Secretary of Defense (Comptroller), September 9, 2010, <http://asafin.army.mil/Documents/OfficeDocuments/Budget/Guidances/omb-gd.pdf>.

¹³⁰ USSOCOM, *SOCOM FY 2019 Posture Statement*.

reach into the regional COCOMs without being subordinate to them. The FY 2019 posture statement reflects this expansion, both in a funding increase and in the broadening of global activities.

In addition, the 2017 NDAA made major changes to the management of Special Operations Forces.¹³¹ It gave the ASD/SOLIC authority over all special operations-peculiar administrative matters and defined these administrative matters broadly, thus inserting the ASD/SOLIC into the administrative chain of command. It continued ASD/SOLIC oversight of policy and programs for irregular warfare and special operations and codified in statute the existing department-wide Special Operations Oversight and Policy Council. It also codified in statute the existing practice that the commander of Special Operations Command monitors promotions and career management of special operations personnel. Giving the commander of SOCOM authority over promotions takes that authority away from the service chiefs.

To support this expanded role, the FY 2019 NDAA increased staffing for the ASD/SOLIC office, despite the caps on OSD personnel overall.

The effect, and explicit congressional intent, was to make special operations forces even more like a separate service. (They already had many service-like authorities in acquisition and training.) The ASD/SOLIC now has authorities like those of a service secretary, exercising administrative and policy control over designated forces. Indeed, in the DOD's *Defense Budget Overview*, Special Operations Command is listed with the military services when it describes readiness recovery (Chapter 3).

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/SOLIC's nominal boss, the under secretary for policy. It will take time to sort out the new relationships.

Stress on the Force

High 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. This year, General Thomas, commander of USSOCOM, set a different tone when he stated that “the vast majority of currently deployed special operations personnel are adhering to the Secretary of Defense-directed goal of 1:2 deployment to dwell for active forces and 1:5 for reserve forces. Currently, 12 percent of deployed special operations forces have a deployed to dwell of less than 1:2.”

Stress is still high but not the crisis it was previously. This likely results from the increasing force size—which spreads deployments over more units—and a decrease in deployment levels as demands ease in the Philippines and in Syria and Iraq.

¹³¹ For a detailed description of these reforms, see Mark Cancian, “What Happened in Congress?” *Defense 360*, January 10, 2017, <https://defense360.csis.org/national-security-reform-happened-congress/>; also, the update, “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/>.

8 | 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). Other good news for civilians is that last year’s hiring freeze has been lifted and political appointees are in place (at least, in DOD). The bad news is that the civilian pay raise is below parity, and some benefits were shaved.

Table 13: Department of Defense Civilians

	DOD Civilians (direct budget)	Total DOD civilians
FY 2018 Enacted	741,500	773,400
FY 2019 Proposed/Enacted	744,500	777,000
Change	+3,000	+3,600

Note: Full-time equivalents. Total includes U.S. and foreign direct hires, excluding classified activities, OCO funded, and indirect hires.
Source: Office of the Under-Secretary of Defense (Comptroller) Chief Financial Officer, Defense Budget Overview: United States Department of Defense Fiscal Year 2018 Budget Request (Washington, DC: Department of Defense, May 2017), 6–18,
http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY2017_Budget_Request_Overview_Book.pdf.

President Trump proposed three goals for the federal government’s civilian workforce: making it smaller, less costly, and higher quality. All three have also been long-time Republican goals, but the first two are controversial and support for the third depends on the specifics. Despite the negative implications of these policies for the size of the civilian workforce, the administration proposed to *increase* the number of DOD civilians, and the Congress (mostly) went along. (Administration proposals would greatly decrease the number of civilians in non-defense/domestic agencies.)

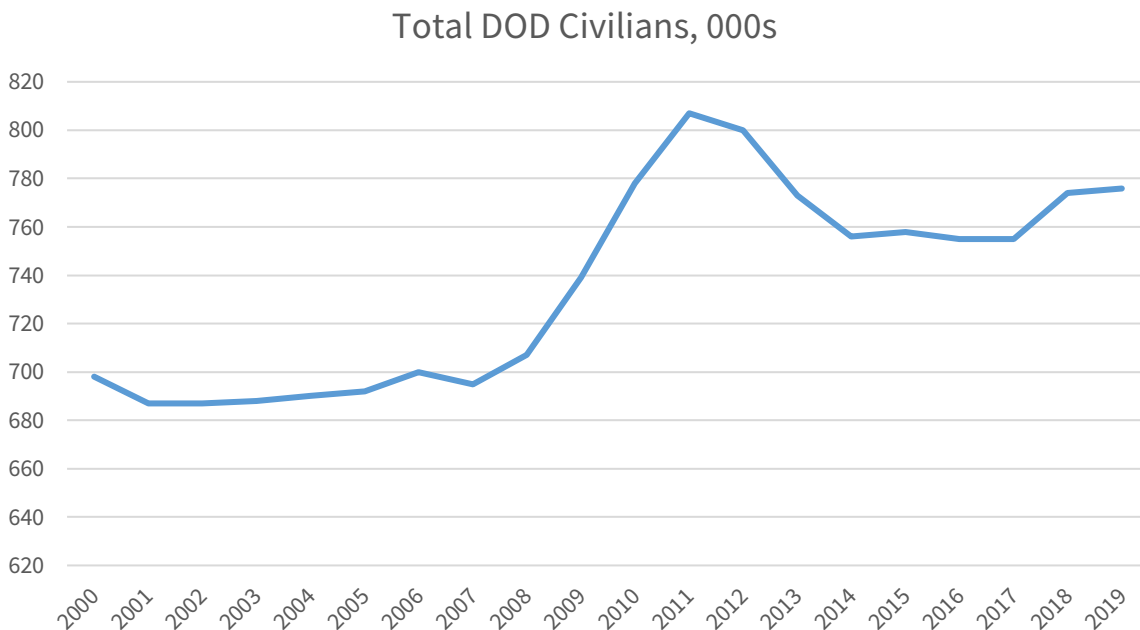
DOD’s civilians perform a wide variety of support functions in intelligence, equipment maintenance, medical care, family support, base operating services, and force management. The department does this for three reasons:

- Civilians provide long-term expertise whereas military personnel rotate rapidly.
- 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 less expensive than military personnel, having less generous benefits and not being diverted periodically for military skills training.

The force management function has been the most controversial because civilians are often viewed as “overhead” in 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 an essential part of our National Defense Strategy” because they “bring to bear capabilities, expertise, and skills directly impacting DoD’s operational warfighting

capabilities.”¹³² DOD, also, recognizing sensitivities about the size of “overhead,” explains that it is working to “right size” the civilian workforce.

Chart 14: DOD Civilians 2000-2019



Also controversial has been the 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.
- 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.

Several changes were made during FY 2018 and proposed for FY 2019 in the areas of civilian pay and benefits, hiring, union activities, administrative organization, and political appointees.

¹³² Office of the Under-Secretary of Defense (Comptroller) Chief Financial Officer, *Defense Budget Overview: United States Department of Defense Fiscal Year 2018 Budget Request* (Washington, DC: Department of Defense, May 2017), 5-7, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY2017_Budget_Request_Overview_Book.pdf.

Civilian Pay Increased, Few Benefits Cut

The administration proposed a pay freeze for all government civilians, whereas the military would get a 2.6 percent increase. Breaking parity is becoming the norm again after many years where military and civilian pay increases were the same. In 2010, the civilian pay raise was lower (2 percent v. 3.4 percent), and there were two years (2011, 2012) when civilians received no pay raise at all and another year (2013) when the increase was small. There was parity in 2014 to 2017 but a lower increase in 2018. Congress partially overruled the administration's proposal by providing civilians with a 1.9 percent pay increase. Another piece of good news: future projections show parity with military pay raises for FY 2020 to FY 2023, but that's what the projections showed last year.¹³³

The administration also proposed to cut retirement benefits, reduce vacation and sick time, and increase health care costs, but unions and professional associations pushed back hard, and few proposals made it into the final legislation.

Hiring Restrictions Have Been Eased

Hiring restrictions, including a hiring freeze imposed by the administration during its first year, have now been lifted. Instead, each agency has been tasked to develop its own workforce strategy. DOD has yet to issue such a document, although its budget requests and justifications give insight into its thinking. As described earlier, DOD sees civilian employees as a readiness enhancement, rather than as an overhead burden.

The 2019 NDAA did put caps on the size of major headquarters (Section 931), and there are ongoing efforts to reduce the size of overhead.

Restrictions Imposed on Union Activities

Not surprising for a Republican administration, President Trump signed several executive orders restricting union activities in the federal workforce. These focused on "administrative time" (whereby union officials could charge the government for time spent on union activities) and use of government office space.

Office of Personnel Management (OPM) To Be Transformed

The administration released its proposals for government reorganization in March 2018.¹³⁴ The only element directly affecting DOD was a proposal to transfer security clearance investigations back to DOD. Government-wide, the major proposal was to eliminate OPM and move its responsibilities elsewhere. OPM is the agency that everyone loves to hate because it implements all the regulations about the civil service. If the proposal were adopted, then DOD would likely have much more control over its civilian workforce.

Political Appointees Finally in Place

The Trump administration was slow to get appointees into all the many positions that called for them. This raised questions about whether there were perhaps too many political appointees and that the administration might propose scaling back on the number. However, such scaling back has not occurred, at

¹³³ *National Defense Budget Estimates For FY 2019 (Green Book)*.

¹³⁴ Office of the President of the United States, *Delivering Government Solutions in the 21st Century* (Washington, DC: June 2018), 51-56, <https://www.whitehouse.gov/wp-content/uploads/2018/06/Government-Reform-and-Reorg-Plan.pdf>.

least explicitly. Most DOD political slots have been filled, although many other agencies, like the State Department, still lag.

9 | 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 Central Command region (49,000 to 36,000), and the ratio of contractors to military personnel has increased from 1:1 in 2008 to 1.8:1 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.

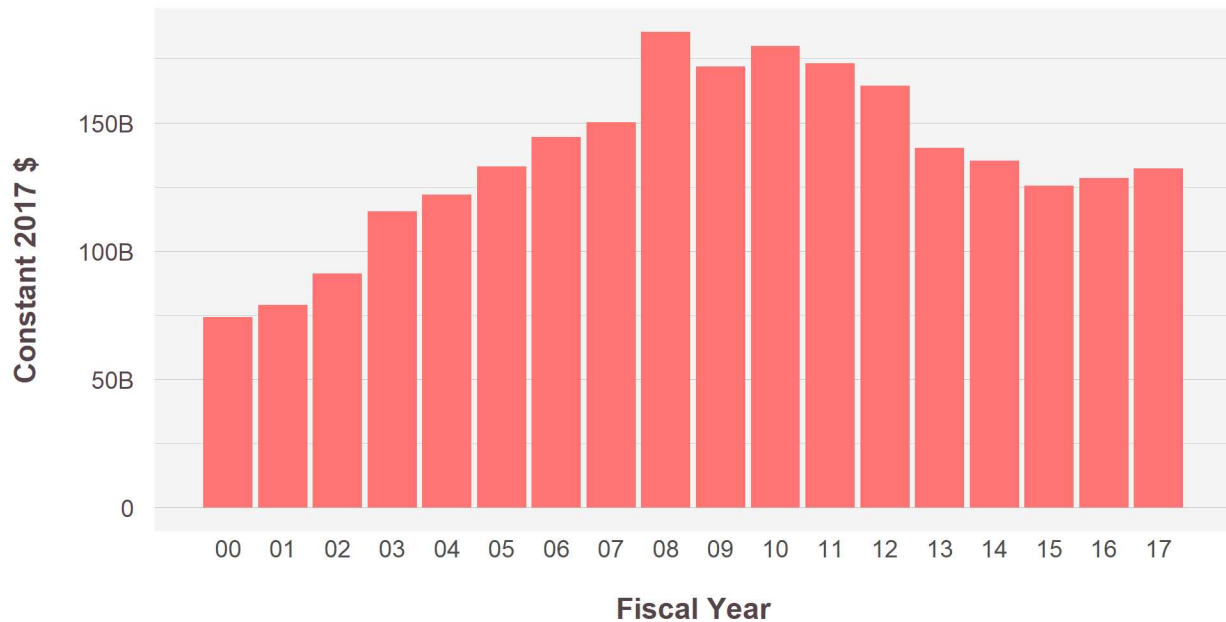
Table 15: Service Contractor Numbers by Organization, 2018

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

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

Source: Inventory of Service Contractors, 2015 (the last year for which full data are available), https://www.acq.osd.mil/dpap/cpic/cp/inventory_of_services_contracts.html

Chart 17: DOD Service Contract Obligations



Source: FPDS; CSIS analysis

CSIS has analyzed these contracts in detail, above, showing how service contract obligations increased from \$74 billion in 2000 to \$185 billion at their peak in FY 2009 (all in FY 2017 dollars). Although service contract obligations have declined to \$132 billion in FY 2017, they are still substantially above the pre-9/11 level and have started to increase again.¹³⁵

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.¹³⁶

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.¹³⁷

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

¹³⁵ Rhys McCormick and Samantha Cohen, *Defense Acquisition Trends, 2018: Defense Contract Spending Bounces Back* (Washington, DC: CSIS, September 2018), <https://www.csis.org/analysis/acquisition-trends-2018-defense-contract-spending-bounces-back-executive-summary>.

¹³⁶ 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?>

¹³⁷ Office of Management and Budget, *Circular A-76: Performance of Commercial Activities*, August 4, 1983 (Revised 1999), <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A76/a076.pdf>.

then the Obama administration blocked conversions permanently. This shutdown occurred partly as 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 a lot of money by bringing activities in-house. However, these savings did not materialize when all of the costs of "insourcing" were considered, and Secretary Gates ended the effort in 2010.¹³⁸ 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 the 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 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 the 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.¹³⁹ A valid comparison requires developing fully burdened costs—personnel costs with all benefits and support included. The department and the broader community have made progress on theoretical constructs about what costs to include, but actual numbers don't 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.¹⁴⁰ 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.

¹³⁸ Robert Brodsky, "Pentagon Abandons Insourcing Effort," *Government Executive*, August 10, 2010, <https://www.govexec.com/defense/2010/08/pentagon-abandons-insourcing-effort/32111/>.

¹³⁹ Jacque S. Gansler, William Lucyshyn, and John Rigilano, *Toward a Valid Comparison of Contractor and Government Costs* (Center for Public Policy and Private Enterprise, February 2012), <http://www.cpppe.umd.edu/publications/toward-valid-comparison-contractor-and-government-costs>.

¹⁴⁰ Defense Business Board, *Focusing a Transition: Challenges Facing The New Administration* (Washington, DC: Department of Defense, 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 Contractors

Table 16: Department of Defense Military and Contractor Personnel in USCENTCOM Area of Responsibility¹⁴¹

	Total Military	Total Contractors	U.S. Citizens	Third-Country Nationals	Local/Host-Country Nationals
Afghanistan Only	11,958	26,922	10,128	10,527	6,267
Iraq/Syria Only	5,765	5,323	2,651	2,210	462
Other Locations	~18,000	17,000	7,111	9,810	79
AOR Total	35,723	49,245	19,890	22,547	6,808

Data as of June 2018; excludes forces afloat and classified data for Iraq, Iran, Kuwait, and Syria.

Operational contractors 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 (termed, “Operational Contractor Support” or OCS) is increasing. 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”¹⁴²—use for logistics and administrative functions has become routine in contemporary operations because of the limited numbers of military personnel.¹⁴³ As a result, some analysts have suggested expanding the use of contractors as military manpower becomes increasingly stretched.¹⁴⁴ DOD may have no choice, since force structure increases are modest, as described earlier, and 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, overall, contractors in Central Command outnumber military personnel. 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.

¹⁴¹ 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 2018), http://www.acq.osd.mil/log/PS/CENTCOM_reports.html; Military personnel data from *FY 2019 Overview*, 4-2.

¹⁴² Rachael Maddow, *Drift: The Unmooring of American Power* (New York, NY: Crown Publishing, 2012), 186–87.

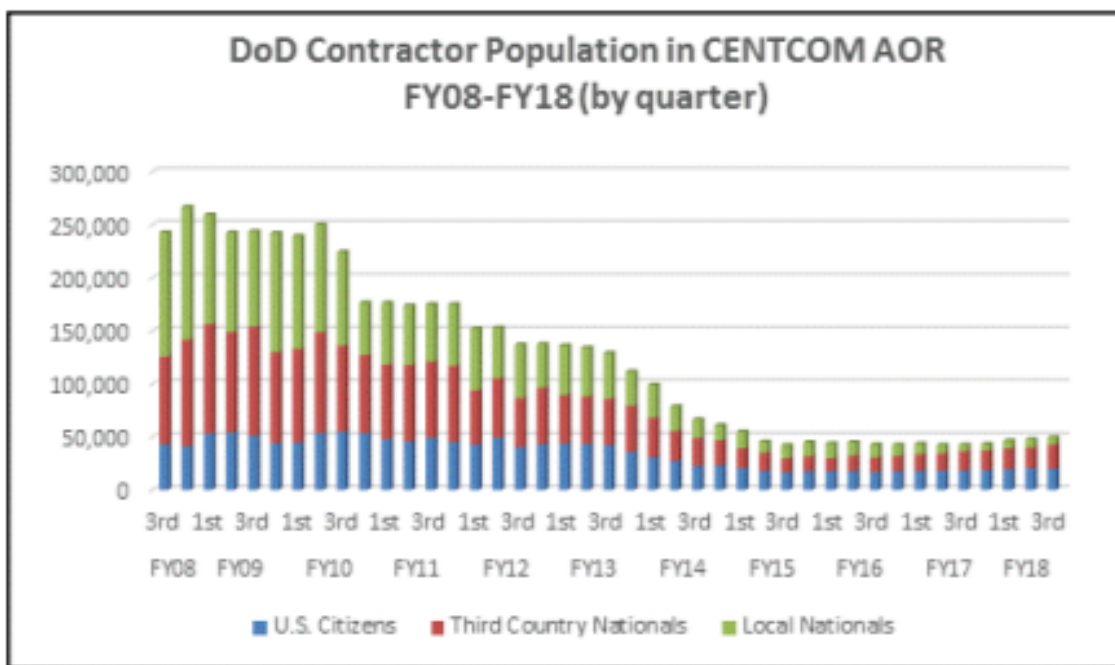
¹⁴³ Mark Cancian, “Contractors: The New Element of Military Force Structure,” *Parameters* 38, no. 3 (Autumn 2008), 61–77.

¹⁴⁴ 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).

- In Afghanistan contractor numbers increased substantially over the last year, from 23,525 to 26,922, 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 4,485 to 5,323, even as the number of military personnel decreased.¹⁴⁵
- Contractors in other CENTCOM locations also increased from 14,402 to 17,000.

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

Chart 18: Contractors in CENTCOM FY 2008-FY 2018



Source: “Contractor Support of U.S. Operations in the USCENTCOM Area of Responsibility,” June 2018, https://www.acq.osd.mil/log/ps/.CENTCOM_reports.html/5A_July%202018_Final.pdf.

As the chart above indicates, total contractor numbers are down from the peak in 2008/2009, but they have stabilized and, as described earlier, have started creeping back up. The ratio of military to contractors has also changed. Whereas in the past, the ratio was close to 1:1, the ratio for Afghanistan, Iraq, and Syria was 1 military to 1.6 contractors in 2017 and has increased to 1:1.8 today.¹⁴⁶ Time will tell whether this is the beginning of a trend.

¹⁴⁵ Heidi M. Peters, Moshe Schwartz, and Lawrence Kapp, *Department of Defense Contractor and Troop Levels in Iraq and Afghanistan: 2007-2012* (Washington, DC: Congressional Research Service, April 2017), <https://fas.org/sgp/crs/natsec/R44116.pdf>.

¹⁴⁶ Historical ratio from *Transforming Wartime Contracting: Controlling Costs, Reducing Risks*, Commission on Wartime Contracting, Commission on Wartime Contracting in Iraq and Afghanistan, August 2011, p. 200, 205, <http://www.acq.osd.mil/dpap/pacc/cc/cowc.html>; current ratios from CENTCOM Contractor Support reports.

Table 17: Contractor Numbers in Iraq, Syria, and Afghanistan by Function, June 2018

Category	Iraq and Syria	Afghanistan Only	Total
Base	1097	3877	4974
Construction	435	2085	2520
IT/Communications Support	267	995	1262
Logistics/Maintenance	1722	8252	9974
Management/Administrative	271	1688	1959
Medical/Dental/Social Services	19	77	96
Other	70	604	674
Security	364	4158	4522
Training	23	1455	1478
Translator/Interpreter	656	2053	2709
Transportation	399	1678	2077
Total	5323	26922	32245

Source: “Contractor Support of U.S. Operations in the USCENTCOM Area of Responsibility,” June 2018, https://www.acq.osd.mil/log/ps/.CENTCOM_reports.html/5A_July%202018_Final.pdf.

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 kinds of tasks. Of the 49,245 contractors in CENTCOM, 4,522 are in security functions and, of these, 2,002 are in Personnel Security Detachments (PSDs), all in Afghanistan. This latter function is highly sensitive because these contractors carry weapons routinely, and PSDs committed highly publicized abuses in the past. As required by Congress, 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.¹⁴⁷

Surprisingly, Erik Prince is back. Last year, Prince, former CEO of Blackwater, proposed to the administration a plan to create a “viceroy” in Afghanistan and turn most activities over to contractors, including the advising of Afghan forces and the conduct of air operations.¹⁴⁸ This was highly controversial, both because of Prince personally—his company was linked to abuses in Iraq—and because the military opposed turning so many of its customary functions over to contractors. The plan was thought to be dead. However, it has resurfaced recently, likely as a result of the president’s frustration with the continued stalemate in Afghanistan and the military’s lack of a clear plan for concluding the conflict. Given the military’s opposition and Prince’s baggage, implementation of such a plan is extremely unlikely, but a further shift of the military/contractor balance could occur.

¹⁴⁷ 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>.

¹⁴⁸ Erik Prince, “A MacArthur Model for Afghanistan,” *Wall Street Journal*, May 31, 2017, <https://www.wsj.com/articles/the-macarthur-model-for-afghanistan-1496269058>.

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 as follows:

- To coordinate policy, DOD established the Operational Contract Support Functional Capabilities Integration Board. To provide operational support program management, DOD has established the Joint Contingency Acquisition Support Office, which, when requested, can provide deployable teams.
- Contract support planners sit at the combatant commands—some full-time, some part-time—to integrate contract support into operational plans.
- Lessons learned processes and professional military education gather and disseminate knowledge.
- OCS activities are governed by published directives: CJCSM 4301.01, *Planning Operational Contract Support*, and DODD 3020.49, *Orchestrating, Synchronizing, and Integrating Program Management of Contingency Acquisition Planning and Its Operational Execution*.
- Expeditionary contracting cells routinely participate in wargames and exercises, including an annual contracting specific exercise called “Operational Contract Support Joint Exercise.”

10 | 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. 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 in DOD, so DOD has an interest in their cost and management. Further, some of these organizations produce products and services for DOD.

National Nuclear Security Administration (NNSA)

NNSA is the part of the Department of Energy that develops and produces nuclear weapons, develops and sustains naval reactors, and conducts nuclear nonproliferation activities. It is the largest of the non-DOD national security organizations and is relevant to DOD for two reasons:

- From a military perspective, NNSA provides the nuclear weapons that complement the nuclear delivery systems that DOD develops, procures, and operates. It also develops (but does not produce) nuclear reactors for Navy nuclear-powered ships.
- From a budget perspective, as noted above, DOD and NNSA are in a zero-sum budget game, so any cost overruns or program increases in NNSA must come out of DOD's budget. In the past, NNSA has had large, even huge, cost increases in its major programs, for example, the B61 life extension program and the MOX plutonium disposition program. As a result, DOD has watched the details of NNSA's budget more closely in recent years than it has in the past.

The FY 2019 budget emphasizes military programs, consistent with the administration's priorities for a "hard power" approach.

NNSA has four major elements:

1. Weapons activities, which develops, produces, and maintains 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.
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 supports safe and effective nuclear propulsion for the U.S. Navy.
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. Note: Most of NNSA's workforce belongs to contractors, not to the federal government directly.

Table 18: NNSA Budgets FY 2017, FY 2018, FY 2019

<i>\$Billion</i>	<i>FY 2017 Enacted</i>	<i>FY 2018 Enacted</i>	<i>FY 2019 Request</i>	<i>\$ Change FY 2017 vs. FY 2019</i>	<i>Percentage Change FY 2017 vs. FY 2019</i>
Weapons Activities	9.2	10.6	11.0	1.8	+19%
Defense Nuclear Nonproliferation	1.9	2.1	1.9	0	-%
Naval Reactors	1.4	1.6	1.8	.4	+26%
NNSA Federal Workforce	.39	.42	.42	.03	+9%
Total	12.9	14.7	15.1	2.2	+17%

Source: Department of Energy, NNSA FY 2019 Congressional Budget Request (Washington, DC: National Nuclear Security Administration, March 2018), <https://www.energy.gov/sites/prod/files/2018/03/f49/FY-2019-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.”¹⁴⁹

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 W76-1), expanding maintenance efforts on the existing weapons stockpile, and starting new weapons developments. The latter effort, particularly development of low-yield nuclear weapons and development of a warhead for a cruise missile replacement, garnered opposition from arms-control groups. These programs had not been part of the original Obama nuclear modernization plan and were criticized as unnecessary and destabilizing.¹⁵⁰ Both efforts were funded in the FY 2019 National Defense Authorization Act but will face tougher going if the political balance in Congress changes in the 2018 midterm elections.

¹⁴⁹ Department of Defense, *Nuclear Posture Review* (Washington, DC: February 2018), iii, <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

¹⁵⁰ For one example among many, 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>.

NONPROLIFERATION

Nonproliferation activities slowed as the easiest materials to access and dispose of have been done, and the remaining materials are in countries where agreements are difficult. It also reflects the collapse of the Mixed Oxide facility (MOX). 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, like the Obama administration before it, has proposed canceling the facility, but the Congress (particularly the South Carolina delegation) has kept it alive.¹⁵¹ That may be changing since the FY 2018 appropriation bill allowed the administration to terminate the program if there were an alternative that cost less than half as much. The administration sent a report to the Congress in May proposing a less expensive “dilute and dispose” approach instead.¹⁵²

NAVAL REACTORS

The large increase reflects the final stages of the Ford-class reactor development and the height of the Columbia-class Trident replacement reactor development. 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 from 1,690 FTEs at the end of FY 2018 to 1,737 FTEs by the end of FY 2019. This reflects the need to expand oversight commensurate with the expansion of agency activity.

STRUCTURAL CHANGE

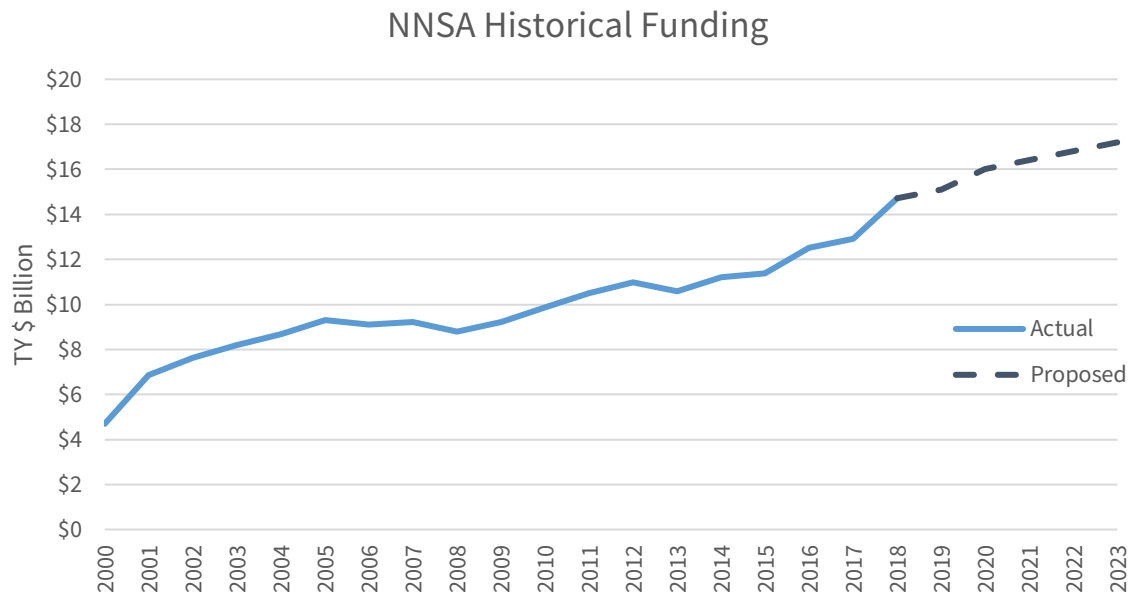
NNSA’s organizational arrangement has always been uncomfortable. It constitutes about half of the Department of Energy’s total budget but is semi-autonomous and not fully under DOE’s control. Most of its products support the DOD, with a Nuclear Weapons Council acting as the link between the two organizations. 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. 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.¹⁵³

¹⁵¹ 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>.

¹⁵² National Nuclear Security Agency, *Surplus Plutonium Disposition Dilute and Dispose Option Cost Estimate Report* (Washington, DC, May 2018), <https://s3.amazonaws.com/ucs-documents/global-security/dilute-and-dispose-independent-cost-estimate-4-18.pdf>.

¹⁵³ Hannah Northey and Peter Behr, “Warnings About Nukes Surface as Trump Mulls Overhaul,” E&E News, April 14, 2017, <https://www.eenews.net/stories/1060053115>.

Chart 19: NNSA Funding and Forecast FY 2000-FY 2023



LONG-TERM RISKS

Because the BCA budget cap puts NNSA and DOD in a zero-sum budget situation, any cost overruns that NNSA suffers must be paid by DOD. This dynamic causes constant tension because NNSA has a poor record of cost control on major projects (see MOX, above, but there are many others). Areas of long-term risk include the nuclear weapons life extension programs, like the B61; 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. One piece of encouraging news: in the FY 2019 budget documents, NNSA stated its belief that the Uranium Processing Facility project remains on track to finish within its \$6,500,000,000 cost ceiling and at the planned FY 2025 completion date.

Other National Security Organizations and Special Funds

Table 19: Funding for Other National Security Organizations

<i>\$ million</i>	2018 Enacted	2019 Proposed
DOE Environmental Cleanup	6,147	6,513
Formerly Utilized Sites Remedial Action/other DOE	111	120
Defense Nuclear Facilities Safety Board	31	31
FBI	5,061	5,185
Other	3,166	2,944
CIA Retirement Fund	514	514

These are the other activities that the 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 environmental cleanup is the largest. It does just that, 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 the counterterrorism and constitutes about 40 percent of the FBI's total budget. The rest is funded through the Department of Justice.
- 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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