

OCTOBER 2017

U.S. Military Forces in FY 2018

The Uncertain Buildup

AUTHOR

Mark F. Cancian



CSIS | CENTER FOR STRATEGIC &
INTERNATIONAL STUDIES

A Report of the
CSIS INTERNATIONAL SECURITY PROGRAM

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Acknowledgments

“Defense Outlook” is an annual series of studies on the linkages between strategy, budgets, forces, and acquisition. As part of the series, this paper examines how changes in the FY 2018 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. Todd Harrison is authoring a companion paper, *Analysis of the FY 2018 Defense Budget*.

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

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Caveat

This report is based on the President's Budget proposal for FY 2018, presented to the Congress on May 22, 2017, as well as on historical documents where needed. The FY 2018 budget included only a single year, with plans for future years awaiting publication of the administration's National Defense Strategy.

Further, as this document was being written, the annual budget process goes forward with the different congressional committees considering the president's proposal. Their actions, taking place over many months, will change some of the analyses in this paper. As the paper is being published, for example, the House and Senate armed services committees have released their marks, and the respective chambers have passed the bills. However, the conference has not yet been held and a joint bill not yet been developed. The House and Senate appropriations committees are beginning their work, but FY 2018 is covered by a continuing resolution until December.

Executive Summary

This is an unusual year for assessing U.S. military forces. First, there was a presidential election and a change of administration. Then, despite the new beginning, partisan rancor and political stalemate continued.

As a result, the much-expected buildup of military forces has become highly uncertain. The change of administration has produced competing visions about strategy and an uncertain fiscal future. These competing visions reflect different concepts about what force demands are most important and how military forces should be configured to meet those demands.

Political stalemate has produced a wide range of possible fiscal futures. This range is far greater than usual, as defense hawks, deficit hawks, and supporters of domestic spending tug at the budget with the specter of the Budget Control Act (“sequestration”) in the background. The fiscal future will be a major driver of force size and composition.

This report, therefore, not only describes changes made in the FY 2018 budget proposal but also assesses the wide range of possible futures arising from this strategic and fiscal uncertainty.

Competing visions of strategy. Competing visions arise from a variety of different judgments about force demands.

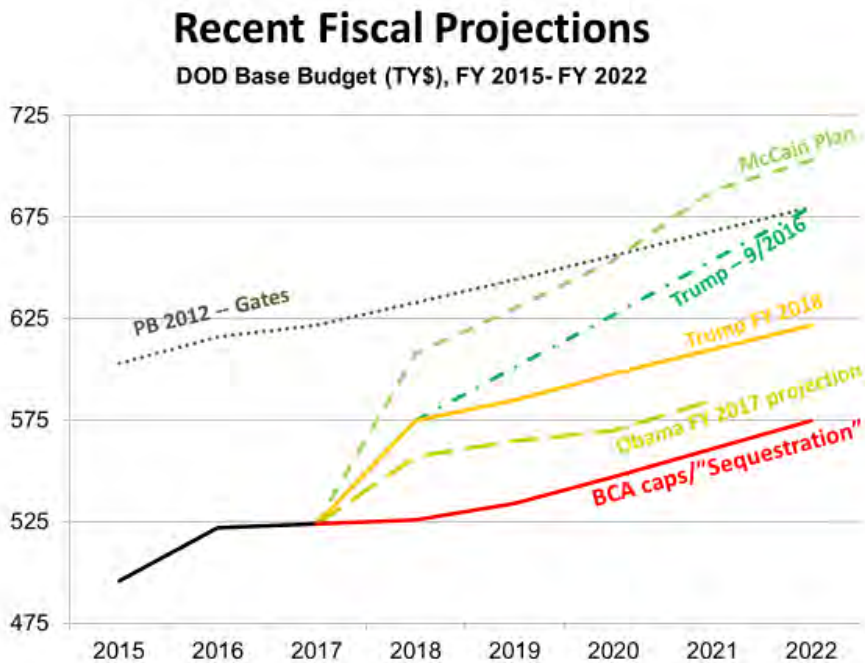
- Which threats are most important? The previous administration, including the current chairman of the Joint Chiefs of Staff, identified five challenges to the United States: Russia, China, North Korea, Iran, and ISIS/global terrorism. Although all elements of U.S. force structure would participate in major conflicts, warfighting requirements against different threats stress different elements of the force structure.
- How to balance force demands for warfighting and day-to-day operations? In addition to the war fighting requirements described above, forces must meet day-to-day demands for ongoing conflicts, crisis response, partner/ally engagements, and forward presence. Day-to-day demands are different from warfighting requirements in that they must be met in a way that is sustainable for the long term and without surge of reservists or personnel tempo.
- Where to make tradeoffs among readiness, modernization, and force structure? Strategists tend to focus on great power competition and are therefore drawn to high-end conflicts and the modernization necessary to conduct them (often called “capability”). However, the press of day-to-day crises forces an emphasis on high readiness and large forces (“capacity”). Secretary of Defense James Mattis has signaled that the FY 2019 budget and its five-year plan will emphasize modernization, but it is unclear whether the world will allow such a focus.

- What should be the U.S. role in the world? As a candidate, President Trump challenged long-standing assumptions about U.S. global leadership, raising fundamental questions about the U.S. role in the world.

These competing visions play out in different force structures proposed by the president (as a candidate), Senator John McCain, the National Defense Panel, think tanks, and recent congressional action.

The administration will lay out its vision about force size and composition in the next strategy review but has not made a clear statement so far. Looking across these many visions, however, one thing is clear: there is a lot of pressure to grow structure after its postwar low point, and changes in the future will likely be on the up side.

A wide range of fiscal futures. Nevertheless, as budgeteers like to say, “Visions without funding are hallucinations.” Despite the strategic rationale for larger forces, the future of military forces depends on the future of the budget, but that future is highly uncertain. The chart below gives a sense of the range. By FY 2022 the gap between the high and low projections is over \$100 billion.



The table below shows how the different fiscal futures affect forces. (“Trump FY 2018” is the Trump administration’s FY 2018 projection, which it argues is a placeholder, not a final decision; “Trump Candidate 9/2016” is what President Trump, as a candidate, proposed in a September 2016 speech.)

	BCA Caps ("Sequestration")	Obama FY 2017 FYDP	Trump FY 2018	Trump Candidate (9/2016)
<i>Army manpower (active/reserve)</i>	421,000/ 498,000	450,000/ 530,000	476,000/ 542,000	540,000/ 563,000
<i>Army brigade combat teams (AC/RC)</i>	53 (27/26)	58 (30/28)	61 (31/28)	68 (40/28)
<i>Navy carriers</i>	10	11	11	12
<i>Navy ships</i>	274	295	305	350
<i>Air Force TacAir – total (4th/5th generation)</i>	1,015 (668/347)	1,101 (699/402)	1,141 (739/402)	1,310 (837/473)
<i>USMC manpower</i>	175,000	180,000	185,000	242,000 (!)

Much, therefore, depends on the outcome of this fall's budget negotiations and the administration's announced strategy, likely to be published in February. For descriptions about how all this comes out and insights into what it means, read next year's paper, *U.S. Military Forces in the FY 2019 Budget*.

Overview of military services

In the absence of comprehensive strategic guidance, the services have struggled to balance capacity and capability, and readiness/modernization/force structure. In the Obama administration, Secretary Ash Carter and Deputy Secretary Robert Work had clearly set a priority for capability and modernization. That emphasis was seen in the "Third Offset" initiative, which sought to enhance capabilities against high-end adversaries such as China and Russia. However, the increased demands for combat forces in the Middle East and for forward deployments to Europe and Asia have pushed the services to prioritize readiness and force structure in order to meet these immediate demands. Indeed, all the services argue that high operational demand puts a floor on their size.

A structural effect of the high day-to-day demand for forces is that all units (except nuclear and a few highly specialized units) must be available for routine deployment. Pulling some units out of the deployment cycle would put too much pressure on the others. That means that units cannot be too highly specialized, for example, only suitable for major conflicts, or only focused on particular geographic regions. It also means that the services have not been able to create experimental units that only test new warfighting concepts and equipment. Instead, the services have had to use regular forces that periodically deploy overseas and execute conventional missions.

Army

The Army ended its postwar drawdown in 2016. Instead of declining to a total end strength of 980,000, the Army bottomed out at 1,015,385 in FY 2016 and in FY 2017 came up slightly to 1,018,000. The FY 2018 request maintains that level. This is consistent with the broader DOD strategy of rebuilding readiness before expanding the force, a strategy also expressed by Gen. Mark Milley, the Army chief of staff, in his annual posture statement.

The Army used this additional end strength to retain units previously planned for inactivation, such as a brigade in Alaska; to create new units to fill gaps such as security force assistance brigades; to increase the manning of existing units to improve readiness; and to add personnel to the support base.

Army officials still believe that the Army is too small, because postwar operational demands continue at a high level. However, the stridency of previous years is gone, likely because recent end-strength increases have eased pressure.

The big change in Army warfighting requirements continues to be the need to defend the Baltic states and eastern Europe against possible Russian aggression. General Milley has often stated his concern about Army readiness to fight this kind of high-end conflict, foreseeing that the Army would be “outgunned, outranged, and outdated on a future battlefield with near-peer competitors.” 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 versus defense of NATO’s heartland).

Through the European Reassurance Initiative, the Army is strengthening its position in Europe with a rotational armored brigade, expansion of prepositioned equipment sets, exercises with allies, and infrastructure improvements to facilitate a surge of forces, if needed. Nevertheless, NATO forces are inadequate to stop a Russian invasion. Thus, the debate about how much is enough will continue.

Army modernization continues to be a classic good-news, bad-news story. The good news is that proposed FY 2018 funding for investment is back at the historical funding levels and that over the last 15 years the Army was able to use war funding to replace a lot of its aging equipment. 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. It was hit by a “triple whammy”: modernization funding reductions, a focus on near-term systems for current operations, and a missed procurement cycle due to program failures.

One piece of good news on Army governance: Relations between regulars and the Guard/reserves have improved. These relations are particularly sensitive for the Army because it has, by far, the largest reserve component, in both relative and absolute terms. Tensions peaked in 2014 during the post-Iraq/Afghanistan drawdown, resulting in congressional creation of the

National Commission on the Future of the Army to make peace. Recent budget increases and the willingness of the Army to implement the commission's recommendations have eased tensions in the near-term.

Navy

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 292 ships by the end of FY 2018, up from its low point of 275 in 2016. Long-term plans had envisioned fleet size rising to about 310 in the 2020s before declining to the 290s after that, but these plans are being revised.

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.

Despite its slowly increasing size, the Navy is feeling a lot of stress. Theater commanders say they only receive about half of their requests for Navy ships, but this is not surprising since theater requests are not resource constrained. Nevertheless, this shortfall engenders a concern that the Navy is too small for the tasks that it is being asked to perform. Highly publicized gaps, such as the intermittent lack of a carrier in the Middle East, reinforce this perception. Further, the need to deploy to Europe, a theater that had been largely ignored by surface forces since the end of the Cold War, adds to demands.

As a result of these tensions, this was the year of Navy force structure assessments. The president, the Navy, and many think tanks all weighed in on what the size of the Navy should be. These assessments all skew high—ranging from 323 to 414—because of the deteriorated strategic environment and high demands for forward presence. Some proposed force structures included innovative designs such as unmanned ships and small carriers. The Navy's 355-ship goal focused on existing ship classes to allow more rapid force expansion.

The Navy proposes to construct nine ships in FY 2018, the same number as in FY 2017: one carrier, two DDG-51 destroyers, two SSN-775 submarines, and two auxiliaries. This is a relatively small number considering the administration's stated intention to expand the fleet (about 12–14 ships a year would be needed to build toward a fleet of 350) but consistent with Secretary Mattis's plans to focus FY 2017 and FY 2018 on readiness.

Further, the Navy appears to be focusing on existing platforms rather than developing new ship classes as some of the force structure analyses recommended. The reason is to get ships built quickly, without the delay and risk of development programs.

- Carrier programs continue, though the availability of the *America*-class amphibious assault ship and the proliferation of A2/AD capabilities have rekindled interest in small carriers.
- The littoral combat ship program remains controversial and in flux. The Navy put out a request for information that opened the door to new designs.

In FY 2018, naval aviation (Navy and Marine Corps) proposes to procure 91 aircraft of all kinds. Naval aviation *procurement* is in generally good shape with mature programs producing aircraft with few major issues. However, naval aviation *overall* has been described as in a “death spiral” because of inventory and readiness problems. The Navy sees faster procurement of new aircraft as the long-term solution, but their high cost, especially for F-35s, makes this difficult.

In the background are issues about manned versus unmanned aircraft. Navy UAV procurement (3) in FY 2018 is far behind the Air Force’s (16), and its UAV inventory (60) is even farther behind the Air Force’s (256, MQ-9 and RQ-4). This reflects the Navy’s emphasis on manned systems such as the F-35, F-18, and P-8, and, to some critics, a lack of interest in unmanned systems.

Marine Corps

The FY 2018 Marine Corps budget maintains the FY2017 manpower levels: active duty end strength at 185,000, Marine Corps Reserve end strength at 38,500, civilian full-time equivalents nearly constant at 21,100. Marine Corps leadership said that maintaining a constant level of end strength was a conscious decision to put more money into readiness. Despite this pause in manpower growth, the Marine Corps, alone among the services, is coming out of the wars at a higher level (185,000) than it went in (172,600).

To cope with the changed strategic environment and evolving methods of conducting military operations in the longer term, the Marine Corps embarked on a force structure assessment, called “Force 2025.” A major theme is that, after 15 years of operations ashore in Iraq and Afghanistan, the Marine Corps is refocusing on its naval roots and full-spectrum operations. The Marine commandant, Gen. Robert Neller, talks about a “5th-generation Marine Corps” that incorporates new technologies and new organizations. Unlike previous force assessments, which were announced as a complete package, specific results of this assessment are being rolled out gradually. One immediate change has been to increase Marine capabilities in cyber and electronic warfare.

In structuring a future force, General Neller said that he had chosen a “hybrid” approach that both enhances traditional capabilities—infantry, artillery, tanks—to increase dwell time and still meet deployment demands and adds new capabilities for future, high-end conflicts. To accomplish this, the Marine Corps has set a target endstrength of 194,000. If the expected, future manpower increase does not materialize, however, then tough choices will be necessary.

Marine aviation continues to upgrade platforms and incorporate new systems. The KC-130J, AH-1Z, and, finally, the F-35B are all in serial production. MV-22 production for the Marine Corps is complete. CH-53K is in initial production, having begun procurement last year. That’s all good news.

The bad news in the aviation community is low readiness, which received extensive attention because of high-visibility crashes and the large number of grounded aircraft. Unfortunately, naval flying hours will decline in FY 2018, though additional funding should increase aircraft availability. F-35s will slowly replace legacy aircraft, but their high flying-hour cost, currently more than double that of the F-18, make achievement of target readiness levels even harder.

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). The JLTV has been developed successfully and is in its third and last year of low-rate initial production. The ACV is the Corps' third attempt to replace the 1970s-era amphibious assault vehicles. In this attempt, the Corps is taking an evolutionary approach, phasing its requirements, and not asking (at least initially) for technologically challenging capabilities.

The Marine Corps is engaged in a long-term effort to ease the burden of its force footprint on Okinawa, moving some forces to more remote areas of the island and other forces off Okinawa, mainly to Guam. Both processes—on Guam and Okinawa—continue, though slowly, and only a few Marine forces have yet relocated or left Okinawa. By contrast, the Marine Corps' rotational deployments to Darwin, Australia, continue into their sixth year without major controversy,

To provide rapid response and persistent presence in Africa Command (AFRICOM) and Central Command (CENTCOM), and periodic theater engagement in Southern Command (SOUTHCOM), the Marine Corps established Special Purpose Marine Air Ground Task Forces (SPMAGTFs). These land-based special-purpose units, smaller than the Marine Expeditionary Unit (2,200 marines), continue but have been losing their air components to higher-priority missions.

Consistent with its reenergized naval orientation, the Marine Corps has strongly stated its support for an amphibious fleet of 38 ships, up from the current 32. Because of the high demands on these 32 ships, the Marine Corps and Navy have been experimenting with using other kinds of ships, such as Maritime Prepositioning Force ships, high-speed vessels (EPFs), and afloat forward staging bases (ESBs and ESDs). This has been a change from the Corps' longstanding "amphibious-only" approach.

Air Force

The FY 2018 budget increases manpower for all three components above the FY 2017 level. This is a change to the Air Force's long-term trend of cutting manpower to maintain the pace of modernization.

Like the other services, the Air Force notes how busy it is. The Air Force is, in effect, conducting an air war in the Middle East while still meeting its other global commitments, particularly growing more active in Europe.

Because of these incessant operational demands, the Air Force leadership describes the service as "too small" for the tasks it has been assigned. This, in turn, pushes the Air Force (as with the other services) to increase capacity, even at the cost of capability, though higher budgets may allow some increase in both.

This tradeoff is seen in the Air Force's decision to delay retirement of the A-10 fleet, upgrade more F-16C/D fighter aircraft, and extend the life of the F-15C fighters through upgrades and fuselage overhauls. Collectively, these decisions—coupled with leveling out F-35 procurement in FY 2018—indicate a leaning toward capacity rather than the previous leaning toward

capability. Whether this will survive the strategy review—and its historical focus on high-end conflict—remains to be seen.

For the Air Force, the UAV revolution is complete. Although 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 in the 2000s—has become routine.

Nevertheless, the Air Force struggles with the long-term challenge of maintaining its force structure with increasingly capable, but increasingly expensive, aircraft. Aircraft numbers have declined while average age has increased (to 27 years).

The Air Force has programs in place to modernize the individual fleets—B-21 for bombers, F-35 for fighter/attack, KC-46 for tankers—but this modernization has been delayed and will take time. As a result, today's aging fleets will be around for a long while. The Air Force calls its modernization program "cost-effective," a nod toward an emphasis on readiness and capacity.

Nuclear forces continue as planned, at least for now. The ICBM force has declined from 450 to the New START limit of 400. The bomber force holds steady at 158 (total). Both the Ground Based Strategic Deterrent (GBSD, replacement for the Minuteman missiles) and Long Range Standoff cruise missile (LRSO) continue in the FY 2018 budget, but the future of the nuclear enterprise will be determined by DOD's Nuclear Posture Review, currently underway.

The great issue about space this year was whether to create a "space corps" separate from the Air Force. Although the issue appears to have receded, it is unlikely to go away entirely since space is an increasingly important domain, and the Air Force is often distracted by its aircraft programs.

Special Operations Forces

Three themes continue from last year—stable force size, continuing stress, and dependence on Overseas Contingency Operations (OCO) funding. In addition, statutory changes to the management of Special Operations Forces give them more independence and broader responsibilities.

- Stable force size. After growing from 42,800 in 2001 to 63,347 military service members today—and approaching the size of the British army (82,000)—SOCOM's size has now leveled off. This has occurred for both fiscal reasons—a focus on readiness—and recruiting reasons—there are a limited number of personnel suitable for SOCOM roles.
- Continuing stress. High force demands have continued even after the substantial withdrawals from Iraq and Afghanistan. As a result, SOCOM operational tempo (OPTEMPO) is about as high as personnel can tolerate in "peacetime." With OPTEMPO and force size limited, DOD will need to shift some existing SOF missions to conventional forces if it wants to add missions to SOF.

- Dependence on OCO funding. SOCOM is particularly dependent on OCO funding, which comprises 31 percent of its total funding, three times the department's rate overall (10 percent). Although OCO looks stable for the immediate future, its long-term prospects are unclear.
- Changes to management. SOCOM received additional missions making it, in effect, a "global COCOM" (combatant commander), with activities that reach into the regional COCOMs. The 2017 National Defense Authorization Act (NDAA) also gave the assistant secretary of defense for special operations/low-intensity conflict additional authorities over SOCOM personnel. The effect, and congressional intent, was to make special operations forces even more like a separate service.

DOD Civilians

Although the administration has pledged to decrease the size of the federal workforce, its FY 2018 budget proposes to increase the number of DOD civilians by 5,200 in FY 2018, justified on the basis of improving readiness.

Nevertheless, controversy about the size of DOD's civilian workforce continued. To opponents, civilians are part of the overhead, and not warfighting elements. The number of civilian personnel has been rising while the number of military personnel has been falling, evidence that these levels are not closely overseen.

Proponents note that government civilians are mostly not in Washington, but rather in readiness functions such as maintenance and base operations. They also note that recent efforts to move functions from higher-cost military personnel to lower-cost civilian personnel naturally increase the number of civilians.

Long-term workforce levels will be set by "management improvement plans" that the Office of Management and Budget (OMB) requires in the FY 2019 budget.

Although DOD civilians were sheltered from cuts, they were affected by government-wide workforce proposals such as increases to retirement contributions. The proposed 1.9 percent pay raise was mostly good news, being higher than the 1.6 percent projected in FY 2017, but lower than the military 2.1 percent raise.

Inadvertently, the administration also raised questions about the number and role of political appointees. That number has been increasing steadily in DOD, numbering 238 in the Obama administration, with 56 requiring Senate confirmation, but the Trump administration has been particularly slow to fill them. The gap raises the question whether all the appointees are needed.

Contractors

Contractors have become a permanent element of the federal workforce, but they remain controversial. Service contractors provide workforce flexibility by conducting noncore governmental activities but raise questions about the line between government and the private

sector. 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.” For both there are unresolved questions about cost compared with government employees.

The background data show how important contractors have become. Service contract obligations increased from \$74 billion in 2000 to \$180 billion at their peak in FY 2009 (all in FY 2014 dollars). Although service contract obligations declined to \$125 billion in FY 2016, they are still substantially above the prewar level and have started to increase again.

Contractors outnumber military personnel in combat theaters, as shown in the table below for CENTCOM.

	Total Military	Total Contractors	U.S. Citizens	Third-Country Nationals	Local/Host-Country Nationals
Afghanistan Only	10,100	23,525	9,436	8,873	5,216
Iraq/Syria Only	7,200	4,485	2,424	1,406	655
Other Locations	18,300	14,402	6,210	8,044	148
AOR Total	35,600	42,412	18,070	18,323	6,019

In the spring, Eric Prince, former head of Blackwater, proposed to have contractors take over much of the U.S. commitment in Afghanistan, thus bringing these issues to the fore after years of relative quiet. The proposal was highly controversial and did not appear in the administration’s announced Afghanistan strategy. However, it did describe an alternative, and lower-visibility, approach to conducting long-term overseas operations, and this approach is still out there if the new strategy falters.

DOD-wide

- *Readiness.* Sequestration in 2013 hurt readiness. The services are still rebuilding readiness after those cuts, and Secretary Mattis identified readiness as the focus for the FY 2017 and FY 2018 budgets. All the services are putting funds toward spare parts and increased unit manning. However, progress stalls in the FY 2018 budget when measured by activity metrics like flying hours, so the indicators are mixed.
- *Readiness shortfalls primarily affect nondeployed forces.* The services deploy forces at a high level of readiness because these forces will conduct real-world operations. The risk is that in an emergency (for example, a war in Korea), the services would need to deploy units at lower readiness. The challenge is that readiness is both expensive and perishable, so buying more requires tradeoffs in other areas. As a result, “readiness crisis” may be the new normal as demands for higher readiness collide with rising readiness costs and the need for budget tradeoffs within a constrained top line.

- *National security reform and reduction in management headquarters.* The 2017 NDAA made many structural and procedural changes to improve efficiency and decisionmaking, and capped the number of general officers and SES civilians. OMB has directed that all agencies, including DOD, evaluate their organization and processes to identify management efficiencies and produce Agency Reform Plans. The effect on life in the Pentagon will be large, but the effect on forces will be indirect and remains to be seen.
- *Facilities and infrastructure.* The FY 2018 request—\$10.4 billion (base and OCO, including family housing)—is a large increase above the FY 2017 level and close to the average level of the 1980s and 1990s. Thus, DOD may be ending its “military construction holiday,” after living off the large construction budgets of the 2000s and the construction activity of previous BRAC rounds. However, it will take sustained investment to recapitalize DOD’s deteriorating facilities.
- *Unmanned systems and artificial intelligence.* A continuing theme in weapons development is the move toward unmanned systems and artificial intelligence. The use of such systems in the air has been well established for two decades. The use of such systems at sea and on the ground (other than for mine clearance) is just beginning. These technologies have the potential to profoundly shape future force structure. Although this revolution will take decades to fully implement, the U.S. military has already begun to enter this new realm with experiments on land, on sea, and in the air.
- *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. The BCA budget caps put NNSA and DOD in a zero-sum situation. Any cost overruns or program increases that NNSA experiences must be paid by DOD. This dynamic causes constant tension, not least because NNSA has a poor record of cost control on major projects.
- *Rising budgets have eased tensions.* Weapons activities and naval reactors increase, consistent with the administration’s stated intention to modernize nuclear forces, while nonproliferation activities decrease. Conflict will return if expected budget increases do not materialize.
- *U.S. allies.* Although this paper is about U.S. armed forces, it also recognizes what allies are doing, and sometimes failing to do, both because the United States is unlikely to fight wars completely on its own and because the Trump administration has highlighted the need for allies to do more for their own defense. In general, the United States spends more on defense, both absolutely and relatively, than its allies, but the allies do participate in operations, such as in Afghanistan and eastern Europe, and provide extensive support by offsetting basing costs. Also, often unappreciated in the United States, is the fact that future wars will likely be fought on, and devastate, allied territory, not ours.

Introduction

This is an unusual year for assessing U.S. military forces. First, there was a presidential election and a change of administration. That always brings a period of uncertainty until the new administration identifies the threats it considers most pressing, publishes a strategy describing how it will meet those threats, and specifies the forces needed to implement that strategy.

Then, despite the new beginning, partisan rancor and political stalemate have continued. Although Republicans control both houses of Congress and the presidency, they don't have enough votes to push through legislation without some Democratic support. Political stalemate has produced a wide range of possible fiscal futures, as defense hawks, deficit hawks, and supporters of domestic spending tug at the budget with the specter of the Budget Control Act ("sequestration") in the background.¹ The fiscal future will be a major driver of force size and composition.

As a result, the much-expected buildup of military forces has become highly uncertain.

Competing visions

Competing visions of strategy arise in several ways. First, there are disagreements about which threats are more important. Then there are disagreements about how to balance demands for war fighting and day-to-day operations. Then there are disagreements about the balance between readiness, modernization, and force structure. Finally, as a candidate, President Trump raised fundamental questions about the U.S. role in the world. These competing visions play out in different force structures that various experts and policymakers have proposed. The administration will lay out its vision in the next strategy review but has not made a clear statement about force size or composition so far.

Threats. The previous administration, including the current chairman of the Joint Chiefs of Staff, identified five challenges to the United States: Russia, China, North Korea, Iran, and ISIS/global terrorism.² This was a change from the administration's earlier strategy, contained in its 2014 Quadrennial Defense Review, which had not envisioned an aggressive Russia, the rise of ISIS, or an assertive China. The Trump administration's defense and national security strategies will almost certainly include all these threats, and perhaps others, but how they are prioritized and constructed makes a difference.

¹ Technically, the BCA caps set future budget levels. Sequestration is an action that would happen in the budget year if appropriations were higher than the caps. Although BCA budget levels are popularly known as "sequestration" levels, this study uses the more precise "BCA" levels or caps.

² Ash Carter, *2017 Defense Posture Statement: Taking the Long View, Investing for the Future*, Department of Defense, February 2016, 4–6, http://www.defense.gov/Portals/1/Documents/pubs/2017DODPOSTURE_FINAL_MAR17UpdatePage4_WEB.PDF; Gen. Joseph Dunford, advanced questions before the Senate Armed Services Committee, *Hearing on Nomination*, 114th Cong. 1st sess., July 9, 2015, http://www.armed-services.senate.gov/imo/media/doc/Dunford_07-09-15.pdf.

Although all elements of U.S. force structure would participate in major conflicts, warfighting requirements against different threats stress different elements of the force structure. Details of war plans and planning scenarios are classified, but enough information is available to make general statements about demands.

- Russia and China. These threats drive requirements for weapons with the most advanced technologies. Both Russia and China can create anti-access/area denial (A2/AD) environments, that is, highly sophisticated defensive layers combined with advanced offensive weapons.³ The response to Russia falls mainly on the Army because of the need to get ground forces forward to defend vulnerable NATO allies such as the Baltic states and Poland. The Navy is relatively less engaged because of the difficulty in getting ships into the Baltic and positioned to strike Russia (unless one side escalates horizontally to the Atlantic or the Pacific). Conversely, the Navy would have the lead in any conflict with China because the Pacific theater is mostly maritime. The Air Force would be engaged in both potential conflicts but has the challenge of getting its forces into a position where they can strike China because the United States lacks nearby bases.
- Iran. Most scenarios about conflict with Iran focus on reopening the Strait of Hormuz, which task falls mainly on the Navy, but can have a ground component to eliminate threats from coastal locations. A scenario that envisioned neutralizing Iran's nuclear capabilities would draw heavily on Air Force and Navy aviation. A scenario that envisioned regime change, that is, replacing the existing government, would require moving forces inland beyond the coastal areas and would be extremely demanding for ground forces, and hence unlikely.
- North Korea. A major war on the Korean Peninsula would stress all force elements because of the size of North Korea's military and the likely goal of removing the regime. Modernization would be relatively less important because of the obsolescence of North Korea's weaponry. The Army would be particularly stressed in such a war. In fact, this scenario drives Army force size, especially if some long-term occupation of North Korea is needed.
- Global terrorism. Force demands are relatively low because, outside of Iraq and Syria, terrorists exist in small units, but the conflict is global and long term. They fall most heavily on special operations forces and intelligence, reconnaissance, and surveillance (ISR) assets. These low force demands assume continuation of the Obama administration's policy of not building force structure for long-term stability operations. If that policy were changed, force demands, particularly for ground forces, would increase greatly because of the need to rotate forces over a long period.

DOD has mechanisms for combining these scenarios, for example, the long-standing construct of two major regional conflicts, so it does not focus on one to the exclusion of all others.

³ Department of Defense, *Joint Operational Access Concept*, Washington, DC, January 17, 2012, https://www.defense.gov/Portals/1/Documents/pubs/JOAC_Jan%202012_Signed.pdf.

Nevertheless, the way the new administration constructs and combines scenarios will drive force requirements.⁴

Warfighting versus day-to-day presence demands. In addition to the warfighting requirements described above, forces must meet day-to-day demands for ongoing conflicts, crisis response, partner/ally engagements, and forward deployments. Army units rotate into Europe and the Baltics to reassure European allies. The Navy deploys carrier battle groups and the Marine Corps deploys Marine Expeditionary Units for crisis response. Force levels in Afghanistan will be higher for longer than had been anticipated. The campaign against ISIS has generated what is, in effect, an air war with, more recently, a ground component as well. The world has not returned to a state of “peace” that the Obama administration had anticipated when it pledged a “responsible exit” from American involvement in Iraq and Afghanistan and to focus on nation building at home. Instead, the world appears to be in a state of persistent conflict that has demanded a continuing U.S. response.

Day-to-day demands are different from warfighting requirements in that they must be met in a way that is sustainable for the long term and without surge of reservists or personnel tempo. To do this, each service has its own process for building, training, and then deploying forces on a regular cycle. The services aim for a ratio of about 1:3, that is, one period deployed and three at home. Faster cycles are possible—some high-demand units currently have deployment ratios of 1:2 and in a surge situation the services have cycles as fast as 1:1—but this creates stress on personnel, and surge cycles cannot be sustained indefinitely. Thus, on average it takes a base of four units to keep one deployed continuously, whether it is Navy carriers, Air Force squadrons, or Army Brigade Combat Teams (BCTs).

Demands for presence and crisis response increase operational tempo. Gen. Joseph Dunford, chairman of the Joint Chiefs of Staff, noted that, “As a result of sustained operational tempo and budget instability, today the military is challenged to meet operational requirements.”

Meeting 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. Leadership of all the services note the high level of operational demands and how current forces are not adequate to meet all those demands. DOD has a global force management process to prioritize force requests and allocate forces to meet them. 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.⁵

⁴ For a detailed discussion of scenario development, simultaneity assumptions, and their effect on force structure, see Mark Cancian and Clark Murdock, *Alternative Defense Strategies in a Cost-Capped Environment* (Washington, DC: Center for Strategic and International Studies, January 4, 2016), <https://www.csis.org/analysis/alternative-defense-strategies-cost-capped-environment>.

⁵ 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).

Readiness, modernization, and force structure. The presence/warfighting dichotomy feeds into a further tension, 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 presence/crisis response deployments. The largest proposed buildups, described in more detail in the next section, avoid these tradeoffs. However, resources are likely to be constrained, so some tradeoffs will be necessary. For example, readiness is highly desirable. However, as described in a later section, readiness is extremely expensive. The more readiness a service buys, the less modernization and force structure it can afford.

Force structure is important because forces, no matter how capable, can only be in one place at one time. Force structure is particularly important in meeting day-to-day demands for presence and crisis response because many of these missions do not require a lot of warfighting capability but do require forces to be forward deployed.

Modernization is especially needed to compete with great powers such as Russia and China. These high-end competitions, with the A2/AD environments that they entail, require advanced technologies such as stealth, long-range precision strike, and electronic warfare. Conversely, conflicts against regional powers like North Korea have less demand for these capabilities. Conflicts against global terrorism typically occur in permissive environments, at least for air and naval forces, where persistence is key.

Aircraft illustrate these different levels. A high-end conflict requires the stealth capabilities available in an F-35 or F-22 aircraft. In a regional conflict, the capabilities of a 4th+ generation fighter such as the F-18 E/F would be adequate, especially after the first few days when the adversary's air defense network has been beaten down. Against global terrorists, where there is a low air threat, close air support aircraft like the A-10 and the proposed OA-X (see Air Force section for details), with their long loiter times and relatively low cost, are desirable.

The last administration often characterized these tradeoffs as capacity versus capability. Secretary Carter called for an emphasis on capability, even at the expense of capacity, because he regarded the high-end threats as paramount. Deputy Secretary Work explicitly made that recommendation to the incoming Trump administration: "If I had another \$20 billion, I wouldn't buy more force structure. I would really focus on cyber vulnerabilities, C4I (command, control, communications, computers and intelligence) [resiliency]... There's a lot of things we would want to fix before I'd say let's start growing the size of the force."⁶ The Navy pushed back on that guidance, wanting to put more emphasis on capacity in order to meet day-to-day demands.⁷

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 day-to-day events, allied desires for engagement, and the need to respond rapidly to crises pushes against

⁶ Megan Eckstein, "DEPSECDEF Work Cautions Trump Team against Growing Military Size over Capability," *U.S. Naval Institute News*, December 6, 2016, <https://news.usni.org/2016/12/06/depsec-work-cautions-trump-team-against-growing-military-size-over-capability>.

⁷ Austin Wright, "Pentagon in open brawl over spending priorities," *Politico*, January 26, 2016, <http://www.politico.com/story/2016/01/pentagon-budget-ash-carter-army-navy-218209>.

such a strategy. As many experts point out, virtual presence is actual absence, and presence on the ground is needed for global leadership.⁸ For this reason, administrations often evolve toward a high/low mix in order to meet both demands.⁹

Secretary Mattis has stated that rebuilding readiness is his top priority and that the FY 2017 and FY 2018 budgets reflected that, based on a “30-day Readiness Review.” He has signaled that the FY 2019 budget and its five-year plan (Future Year Defense Program or “FYDP” in DOD language) will emphasize modernization. He is particularly cautious about force structure, noting, “We already know we face a dilemma between increasing personnel end strength and force structure on the one hand and investing in equipment as well as research and development on the other hand.”¹⁰ General Dunford was similarly cautious in his reconfirmation hearing, saying, “I don’t see, in the near term, our ability to really grow the force.”¹¹ This implies that force expansion will be modest, and that forces may even shrink as bill payers for modernization and readiness. This would be a major change from the force expansion that the president had been indicating. The politics of making such a shift would be daunting, both internally with the military services and externally with defense hawks.

Kathleen Kicks, a senior vice president at CSIS, summarized the dilemma: “As long as the U.S. military is operationally engaged today, squeezing readiness and structure too tightly seems irrational, and investments for the future are the costs most easily deferred. Like a prisoner’s dilemma, defense strategists face the paradox that this is a worst-choice strategy for long-term U.S. military preeminence, but it is better than every other choice one can make when threats are judged imminent and our soldiers, sailors, airmen, and Marines are routinely in the field. One can nuance the edges of this dilemma, but for the most part, [the iron triangle of painful tradeoffs] forecloses radical changes in defense strategy.”¹²

Nontraditional strategies. As a candidate, President Trump criticized reductions in military forces and said he would “spend what [is] needed to rebuild our military,” so that “our military dominance is unquestioned.”¹³ As president he has continued to make such statements. As one of many examples: “We must give our sailors, soldiers, airmen, marines, and coastguardsmen

⁸ For example, Thomas Donnelly, *Peers, Near-Peers, and Partial Peers: Making Sense of America’s Balance-of-Power Interests*, Statement before the Senate Committee on Armed Services, 115th Cong., 1st sess., February 16, 2017; Michael J. Mazarr, “Presence v. Warfighting: A Looming Dilemma in Defense Planning,” *War on the Rocks*, April 26, 2016, <https://warontherocks.com/2016/04/presence-vs-warfighting-a-looming-dilemma-in-defense-planning>.

⁹ James Thomas, *Reshaping the U.S. Military*, Testimony before the Senate Armed Services Committee, 115th Cong., 1st sess., February 16, 2017, <https://www.armed-services.senate.gov/hearings/17-02-16-reshaping-the-us-military>.

¹⁰ Secretary of Defense James Mattis, *Testimony to the House Armed Services Committee*, 115th Cong., 1st sess., June 12, 2017.

¹¹ Tony Bertuca, “Dunford: DOD needs between 3 percent and 7 percent growth annually,” *Inside Defense*, September 26, 2017, <https://insidedefense.com/daily-news/dunford-dod-needs-between-3-percent-and-7-percent-growth-annually>.

¹² Kathleen Hicks, *Defense Strategy and the Triangle of Painful Tradeoffs* (Washington, DC: Center for Strategic and International Studies, June 22, 2017), <https://www.csis.org/analysis/defense-strategy-and-iron-triangle-painful-trade-offs>.

¹³ Donald Trump, “Foreign Policy Speech,” Washington, DC, April 27, 2016, <https://www.donaldjtrump.com/press-releases/donald-j.-trump-foreign-policy-speech>.

the tools, equipment, resources and training they need to get the job done, and get it done right—especially in these very dangerous times.”¹⁴

Potentially disruptive is his often-stated desire to avoid overseas entanglements, restructure alliances, and put more responsibility onto our allies. This is part of a broader uncertainty about what an “America First” strategy actually entails.¹⁵

So far, the administration’s actions have shown considerable continuity with past strategies of U.S. global leadership, rather than a major break, particularly when expressed by Secretaries Mattis and Rex Tillerson. Nevertheless, there is the possibility of a major change.

Force structure proposals

Defense hawks have not waited for a new strategic review to lay out their ideas about force structure. Senator McCain drove the defense debate by publishing a comprehensive plan for a defense buildup.¹⁶ His proposed force expansion would increase the Navy to 355 ships, the Marine Corps to 200,000 active duty personnel, the Army to 510,000, and add modern aircraft to the Air Force. In addition, the plan would fix readiness shortfalls, buy more modern equipment, modernize nuclear forces, expand efforts in cyber, missile defense and space, and develop innovative technologies. All this would cost a great deal of money, with the budget rising to \$740 billion (“National Security” or 050) by FY 2022.

On May 22, the Trump administration published its FY 2018 budget proposals. Both McCain and Rep. Mac Thornberry (chairman of the House Armed Services Committee), the leading congressional hawks, criticized these proposals as inadequate. Senator McCain: “With a world on fire, America cannot secure peace through strength with just 3 percent more than President [Barack] Obama’s budget. We can and must do better.” Representative Thornberry: “While we cannot repair all of the damage done by those cuts in a single year, we can and should do more than [the president’s FY 2018] level of funding will allow.”¹⁷

The table below shows how the different proposals play out in manpower levels, which are a first approximation of force structure size. The administration proposed a total increase of 10,800 over the FY 2017 authorized levels and 73,600 over what the Obama administration had

¹⁴ President Donald Trump, “President Trump’s Weekly Address,” White House, March 3, 2017, <https://www.whitehouse.gov/the-press-office/2017/03/03/president-trumps-weekly-address>.

¹⁵ For example, Greg Jaffe, “The Battle to Define an ‘America First’ foreign-policy divides the Trump White House,” *Washington Post*, March 18, 2017, https://www.washingtonpost.com/world/national-security/the-battle-to-define-an-america-first-foreign-policy-divides-the-trump-white-house/2017/03/18/d436acf2-09b3-11e7-93dc-00f9bdd74ed1_story.html?utm_term=.3f9ee9e900f3.

¹⁶ John McCain, *Restoring American Power*, U.S. Senate, January 2017, <https://www.mccain.senate.gov/public/index.cfm/press-releases?ID=AA148EA0-8753-4483-8BEB-3D812D51F055>.

¹⁷ Travis Tritten, “McCain, Thornberry: Trump’s Proposed Defense Spending Hike Not Enough,” *Stars and Stripes*, February 28, 2017, <http://www.military.com/daily-news/2017/02/28/mccain-thornberry-trumps-proposed-defense-spending-not-enough.html>; John McCain, *Restoring American Power*, U.S. Senate, January 2017, <https://www.mccain.senate.gov/public/index.cfm/press-releases?ID=AA148EA0-8753-4483-8BEB-3D812D51F055>; U.S. House Armed Services Committee, “Thornberry on Low Defense Budget Outline Number,” U.S. House of Representatives, February 27, 2017, <https://armedservices.house.gov/news/press-releases/thornberry-low-defense-budget-outline-number>.

projected. However, the House Armed Services Committee (HASC) is 7,000 higher than the Trump administration levels and the Senate Armed Services Committee (SASC) 17,000 higher.

Table 1: FY 2017 Endstrength, Planned v. Request

Service Endstrength					
	FY 2017 Authorized	FY 2018 Requested	Obama 2014 QDR	SASC	HASC
Army	476,000	476,000	450,000	481,000	486,000
Army National Guard	343,000	343,000	335,000	343,500	347,100
Army Reserve	199,000	199,000	195,000	199,500	202,000
Navy	323,900	327,900	323,000	327,900	327,900
Navy Reserve	58,000	59,000	58,800	59,500	59,000
Air Force	321,000	325,100	308,000	325,100	325,100
Air National Guard	105,700	106,600	104,000	106,600	106,600
Air Force Reserve	69,000	69,800	69,000	69,800	69,800
Marine Corps	185,000	185,000	182,100	186,000	185,000
Marine Corps Reserve	38,500	38,500	38,500	38,500	38,500
Total	2,119,100	2,129,900	2,056,300	2,136,900	2,147,000

* Endstrength = the number of service members on September 30 of the fiscal year.

Source: FY 2018 President’s Budget Request; 2014 QDR and service FY 2015 budget briefings; HASC and SASC FY 2018 marks

Conservative think tanks have also proposed larger force structures.

- Heritage Foundation has proposed a large expansion: 50 regular Army brigades, about 350 Navy ships, 36 active duty Marine Corps battalions, 1,200 active duty Air Force fighter/attack aircraft.¹⁸ This built on Heritage’s detailed *Index of U.S. Military Strength*,¹⁹ which assessed the U.S. military’s ability to meet a requirement for two major wars. It rated Navy, Air Force, and nuclear capabilities as “marginal”; Army and Marine Corps capabilities as “weak.”
- The American Enterprise Institute (AEI) has similarly recommended a broad expansion of forces to cover a “three-theater” demand. This includes a total Army of 1,096,000, a Marine Corps of 202,000, 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

¹⁸ Heritage Foundation, “Defense,” in *Solutions 2016* (Washington, DC: Heritage Foundation, 2016), 157–65, <http://solutions.heritage.org/wp-content/themes/heritage/pdf/Solutions-2016.pdf>.

¹⁹ Dakota Wood, ed., *2018 Index of U.S. Military Strength* (Washington, DC: Heritage Foundation, 2017). http://www.heritage.org/sites/default/files/2017-10/2018_IndexOfUSMilitaryStrength-2.pdf.

percent of GDP, about \$80 billion above the Trump administration's proposed FY 2018 budget.²⁰

The National Defense Panel, which reviewed the 2014 QDR, concluded that "The QDR force is not adequate to meet requirements." It recommended a regular Army of not less than 490,000, a Navy of 323 to 346 ships, and a larger Air Force.²¹

Five think tank teams participated in a force structure and budget exercise to recommend a military posture in 2027.²² Four—AEI, Center for Strategic and Budgetary Assessments (CSBA), Center for a New American Security (CNAS), and CSIS—expanded forces and increased the defense budget, though in different ways. CATO cut both substantially.

- AEI substantially expanded forces, consistent with its 2015 report *To Rebuild America's Military*, described above.
- CSBA proposed "a military second to none" but by adopting "leap-ahead" technologies and warfighting concepts, not legacy systems. This would expand the Army to 505,000 soldiers with more forward deployed in Europe and the Pacific and armed with longer-range fires. The Navy would shift to smaller combatants and longer-range fires and away from large platforms like carriers. The Air Force would also move toward long-range precision strike, using both manned and unmanned platforms.
- CNAS adopted a high/low mix approach but cut many legacy platforms. For example, the team increased procurement of Navy high-end destroyers and low-end small combatants but gradually retired aircraft carriers. Similarly, the team increased production of Air Force stealth fighters and retained more legacy fighters. The Army remained at the then-planned 450,000 but had more modernized equipment. The Marine Corps was cut 5 percent reflecting skepticism about the viability of amphibious warfare in an age of long-range precision strike. The team increased readiness to enhance forward deployments. The resulting budget was 2 percent over President's Budget 2017.
- CSIS's team also proposed a high/low mix of forces. As with CSBA, the high-end capabilities emphasized stealthy/submersible, long-range, unmanned, and distributed forces. The team also proposed that the strategy be "resource constrained." Thus, the budget increased by only 1 percent excluding the recommended movement of enduring

²⁰ American Enterprise Institute, *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>; Mackenzie Eaglen, *Repair and Rebuild: Balancing New Military Spending for a Three-Theater Strategy* (Washington, DC: American Enterprise Institute, October 2017).

²¹ William J. Perry and John P. Abizaid, *Ensuring a Strong U.S. Defense for the Future: The National Defense Panel Review of the 2014 Quadrennial Defense Review* (Washington, DC: United States Institute of Peace, 2014), http://www.usip.org/sites/default/files/Ensuring-a-Strong-U.S.-Defense-for-the-Future-NDP-Review-of-the-QDR_0.pdf.

²² Jacob Cohn, Ryan Boone, and Thomas Mahnken, eds., *How Much Is Enough? Alternative Defense Strategies* (Washington, DC: Center for Strategic and Budgetary Assessments, 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.

warfighting costs from the war budget (Overseas Contingency Operations, or OCO) to the base budget.

- CATO rejected the current strategy of engagement and forward deployments and instead proposed a strategy of “restraint.” This strategy disengaged from allies and forward deployments and implemented “a truly defensive defense strategy.” Thus, it reduced the Army, Air Force, and Marine Corps by a third, the Navy relatively less, 25 percent, in order to retain the ability to deploy globally when needed. Reserves were reduced relatively less to maintain a surge capability. These changes cut \$1.1 trillion out of the 10-year budgets 2018–2027.

Liberal/progressive groups have not entirely agreed. Fareed Zakaria, for example, argued against defense budget increases: “None of the difficulties the United States has faced over the past 25 years has been in any way because its military was too small or weak.”²³ Last year a coalition of progressive and libertarian groups recommended \$38 billion in budget cuts but no force structure reductions.²⁴

Nevertheless, looking at the weight of opinion, one thing is clear: changes in the future will likely be on the up side because of a perceived gap between strategic needs and the forces available.

The next strategy review

The administration’s strategic review is under way. That review will lay out the administration’s view of threats, its strategy for meeting those threats, and the forces and budgets needed to implement the strategy. No public information is yet available about where the administration will come out on these key questions, and it may be next February before there is something official.

This strategy review will not be like the earlier Quadrennial Defense Reviews (QDRs). The 2017 National Defense Authorization Act changed the statutory requirements for the review, which will now produce a document called the National Defense Strategy (NDS). The NDS will be structured as guidance from the secretary to department (not as a public explanation of the administration’s plans and policies), presented to Congress as a classified document with an accompanying unclassified summary, and cover a shorter list of required topics than the QDRs. The exact nature of the information that will be publicly available is, therefore, uncertain.²⁵

²³ Fareed Zakaria, “Throwing more money at the military won’t make it stronger,” *Washington Post*, March 2, 2017, https://www.washingtonpost.com/opinions/throwing-more-money-at-the-military-wont-make-it-stronger/2017/03/02/74716c22-ff99-11e6-8ebe-6e0dbe4f2bca_story.html.

²⁴ Taxpayers for Common Sense, “Right/Left Coalition Proposes \$38.6 Billion Worth of Pentagon Savings,” April 19, 2016, <http://www.taxpayer.net/library/article/right-left-coalition-proposes-38.6-billion-worth-of-pentagon-savings>.

²⁵ For a fuller description, see Mark Cancian, *National Security Reform: What Happened in Congress?* (Washington, DC: Center for Strategic and International Studies, January 10, 2017), <https://defense360.csis.org/national-security-reform-happened-congress>.

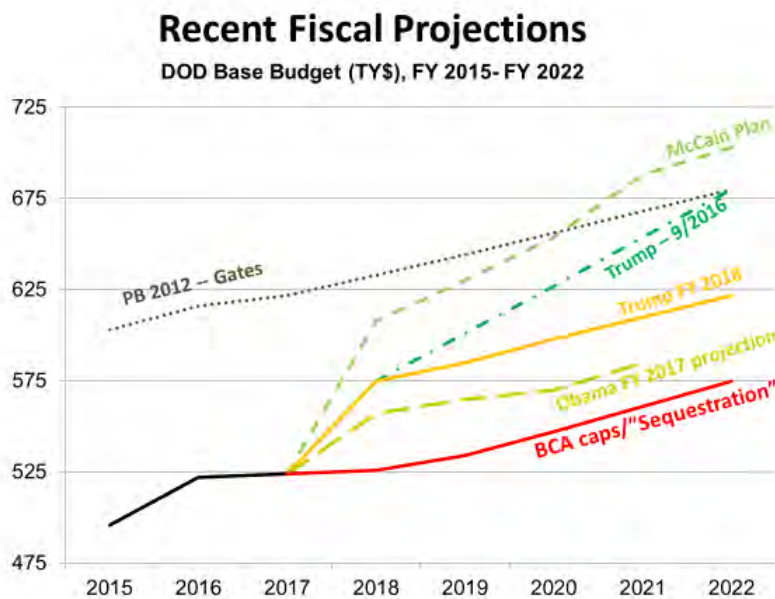
A wide range of fiscal futures

As budgeteers like to say, “Visions without funding are hallucinations.” The future of military forces depends on the future of the budget, but the budget future is highly uncertain. Force expansion costs a lot more money. Secretary Mattis and General Dunford have identified 5 percent budget growth per year as the amount required to build needed capabilities.²⁶

However, as my colleague Todd Harrison explains, such growth can only be obtained through some government-wide budget agreement that changes or eliminates the Budget Control Act (BCA), but such a deal has been elusive.²⁷ Other budget experts, Mackenzie Eaglen and Katherine Blakely, express similar skepticism.²⁸ Year-to-year budget compromises are unlikely to produce enough additional funding for major force expansion. Additional forces could be supported temporarily through OCO funding (the war funding), but that would not be a long-term solution and might not be acceptable to the administration or elements of the Congress.

Fiscal futures

The chart below shows different budget projections to give a sense of the great uncertainty.



²⁶ Mattis said 5 percent explicitly, Dunford 3 to 7 percent with 5 percent as the midpoint. Tony Bertuca, “Dunford: DOD Needs Between 3 percent and 7 Percent Growth Annually,” *Inside Defense*, Sept 26, 2017, <https://insidedefense.com/daily-news/dunford-dod-needs-between-3-percent-and-7-percent-growth-annually>.

²⁷ Todd Harrison, *Analysis of the FY 2017 Defense Budget* (Washington, DC: Center for Strategic and International Studies, 2016), <https://defense360.csis.org/wp-content/uploads/2016/08/Analysis-of-the-FY-2017-Budget.pdf>; Todd Harrison, *What to Expect in the FY 2018 Budget* (Washington, DC: Center for Strategic and International Studies, May 19, 2017), <https://www.csis.org/analysis/what-expect-fy-2018-defense-budget>.

²⁸ 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* (Washington, DC: Center for Strategic and Budgetary Assessments, July 2017), <http://csbaonline.org/about/news/a-defense-buildup-in-the-near-term>.

The solid black line is the enacted budget level. The other lines are different budget projections. There are three clusters: green/high, yellow/medium, red/low.

"Gates 2012." The top line is the Gates budget projection before the Budget Control Act of 2011. He regarded it at the time as the minimum required to execute the strategy, and defense hawks often refer to it as a goal.

"McCain plan." This reflects the buildup that Senator McCain proposed in January 2017. The plan represented his recommendation to the new administration about what it should do in national security. The House Budget Committee projected a similar fiscal path, though without McCain's program details behind it.

"Trump 9/2016." This is the fiscal level implied by the president's September 2016 speech. That speech was a major policy statement by then-candidate Trump. In it, he proposed an expanded force structure. CSIS used its Force Cost Calculator to estimate required budget levels. This is where many defense hawks thought the DOD budget would be after the election.

"Trump FY 2018." For FY 2018 the Trump administration proposed an \$18 billion increase over what the Obama administration had forecast and then projected that level through FY 2022. (This was described as a \$54 billion increase, but that used the Budget Control Act level as a baseline.²⁹) The Trump administration was emphatic that this projection was a "nonpolicy" profile that would be changed as a result of the administration's strategic reviews. In theory, it could be higher.³⁰ However, it represents budget "facts on the ground," and the department will, in effect, have to appeal to OMB for more resources.

"Obama 2017." This is 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 pending new guidance from the Trump administration.

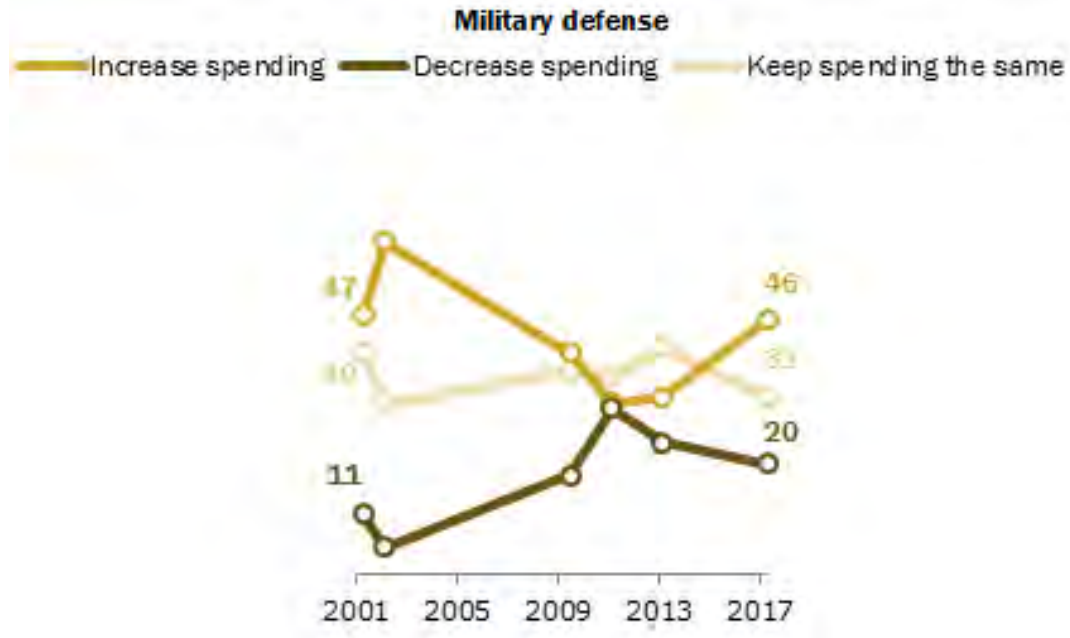
"BCA caps." This represents the floor. These caps were established by the Budget Control Act and the failure of the Joint Committee to forge a long-term fiscal agreement. Successive budget compromises have modified the caps, but their continued existence has put a damper on any defense buildup.

An important observation is that projections show increases, reflecting a consensus that the nation needs to spend more on defense in the face of rising threats. This is evident in public polling, in the Congress, and in the administration's projections. For example, both Pew and Gallop polling reveal sharp increases in public support for defense spending. The Pew graph below shows a sharp rise after 2010 with those now supporting increases (46 percent) being more than double those wanting decreases (20 percent).³¹

²⁹ Mark Cancian, "Trump's Promised Big Boost to DoD Evaporates in 2018 Budget," *Breaking Defense*, May 22, 2017, <http://breakingdefense.com/2017/05/trumps-promised-big-boost-to-dod-evaporates-in-2018-budget>.

³⁰ John Roth and Lt. Gen. Anthony Ierardi, *Department of Defense News Briefing on the President's FY 2018 Defense Budget*, May 23, 2017, <https://www.defense.gov/News/Transcripts/Transcript-View/Article/1191830/departments-of-defense-news-briefing-on-the-presidents-fiscal-year-2018-defense>.

³¹ Pew Research Center, "With Budget Debate Looming, Growing Share of Public Prefers Bigger Government," Pew Research Center, April 24, 2017,



Force implications

The table below translates some of the fiscal projections into specific force structures and—with one high, two medium, and one low budget level—gives a sense of the wide range of possible outcomes.

	BCA Caps ("Sequestration")	Obama FY 2017 FYDP	Trump FY 2018	Trump Candidate (9/2016)
<i>Army manpower (active/reserve)</i>	421,000/ 498,000	450,000/ 530,000	476,000/ 542,000	540,000/ [563,000]
<i>Army brigade combat teams (AC/RC)</i>	53 (27/26)	58 (30/28)	61 (31/28)	68 (40/28)
<i>Navy carriers</i>	10	11	11	12
<i>Navy ships</i>	274	295	305	350
<i>Air Force TacAir – total (4th/5th generation)</i>	1,015 (668/347)	1,101 (699/402)	1,141 (739/402)	1,310 (837/473)
<i>USMC manpower</i>	175,000	180,000	185,000	242,000 (!)

<http://www.people-press.org/2017/04/24/with-budget-debate-looming-growing-share-of-public-prefers-bigger-government/>; Gallup Poll, "Military and National Defense," Gallup Poll, 2017, <http://news.gallup.com/poll/1666/military-national-defense.aspx>.

The forces of the Obama FYDP reflect the fiscal projections that the Obama administration had in place when it left office. In some cases, the forces are below what the Obama administration had planned because its projected budgets were not adequate to support the planned forces.

The “Trump FY 2018” level reflects the implied forces that go with the Trump administration’s FY 2018 “nonpolicy” fiscal projection. The forces were developed using CSIS’s Force Cost Calculator, so it is illustrative, not an administration position. Nevertheless, it gives a sense of what forces might be supported if there were no change to the FY 2018 fiscal projection.

The Trump structure of September 2016 reflects the forces described in the president’s September 2016 speech when he was a candidate. The speech acknowledged the Heritage Foundation’s work. Therefore, these forces track closely the force structure that the Heritage Foundation proposed in a May 2016 paper, supplemented where necessary by CSIS interpretations of the paper’s intent. Forces in brackets are a CSIS calculation and not in the original description. The exclamation point for the Marine Corps reflects the fact that this would be a very large increase, far beyond what the Marine Corps itself has proposed.

Much, therefore, depends on the outcome of budget negotiations and the administration’s announced strategy. For descriptions about how all this comes out and insights into what it means, read next year’s paper, *U.S. Military Forces in the FY 2019 Budget*.

Overview of Military Services

In the absence of comprehensive strategic guidance, the services have struggled to balance capacity and capability, and readiness/modernization/force structure. Secretary Carter and Deputy Secretary Work in the Obama administration had clearly set a priority for capability and modernization. That emphasis was seen in the “Third Offset” initiative, which sought enhance capabilities against high-end adversaries such as China and Russia. However, the increased demands for combat forces in the Middle East and for forward deployments in Europe and Asia have pushed the services to prioritize readiness and force structure in order to meet these immediate demands. Indeed, all the services argue that high operational demand puts a floor on their size.

A structural effect of the high day-to-day demand for forces is that all units (except nuclear and a few highly specialized units) must be available for routine deployment. Pulling some units out of the deployment cycle would put too much pressure on the others. That means that units cannot be too highly specialized, for example, only suitable for major conflicts, or only focused on particular geographic regions. Proposals by various post–Cold War analysts to convert general-purpose units into specialized units for specific missions have not been feasible as a result.³²

It also means that the services have not been able to create experimental units that only test new warfighting concepts and equipment. Instead, the services have had to use regular forces that periodically deploy overseas and execute conventional missions.

³² One illustrative and highly publicized proposal came from Thomas Barnett. He proposed two different types of forces: “system administrators” that focused on day-to-day forward presence and crisis response and “the Leviathan” that focused on fighting major conflicts. See, for example, Thomas Barnett, *The Pentagon’s New Map* (New York: Berkley Books, 2004). There were many others.

Army

Table 2: Army – Regular and Civilians

	Regular Army		Civilian Full-Time Equivalents
	Brigade Combat Teams	Endstrength	
FY2017 Authorized	31	476,000	197,533
FY2018 Proposed	31	476,000	194,766
Change	0	0	-2,767

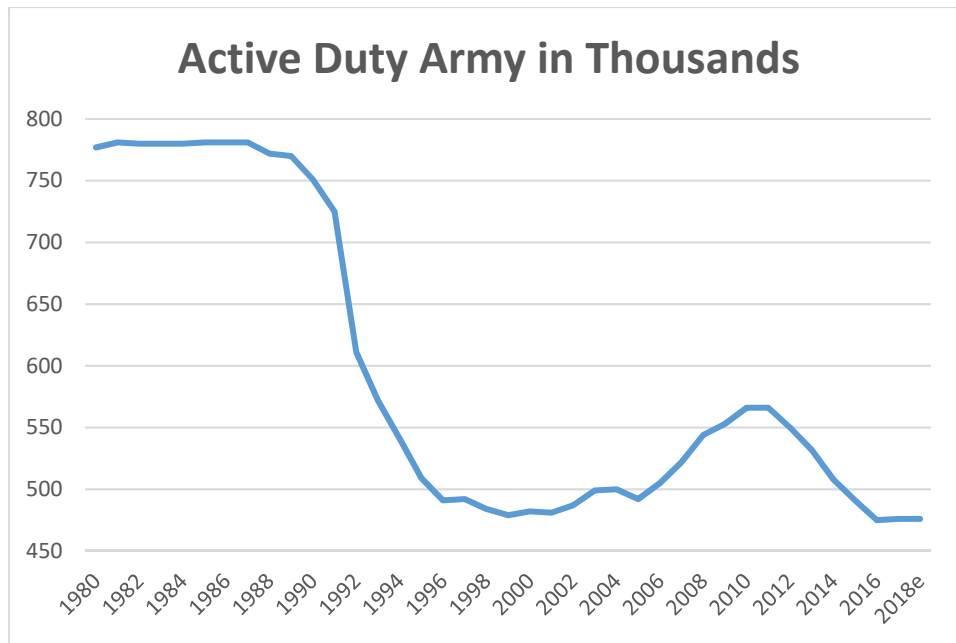
Table 3: Army – National Guard and Reserve

	Army National Guard		Army Reserve
	Brigade Combat Teams	Endstrength	Endstrength
FY2017 Authorized	26	343,000	199,000
FY2018 Proposed	26	343,000	199,000
Change	0	0	0

Note: Figures are for end of fiscal year.

The Army ended its postwar drawdown in 2016. Instead of declining to a total endstrength of 980,000, the Army bottomed out at 1,015,385 in FY 2016 and in FY 2017 came up slightly to 1,018,000. The FY 2018 request maintains that level. This is consistent with the broader DOD strategy of rebuilding readiness before expanding the force, a strategy also expressed by General Milley, Army chief of staff, in his annual posture statement.³³

³³ Gen. Mark Milley, *Testimony to the Senate Armed Services Committee*, 115th Cong., 1st sess., Washington, DC, May 25, 2017, https://www.armed-services.senate.gov/download/speer-milley_05-25-17.



The Regular Army maintains 31 Brigade Combat Teams (BCTs) and 11 Combat Aviation Brigades (CABs) with no change from FY 2017 to FY 2018. The Army National Guard will maintain its current force of 26 BCTs and 8 Combat Aviation Brigades (CABs) through 2018. The Army Reserve, which consists mostly of support units (“enablers”), retains two Theater Aviation Brigades (TABs) and holds an endstrength of 199,000 in FY 2018.

The Army has used the additional endstrength above QDR 2014 planned levels in several ways:³⁴

- 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 some smaller support units.
- Creating new units. The Army will activate its first two security force assistance brigades (of a planned six) as well as some smaller support units. The brigades 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 toward high-end conflicts.
- Increasing the manning of existing units. This can greatly improve 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.
- Adding personnel to the support base.

³⁴ U.S. Army Public Affairs, “Department of the Army announces force structure decisions for fiscal year 2017,” June 15, 2017, https://www.army.mil/article/189082/department_of_the_army_announces_force_structure_decisions_for_fiscal_year_2017.

The Army continues its reorganization of BCTs begun in 2014. Under the reorganization, the Army will add a third maneuver battalion to infantry and armored brigades, which recently had only two. (Stryker brigades already had three maneuver battalions.) This reorganization makes brigades larger and more flexible, but reduces the number.

Finally, the Army continues implementing its plan to convert one infantry BCT into an armored BCT, resulting in a total of 14 IBCTs, 10 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, described below, and a focus on near-peer conflicts unlike the counterinsurgency campaigns of the last 16 years.

The future size of the Army

Army officials still believe that the Army is too small. In July, 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. And we need to be stronger and more capable.”³⁵ There is no similar statement in General Milley’s May posture statement—the focus there is on readiness— but the Army’s unfunded requirements list, submitted to the Congress every year specifying what the Army would do with additional money, asks for 14,000 more soldiers (10,000 regulars, 4,000 National Guard, 3,000 Army Reserve).³⁶ So the stridency of previous years is gone, likely because the recent endstrength increases, but the same message is still there.

Even with the recent manpower increase, the Army has justification for its concern about size. In 2001, just as the wars were beginning, the Army’s strength was 482,000 in the Regular Army, 352,000 in the Army National Guard, and 205,000 in the Army Reserve, for a total of 1,039,000. The Army’s current total is 1,018,000. So the Army will be 21,000 soldiers smaller coming out of the wars than going into them. However, it is not clear that the world will put fewer demands on the Army. In 2001 the Army was quite stressed by deployments to Bosnia, Kosovo, and Kuwait when added to the usual overseas deployments in Korea and across the globe. Postwar demand for deployments appears to be at least as high.

The earlier discussion about budgets and forces shows the wide range of possible Army end strength, from 450,000 to 540,000 for the regular Army and commensurate ranges for the Army Guard and Army Reserve. The Army chief of staff stated a tentative target of 540,000–550,000 for the regular force, 350,000–355,000 for the National Guard, and 205,000–209,000 for the Reserve—consistent with the president’s target, but far in the future.³⁷ Instead, he has proposed a gradual increase of 7,000 soldiers per year in the regular force. He has been

³⁵ Gen. Mark Milley, “Speech to the National Press Club,” National Press Club, July 27, 2017, http://www.press.org/sites/default/files/20170727_milley.pdf.

³⁶ Jen Judson, “US Army’s FY18 wish list would grow force by 17,000 Soldiers,” *Defense News*, June 2, 2017, <http://www.defensenews.com/congress/budget/2017/06/02/us-armys-fy18-wish-list-would-grow-force-by-17000-soldiers>.

³⁷ Gen. Mark Milley, “Testimony to the Senate Appropriations Committee,” 115th Cong., 1st sess., Washington, DC June 7, 2017.

emphatic that endstrength should not grow beyond what can be fiscally supported over the long term.³⁸

His caution is prudent because endstrength is expensive. Since 2001, pay per service member grew about 50 percent in constant dollars.³⁹ 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 2017 Budget* covers personnel costs in depth.)

Balance of regular and Guard/reserve forces

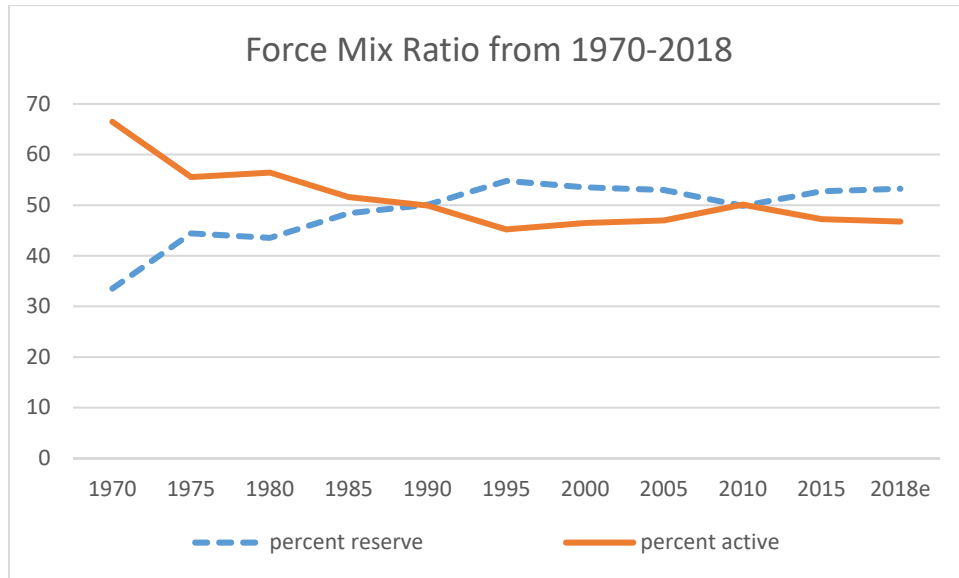
Tensions between regulars and reservists have existed since the beginning of the Republic. The different components have different perspectives, histories, and cultures, so the resulting tensions are a challenge to be managed, not solved. This is particularly an issue for the Army because it has, by far, the largest reserve component, in both 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. Its reserve components are twice the size of all the other reserve components put together (in FY 2017, 542,000 versus 272,200).

As the graph below shows, the institution of the All Volunteer Force in 1973, which raised the cost of military personnel, and simultaneous end of the draft, which cut off an easy supply of active duty personnel, caused the ratio to shift toward the reserves. The ratio returned to parity with the increase in the regular force during the wars in Iraq and Afghanistan, but has returned to what appears to be a strategically stable level. Whether this is fiscally sustainable remains to be seen. Instead of growing either, the Army, and DOD in general, have turned to contractors, as discussed in a later section.

³⁸ Lopez, C. Todd, "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.

³⁹ 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.



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. The recent budget increases, and the commission described below, have eased tensions in the near term.

National Commission on the Future of the Army. As a result of the 2014 tensions, Congress created the National Commission on the Future of the Army. The commission looked broadly at all the components and the total Army’s needs, reported its findings in January 2016, and made a total of 63 recommendations.⁴⁰ The most important recommendations were as follows:

- Consider all components as part of a “Total Army.”
- Retain 11 Combat Aviation Brigades (CABs) in the Regular Army, with one forward-stationed in Korea.
- Increase Armored Brigade Combat Team (ABCT) capacity, with one forward-stationed in Europe.
- Retain four battalions of Apaches (with 18 aircraft each) in the Army National Guard.
- Maintain a minimum total Army endstrength of 980,000 soldiers.
- Encourage the creation of a true “Total Force” by establishing and incentivizing assignments across all three components and within multicomponent units, as well as beginning a pilot program that allows recruiters to recruit individuals into any Army component.
- Assess ways, and associated costs, to reduce or eliminate force structure shortfalls.

⁴⁰ National Commission on the Future of the Army, *Report to the President and Congress of the United States*, January 28, 2016, <http://www.ncfa.ncr.gov>.

The Army accepted nearly all the recommendations and that seems to have eased tensions among the Army components. The Army leadership now talks about a total Army of a million in its public statements, not just the 476,000 in the Regular Army. The Army is creating multicomponent units and building the additional ACBT, as described earlier.

The Army had expressed concern about paying for all the recommendations, particularly the recommendation to buy additional Apache helicopters and to maintain the 11th CAB in the Regular Army in Korea. Thus, the Army put some recommendations onto its unfunded requirements list but, with a rebounding defense budget and the availability of OCO, the Congress was able to provide some additional funds without the Army having to make large internal cuts. Nevertheless, fully implementing the helicopter recommendations has required some tradeoff of UH-60s for AH-64s, and the timeline for force restructuring will extend into the late 2020s.

An operational reserve. As a result of these and other initiatives, the readiness of the Army's reserve components is improving. The number of National Guard rotations to CTCs will increase from 2 to 4. The increased unit manning, described earlier, is particularly important for the reserves because under-manning in units caused significant disruption during the mobilizations of the 2000s. To fill shortfalls in one unit, the reserve units had to pull personnel from other units. Then these units became even more undermanned. When these units were called in their turn, they needed yet more personnel. The cascading effect severely reduced the responsiveness of reserve component units. The National Guard plans to bring manning of its most urgent units to 118 percent, which will greatly improve their readiness to deploy.⁴¹

The reserve components can thus maintain their status as an operational reserve. On average about 18,000 Army reservists and Guardsmen are mobilized at any time, mainly supporting operations in Iraq and Afghanistan. With high force demands on the Army continuing, this level of mobilization will likely persist indefinitely.

So the sharp public disagreements of three 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.

Europe, Russia, and the European Reassurance Initiative (ERI)

The big change in Army warfighting requirements continues to be the need to defend the Baltic states and eastern Europe against possible Russian aggression. Unlike Ukraine, which Russia also threatens, the Baltics and most of Eastern Europe are members of NATO, and Article 5 states that an attack on one NATO state is an attack on all. President Trump confirmed this commitment, after some hesitation, in June.⁴² Meeting this commitment entails preparing for high-end ground combat very unlike the regional conflicts and stability operations that the

⁴¹ Connie Lee, "ARNG Director Outlines End-strength Plans," *Inside Defense*, April 26, 2017, <https://insidedefense.com/daily-news/arn-g-director-outlines-end-strength-plans>.

⁴² Jeremy Herb, "Trump Commits to NATO's Article 5," CNN, June 9, 2017, <http://www.cnn.com/2017/06/09/politics/trump-commits-to-natos-article-5>.

Army has conducted for a generation. This reorientation affects all elements of the Army: forces, doctrine, and acquisition.

As in the Cold War, the challenge is great. RAND's extensive wargaming of a Baltic invasion concluded, "the outcome was, bluntly, a disaster for NATO. Russian forces . . . were at the gates of or actually entering Riga, Tallinn, or both between 36 and 60 hours after the start of hostilities."⁴³ Assessments continue to be grim. A recent brigade report noted a wide variety of gaps—"underequipped, undermanned, inadequately organized"—stemming from the fact that many reinforcing units would be infantry that lack the heavy firepower needed to confront Russian armor.⁴⁴ The threat has even made its way into fiction, with a recent book (*2017 War With Russia*, by Gen. Sir Richard Shirreff) about a Russian invasion of the Baltics and NATO's struggle to respond.⁴⁵

To meet this challenge, the Army is returning to Europe in a major way, and there is a "Back to the Future" tone to the discussion, echoing the circumstances of the Cold War.

ERI is the primary mechanism for getting the Army back to Europe. ERI was established in the FY 2015 budget "to reassure allies of the U.S. commitment to their security and territorial integrity as members of the NATO Alliance."⁴⁶ The money was mostly for exercises and troop rotations to Europe, the bulk going to the Army but with some going to the Air Force and Navy. Although ERI was originally planned to be a one-time activity, it has been funded every year since then and now represents a long-term commitment, despite residing in OCO.

The president's FY 2018 budget proposes to increase ERI funding to \$4.8 billion, up from \$3.4 billion in FY 2017 and way up from the original \$1 billion in FY 2015. Further, ERI is now described as "deterrence" of Russia, not just "reassurance" of allies.⁴⁷

ERI funds dozens of training events and exercises, including a major, multinational exercise "Saber Guardian" held in July and, in FY 2018, an annual reinforcement exercise "Swift Response" (reminiscent of the old REFORGER exercise series). In addition to training and exercises, ERI funds another year of rotation of Army ABCTs to Europe from the United States. With the two existing brigades in Europe, there will thus be a total of three U.S. BCTs on the continent at all times. The initiative will also continue expansion of the equipment sets in Europe to a full division and, somewhat controversially, fund a long-term program of upgrades to existing armored vehicles—M1A2 Abrams tanks, M2 Bradley Fighting Vehicles, M109A7 Paladin artillery, and Stryker armored fighting vehicles—plus procurement of the new Armored Multi-

⁴³ 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.

⁴⁴ Wesley Morgan, "U.S. Army Unprepared to Deal with Russia in Europe," *Politico*, September 2, 2017, <http://www.politico.com/story/2017/09/02/army-study-173rd-airborne-brigade-europe-russia-242273>.

⁴⁵ Richard Shirreff, *War with Russia* (London: Coronet, 2016).

⁴⁶ Department of Defense, *European Reassurance Initiative: Department of Defense Budget Fiscal Year (FY) 2016 Overview of the DoD FY 2016 Budget* (Washington, DC: Department of Defense, January 26, 2016), http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/FY2016_ERI_J-Book.pdf.

⁴⁷ Justin Doubleday, "Pentagon Embraces Shift to European Deterrence Initiative," *Inside Defense*, September 6, 2017, <https://insidedefense.com/daily-news/pentagon-embraces-shift-european-deterrence-initiative>.

Purpose Vehicle (AMPVs). Finally, it will fund the rotation of a division headquarters to Europe and infrastructure improvements to facilitate a surge of forces, if required.⁴⁸

Although this substantially increases U.S. presence and combat capability in Europe, it still falls short of the forces that would be necessary to slow or stop a Russian invasion. A study by CSIS put the rapid surge requirement to deter Russian aggression at 13 U.S. and NATO brigades.⁴⁹ The force requirement is driven by the choice of objectives: whether to deter, slow, or defeat a possible Russian invasion. Until that objective is resolved, the debate about how much is enough in the Baltics will continue.

General Milley has often stated his concern about Army readiness to fight this kind of high-end conflict, foreseeing that the Army would be “outgunned, outranged, and outdated on a future battlefield with near-peer competitors.”⁵⁰

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 versus defense of NATO’s heartland). To gain insight into how a high-end conflict might play out in the near term, the Army is looking at contemporary combat in the Ukraine and even to the 1973 Yom Kippur War.⁵¹ For the long term the Army has research projects looking out to 2035 and even to 2050.

Modernization—the future force

As other CSIS analyses have shown, Army modernization declines sharply in postwar periods but then rebounds as a new steady state is established.⁵² Thus, Army procurement and RDT&E funding are now in the recovery phase after postwar lows *if* the FY 2018 budget is passed at or above the president’s request. (All figures below in FY 2018 dollars.⁵³)

⁴⁸ For more information on ERI, see Office of the Under Secretary of Defense (Comptroller), *European Reassurance Initiative Budget Document Fiscal Year 2018*, May 2017, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_ERI_J-Book.pdf.

⁴⁹ Kathleen H. Hicks and Heather A. Conley, *Evaluating Future U.S. Army Force Posture in Europe: Phase 1 Report* (Washington, DC: Center for Strategic and International Studies, February 2016), <http://csis.org/publication/evaluating-future-us-army-force-posture-europe>.

⁵⁰ Gen. Mark Milley, testimony 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.

⁵¹ Bryan Bender, “The Secret U.S. Army Study That Targets Moscow,” *Politico*, April 14, 2016, <http://www.politico.com/magazine/story/2016/04/moscow-pentagon-us-secret-study-213811>.

⁵² Rhys McCormick, *The Army Modernization Challenge: A Historical Perspective* (Washington, DC: Center for Strategic and International Studies, March 31, 2016), <http://fysa.csis.org/2016/03/31/the-army-modernization-challenge-a-historical-perspective>.

⁵³ Data from *Green Book*, tables 2-1 and 6-19; Average levels from Rhys McCormick and Andrew Hunter, *The Army Modernization Imperative* (Washington, DC: Center for Strategic and International Studies, May 2017), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/170530_Hunter_ArmyModernization_Web.pdf?230oluRM4PwJB4XRuNDpVRMndOnunc.

- The Army's procurement request for FY 2018 is \$21.2 billion, including OCO. Although this is down substantially from the wars' high point in 2008 of \$79 billion, it is higher than the level has been in five years, higher than the level in 2000 before the wars began (\$14.5 billion), and substantially higher than levels during the procurement holidays of the 1990s (averaging about \$12 billion per year). This is nearly back to the long-term Army average level (\$23 billion).
- Similarly, the RDT&E request of \$9.5 billion is down from a wartime high of \$12.4 billion in FY 2008 but higher than it has been for five years and higher than the low level of the late 1990s, which averaged \$7.4 billion. It is slightly above 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 over the last 10 years the Army was able to use war funding to replace a lot of its aging equipment, especially the equipment required for stability operations. 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 twenty-first-century threats. It was hit by a "triple whammy": modernization funding reductions, a focus on near-term systems for current operations, and a missed procurement cycle due to program failures.⁵⁴

The good news

Going into the wars in Iraq and Afghanistan, the Army had very old equipment as a result of the procurement holiday of the 1990s when the Army was putting its money toward maintaining personnel and living off the inventories of the Cold War. Its truck fleet averaged 20 years old; its helicopters were aging. War funding changed that for four reasons.

- The Army was able to get war funding to pay for its reorganization from a division-based structure to a brigade-based structure (called "modularity").
- All the Army's combat losses were replaced one-for-one with new equipment, irrespective of the age of the lost equipment. That meant that if, for example, the Army lost a UH-60A, the replacement was a modern UH-60L or M model. Further, the loss did not have to be catastrophic. If, on return to the United States, equipment was judged not economically repairable, then it was disposed of and replaced.
- All returning equipment was repaired or "reset" to a high ("10/20") standard with war funds.
- The Congress has frequently used war funding for nonwar uses. For example, the Congress has added billions of dollars for reserve equipment that would otherwise have been purchased out of the Army's base budget.

⁵⁴ McCormick and Hunter, *The Army Modernization Imperative*.

Thus, the Army has bought tens of thousands of trucks, thousands of fighting vehicles, and hundreds of aircraft outside of its normal budget. A Stimson Center study⁵⁵ examined the service procurements during the period 2000–2010 and found that “the Army has a much larger inventory than it envisioned, sooner than it had planned.” For example, the Army had planned to buy 1,806 Bradleys but ended up buying 4,372; Strykers, planned 2,000, actually procured 4,000; similar procurements occurred with Abrams tanks, HMMWVs, and support vehicles. These were, however, procurements of existing designs, not new systems.

The bad news

The bad news is that the Army does not have a long-term modernization program in place for the 2020s and beyond. Instead, it has well-established upgrade programs for many existing systems: the Abrams tank (M1A2SEPV3), 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 Army has not been successful—in fact, it has been 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.”⁵⁶ These failures cost the Army a modernization generation.

The lack of focus on modernization has deep cultural roots. Whereas the Navy and Air Force man equipment, the Army equips manpower.⁵⁷ Therefore, historically it has prioritized force structure and readiness above modernization. Procurement and RDT&E are 20 percent of the Army’s FY 2018 base budget proposal but 39 percent of the Navy’s and 47 percent of the Air Force’s.

Current actions to modernize the 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. All these 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

⁵⁵ Russell Rumbaugh, *What We Bought: Defense Procurement from FY01 to FY10* (Washington, DC: Henry L. Stimson Center, October 2011), <http://www.stimson.org/images/uploads/research-pdfs/Contentv2.pdf>.

⁵⁶ 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.

⁵⁷ For a detailed discussion of service cultures, see Carl Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Arlington, VA: RAND Corporation, 1989), <http://www.amazon.com/Masks-War-American-Military-Corporation/dp/0801837766>.

Rhys McCormick point out, focusing on capabilities through upgrades rather than developing major new systems avoids the technical and political risk of relying on a few, costly, high-profile programs.⁵⁸ However, even these low-risk initiatives will take time, in some cases a lot of time, to actually field new capabilities.

Plugging gaps. In the near term, there are only two new platforms in the Army modernization program.

- Joint Light Tactical Vehicle (JLTV), an armored light truck replacement for the HMMWV, is in full-rate production. However, current plans call for the JLTV to replace only half the HMMWVs, so the Army will need to either increase the buy or extend the life of the HMMWVs.
- Armored Multi-Purpose Vehicle (AMPV), a replacement for the M113 family of tracked vehicles, begins production in the FY 2018 budget. Consistent with the theme of using existing systems, the AMPV is, essentially, a turretless Bradley, developed after several failures to field a new ground combat vehicle.

Upgrades. Several important upgrade programs are under way:

- Active protection to tanks and, perhaps, other combat vehicles. Already fielded on Israeli tanks, these systems intercept antitank missiles in flight. The Army is currently testing potential systems.
- A 30mm gun for the Stryker combat vehicle, specifically designed to counter Russian armored vehicles. Testing appears to have been successful, though fielding has not yet begun.
- Development of a long-range precision missile as a replacement for the ATACMs missile, which is fired from existing MLRS/HIMARS launchers.

New capabilities. Finally, the Army is conducting tests and experiments for new capabilities.

- The Army is looking at options to upgrade its short-range air defenses, an idea that came from the National Commission and many others. 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 but cruise missiles and UAVs. Many prospective adversaries have such capabilities, and the Army has few defenses.
- The Army is also developing electronic warfare systems, precision munitions, and a variety of other technologies. More exotically, Pacific Command (PACOM) head Adm.

⁵⁸ Rhys McCormick and Andrew Hunter, "The U.S. Army's Next Big 5 Must Be Capabilities, Not New Platforms," *Defense One*, July 25, 2017, <http://www.defenseone.com/ideas/2017/07/us-armys-next-big-5-must-be-capabilities-not-new-platforms/139714>.

Harry Harris and others⁵⁹ have suggested that the Army develop an antiship capability for Multiple-Launch Rocket System (MLRS)/High Mobility Artillery Rocket System (HIMARS), but only a few experiments have been conducted so far.

- A next-generation combat vehicle program—greatly desired by the armored community—is still in the demonstrator phase, previous efforts having failed to produce a viable program.

⁵⁹ Sam Lagrone, "PACOM Commander Harris Wants the Army to Sink Ships, Expand Battle Networks," *U.S. Naval Institute News*, February 21, 2017, <https://news.usni.org/2017/02/21/pacom-commander-harris-wants-army-sink-ships-expand-battle-networks>; Eric Lindsey, *Beyond Coast Artillery: Cross-Domain Denial and the Army* (Washington, DC: Center for Strategic and Budgetary Assessments, October 29, 2014), <http://csbaonline.org/publications/2014/10/beyond-coast-artillery-cross-domain-denial-and-the-army/>; Mark Gunzinger, Bryan Clark, David Johnson, and Jesse Sloman, *Developing the Future Force: Priorities for The U.S. Military's Next Force Planning Construct, Army* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017).

Navy

Table 4: Navy – Active, Reserve, and Civilians⁶⁰

	Active Navy				Navy Reserve	Civilian Full-Time Equivalents
	Ships	Carrier Strike Groups	Aircraft (PAA) ⁶¹	Endstrength	Endstrength	
FY2017 Authorized	276*	11	2,328	323,900	58,000	184,236
FY2018 Proposed	292	11	2,362	327,900	59,000	187,900
Change	+16	0	+34	+4,000	+1,000	+3,664

* As of August 30, 2017

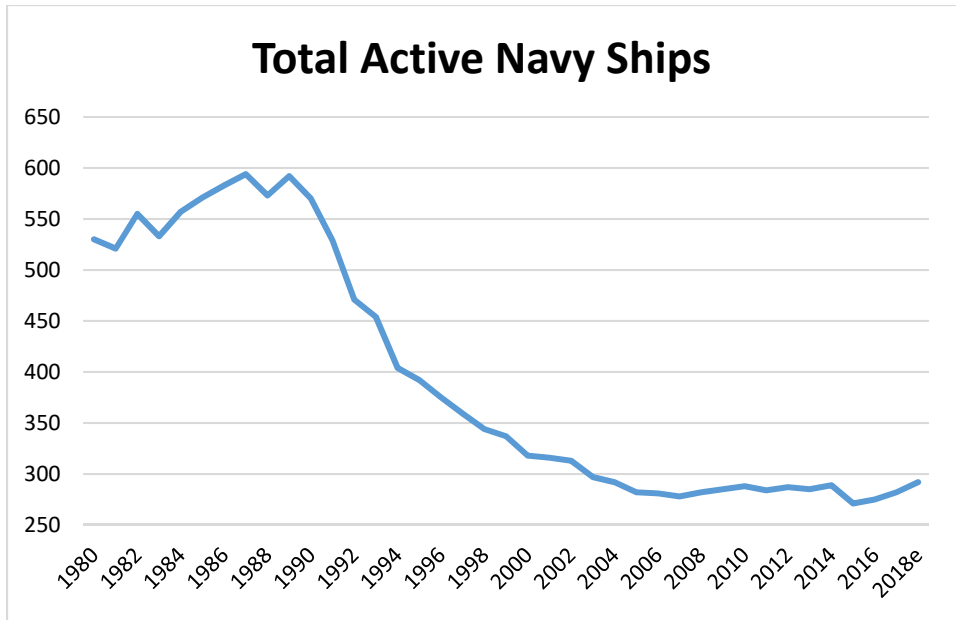
After years of shrinkage, the Navy is growing as new ships are delivered, particularly the numerous littoral combat ships (LCSs) and DDG-51 destroyers. (Rightly or wrongly, the ship count is often used as a measure of Navy capacity.⁶²) The Navy projects that it will hit 292 ships by the end of FY 2018, up from its low point of 275 in 2016. Long-term plans had envisioned fleet size rising to about 310 in the 2020s before declining to the 290s after that.⁶³ These projections are uncertain now with discussion of building a much larger fleet (next section). The Navy has not published a long-term shipbuilding plan for the FY 2018 budget.

⁶⁰ Data from U.S. Department of the Navy, *Highlights of The Department of the Navy FY 2018 Budget, 2017*, <http://www.secnave.navy.mil/fmc/fmb/Pages/Fiscal-Year-2018.aspx>.

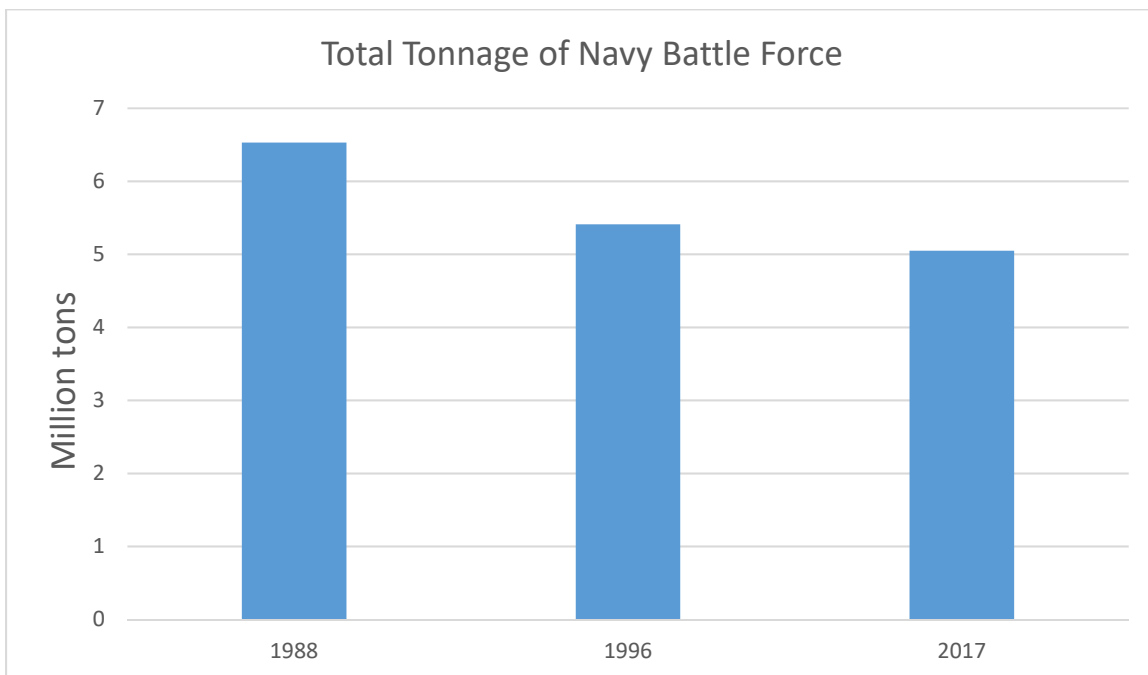
⁶¹ PAA stands for Primary Authorized Aircraft, that is, aircraft in units; data from U.S. Department of the Navy, *Highlights of the Department of the Navy FY 2017 Budget*, Figure 21, Section 3-7, 2016, http://www.secnave.navy.mil/fmc/fmb/Documents/17pres/Highlights_book.pdf.

⁶² 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>.

⁶³ Deputy Chief of Navy Operations (Integration of Capabilities and Resources) (N8), *Report to the Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2017* (Washington, DC: Office of the Chief of Naval Operations, March 2017), <https://news.usni.org/2016/05/09/document-fy-2017-u-s-navy-30-year-shipbuilding-plan>.



As a reflection of this increased size, the Navy again has 11 carrier strike groups with delivery of the *Ford* (CVN-78), and will increase its active duty endstrength, reserve endstrength, and civilian workforce.



Numerically, all these fleet sizes—275, 290, 310—are far below the level of the “600 ship” Navy of the 1980s. Yet, as the chart on tonnage shows, today’s fleet has half the number of ships of 1988, but it is about 78 percent of the tonnage. The reason is that contemporary ships are much larger than their earlier counterparts. Today’s DDG-51 destroyer (Flight III) 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.

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.⁶⁴ Last summer, for example, the Navy surged two carriers in the Mediterranean for the first time since 2003 in order to conduct the air war against ISIS.

Theater commanders say they only receive about half of their requests for Navy ships.⁶⁵ The Navy in response says that it would need a fleet of 450 ships to fully meet the theater requests.⁶⁶ Because these theater requests are not resource constrained, it is unsurprising that the requests greatly exceed what is available.

Nevertheless, this shortfall engenders a concern that the Navy is too small for the tasks that it is being asked to perform. Highly publicized gaps, such as the intermittent lack of a carrier in the Middle East, reinforce this perception.⁶⁷ The need to deploy to Europe, a theater that had been largely ignored since the end of the Cold War, adds to demands.

As a result, the Navy feels the presence/warfighting tension more acutely than other services. It appears, for example, in the initial guidance from the new 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."⁶⁸ In other words, the Navy will do both, apparently with equal emphasis. Secretary Carter argued for "capability" and warfighting and clashed with Secretary of the Navy Ray Mabus who favored numbers and capacity. Indeed, 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)."⁶⁹

⁶⁴ U.S. Department of the Navy, *Department of the Navy FY 2018 Budget Press Briefing*, 2017, http://www.secnav.navy.mil/fmc/fmb/Documents/17pres/Highlights_book.pdf.

⁶⁵ John M. Richardson, *Testimony before the House Committee on Appropriations, Subcommittee on Defense, Hearing on the United States Navy and Marine Corps*, 114th Cong., 2nd sess., March 1, 2016, <http://appropriations.house.gov/calendar/eventsingle.aspx?EventID=394402>.

⁶⁶ 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>.

⁶⁷ 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.

⁶⁸ Richard V. Spencer, "Department of the Navy Mission, Vision, and Priorities," August 29, 2017, <http://navylive.dodlive.mil/2017/08/29/secnavs-letter-to-the-force-department-of-the-navys-mission-vision-and-priorities>.

⁶⁹ 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>.

The size of the Navy

This was the year of Navy force structure assessments. The president, the Navy, and many think tanks weighed in on what the size of the Navy should be. These assessments all skew high because of the deteriorated strategic environment and continuing demands for robust forward presence. Older, skeptical assessments from progressive and libertarian organizations (Project on Defense Alternatives, 230 ships, 2012; Sustainable Defense Task Force, 240 ships, 2010; Cato, 241 ships, 2010), wary of global intervention and therefore of a large Navy, have been pushed aside.

Table 5: Recommendations for Size of the Navy⁷⁰

President Trump and Heritage (2017)	350
Navy Force Structure Assessment (2016)	355
Navy Project Team	321 (+136 unmanned)
Center for Strategic and Budget Assessment (2017)	340
MITRE (2017)	414

President Trump and Heritage Foundation. In September 2016, as noted earlier, then-candidate Trump described his force structure vision for the military, which included a 350-ship Navy with 12 carrier battle groups. As president, Trump reiterated this goal, stating, "I just spoke with Navy and industry leaders and have discussed my plans to undertake a major expansion of our entire Navy fleet, including having the 12-carrier Navy we need."⁷¹

Navy Force Structure Assessment (FSA). The Navy conducts an FSA every few years to determine its force-structure goal. The 2016 assessment set a force level of 355 ships, replacing the 2015 308-ship goal. This reflected the rising demands on the fleet as well as the political reality that the Navy could not have a goal that was below what the president said was necessary. The Navy's analysis considers capabilities needed for both warfighting and day-to-day forward-deployed presence. The resulting structure adds ships across the board but particularly submarines and high-end combatants. However, the Navy acknowledged that the assessment was independent of budgets and industrial capacity.⁷²

The Congress directed three studies of Navy force structure, one by the Navy itself and two by independent organizations.⁷³ The independent studies were done by the Center for Strategic

⁷⁰ Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for the Congress*, CRS Report RL32665 (Washington, DC: Congressional Research Service, March 17, 2016).

⁷¹ Jamie McIntyre, "Trump's 12-carrier Navy plan: Anything but smooth sailing," *Washington Examiner*, March 27, 2017, <http://www.washingtonexaminer.com/trumps-12-carrier-navy-plan-anything-but-smooth-sailing/article/2618301>.

⁷² U.S. Naval Institute, "Document: Summary of the Navy's New Force Structure Assessment," *U.S. Naval Institute News*, December 16, 2016, <https://news.usni.org/2016/12/16/document-summary-navys-new-force-structure-assessment>.

⁷³ Section 1067, FY2016 National Defense Authorization Act (S. 1356/P.L. 114-92 of November 25, 2015).

and Budgetary Analyses (CSBA) and MITRE, a federally funded research and development center.

Navy Project Team. This “think piece” was different from the official FSA. It proposed a 321-ship fleet with smaller carriers in addition to the supercarriers, more submarines with the Virginia Payload Module, and a large frigate instead of LCS. Organizing concepts were “distributed Fleet lethality, electromagnetic maneuver warfare, and distributed, agile logistics.” Most striking is their proposal for 136 unmanned ships for surface and subsurface operations. (These 136 vessels are not included in the 321-ship count.)

*CSBA.*⁷⁴ CSBA’s architecture envisioned a fleet of 340 ships (382 ships if small patrol craft are included). The fleet added small carriers in addition to the 12 large carriers, emphasized small surface combatants over large, and reduced the number of amphibious ships because of their perceived vulnerability. Like the Navy Project Team, CSBA’s proposal called for large numbers of unmanned ships for surface, subsurface, and vehicle transport operations.

*MITRE.*⁷⁵ MITRE proposed a 414-ship fleet, which it recognized was unaffordable. The fleet had a mix of platforms—“exquisite (i.e., high), capable (i.e., moderate), and expendable (i.e., low)” —to meet both presence and warfighting needs at affordable cost. It proposed novel high-end capabilities such as a magazine ship and added ballistic missile defense to existing ships. It deemphasized large carriers because of their vulnerability and proposed smaller carriers. It continued production of SSN’s but proposed diesel submarines to complement the nuclear submarine force.

Whatever fleet architecture is ultimately selected, affordability of an expanded fleet will be a challenge. The Congressional Budget Office (CBO) concluded: “[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.⁷⁶ The Congressional Research Service came to similar conclusions.⁷⁷

Recognizing the tension between affordability and the need to field higher numbers, the Navy is considering “extending the planned service lives to reach 40 years for all ships.”⁷⁸ Although such an extension would increase maintenance costs somewhat, it would substantially decrease shipbuilding costs, especially in the near term. The Navy is also assessing the feasibility of reactivating the remaining eight FFG-7s, which have been retired but not disposed of.

⁷⁴ Bryan Clark et al., *Restoring American Seapower: A New Fleet Architecture for the United States Navy* (Washington, DC: Center for Strategic and Budgetary Assessments, 2017).

⁷⁵ MITRE Corporation, *Navy Future Fleet Platform Architecture Study*, July 1, 2016.

⁷⁶ Congressional Budget Office, *Costs of Building a 355-Ship Navy*, 2017, <https://www.cbo.gov/publication/52632>.

⁷⁷ Ronald O’Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, Congressional Research Service, June 30, 2017, <https://fas.org/sgp/crs/weapons/RL32665.pdf>.

⁷⁸ Vice Adm. Tom Moore, *The Navy’s Maintenance Challenge: Resetting the Fleet* (Washington, DC: Center for Strategic and International Studies, June 1, 2017), <https://www.csis.org/events/navys-maintenance-challenge-resetting-fleet>.

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.⁷⁹

Navy shipbuilding—the future fleet

The Navy is planning to construct nine ships in FY 2018, the same number as in FY 2017: one carrier (authorized in FY 2018 but with funding spread over 8+ years), two DDG-51 destroyers, two SSN-775 submarines, and two auxiliaries (one fleet tanker and one salvage and rescue ship). This is a relatively small number considering the discussion of fleet expansion (about 12–14 ships a year would be needed to build toward a fleet of 350) but consistent with Secretary Mattis’s plans to focus FY 2017 and FY 2018 on readiness. Further, the Navy appears to be focusing on existing platforms rather than developing new ship classes as some of the force structure analyses recommended. The reason is to get ships built quickly, without the delay and risk of development programs.⁸⁰

Aircraft carriers

Carriers are dinosaurs. No, carriers have unparalleled versatility and warfighting capabilities.

The debate never goes away. New this year is strong support for carriers from the president and a small deck carrier alternative. The following summarizes the debate:

Supporters of big deck carriers point out their many strengths.⁸¹

- Versatility. Carriers carry many different aircraft—from strike to air defense to antisubmarine warfare to reconnaissance and surveillance—and therefore can conduct a wide range of missions. Thus, the reason for the classic presidential question during a crisis: where are the carriers?
- Sovereignty. Carriers are “90,000 tons of American sovereignty.” They do not require permission from another country to conduct operations, as would be the case for land-

⁷⁹ For example, Kathleen Hicks et al., *Undersea Warfare in Northern Europe* (Washington, DC: Center for Strategic and International Studies, July 21, 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: Center for Strategic and International Studies, April 4, 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: Center for Strategic and International Studies, August 25, 2015), https://csis-prod.s3.amazonaws.com/s3fs-public/legacy_files/files/publication/150824_Lawrence_BurdenSharingSea_Web.pdf.

⁸⁰ Sydney J. Freedberg 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>.

⁸¹ For example, Adm. Richard C. Macke, “Demise of the Aircraft Carrier? Hardly,” *U.S. Naval Institute Proceedings*, 141, no. 10 (October 2015); Seth Cropsey and Bryan McGrath, *America’s Defense Still Needs Aircraft Carriers* (Washington, DC: Hudson Institute, April 23, 2015), <https://www.hudson.org/research/11247-america-s-defense-still-requires-aircraft-carriers>.

based fighter/attack aircraft. This gives the United States great latitude in conducting its national security policy.

- Defenses. Carriers are heavily defended in all dimensions—air, sea, underwater—with both organic capabilities and those of its escorts.

Opponents don't dispute these strengths but raise concerns about carriers' value and survivability in the future.⁸²

- High cost. The ship alone costs \$12 billion, and the carrier battle group costs perhaps \$35 billion when aircraft and escorts are included. This limits resources available to build other capabilities.
- Vulnerability. Prospective adversaries have increasingly quiet submarines and long-range antiship missiles, both of which threaten carriers. The Chinese DF-21D has particularly caught analysts' attention because it seems specifically designed to kill U.S. carriers.
- Small numbers. Even powerful ships can only be in one place at one time. Because of their high cost and long deployment cycles, only two to three carriers can routinely be deployed at any time.

The carrier's future is a critical question for the Navy because, since World War II, most of its force structure and operations have been built around the carriers.

New this year is a revived interest in smaller carriers. The McCain, MITRE, and CSBA alternative fleets included such a ship, and the new secretary of the navy, Richard Spencer, indicated an openness to studying such ships.⁸³ Interest in small carriers has been intermittent for decades as a low-cost alternative to the large supercarriers. In the 1970s, such a small carrier made it into the Navy five-year program as a "sea control ship," but the program was canceled before any were built. Such carriers have always foundered on their lack of efficiency, that is, the cost of putting aircraft to sea decreases as the size of the ship increases, so large carriers always had the advantage. Further, there was a high upfront cost to design and build the first small carrier.⁸⁴

The availability of the *America*-class helicopter carrier and the rise of A2/AD environments have revived interest in small carriers. The *America*-class, although designed as amphibious ships, have many of the attributes desired in a small carrier: a large flight deck, a hangar deck, and a procurement cost about one-third of a *Ford*-class supercarrier.⁸⁵ The design eliminated well decks to enhance aviation capability, particularly to make it a better platform for F-35Bs. With

⁸² Robert Farley, "How to Kill America's Killer Aircraft," *The National Interest*, August 18, 2017; Jerry Hendrix, "Stop the Navy's Carrier Plan," *Politico*, February 3, 2016, <http://www.politico.com/agenda/story/2016/02/stop-the-navy-aircraft-carrier-plan-000036-000036>.

⁸³ Lee Hudson, "SECNAV Nominee Supports Studying Small Aircraft Carriers to Outfit Future Fleet," *Inside Defense*, July 11, 2017, <https://insidedefense.com/insider/secnav-nominee-supports-studying-small-aircraft-carriers-outfit-future-fleet>.

⁸⁴ Loren Thompson, "A Dozen Reasons Why Small Carriers Don't Make Much Sense," *Forbes*, September 5, 2017, <https://www.forbes.com/sites/lorenthompson/2017/09/05/a-dozen-reasons-why-small-aircraft-carriers-dont-make-much-sense/#aa9fbb666419>.

⁸⁵ U.S. Department of Defense, *Program Acquisition Costs by Weapon System: FY 2018 Budget*, 2017.

modest additional changes, it might make an effective aviation platform, particularly for expeditionary missions not involving A2/AD environments. However, to carry the full scope of naval aviation, like airborne early warning, the ship would require catapults and arresting gear, entailing a much more extensive redesign.

Further, the threat to carriers from an A2/AD environment has raised concerns about putting so much naval capability in just 11 platforms. The Navy's response, and the U.S. military's response in general, is to move to distributed operations with many connected platforms. A smaller carrier could contribute to distributed operations through higher numbers. Whether this smaller concept gets traction remains to be seen. It's an uphill battle with a long history of failure.

Irrespective of views about the carriers, there is a broad consensus that the short range of modern carrier aviation is a problem. From the 1950s through to the 1980s, the average range of carrier aviation was about 1,000 miles. Now it is about half that. The F-35, for whatever other capabilities it brings, will increase the carrier's strike range only a little. It is possible to use aerial tankers to extend range but that assumes an environment benign enough for vulnerable tankers to survive in.⁸⁶

For the kinds of operations the United States has been conducting since World War II, carriers appear to be worth their high cost, at least as the political process has judged since the United States has continued to build carriers. Their usability in a conflict with a peer competitor, however, is the great uncertainty. This will not be resolved short of an outright conflict. Thus, the debate will continue without resolution until some naval event clarifies the situation.

Also new this year is the possibility of accelerated carrier construction. President Trump has recommended 12 carrier battle groups, and the Navy's 355-ship force structure also envisions 12 carriers. Because of the long construction time for carriers (about a decade), it would take many years, indeed decades, to get to this higher level. The first step would be to accelerate construction to one carrier every four years, perhaps authorizing several carriers at the same time to save time and money.⁸⁷ This was done in the 1980s with CVNs-72 and 73.

No change to carrier construction was announced in the FY 2017 and FY 2018 budgets, but this is not surprising since those were focused on rebuilding readiness in near-term requirements. Pending a change in the forthcoming National Defense Strategy, the Navy has continued to build new carriers at its previous pace of one every five years. USS *Ford* (CVN-78), the lead ship of that class, finally delivered in July, after repeated delays, though it won't actually make a deployment until 2020. Construction continues on the *John F. Kennedy* (CVN-79) and long-lead items are being procured for the *Enterprise* (CVN-80). Funding for carrier construction increases from \$2.7 billion in FY 2017 to \$4.6 billion in FY 2018, as previously planned.

The midlife carrier overhauls also continue with *George Washington* (CVN-73) in the yard now and long-lead items being procured for the *John Stennis* (CVN-74). These overhauls are major

⁸⁶ Jerry Hendrix, *Retreat from Range: The Rise and Fall of Carrier Aviation* (Washington, DC: Center for a New American Security, October 2015), <http://www.cnas.org/sites/default/files/publications-pdf/CNASReport-CarrierAirWing-151016.pdf>.

⁸⁷ Brock Vergakis, "Buying 3 Carriers at Once Could Save \$1.5 Billion, Shipyard Says," *Military.com*, May 22, 2017, <http://www.military.com/daily-news/2017/05/22/buying-3-carriers-once-could-15-billion-shipyard-says.html>.

programs, taking 4 years and costing \$4.5 billion, but giving the carriers another 25 years of life. In 2014, to save money the Navy proposed to retire the *George Washington* rather than overhaul it, but congressional pressure pushed them to implement the planned overhaul.

Littoral Combat Ship/Fast Frigate

The LCS program remains in flux with unresolved questions about numbers and configuration.

The Navy has always needed a lower-cost small combatant to complement its highly capable, but higher-cost, destroyer and cruiser programs. For many years, the *Perry*-class provided this capability, but the last of this numerous class (51 ships) was decommissioned in 2015. The original LCS concept envisioned a replacement program of about the same size, 52 ships, but with very different capabilities. Whereas the *Perry* class was designed as general-purpose escorts, the LCS was “envisioned to be a networked, agile, stealthy surface combatant capable of defeating anti-access and asymmetric threats in the littorals.”⁸⁸ The LCS had very high speed (40 knots) and shallow draft for littoral operations. Its survivability came from its speed and, originally, they were envisioned as expendable. It would also be modular with three different configurations: mine countermeasures, surface warfare, antisubmarine warfare. The ships are built in two nontraditional production yards, Austral in Alabama and Lockheed/Martin in Wisconsin, to two very different designs—one a trimaran hull, the other a traditional hull. The original plan to downselect to one design and one shipyard has been shelved. Twenty-nine ships have been funded through FY 2017.

The class has had many problems. The modular concept failed because the individual modules were too expensive and too difficult to replace frequently, cost growth meant that the individual ships were not expendable, the small crew size (about 75, depending on the mission) was inadequate for many maintenance tasks and damage control, and engineering casualties have been frequent.⁸⁹

To mitigate the program’s weaknesses, the Navy conducted a series of reviews in 2014 and 2015. It rejected proposals to build an entirely new ship and instead proposed a program of upgrades to the LCS design that would improve its armament and survivability. In July 2017, the Navy changed course again, putting out a request for information that opened the door to new designs. The ship envisioned has higher reliability, survivability, and crew size than the LCS but only 28 knots speed (compared with LCS’s 40 knots). As one observer put it: “The Navy wants the frigate to do certain things better than the LCS, and the things the LCS does well, the Navy doesn’t care much about.”⁹⁰ To save time and money, the new design must be based on an existing ship.⁹¹

⁸⁸ U.S. Department of the Navy, “About the Littoral Combat Ship (LCS) Program,” February 17, 2011, <http://www.public.navy.mil/surfor/lcs4/Pages/AbouttheLittoralCombatShipLCSProgram.aspx#.WaQS5ca1vcs>.

⁸⁹ Ronald O’Rourke, *Navy Littoral Combat Ship/Frigate (LCS/FFGX) Program: Background and Issues for Congress*, Congressional Research Service, August 11, 2017.

⁹⁰ Sydney Freedberg, Jr., “Navy Steers Well Away from an LCS Frigate,” *Breaking Defense*, July 10, 2017, <https://breakingdefense.com/2017/07/navy-steers-well-away-from-an-lcs-frigate>.

⁹¹ Ronald O’Rourke, *Navy Frigate (FFG(X)) Program: Background and Issues for the Congress*, Congressional Research Service, September 28, 2017.

The LCS also became the focus of the capability-versus-capacity debate. In the Obama administration's 2017 budget, Secretary Carter directed the Navy to cut 12 LCSs from the 52-ship program and instead procure enhancements to its existing platforms such as advanced munitions and combat systems.⁹² Secretary Mabus pushed back, saying that the validated requirement was still 52 and that the new version would mitigate many of the earlier weaknesses.⁹³ So the program is in limbo between 40 and 52 ships.

An additional complexity for the program is the Navy's desire to have multiple crews per ship. This is attractive because it can extend the amount of time a ship is at sea. However, rotating crews and increasing ship operations is complicated. Although successful with ballistic missile submarines, and their blue/gold crews, it has never worked well in the past for other ship types.

It may be that the new small combatant (to be called "guided missile frigates" or FFGs, a traditional nomenclature for such ships) will have enough warfighting capability that this distinction between posture and presence will no longer be an issue. That remains to be seen in an LCS program that has had a lot of shortfalls to date.

The Trump administration has not indicated whether it has a different view of the program. However, the Navy had planned to buy one LCS in FY 2018 and sent the budget up to Congress reflecting that. Shortly after submitting the budget, and amid much confusion, the administration increased the proposal to two, but that reflected political concerns about the industrial base and ship numbers rather than an endorsement of the LCS program.⁹⁴

Only one thing is certain: there will be more twists and turns before the small combatant program settles down to serial production.

Other shipbuilding programs

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

- *Ohio Replacement Program/Columbia-Class Submarine.* The Ohio Replacement Program remains on track in development, having received milestone B approval (entry into engineering development) in January 2017.⁹⁵ The budget cost is substantial, however, \$1.9 billion in FY 2018, so affordability, long identified as a challenge for Navy shipbuilding, is becoming a near-term, rather than a long-term, issue.

⁹² Ash Carter, *Memorandum for Secretary of the Navy, Subject: Navy Program Balance* (Washington, DC: Department of Defense, December 14, 2015), <http://www.marinelog.com/images/PDF/293526789-12-14-15-memo-secdef.pdf>.

⁹³ Ray Mabus, Testimony before the House Committee on Appropriations, Subcommittee on Defense, *Hearing on the United States Navy and Marine Corps*, 114th Cong., 2nd sess., March 1, 2016, <http://appropriations.house.gov/calendar/eventsingle.aspx?EventID=394402>.

⁹⁴ Tony Capaccio, "Suddenly There's Another Littoral Ship in Trump's Budget Plans," *Bloomberg*, May 26, 2017, <https://www.bloomberg.com/news/articles/2017-05-26/suddenly-there-s-another-littoral-ship-in-trump-s-budget-plans>.

⁹⁵ Megan Eckstein, "Columbia-class Submarine Program Passes Milestone B Decision, Can Begin Detail Design," *U.S. Naval Institute News*, January 4, 2017, <https://news.usni.org/2017/01/04/columbia-class-submarine-program-passes-milestone-b-decision-can-begin-detail-design>.

- *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 longer term. Numbers dip in the late 2020s and early 2030s bottoming at 41 boats as *Los Angeles*-class boats built during the 1980s retire.⁹⁶ This prospective submarine shortfall will happen at a time when Russian and Chinese submarines are becoming more capable and active.⁹⁷ Retirement of the *Ohio*-class SSGNs in the late 2020s, which greatly reduces the undersea strike capability, exacerbates the shortfall. Today, the Navy can only meet 50 to 60 percent of the theater commanders' (unconstrained) request for submarine forward presence.⁹⁸ The obvious solution is to build more submarines, but Ohio Replacement Program (ORP) submarine construction puts pressure on both the shipbuilding account and the submarine industrial base. Nevertheless, the Navy now plans to continue building two attack boat every year, even in the years that it procures an ORP boat, a change from the previous plan, which envisioned only one. Incorporation of the Virginia payload module (VPM), to address the undersea strike shortfall, beginning in FY 2019 will increase the fiscal challenge. The VPM increases munitions loadout but also increases the submarine's cost by about \$550 million.⁹⁹
- *DDG-51 Destroyers*. The program is on track, with another two DDG-51s proposed for FY 2018 consistent with the multiyear contract. 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, but the radar was originally planned to go on a much larger ship (a new cruiser that was canceled), so there's some risk.
- *Cruiser modernization*. The Navy seems to have surrendered to the Congress and accepted the current plan, called "2/4/6," 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.¹⁰⁰ 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 two ships in FY 2017, the Navy funds none in FY 2018 but continues development of the LX(R) replacement for the LSDs.
- *DDG-1000 Zumwalt Destroyers*. These stealthy, high-technology destroyers (at 14,500 tons, actually cruiser size) are an exception to the "smooth sailing" shipbuilding story. The lead ship was commissioned in 2016, but delivery was again delayed, to FY 2018,

⁹⁶ U.S. Naval Institute, "Document: FY 2017 U.S. Navy 30-Year Shipbuilding Plan," *U.S. Naval Institute News*, May 9, 2016, <https://news.usni.org/2016/05/09/document-fy-2017-u-s-navy-30-year-shipbuilding-plan>.

⁹⁷ For example, Kathleen H. Hicks, Andrew Metrick, and Lisa Sawyer Samp, *Undersea Warfare in Northern Europe*, (Washington, DC: Center for Strategic and International Studies, July 22, 2016), <https://www.csis.org/analysis/undersea-warfare-northern-europe>.

⁹⁸ Adm. Harry Harris, Commander PACOM, *Testimony to the House Armed Services Committee*, 115th Cong., 1st sess., April 26, 2017.

⁹⁹ Ronald O'Rourke, *Navy Virginia (SSN-774) Class Attack Submarine Procurement: Background and Issues for Congress*, CRS Report RL32418 (Washington, DC: Congressional Research Service, April 14, 2016).

¹⁰⁰ Sean Stackley, Acting Secretary of the Navy, *Testimony to the Senate Armed Services Committee*, 115th Cong., 1st sess., June 15, 2017.

with cost growth continuing. The other two ships were similarly delayed.¹⁰¹ Further, the lead ship had serious engineering casualties on its initial voyages.¹⁰²

Naval aviation modernization—the future air arm

In FY 2018, naval aviation (Navy and Marine Corps) proposes to procure 91 aircraft of all kinds. Naval aviation *procurement* is in generally good shape with mature programs producing aircraft with few major issues. However, naval aviation *overall* has been described as being in a “death spiral” because of inventory and readiness problems.¹⁰³ (See the “Readiness” section later in this report for additional detail.) The Navy sees faster procurement of new aircraft as the long-term solution, but their high cost, especially F-35s, makes this difficult.

MQ-25/Carrier-Based Aerial Refueling System (CBARS)/“Stingray”

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 FY 2018 the Navy continued with its plan to develop the aircraft as a tanker (hence “CBARS”) with some intelligence, reconnaissance, and surveillance (ISR) capabilities, requesting \$222 million for development and shifting \$27 million for carrier adaptations.

The Navy sees this approach as a way to accelerate fielding of an unmanned capability.¹⁰⁴ However, many experts saw the program as a way to allow carriers to stand off in anti-access/area denial (A2/AD) environments because the predecessor UCLASS demonstrator aircraft, the X-47B, had both the long-range and stealth that manned aircraft lacked. Thus, the decision to reshape the program to focus on the tanking mission with a secondary ISR role was harshly criticized as “strategic malpractice of the highest order.”¹⁰⁵

The controversy has died down as the program has entered development. However, it may not stay dormant as the issues surrounding the MQ-25 are fundamental questions about the future of carrier aviation, particularly manned carrier aviation.

Other UAV programs

The MQ-4C Triton long-range surveillance UAV successfully completed operational testing and continues low rate procurement in FY 2018 with three systems. The troubled MQ-8C Fire Scout

¹⁰¹ Ronald O'Rourke, *Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress*, CRS Report RL32109 (Washington, DC: Congressional Research Service, August 11, 2017).

¹⁰² Sam Lagone, “Updated: USS Zumwalt Sidelined in Panama Following New Engineering Casualty,” *U.S. Naval Institute News*, November 22, 2016, <https://news.usni.org/2016/11/22/uss-zumwalt-sidelined-panama>.

¹⁰³ Sydney J. Freedberg, “Navy, Marine F-18s in ‘Death Spiral’ as Readiness Plummet,” *Breaking Defense*, February 8, 2017, <https://breakingdefense.com/2017/02/navy-marine-f-18s-in-death-spiral-as-readiness-plummet/>.

¹⁰⁴ Sydney J. Freedberg, Jr., “Navy Hits Gas on the Flying Gas Truck, See Bars: Will It Be Armed?,” *Breaking Defense*, March 11, 2016, <http://breakingdefense.com/2016/03/navy-hits-gas-on-flying-gas-truck-cbars-will-it-be-armed/>.

¹⁰⁵ 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/>.

ISR UAV completed procurement in FY 2017 with 60 units (of a planned 177).¹⁰⁶ Overall, Navy UAV procurement (3) in FY 2018 is far behind the Air Force's (16), and its UAV inventory (60) is even farther behind the Air Force's (256, MQ-9 and RQ-4). Both reflect the Navy's relative emphasis on manned systems and, to some, a lack of interest in unmanned systems.

F-18 Hornet

The other major aviation issue is how long the Navy will continue to buy F-18s. 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. Every year the Navy has either requested aircraft in its budget or indicated in its unfunded requirements list that it desired more and then the Congress added the aircraft. As a result, the Navy's tactical aviation fleet is much younger than the Air Force's (16 years on average versus 25 years) and its inventory shortfalls are less acute.¹⁰⁷

The Navy seems to have resolved this question, requesting 14 in the FY 2018 budget and indicating a desire in the budget documents to continue procurement into the future.¹⁰⁸ Ten more aircraft are on the Navy's unfunded requirements list.

The policy issue is not whether a particular factory remains open (although that's important to the Missouri congressional delegation, where the aircraft 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. Conversely, the Air Force decided to procure only fifth-generation aircraft, although it is also upgrading some of its legacy fourth-generation aircraft. This implies that most conflicts will be in very demanding air defense environments and was the genesis of the A-10 controversy, described in the Air Force section.

F-35C

The Navy's F-35 program has always been low visibility because the Navy carrier version ("C") was the last 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.

¹⁰⁶ Government Accountability Office, *Defense Acquisitions: Assessments of Selected Weapon Programs*, March 2015, 123, <http://www.gao.gov/assets/670/668986.pdf#page=123>; U.S. Department of Defense, *Fiscal Year (FY) 2018 Budget Estimates, Aircraft Procurement, Navy* (Washington, DC: Department of Defense, 2017), http://www.secnav.navy.mil/fmc/fmb/Documents/18pres/APN_BA1-4_BOOK.pdf.

¹⁰⁷ Navy figures represent an average for F-18A/B/C/D/E/F from Aeroweb, "F/A-18E/F Super Hornet," June 30, 2015, <http://www.bga-aeroweb.com/Defense/F-18-Super-Hornet.html>; Air Force figures from an average of the A-10, F-15C, F-15E, F-16C, and F-22 fleets from The Air Force Association, *The Air Force in Facts & Figures*, June 2017.

¹⁰⁸ Department of the Navy, *Highlights of the Department of the Navy FY 2018 Budget* (Washington, DC: Department of the Navy, 2017), 4–5, http://www.secnav.navy.mil/fmc/fmb/Documents/17pres/Highlights_book.pdf.

The number of F-35Cs procured in FY 2018 goes down from eight to four to put more resources into readiness.

Other aircraft programs

The remaining issues in naval aviation (both Navy and Marine Corps) are programmatic rather than policy; that is, they relate to issues of program management, affordability, and schedule, rather than broader policy questions. Thus, in FY 2018, the P-8, AH-1Z/UH-1Y, E-2D, MQ-4, and V-22 programs continue production, more or less as planned, though with some reductions in quantity for affordability. The CH-53K program procures four initial production aircraft.

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) is moving through development with apparently few issues. It is ahead of schedule and conducted first flight in August 2017.¹⁰⁹ Thus it often is with good program management: bad management makes headlines, good management is invisible.

Ship collisions and their implications for the force

The Navy experienced several high-visibility collisions—the USS *Fitzgerald* (DDG-62) in June 2017, and the USS *John S. McCain* (DDG-56) in August—resulting in large loss of life. This impelled the Navy to declare a one-day “stand down” to review training and safety procedures. The accidents also engendered discussion about possible systemic causes. A high tempo of operations, low readiness, poor maintenance, inadequate training, even cyber attack have all been proposed.¹¹⁰ Investigations are ongoing, but so far no common causes have emerged. Given the seriousness of the incidents, look for some budget and program action by the Navy and the Congress.

From a force structure perspective, there are near- and long-term effects.

Even before the collisions raised questions about ship material condition, the Navy was trying to address long-standing maintenance problems with its Optimized Fleet Readiness Plan, which is designed to improve readiness but will decrease deployment time. Previously, the Navy had deployed ships as the combatant commanders and National Command Authorities had directed and then conducted maintenance as the schedules permitted. However, maintenance availability was inadequate, and material conditions on ships deteriorated. The new plan locks in

¹⁰⁹ On program status: Director of Operational Test and Evaluation, “VH-92A Presidential Helicopter Replacement Program,” *Annual Report for FY 2016*, www.dote.osd.mil/pub/reports/FY2016/pdf/navy/2016vh92A; On first flight: Lockheed Martin Corporation, “VH-92A Presidential Helicopter Achieves First Flight,” August 3, 2017, <http://news.lockheedmartin.com/2017-08-03-VH-92A-Presidential-Helicopter-Achieves-First-Flight>.

¹¹⁰ For example, Mackenzie Eaglen, “America’s new deadliest war is hiding in plain sight” (Washington, DC: American Enterprise Institute, September 7, 2017), <http://www.aei.org/publication/americas-new-deadliest-war-is-hiding-in-plain-sight/>; Jerry Hendix, “Our Navy Is Broken, And That Is a Bad Thing,” *Defense One*, August 30, 2017, <http://www.defenseone.com/ideas/2017/08/our-navy-broken-and-bad-thing/140636/>; Sydney Freedberg, “Congress, Navy Share Blame for Fatal Collisions at Sea,” *Breaking Defense*, September 8, 2017, <https://breakingdefense.com/2017/09/congress-navy-share-blame-for-fatal-collisions-at-sea/>.

the maintenance schedules and provides deployments as time is available. Whether the Navy can implement this plan and decrease deployments in the face of continuing global crises remains to be seen.

Longer term, the accidents may cause the Navy to reconsider its forward basing in Japan, called the Forward Deployed Naval Force. Because these ships are considered always deployed, any reduction would substantially reduce Navy overseas presence.

As a final perspective in considering accidents at sea, it is important to remember that the Navy is mostly made up of apprentices, with most of the crew on their first ship and only a handful of senior enlisted and officers with multiple tours at sea. What is surprising is not how many accidents occur but how few.

Marine Corps

Table 6: Marine Corps – Active, Reserve, and Civilians

	Marine Corps Active		Marine Corps Reserve		Total Force Aviation	Civilian Full-Time Equivalents
	Infantry Battalions	Endstrength	Infantry Battalions	Endstrength	FW TacAir/ Rotary Wing Squadrons	
FY17 Authorized	24	185,000	8	38,500	22/37	21,000
FY18 Proposed	24	185,000	8	38,500	21/37	21,100
Change	0	0	0	0	-1/0	+1

The FY 2018 Marine Corps budget maintains the FY 2017 active duty endstrength of 185,000 and the Marine Corps Reserve endstrength of 38,500. Similarly, civilian full-time equivalents were nearly constant. Alone among the services, the Marine Corps is coming out of the wars at a higher level (185,000) than it went in (172,600).

Marine Corps leadership said that maintaining a constant level of endstrength was a conscious decision to put more money into readiness.¹¹¹ Indeed, the Marine Corps’ proposed FY 2018 base budget for operations and maintenance increases by \$1.2 billion (21 percent) over FY 2017 enacted.

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

The commandant noted in his posture statement how busy the Marines were: 200 operations, 20 amphibious operations, 70 major exercises, 160 security cooperation activities in addition to the return of Marines to Afghanistan and Iraq. Deployment-to-dwell is one-to-two, below the desired one-to-three.¹¹² Indeed, the McKenzie Group of 2013 (named for its leader, Lt. Gen. Kenneth F. McKenzie) argued that forward presence and crisis response were the Corps’ primary

¹¹¹ Lee Hudson, “Neller: Marines Will Stall Personnel Growth in FY 2018 to Pay for Readiness,” *Inside Defense*, May 24, 2017, <https://insidedefense.com/insider/neller-marines-will-stall-personnel-growth-fy-18-pay-readiness>.

¹¹² Gen. Robert Neller, *Testimony to the Senate Armed Services Committee*, 115th Cong., 1st sess., June 15, 2017.

force drivers.¹¹³ Nevertheless, despite this high tempo, General Neller did not ask for additional endstrength in his unfunded requirements list.¹¹⁴

Revised force structure

To cope with the changed strategic environment and evolving methods of conducting military operations, the Marine Corps (like the Navy) embarked on a force structure assessment, called “Force 2025.” The effort started with concepts. A major theme is that, after 15 years of operations ashore in Iraq and Afghanistan, the Marine Corps is refocusing on its naval roots and full-spectrum operations. The commandant talks about a “5th generation Marine Corps” that incorporates new technologies and new organizations. The 2016 Marine Corps Service Strategy acknowledges operations across the range of military operations but focuses on high-end, complex operations and, from a forces perspective, emphasizes enhanced command and control, ISR, precision fires, cyber, electronic warfare, and, in the future, robotics.¹¹⁵ The complementary Marine Operating Concept emphasizes maneuver warfare in all five domains, combined arms that includes information warfare, distributed operations, and enhanced leadership in highly contested A2/AD environments.¹¹⁶

This vision is consistent with the emerging DOD strategy. 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— a highly controversial proposal in a service that prides itself on a warrior ethos.¹¹⁷

Unlike previous force assessments, which were announced as a complete package, specific results of this assessment are being rolled out gradually. One immediate change has been to increase Marine capabilities in cyber and electronic warfare, which General Neller had directed in his initiating directive.¹¹⁸ This has included establishment of a three-star billet for information operations,¹¹⁹ creation of 13 cyber mission teams, and restructuring the MEF Headquarters Group into a MEF Information Group, which has expanded capabilities for electronic warfare, intelligence, and data fusion.

¹¹³ Lt. Col. Brian Buggeman and Ben Fitzgerald, *Crisis Response: Institutional Innovation in the United States Marine Corps* (Washington, DC: Center for a New American Security, November 2015).

¹¹⁴ Sam LeGrone, “Marines FY 2018 \$3.2 Billion Unfunded List Prioritizes Aviation,” *U.S. Naval Institute News*, June 5, 2017, <https://news.usni.org/2017/06/05/marines-fy-2018-3-2b-unfunded-list-prioritizes-aircraft-buys>.

¹¹⁵ Gen. Robert B. Neller, *U.S. Marine Corps Service Strategy 2016*; Justin Doubleday, “New Marine Corps ‘Service Strategy’ Will Guide Force Development, Investments,” *Inside Defense*, August 29, 2017, <https://insidedefense.com/daily-news/new-marine-corps-service-strategy-will-guide-force-development-investments>.

¹¹⁶ U.S. Marine Corps, *Marine Corps Operating Concept*, September 2016, <http://www.mccdc.marines.mil/MOC>.

¹¹⁷ 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 Today*, July 2017, <https://www.usni.org/magazines/proceedings/2017-07/drop-marine-standards-cyber-warriors>.

¹¹⁸ Gen. Robert Neller, *Frag Order 1/2016: Advance to Contact*, U.S. Marine Corps, January 19, 2016, [www.hqmc.marines.mil/Portals/142/Docs/CMC FRAGO 01](http://www.hqmc.marines.mil/Portals/142/Docs/CMC_FRAGO_01).

¹¹⁹ Lee 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>.

Other changes include activation of another HIMARS battalion for long-range fires, adding company-level operations and intelligence centers to enhance distributed operations, and adding an assistant infantry squad leader.

Last year Marine leadership talked about “revolutionary” versus “evolutionary” structure change,¹²⁰ and General Neller said that he had chosen a “hybrid” approach. The higher manpower goal of 194,000, specified in *Marine Corps Force 2025*,¹²¹ will allow the Corps to both enhance traditional capabilities— infantry, artillery, tanks—which improves dwell time, and still add new capabilities for future, high-end conflicts. Thus, the Corps would be able to pursue the McKenzie Group’s focus on crisis response and General Neller’s new focus on conflict with peer adversaries.

If the manpower increase does not materialize, however, then tough choices will be necessary. High-end modern warfare requires new capabilities, such as cyber, electronic warfare, and space, and this is clearly where General Neller is focused. However, the press of current crises and ongoing operations, such as the recent reinforcement in Afghanistan, puts demands on traditional capabilities and capacity. One study showed how the number of infantry battalions could vary from 27 to 6 depending on budgets and strategic orientation.¹²²

Aviation modernization and woes

Marine aviation continues to upgrade platforms and incorporate new systems.¹²³ The KC-130J, AH-1Z, and, finally, the F-35B are all in serial production. Indeed, the F-35 recently had its first deployment (to Japan). MV-22 production for the Marine Corps is complete, with the target acquisition of 360 having been funded, though deliveries will continue for the next few years. The Marine Corps is considering increasing the target to 380 and adding attack capabilities to the aircraft. As noted in the Navy section, the CH-53K is in initial production, having begun procurement last year.

Fixed-wing force structure declined by one squadron as one EA-6B squadron and one F/A-18 squadron deactivated, replaced by one F-35 squadron. In the face of declining inventories, the Marine Corps also reduced the number of aircraft in F-18 squadrons to keep the remaining aircraft more ready and pulled 30 F-18s out of the boneyard. Although rotary wing squadrons stayed constant, the number of CH-53E aircraft per squadron declined. These inventory declines are not surprising given the high cost and slow production rate of replacement aircraft like the F-35, MV-22, and the CH-53K. Like the Air Force, but unlike the Navy, the Marine Corps skipped a generation of aviation modernization to move to a fifth-generation capability in the F-35 and MV-22 but now has a lot of old aircraft in its inventory. Although the force structure

¹²⁰ Justin Doubleday, “Marine futurists examining ‘evolutionary’ versus ‘revolutionary’ change,” *Inside the Pentagon*, March 31, 2016, <http://insidedefense.com/daily-news/marine-futurists-examining-evolutionary-versus-revolutionary-change>.

¹²¹ 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>.

¹²² Lt. Col. Frank G. Hoffman, USMCR (Ret), and Col. G.P. Garrett, USMC (Ret), *Envisioning Strategic Options: Comparing Alternative Marine Corps Structures* (Washington, DC: Center for a New American Security, March 2014).

¹²³ For details on all aspects of Marine aviation, see U.S. Marine Corps, *2017 Marine Aviation Plan*, 2017, <http://www.aviation.marines.mil/Portals/11/2017%20MARINE%20AVIATION%20PLAN.pdf>

shrinkage is intended to be temporary, such reductions tend to become permanent in the face of continuing fiscal constraints.

Existing platforms are being upgraded, for example, the Harvest HAWK lethality upgrades on the KC-130J, giving it attack capabilities, and the Intrepid Tiger electronic warfare sensor on a variety of platforms. The MV-22 fleet will be undergoing standardization for many years to deal with the three blocks, 70 different hardware configurations, and seven different software configurations in fielded aircraft.¹²⁴

The Marine Corps is beginning procurement of the RQ-21 Blackjack UAV, which has achieved Initial Operating Capability but is delayed by quality-control problems.¹²⁵ 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. 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.¹²⁶

Aviation woes come from low readiness levels and high-profile accidents. Low readiness received extensive attention, because so many aircraft are grounded.¹²⁷ In May, Lt. Gen Jon Davis, head of Marine aviation, noted that only 43 percent of Marine aircraft were flyable. Low readiness is a particular problem for the Marine Corps, which seeks to keep all units at relatively high readiness levels. The Marine Corps is not comfortable with a tiered readiness approach that the other services use, that is, maintaining deployed units at high levels of readiness but nondeployed units at lower levels. Marine aviation has a “balanced recovery plan” that consists of fixing existing aircraft and buying new aircraft, but the fiscal environment makes this challenging.¹²⁸

V-22s, CH-53Es, F/A-18s, AV-8Bs, and KC-130s all had high-visibility mishaps. These mishaps resulted in several safety standdowns, some fleet-wide, some limited to particular commands.¹²⁹ Aviation leadership blamed the mishaps on low-readiness levels, lack of flying time, and “tired iron.” Increased readiness funding should increase aircraft availability, but naval flying hours will decline in FY 2018. (See “Readiness” section of this report for details.) F-35s will slowly replace

¹²⁴ Ibid.

¹²⁵ Defense Operational Test and Evaluation, *RQ-21A Blackjack Unmanned Aircraft System*, U.S. Department of Defense, January 2016, <http://www.dote.osd.mil/pub/reports/FY2015>.

¹²⁶ 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 *Marine Corps Gazette*.

¹²⁷ Jeff Schogol, “The Marine Corps’ Aviation Fleet Is in Peril,” *Marine Corps Times*, April 29, 2016, <https://www.marinecorpstimes.com/news/your-marine-corps/2016/04/26/the-marine-corps-aviation-fleet-is-in-peril>.

¹²⁸ Lt. Gen. Jon Davis, “The State of Readiness,” *Marine Corps Gazette*, May 2017, <https://www.mca-marines.org/gazette/2017/05/art-readiness>.

¹²⁹ For AV-8Bs: Jeff Schogol, “Marine Corps Harriers in Japan Stand Down Following Crash,” *Marine Corps Times*, September 23, 2016, <http://www.marinecorpstimes.com/news/your-marine-corps/2016/09/23/marine-corps-harriers-stand-down-in-japan-following-crash/>; Marine Corps wide: Jeff Schogol, “Marines Order 24-Hour Pause in Flight Operations,” *Marine Corps Times*, August 3, 2016, <http://www.marinecorpstimes.com/news/your-marine-corps/2016/08/03/marines-order-24-hour-pause-in-flight-operations-for-all-non-deployed-aircraft>.

legacy aircraft, but their high flying-hour cost, currently more than double that of the F-18, make achievement of target readiness levels even harder.

Ground modernization—the future force

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). The 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 537 in FY 2018¹³⁰ and may increase its total buy above the currently planned 5,500.¹³¹ 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 2018 the Corps will buy 26 vehicles for testing, 13 from each of two contractors.

The modest level of ground modernization caused one legislator to raise the long-standing issue of ground versus aviation modernization, noting that in FY 2017 the Marine Corps was spending three times as much on aviation as on ground. The Corps responded that the balance was appropriate.¹³² This imbalance also reflected the bureaucratic fact that ground modernization is funded in a Marine Corps appropriation (Procurement, Marine Corps) while aviation modernization is funded in a Navy appropriation (Aviation Procurement, Navy).

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. CSIS discussed this in depth in its recent report on the Asia-Pacific rebalance.¹³³ This year a contract for infrastructure construction on Guam has been let.¹³⁴ The current target is for 4,000 Marines to be on Guam by

¹³⁰ Office of the Undersecretary of Defense (Comptroller), *Program Acquisition Cost by Weapon System*, 3-2, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_Weapons.pdf.

¹³¹ Hope Hodge Seck, "For the Marine Corps, 18 Will Be the Year of the Combat Vehicle," *Military.com*, May 23, 2017, <http://www.military.com/daily-news/2017/05/23/marine-corps-2018-will-be-year-combat-vehicle.html>.

¹³² Megan Eckstein, "Lawmaker Worries Marine Corps Investing Too Heavily in Aviation over Ground Vehicles," *U.S. Naval Institute News*, March 10, 2017, <https://news.usni.org/2017/03/10/lawmaker-worries-marine-corps-investing-too-heavily-in-aviation-over-ground-vehicles>.

¹³³ Michael J. Green, Kathleen H. Hicks, Mark F. Cancian, John Schaus, and Zack Cooper, *Asia-Pacific Rebalance 2015: Capabilities, Presence, and Partnerships* (Washington, DC: Center for Strategic and International Studies, January 2016), http://csis.org/files/publication/160119_Green_AsiaPacificRebalance2025_Web_0.pdf.

¹³⁴ Shawn Raymundo and Dana M. Williams, "Guam buildup project for Marine Corps base construction awarded," *Pacific Daily News*, August 18, 2017, <http://www.guampdn.com/story/news/2017/08/18/contract-awarded-marine-corps-guam-buildup/578376001>.

2024, though that timeline has slipped repeatedly, and for the number of Marines on Okinawa to be halved, to 11,500, by 2027.¹³⁵

The effort also involves building a new air facility—called the Futemna replacement facility—in a less inhabited area of Okinawa. However, this has been delayed due to demonstrators and opposition from the provincial government of Okinawa. That opposition continues, with the government on the mainland supporting the new facility and local politicians opposing it, but some site preparation is underway.¹³⁶

So both processes—on Guam and Okinawa—continue, though slowly, and only a few Marine forces have yet relocated or left Okinawa.

By contrast, the Marine Corps' rotational deployments to Darwin, Australia, continue into their sixth year without controversy, with six-month rotations on the ground of about 1,200 Marines each. The rotations provide opportunities to train with the Australian defense forces and provide a U.S. presence in southeast Asia. The rotations have continued through changes of administration in both Australia and the United States, so the politics look settled. The most recent rotation was marred by a MV-22 crash that killed three Marines but that has not affected operations.

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. The Corps is also using them as experimentation platforms. However, the press of operational demands forced the Marine Corps to cut the MV-22 and C-130J aircraft from the SP-MAGTFs, thus greatly reducing their responsiveness, so the future of this new capability may be in doubt.

Amphibious ships and alternative platforms

Consistent with its reenergized 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. The Navy's 355-ship target includes 38 amphibians and the FY 2017 30-year shipbuilding plan does achieve this level in the future, but, as noted earlier, there is risk in the plan's affordability.

¹³⁵ "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.

¹³⁶ "Why Is Okinawa Blocking Plans to Build an American Military Base?," *The Economist*, July 11, 2017, <https://www.economist.com/blogs/economist-explains/2017/07/economist-explains-5>.

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, high-speed vessels (EFPs), and afloat forward staging bases (ESBs/ESDs).¹³⁷ 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.

¹³⁷ Robert D. Holzer and Scott C. Truver, "The U.S. Navy in Review," *Proceedings*, U.S. Naval Institute, May 2017, <https://www.usni.org/magazines/proceedings/2017-05/us-navy-review>; Megan Eckstein, "3rd Marine Division Experimenting with Using MSC Ships in Higher Level Operations," *U.S. Naval Institute News*, January 12, 2016, <https://news.usni.org/2016/01/12/3rd-marine-division-experimenting-with-using-msc-ships-in-higher-level-operations>; Megan Eckstein, "Council Looking into Using JHSV as Afloat Command and Control Platform for Marines," *U.S. Naval Institute News*, November 6, 2015, <https://news.usni.org/2015/11/06/council-looking-into-using-jhsv-as-afloat-command-and-control-platform-for-marines>. These ships are receiving new designations as "E" or Expeditionary-class ships: MLP as Expeditionary Transfer Dock (ESD), JHSV as Expeditionary Fast Transport (EPF), and AFSB as Expeditionary Mobile Base (ESB).

Air Force

Table 7: Air Force – Active and Civilians

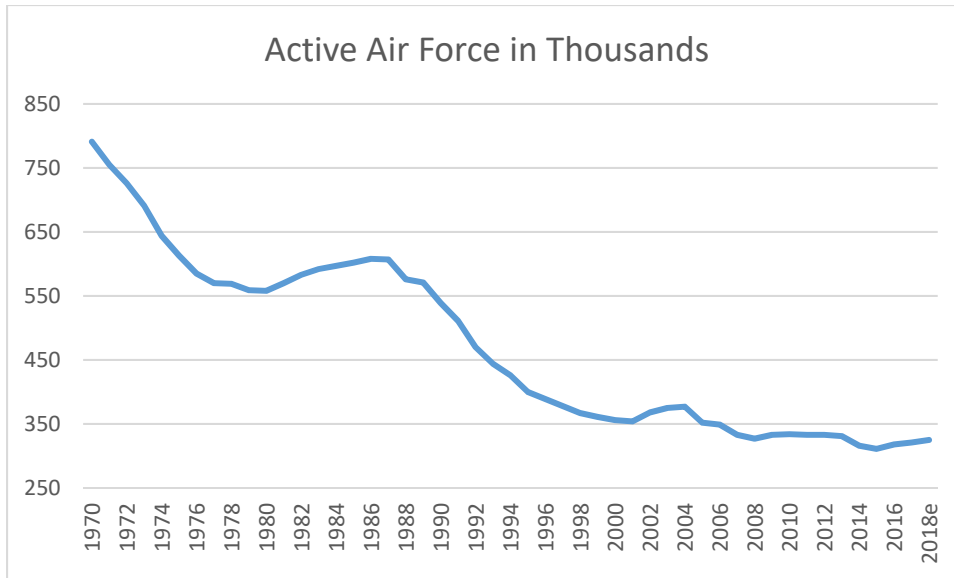
	Air Force Active		Civilian Full-Time Equivalents
	Combat Coded Squadrons	Endstrength	
FY 2017 Authorized	40	321,000	170,000
FY 2018 Proposed	40	325,100	170,500
Change	0	+4,100	+500

Table 8: Air Force – Reserve and Air National Guard

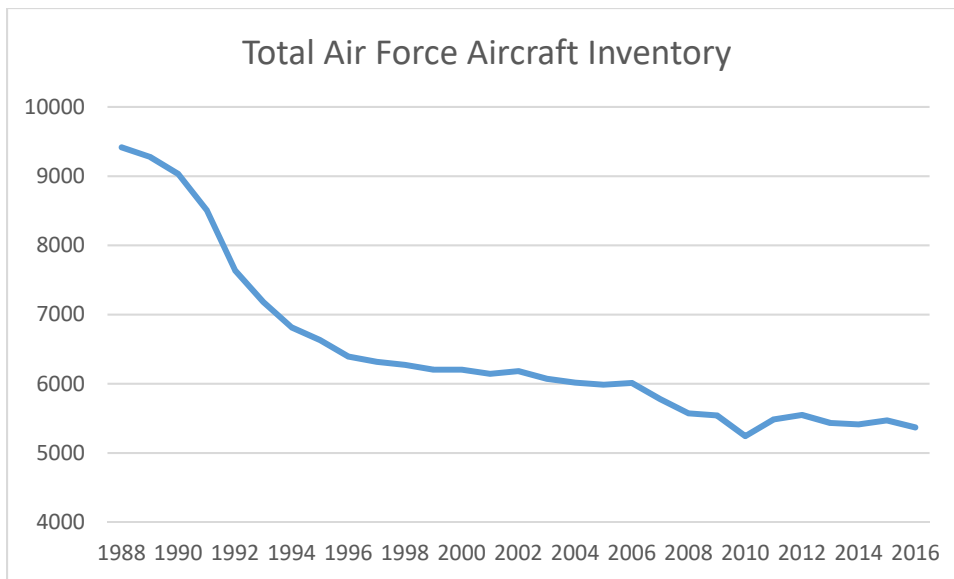
	Air Force Reserve		Air National Guard	
	Combat Coded Squadrons	Endstrength	Combat Coded Squadrons	Endstrength
FY 2017 Authorized	3	69,000	21	105,700
FY 2018 Proposed	3	69,800	21	106,600
Change	0	+800	0	+900

Note: Combat coded squadrons = fighter and bomber squadrons with a wartime mission

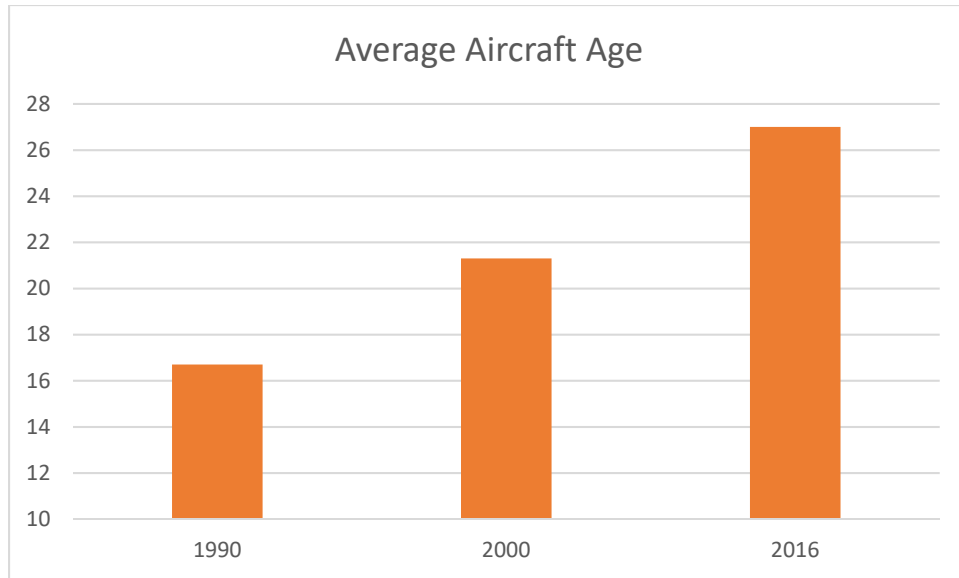
The budget increases manpower for all three components above the FY 2017 level. The reason for the higher manpower levels is the congressionally directed retention of more legacy aircraft like the A-10 and readiness improvements such as increasing training units and equipment maintainers. This manpower 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.



The Air Force FY 2018 budget maintains 40 active combat-coded squadrons (fighter and bomber) and 24 reserve combat-coded squadrons (which did not decline to 23 as had been previously planned). 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 numbers¹³⁸ have declined, paralleling the decline in numbers, while average aircraft age has increased (to 27 years).



¹³⁸ Numbers measured by total active inventory (TAI), that is, aircraft assigned to operating forces for mission, test, or maintenance. It includes primary, backup, and attrition reserve aircraft.



As Stephen Kosiak, a 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.”¹³⁹ 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, the specialty fleet (ISR/BM/C3) because of UAVs/RPVs. Other fleets are old: fighter/attack (25 years old, on average), bomber (41 years), tanker (50 years), helicopter (33 years), and trainers (31 years).¹⁴⁰ 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.

A bright spot is active/reserve relations. By having active and reserve manpower increase together, and not favoring one component or the other, 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—27,000 airmen deployed overseas, 26 strike sorties per day, 131,000 ISR sorties over the year—which it describes as an “insatiable demand for airpower.” The Air Force is, in effect, conducting an air war in the Middle East while still meeting its other global commitments.¹⁴¹

¹³⁹ 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).

¹⁴⁰ Fleet age numbers from The Air Force Association, *The Air Force in Facts and Figures*.

¹⁴¹ Maj. Gen. Joseph Martin, *United States Air Force: Fiscal Year 2018 Budget Overview*, May 23, 2017, <http://www.saffm.hq.af.mil/Portals/84/documents/FY18%20PB%20Rollout%20Brief.pdf?ver=2017-06-05-093249-283>.

Further, the Air Force has, like the Army and Navy, become more active in Europe, mainly through ERI. It has conducted air patrols over the Baltic, deployments to Eastern Europe for training with allies, and reversed planned reductions of F-15s in the United Kingdom. F-22s recently made a training/reassurance/deterrence deployment. The FY 2018 ERI budget also requests funds for air base projects, mainly in Eastern Europe, so the groundwork is literally being laid for future engagements and, if necessary, rapid reinforcement.

As a result of these incessant operational demands, the Air Force leadership describes the service as “too small” for the tasks it has been assigned.¹⁴² This, in turn, pushes the Air Force (as with the other services) to increase capacity, even at the cost of capability, though higher budgets may allow some increase in both.

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 through the five-year planning period. The Air Force will also upgrade and extend the lives of additional F-16C/D aircraft and F-15Cs.¹⁴³

The Air Force has gone further, conducting demonstrations of off-the-shelf light attack aircraft (called “OA-X”), both turboprop and jet.¹⁴⁴ The concept is that such an aircraft would be better for missions in low threat environments—less expensive to operate, reducing wear on high-end aircraft, and with more focused training. Such an aircraft appears in the McCain proposal as well as several others. Whether this will turn into a real program, or just be a way to quiet opposition to A-10 retirement, will be seen over time.

Collectively, these decisions—coupled with the F-35 procurement pause, described below—indicate a leaning toward capacity rather than the previous leaning toward capability. Whether this will survive the strategy review—and its apparent focus on high-end conflict—remains to be seen. Nevertheless, the A-10/CAS/legacy aircraft issue never quite goes away because it raises three strategic questions: What kinds of conflicts should the Air Force prepare for? How can airpower achieve the greatest effects? What is the value of stealth in modern air warfare? The answers to these questions drive the Air Force’s central decision in each budget for the fighter/attack fleet: setting the balance between legacy fourth-generation aircraft (capacity) and new fifth-generation aircraft (capability).

- *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

¹⁴² Heather A. Wilson and Gen. David L. Goldfein, *Air Force Budget Posture FY 2018*, June 6, 2017, https://www.armed-services.senate.gov/imo/media/doc/Wilson-Goldfein_06-06-17.pdf.

¹⁴³ Courtney Albon, “F-16 SLEP Scope Grows to 343 Jets,” *Inside Defense*, December 28, 2016, <https://insidedefense.com/daily-news/f-16-slep-scope-grows-343-jets-foreign-military-sales-customers>.

¹⁴⁴ Mike Pietrucha, “Back to Basics: The Light Attack Experiment Begins,” *War on the Rocks*, August 20, 2017, <https://warontherocks.com/2017/08/back-to-basics-the-light-attack-experiment-begins>.

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.

- *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,¹⁴⁵ arguing that these effects are immediate and tangible. Specifically designed aircraft like the A-10 are both cheaper and more effective for these missions than multirole stealth aircraft like the F-35.¹⁴⁶ 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.¹⁴⁷ The debate goes far beyond this monograph.
- *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.¹⁴⁸ 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.¹⁴⁹ Opponents argue that only a small part of the fleet needs to be stealthy while the rest can be non-stealthy.¹⁵⁰

If budgets increase and allow the Air Force to follow both approaches, this tension will ease, but it will never fully go away until something happens in combat operations that clarifies the way to go.

¹⁴⁵ Scott Beauchamp, “An Infantryman’s Defense of the A-10,” *Task and Purpose*, February 29, 2016, <http://taskandpurpose.com/infantrymans-defense-10>.

¹⁴⁶ 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>.

¹⁴⁷ The literature on close air support versus strategic attack is extensive. For a recent example, see Phil Haun and Colin Johnson, “Breaker of Armies: Airpower in the Easter Offensive and the Myth of Linebacker One and Two in the Vietnam War,” *International Security*, 40, no. 3 (Winter 2015/16): 139–78.

¹⁴⁸ 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 percent more (in FY 2018, F-18E/F \$90 million; F-35B/C \$145 million, Budget Justification Book Navy Aircraft Procurement, http://www.secnaw.navy.mil/fmc/fmb/Documents/18pres/APN_BA1-4_BOOK.pdf).

¹⁴⁹ Maj. Gen. Jeff Harrigan and Col. Max Morosko, *Fifth Generation Air Combat: Maintaining the Joint Force Edge*, *The Mitchell Forum*, 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>.

¹⁵⁰ 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>.

Piloted versus unpiloted (or “manned versus unmanned”)

For the Air Force, this revolution is complete. 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 2000s—has become routine.

The FY 2018 budget procures 16 additional MQ-9 Reapers, the follow-on aircraft to MQ-1 Predators, in OCO. 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 substantive issue is whether to buy UAVs/RPAs for permissive or nonpermissive environments.¹⁵¹ Predator and 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 will be too vulnerable to survive on many battlefields if employed using current concepts of operation. The question, then, is twofold. First, are there concepts of operation that would enable current UAVs to contribute to a high-end warfighting campaign? Second, should the Air Force develop and procure stealthy and likely largely autonomous UAVs to operate inside these challenging environments. There are indications that such aircraft may exist in the black world, but there is little in the open literature.¹⁵²

Aircraft modernization—the future force structure

The general theme is that the Air Force has programs in place to modernize the individual fleets, but this modernization has been delayed, will take time, and, as a result, today’s aging fleets will be around for a long while. The Air Force calls its modernization program “cost-effective,”¹⁵³ a nod toward an emphasis on readiness and capacity.

¹⁵¹ 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>.

¹⁵² Amy Butler and Bill Sweetman, “Secret New UAS Shows Stealth, Efficiency Advances,” *Aviation Week*, December 6, 2013, <http://aviationweek.com/defense/secret-new-uas-shows-stealth-efficiency-advances>.

¹⁵³ U.S. Air Force, “USAF Posture Statement Fiscal Year 2018,” June 21, 2017, <http://www.af.mil/Portals/1/documents/airpower/FY18%20AF%20Posture%20Statement%20Final.pdf?ver=2017-06-30-093831-353>.

B-21 and the bomber force

The B-21 Raider program continues in development with budget demands rising from \$1.3 billion in FY 2017 to \$2.0 billion in FY 2018. 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 41 years on average), though a variety of upgrade programs keep the aircraft flying and operationally relevant.

F-35 and the fighter force

The Air Force requests 46 aircraft in FY 2018, down slightly from the FY 2017 level of 48. A further 14 are on the Air Force’s unfunded requirement list. The Air Force had hoped to get to 60 aircraft per year, but affordability and prospective retrofit costs are keeping the annual production capped.¹⁵⁴ The program recently had problems with its oxygen system at high altitudes, but long-standing software problems seem to be settling down, showing that with enough time and money, most development challenges can be overcome.

Age of the fighter/attack force has increased from 8 years at the end of the Cold War in 1991 to 25 years today while numbers have decreased from 4,000 in 1991 to 1,970 (total) today. Kosiak’s observation is particularly 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-35’s is beginning to ease the aging of the fleet. Nevertheless, at 46 aircraft per year, the Air Force would take 38 years to buy its full 1,763-inventory goal. Even at 60 per year, it would take 29 years. Average age of the fighter/attack fleet will therefore remain high for a long time, perhaps indefinitely.

KC-46 and the tanker force

The program continues in development and received “Milestone C” (production) approval in October 2016.¹⁵⁵ However, first delivery has been postponed to early 2018 because of delays in flight testing and problems with the refueling boom.¹⁵⁶ Boeing, the contractor, continues to execute the fixed-price contract that it greatly underbid and on which the company is taking large losses (\$2.3 billion so far).¹⁵⁷ That underbidding strategy appears to have paid off, however,

¹⁵⁴ Valerie Insinna, “Air Force official cautions against increasing F-35 buy rate,” *Defense News*, February 17, 2017, <https://www.defensenews.com/digital-show-dailies/air-warfare-symposium/2017/02/17/air-force-official-cautions-against-increasing-f-35-buy-rate>.

¹⁵⁵ U.S. Air Force, “KC-46A approved for production,” August 12, 2016, <http://www.af.mil/News/Article-Display/Article/913955/kc-46a-approved-for-production>.

¹⁵⁶ Valerie Insinna, “US Air Force predicts first KC-46 delivery in spring 2018, likely not this year,” *Defense News*, June 8, 2017, <http://www.defensenews.com/air/2017/06/08/us-air-force-predicts-first-kc-46-delivery-in-spring-2018-likely-not-this-year>.

¹⁵⁷ Oriana Pawlyk, “KC-46 Refueling Tanker Faces More Delays, Auditors Say,” *Defense Tech*, March 25, 2017, <https://www.defensetech.org/2017/03/25/kc-46-refueling-tanker-delays>.

as the Air Force announced that it would not recomplete 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, already 50 years old on average, 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's and China's anti-aircraft capabilities. That will drive inventory requirements higher. The study will not begin until 2019, so there will be a lot of discussion over the next two years.¹⁵⁸

Nuclear enterprise

The ICBM force is declining from 450 to the New START limit of 400. The bomber force holds steady at 158 total (TAI).

The future of the nuclear enterprise will be determined by DOD's Nuclear Posture Review, currently underway. Although results will not be known for some time, Secretary Mattis did signal support for the triad: "I have questioned the triad, but I cannot solve the deterrent problem reducing [the nuclear force] from a triad."¹⁵⁹ That's 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."¹⁶⁰ GBSD received its early, "Milestone A" approval, though there was great uncertainty over its cost because the United States has not developed a new ICBM for many decades.¹⁶¹ Funding increases to \$216 million in FY 2018.¹⁶² So there will likely to be a GBSD of some sort, but its form may be determined by cost as the program evolves.

Similar controversy surrounds the Long Range Standoff (LRSO) weapon, a nuclear-armed cruise missile. In his triad statement, Secretary Mattis did not signal support for all nuclear programs, so its fate is undetermined, though it continues in the FY 2018 budget. These programs—with the

¹⁵⁸ 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>.

¹⁵⁹ Marcus Weisgerber, "At US Nuclear Weapons Base, Mattis Signals Support for Triad," *Defense One*, September 13, 2017, <http://www.defenseone.com/business/2017/09/us-nuclear-weapons-base-mattis-signals-support-triad/140987>.

¹⁶⁰ Marcus Weisgerber, "Despite Objections, Pentagon Takes Steps toward Buying Nuclear Weapons," *Defense One*, July 29, 2016, <http://www.defenseone.com/threats/2016/07/despite-objections-pentagon-takes-step-toward-buying-new-nuclear-weapons/130355>.

¹⁶¹ Sydney Freedberg, "New ICBMs Could Cost Way above \$85B: CAPE'S Morin," *Breaking Defense*, September 22, 2016, <http://breakingdefense.com/2016/09/new-icbms-could-cost-way-above-85b-capes-morin>.

¹⁶² 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: Center for Strategic and International Studies, September 21, 2017), <https://www.csis.org/analysis/options-ground-based-leg-nuclear-triad>.

B-21 bomber and the Columbia-class submarine—contribute to the nuclear modernization bow wave that DOD faces in the 2020s and 2030s, which will require it to either trim programs or increase the proportion of the budget allocated to nuclear forces.¹⁶³

Intermediate-range missiles and “tactical” nuclear weapons are wildcards. The budget funds modifications to the F-35As, allowing the aircraft to employ the B61 nuclear bomb. Uncertain, however, is the future of the intermediate-range nuclear force treaty, which the Russians appear to be violating. Some commentators, and language in the House and Senate NDAs, recommend that the United States build comparable forces again, thus reopening a whole new category of weapons that had been eliminated in the 1980s.

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.

Space

The great issue about space this year was whether to create a “space corps” separate from the Air Force, as proposed by the House in its version of the FY 2018 NDAA. Discussion was intense, the Air Force arguing vigorously that it was already an aerospace organization and that such a change was unnecessary. The issue appears to have subsided, the Senate having prohibited establishment of a “space corps” in its version of the NDAA. Nevertheless, the issue is unlikely to go away entirely since space is an increasingly important domain, and the Air Force is often distracted by its aircraft programs. For a detailed discussion of current challenges and programs in the space domain, see CSIS reports *Beyond the RD-180, Implications of Ultra-Low-Cost Access to Space*, and *How to Organize Military Space*.¹⁶⁴

¹⁶³ 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>.

¹⁶⁴ Todd Harrison, Andrew Hunter, Kaitlyn Johnson, Evan Linck, and Thomas Roberts, *Beyond the RD-180* (Washington, DC: Center for Strategic and International Studies, March 2017), <https://www.csis.org/analysis/beyond-rd-180>; Todd Harrison, Andrew Hunter, Kaitlyn Johnson, Thomas Roberts, *Implications of Ultra-Low-Cost Access to Space* (Washington, DC: Center for Strategic and International Studies, March 21, 2017), <https://www.csis.org/analysis/implications-ultra-low-cost-access-space>; Todd Harrison, moderator, *How to Organize Military Space*, CSIS, September 16, 2017, <https://www.csis.org/events/how-organize-military-space>.

Special Operations Forces (SOF)

Table 9: Special Operations Forces – Military, Civilians, Contractors¹⁶⁵

	Military Endstrength	Civilian FTEs	Contractors
FY 2017 Authorized	63,347	6,599	5,697
FY 2018 Proposed	63,579	6,424	5,648
Change	+233	-75	-49

Three themes continue—stable force size, continuing stress, and dependence on OCO funding. In addition, statutory changes to the management of Special Operations Forces give them more independence and broader responsibilities.

Size of the force

SOCOM grew greatly in size during the wars, from 42,800 in 2001 to 63,347 military service members today.¹⁶⁶ They are now approaching the size of the British Army (82,000 in 2017). This large post-2001 increase has been in response to DOD steadily increasing the number and type of missions SOCOM is expected to carry out. Beyond its core missions of direct action, foreign internal defense, irregular warfare, and civil affairs, SOCOM has provided DOS’s core counterterrorism capabilities. Demand for all these missions has grown, not just in CENTCOM but globally as well.¹⁶⁷

SOCOM’s size has now leveled off. This has occurred for both fiscal reasons—the budget downturn—and recruiting reasons—there are a limited number of personnel suitable for SOCOM roles. Although reductions are unlikely, so is further growth.

Stress on the force

High OPTEMPO has continued even after the substantial withdrawals from Iraq and Afghanistan. Gen. Raymond A. Thomas, commander of SOCOM, noted that “Most SOF units are employed to their sustainable limit. . . . Despite growing demand for SOF, we must prioritize the sourcing of these demands as we face a rapidly changing security environment. As we work to support the

¹⁶⁵ 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.

¹⁶⁶ 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>.

¹⁶⁷ *Ibid.*; Statement of Joseph L. Votel, testimony before the House Armed Services Committee, Emerging Threats and Capabilities Subcommittee, *Hearing on Special Operations Forces in an Evolving Threat Environment: A Review of the Fiscal Year 2017 Budget Request for U.S. Special Operations Command*, 114th Cong., 2nd sess., March 1, 2016, <https://armedservices.house.gov/legislation/hearings/special-operations-forces-evolving-threat-environment-review-fiscal-year-2017>.

[Ground Combat Commanders] in addressing the challenges they face, we are constantly on guard against over-committing this relatively small force.”¹⁶⁸ Because of this high OPTEMPO, combined with limits on force size, SOCOM has experienced increased suicides and pressures on families. It has instituted programs to reduce both. Nevertheless, as CSIS scholar Mark Moyar notes, “With the demand for special operations forces exceeding the supply, the new administration must determine where scarce special operations personnel can best be employed, and where other U.S. and allied capabilities can most profitably shoulder the burden.”¹⁶⁹

Dependence on OCO funding

SOCOM is particularly dependent on OCO funding. For FY 2018 it has requested \$3.8 billion in OCO, 31 percent of its total funding, three times the department’s rate overall (10 percent).¹⁷⁰ This heavy usage occurs because SOCOM is allowed to fund global counterterrorism operations in OCO, unlike the military services.¹⁷¹ Although OCO looks stable for the immediate future, its long-term prospects are unclear. Todd Harrison at CSIS and Kate Blakeley at CSBA have both warned about the long-term prospects for OCO.¹⁷² Ninety percent of SOCOM’s OCO funding is for enduring activities.¹⁷³ The administration has made vague statements about pushing enduring activities into the base budget. However, doing that in an environment of budget caps would be highly disruptive across the department but especially to special operations forces.

Management of Special Operations Forces

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

SOCOM received two additional missions this year, coordinating authority for transregional terrorist organizations and other threat networks and Countering Weapons of Mass Destruction (CWMD) synchronization, transferred from U.S. Strategic Command (USSTRATCOM). The effect

¹⁶⁸ U.S. Special Operations Command, “SOCOM Posture Statement,” May 2, 2017, <http://www.socom.mil/Pages/posture-statement-hasc.aspx>.

¹⁶⁹ Mark Moyar, *Making the Most of Special Operations Forces* (Washington, DC: Center for Strategic and International Studies, July 18, 2017), <https://www.csis.org/analysis/making-most-special-operations-forces>.

¹⁷⁰ *Fiscal Year 2018 President’s Budget: United States Special Operations Command (USSOCOM)* (MacDill Air Force Base, FL: Special Operations Command, May 2017), <http://comptroller.defense.gov/Budget-Materials/FY2018BudgetJustification>.

¹⁷¹ Letter from Steven Kosiak, Associate Director of the Office of Management and Budget, to Robert Hale, Under Secretary of Defense (Comptroller), September 9, 2010, <http://asafm.army.mil/Documents/OfficeDocuments/Budget/Guidances/omb-gd.pdf>.

¹⁷² Todd Harrison, “The Enduring Dilemma of Overseas Contingency Operations Funding,” *Defense360*, January 11, 2017, <https://defense360.csis.org/enduring-dilemma-oco-funding>; Katherine Blakeley and Max Andonov, “The Sequester Defense Cuts Are Making the World More Dangerous,” *Newsweek*, September 29, 2015, <http://www.newsweek.com/sequester-defense-cuts-are-making-world-more-dangerous-377991>.

¹⁷³ U.S. Special Operations Command, “SOCOM Posture Statement.”

is, in effect, to make SOCOM a “global COCOM,” with activities that reach into the regional COCOMs.

In addition, the 2017 NDAA made major changes to the management of Special Operations Forces.¹⁷⁴ It gave the assistant secretary of defense for special operations forces (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.

The effect, and congressional intent, was to make special operations forces even more like a separate service. (Special Operations Forces 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. To support this expanded role, the NDAA report recommended, but the legislation does not require, an increase in staffing for the ASD/SOLIC office, despite the caps on OSD personnel overall. Giving the commander of SOCOM authority over promotions takes that authority away from the service chiefs.

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.

¹⁷⁴ 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>.

DOD Civilians

Table 10: Department of Defense Civilians

	Total DOD Civilians ¹⁷⁵
FY 2017 Authorized	734,800
FY 2018 Proposed	740,000
Change	+5,200

Note: Total full-time equivalents, U.S. and foreign direct hires, excluding classified activities.

President Trump proposed two goals for the federal government’s civilian workforce: making it smaller and less costly, and increasing its quality. Both have also been long-time Republican goals, but the first is controversial and support for the second depends on the specifics. Despite the negative implications of these policies for the size of the civilian workforce, the administration proposes to *increase* the number of DOD civilians by 5,200. (Administration proposals would greatly decrease the number of civilians in nondefense/domestic agencies.) Inadvertently, the administration has also raised questions about the number and role of political appointees.

Reducing cost: pay raise and pension cuts

The proposed civilian pay raise, 1.9 percent, is mostly good news, being higher than the 1.6 percent that had been projected for FY 2018 last year. On the other hand, it is lower than the proposed military pay raise (2.1 percent). Breaking parity is not unprecedented. In 2010 the civilian pay raise was also lower (2 percent versus 3.4 percent) and there were three years (2011, 2012, 2013) when civilians received no pay raise at all while the military did get a pay raise. Nevertheless, lack of parity is unusual and disappointing for civilian employees. One piece of good news: future projections show parity for FY 2019 to FY 2022.¹⁷⁶

Bad news for federal employees, DOD and government-wide, are administration proposals to cut retirement benefits and the not-yet-acted-upon FY 2018 House Budget Resolution to cut \$32 billion in benefits for current employees and annuitants. The administration’s proposals increase employee contributions toward retirement by approximately 6 percent, eliminate certain cost-of-living adjustments, and alter the retirement calculation for new retirees. To federal employees, these are simply pay cuts and hinder the federal government in the “war for talent.” Unions and employee associations strongly oppose the proposals. The administration

¹⁷⁵ 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: U.S. Department of Defense, May 2017), 6–18, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY2017_Budget_Request_Overview_Book.pdf.

¹⁷⁶ *National Defense Budget Estimates For FY 2018 (Green Book)*, June 2017, <http://comptroller.defense.gov/Budget-Materials/Budget2018>.

argues that the proposals will bring overly generous federal pensions more in line with those in the private sector.

Reducing size: Hiring freezes and the size of the civilian workforce

Consistent with long-standing Republican commitments, the new administration immediately instituted a hiring freeze on civilian personnel.¹⁷⁷ There were a few exceptions for national security, so it is unclear how much it affected DOD hiring. Hiring freezes reduce headcount but are blunt instruments, since the government cannot control either the billets or the quality of the personnel being lost. Further, in response to constraints on civilian personnel, government agencies hire more contractors and turn routine duties over to military personnel. The former can diminish accountability, while the latter diverts military personnel from training for war and increases costs.¹⁷⁸

OMB lifted the blanket freeze in March, instructing agencies: “Rather than setting arbitrary targets, the Administration [has] tasked each agency to determine workforce levels that align with effectively and efficiently delivering its mission, including planning for funding levels in the President’s Budget.”¹⁷⁹ DOD justified its increased numbers of civilian employees by their effect on readiness: “While the Defense Agencies and Field Activities continue to reduce the MHA [Military Headquarters Activities] civilian workforce, the Military Departments will continue to shape the workforce to support the Department’s push to increase readiness as reflected in the FY 2018 President’s Budget. Civilian increases are tied to skillsets directly related to the operational requirements, such as depot maintenance supporting shipyards and logistics depots, and cyber and intelligence.”¹⁸⁰

Nevertheless, controversy about the size of DOD’s civilian workforce continued. To opponents, civilians are part of the overhead, and not warfighting elements. The number of civilian personnel has been rising while the number of military personnel has been falling, evidence that these levels are not closely overseen.

Proponents note that government civilians are mostly not in Washington, but rather in readiness functions such as maintenance and base operations. They also note that recent efforts to move functions from higher-cost military personnel to lower-cost civilian personnel naturally increase the number of civilians.

¹⁷⁷ White House, *Hiring Freeze*, Presidential Memorandum, January 23, 2017, <https://www.whitehouse.gov/the-press-office/2017/01/23/presidential-memorandum-regarding-hiring-freeze>.

¹⁷⁸ Jennifer Lamping Lewis et al., *U.S. Department of Defense Experiences with Substituting Government Employees for Military Personnel* (Arlington, VA: RAND Corporation, 2016), http://www.rand.org/pubs/research_reports/RR1282.html.

¹⁷⁹ Office of Management and Budget, *Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce*, April 12, 2017, <https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2017/M-17-22.pdf>.

¹⁸⁰ Office of the Undersecretary of Defense (Comptroller), *Overview—FY 2018 Defense Budget*, May 2017, http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2018/fy2018_Budget_Request_Overview_Book.pdf.

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. Organizations as diverse as the Project on Government Oversight, the Defense Business Board, and CSIS have made this point.¹⁸¹ DOD has four such workforce elements: active duty military, reserve military, government civilians, and contractors. While there is extensive literature on the active/reserve mix, there is much less on government civilians and contractors (discussed later), largely because of the lack of an assessment of the full costs of each workforce element. This requires developing fully burdened costs—that is, personnel costs with all benefits and support included—so that decisionmakers can make truly apples-to-apples cost comparisons. The department and the broader community have made progress on theoretical constructs about what costs to include, but actual numbers don't exist.¹⁸²

Reducing size: Cap on Senior Executive Service (SES) positions

The 2017 NDAA limits the total number of SES positions in DOD (roughly comparable to general/flag officers) to 1,260 by the end of CY 2022, of which no more than 200 can be hired under the existing authority for “highly qualified” personnel. It also requires a plan for SES allocations and periodic progress reports. However, DOD typically has many positions vacant and currently has about 1,200 SES personnel, so the cap is essentially a freeze that prevents any growth, even as budgets and forces increase. The Senate had sought a 25 percent cut in SES personnel, but the department had pushed back, noting that SES were needed to offset limits on general/flag officers and to provide continuity of leadership amid frequent rotations and changes in the general/flag officer ranks.¹⁸³ The cap on “highly qualified” personnel likely reflects a desire to focus these billets on the most technical skills and not allow them to become a mechanism to get around normal promotion procedures. The requirement for a plan and reports is comparable to similar requirements for general/flag officers.

Increasing quality: reform and accountability

Performance of the civil service system continues to be an issue. Most of Secretary Carter's “Force of the Future” initiatives died with the administration, but frustration continues with “a

¹⁸¹ Defense Business Board, *Focusing a Transition: Challenges Facing the New Administration* (Washington, DC: U.S. 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>.

¹⁸² For example, Department of Defense Directive-Type Memorandum (DTM) 09-007, “Estimating and Comparing the Full Costs of Civilian and Military Manpower and Contract Support,” September 2, 2011, [www.asamra.army.mil/scra/documents/OSD DTM-09-007...](http://www.asamra.army.mil/scra/documents/OSD%20DTM-09-007...); David Berteau et al., *DOD Workforce Cost Realism Assessment* (Washington, DC: Center for Strategic and International Studies, May 2011); Jacque S. Gansler, William Lucyshyn, and John Rigilano, *Toward a Valid Comparison of Contractor and Government Costs* (College Park, MD: Center for Public Policy and Private Enterprise, February 2012). Gansler is a partial exception, having some numbers for allocated overhead activities.

¹⁸³ Mark Cancian, “National Security Reform: What happened in Congress,” *Defense 360*, January 10, 2017, <https://defense360.csis.org/national-security-reform-happened-congress>; Mark Cancian, *Reducing the Number of SES by 25 Percent* (Washington, DC: Center for Strategic and International Studies, July 9, 2016), <https://www.csis.org/analysis/reducing-number-senior-executive-service-positions>.

rigid personnel system that stymies our civilian workforce,” as then-candidate Trump complained.¹⁸⁴ Many organizations and experts argue for reform, seeing a need to tie reward to performance and to make hiring more flexible. For example, the Bipartisan Policy Center noted in a recent report that “If the military personnel system errors on the side of instability and frequent turnover, the civilian personnel system has the opposite problem. Civilian employees may remain in their positions almost indefinitely— typically regardless of their level of performance.” It recommended a separate DOD personnel system with more flexible hiring, compensation, and retention.¹⁸⁵

The administration has committed to “creating a lean, accountable, more efficient government.” It has tasked agencies to “take near-term actions to ensure that the workforce they retain and hire is as effective as possible . . . [and] develop a plan to maximize employee performance by reviewing the systems and structures currently in place within their agencies.”¹⁸⁶ This implies that reform efforts will be agency specific and not government-wide. DOD’s attempt to develop an agency-specific civilian workforce reform in the 2000s, the National Security Personnel System, failed in the face of union and Democratic opposition. Whether a future reform effort, informed by the failure of the earlier effort, will succeed remains to be seen. Such planning is in the early stages and has not become public.

Political appointees

Since 1990, the number of political appointees in DOD has stayed roughly constant at the current level of 238 despite the 40 percent downsizing of the department’s military and career workforces. The number of senior officials needing Senate confirmation has kept rising, from 12 in 1947 when the Department was created, to 45 in 2000, to 58 today.¹⁸⁷ Despite the increase, the positions have been slow to be filled. By August only 15 nominees had been confirmed out of 58 positions. The Bush and the Obama administrations had been somewhat faster, with 33 and 22 confirmed at the same point in time, but still took a long time to fill positions.¹⁸⁸ Thus, during transitions the department operates for the better part of a year without most of these senior appointees being onboard. In the meantime, civil servants have filled in, often for extended periods of time. The gap raises questions about whether all the political appointees are truly needed. The Senior Executives Association has argued that presidential transitions would be smoother, and faster to implement the president’s agenda, if certain mission-critical billets were filled with career SES so there was no leadership vacuum.¹⁸⁹

¹⁸⁴ Brad R. Carson, *Information Memorandum for the Secretary of Defense, Force of the Future: A Revolution in DOD’s Talent Management* (Washington, DC: U.S. Department of Defense, April 20, 2015).

¹⁸⁵ Bipartisan Policy Center, *Building a Fast Force: A Flexible Personnel System for a Modern Military*, March 2017, <https://bipartisanpolicy.org/library/building-a-fast-force>.

¹⁸⁶ Office of Management and Budget, *Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce*, April 12, 2017.

¹⁸⁷ Cancian, “Reforming the Civilian Workforce: Two Carrots and Two Sticks.”

¹⁸⁸ Jan Diehm, Sergio Hernandez, Aaron Kessler, Tal Kopan, Curt Merrill, and Sean O’Key, “Tracking Trump’s Nominees,” CNN, August 29, 2017, <http://www.cnn.com/interactive/2017/politics/trump-nominations>.

¹⁸⁹ Senior Executives Association, *Letter to OMB/OPM ON Hiring Freeze*, March 9, 2017, <https://seniorexecs.org/advocacy/policy-letters/876-sea-president-s-letter-to-opm-omb-hiring-freeze>.

Contractors

Contractors have become a permanent element of the federal workforce, but they remain controversial. Service contractors provide workforce flexibility by conducting noncore governmental activities but raise questions about the line between government and the private sector. 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.” For both there are unresolved questions about relative cost.

A proposal by Eric Prince, former head of Blackwater, to have contractors take over much of the U.S. commitment in Afghanistan, brought these issues to the fore after years of relative quiet.

Service contractors

These contractors provide services to the government and are distinct from contractors who provide products and research and development. CSIS has analyzed these contracts in detail, showing how service contract obligations increased from \$74 billion in 2000 to \$180 billion at their peak in FY 2009 (all in FY 2014 dollars). Although service contract obligations have declined to \$125 billion in FY 2016, they are still substantially above the prewar level and have started to increase again.¹⁹⁰ In response to this 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.¹⁹¹

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.¹⁹²

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

¹⁹⁰ Andrew Hunter and Rhys McCormick, *Defense Acquisition Trends, 2016: The End of the Contracting Drawdown* (Washington, DC: Center for Strategic and International Studies, March 2017), <https://www.csis.org/analysis/defense-acquisition-trends-2016>.

¹⁹¹ 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?>

¹⁹² White House, *OMB Circular A-76: Performance of Commercial Activities*, https://www.whitehouse.gov/omb/circulars_a076_a76_incl_tech_correction

result of concerns about disruptions to the workforce and the actual achievement of savings, 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 the effort ended. Thus, the balance between contractors and the federal workforce has reached a position of stasis, that is, there are restrictions against moving in either direction.

This stasis is driven in part by unresolved questions about relative costs between the two sectors. Some argue that government is inherently less expensive because it does not need to make a profit. Others argue that government is generally more expensive because it does not need to compete and to be efficient to remain in business. Where commentators come down depends strongly on their views about government and the private sector, with Republicans generally relying more on the private sector and Democrats more on government. The analytic problem arises from indirect costs. Private-sector prices must include all these costs if an organization is to remain in business over the long term. In government, these costs are widely distributed, so their identification and allocation are difficult.¹⁹³

The Trump administration has proposed some changes that would increase the role of the private sector. In the domestic realm, for example, it proposed privatizing the air traffic control function and taking it out of the Federal Aviation Administration. Whether the administration can convince a skeptical Congress, even a Republican-dominated Congress, to make such changes remains to be seen. Otherwise, however, its guidance calls for review and analysis of the different kinds of workforces in building agency reform plans, described earlier, without apparent leaning toward either insourcing or outsourcing.¹⁹⁴ The administration will announce the results in its FY 2019 budget proposal.

The radical changes in acquisition reform instituted by the Congress in the FY 2017 National Defense Authorization Act were mainly aimed at products—encouragement of innovation, for example—and had only minor effect on the acquisition of services, which get much less attention. Similarly, the breakup of the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics will have profound effects on the acquisition of products but not so much on the acquisition of services. The offices overseeing service contracts and operational contractors will still exist under DOD's plan, but under the new undersecretary of defense for acquisition and sustainment and the assistant secretary of defense for sustainment.¹⁹⁵

¹⁹³ Jacques S. Gansler, William Lucyshyn, and John Rigilano, *Toward a Valid Comparison of Contractor and Government Costs* (College Park, MD: Center for Public Policy and Private Enterprise, February 2012), <http://www.cpppe.umd.edu/publications/toward-valid-comparison-contractor-and-government-costs>.

¹⁹⁴ Office of Management and Budget, *Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce*, April 12, 2017.

¹⁹⁵ *Report to Congress Restructuring the Department of Defense Acquisition, Technology and Logistics Organization and Chief Management Officer Organization*, August 2017, <http://www.acq.osd.mil/fo/docs/Section-901-FY-2017-NDAA-Report.pdf>.

Operational contractors

Contractors now form a permanent element of the U.S. forces overseas, along with active duty personnel, reservists, and government civilians. Although the widespread and routine use of battlefield (or “operational”) contractors remains controversial—Rachael Maddow, the MSNBC commentator, criticized “[reliance] on a pop-up army . . . of greasy, lawless contractors”¹⁹⁶—such use for logistics and administrative functions has become routine in contemporary operations because of the limited numbers of military personnel.¹⁹⁷ As a result, some analysts have suggested expanding the use of contractors as military manpower becomes increasingly stretched.¹⁹⁸ DOD may have no choice, since the Army is cutting enablers more than combat units,¹⁹⁹ which may be strategically sound but which opens up 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 Table 11 shows, contractors outnumber military personnel in Afghanistan and approach the number of military personnel in Iraq, though fewer than half are U.S. citizens. Overall, contractors in Central Command outnumber military personnel. In the past, the ratio was closer to 1:1,²⁰⁰ but the low caps on troop numbers specified by the Obama White House likely pushed Central Command to use contractors more extensively.

Total contractor numbers declined slightly from 44,983 to 42,412 over the last year as the troop levels in Afghanistan declined, then stabilized, but this decline has been partly offset by increases to support expanded operations in Iraq. In Iraq, the number of contractors has increased as operations have increased (from 2,619 in 2016 to 4,485 in July 2017), but numbers are far below the 2008 peak of 164,000.²⁰¹ There are another 5,600 contractors working outside DOD, presumably for the Department of State, U.S. Agency for International Development (USAID), and the intelligence community.

¹⁹⁶ Rachael Maddow, *Drift: The Unmooring of American Power* (New York, NY: Crown Publishing, 2012), 186–87.

¹⁹⁷ Mark Cancian, “Contractors: The New Element of Military Force Structure,” *Parameters* 38, no. 3 (Autumn 2008), 61–77.

¹⁹⁸ 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).

¹⁹⁹ Government Accountability Office, *Army Planning: Comprehensive Risk Assessment Needed for Planned Changes to the Army’s Force Structure*, GAO-16-327 (Washington, DC: GAO, April 2016), <http://www.gao.gov/assets/680/676516.pdf>.

²⁰⁰ Commission on Wartime Contracting, Commission on Wartime Contracting in Iraq and Afghanistan, *Transforming Wartime Contracting: Controlling Costs, Reducing Risks*, August 2011, 200, 205, <http://www.acq.osd.mil/dpap/pacc/cc/cowc.html>.

²⁰¹ Heidi M. Peters, Moshe Schwartz, and Lawrence Kapp, *Department of Defense Contractor and Troop Levels in Iraq and Afghanistan: 2007-2012*, Congressional Research Service, April 28, 2017, <https://fas.org/sgp/crs/natsec/R44116.pdf>.

Table 11: Department of Defense Military and Contractor Personnel in USCENTCOM Area of Responsibility²⁰²

	Total Military	Total Contractors	U.S. Citizens	Third-Country Nationals	Local/Host-Country Nationals
Afghanistan Only	10,100	23,525	9,436	8,873	5,216
Iraq/Syria Only	7,200	4,485	2,424	1,406	655
Other Locations	18,300	14,402	6,210	8,044	148
AOR Total	35,600	42,412	18,070	18,323	6,019

Note. Data as of Sept 2017; excludes forces afloat and classified data for Iraq, Iran, Kuwait, and Syria.

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 42,412 contractors in CENTCOM, 1,695 are armed, in security functions and Personnel Security Detachments (PSDs). This function is highly sensitive because the contractors carry weapons routinely and PSDs committed highly publicized abuses in the past. As required by Congress, PSDs are 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 may be effective.²⁰³

DOD recognizes that operational contractors are a permanent element of its force structure. As a result, DOD is continuing to standardize and institutionalize the contracting process that supports contingencies, both conflicts and peacetime needs such as natural disasters and humanitarian assistance. Some actions DOD has taken are as follows:

- To coordinate policy, DOD has 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.

²⁰² Contractor data from Deputy Assistant Secretary of Defense (Program Support), *Contractor Support of U.S. Operations in the CENTCOM Area of Responsibility* (Washington, DC: U.S. Department of Defense, July 2017), http://www.acq.osd.mil/log/PS/CENTCOM_reports.html; Military personnel data from Defense Manpower Data Center, *Total Military Personnel and Dependent End Strength by Service, Regional Area, and Country* (Washington, DC: DMDC, June 30, 2017), Excel, https://www.dmdc.osd.mil/appj/dwp/dwp_reports.jsp.

²⁰³ 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>.

- Lessons learned processes and professional military education gather and disseminate knowledge.
- The Joint Staff approved and published CJCSM 4301.01, Planning Operational Contract Support.
- Expeditionary contracting cells routinely participate in wargames and exercises, including an annual contracting-specific exercise called "Operational Contract Support Joint Exercise."²⁰⁴

With the decline of operations in Afghanistan and Iraq and the decrease in contracting scandals, the issue of military personnel versus battlefield contractors had receded into the background. However, in May, Erik Prince, former CEO of Blackwater, proposed to the government that it create a "viceroy" in Afghanistan and turn most activities over to contractors, including the advising of Afghan forces and air operations.²⁰⁵ To say that the proposal was controversial would be an understatement. A wide variety of commentators criticized it on both substantive grounds and because of abuses that Blackwater had committed in Iraq.²⁰⁶ However, the proposal gained traction with some elements in the White House because the military's proposal to add several thousand troops looked like more of the same, and President Trump had campaigned on a skepticism about long-term commitments in the volatile Middle East. Prince's recommendations did not appear in the administration's announced Afghanistan strategy. However, it did describe an alternative approach to conducting long-term overseas operations, and this approach is still out there if the new strategy falters.

²⁰⁴ Andrew Leonhard, "OCSJX-17 Kicks Into Full Swing at Ft. Bliss," *U.S. Army Public Affairs*, March 15, 2017, https://www.army.mil/article/184351/ocsjx_17_kicks_into_full_swing_at_fort_bliss.

²⁰⁵ Erik Prince, "A MacArthur Model for Afghanistan," *Wall Street Journal*, May 31, 2017, <https://www.wsj.com/articles/the-macarthur-model-for-afghanistan-1496269058>

²⁰⁶ There are many. For example, Matthew Pulver, "Erik Prince's Dark Plan for Afghanistan: Military Occupation for Profit, Not Security," *Salon*, June 3, 2017, <http://www.salon.com/2017/06/03/erik-princes-dark-plan-for-afghanistan-military-occupation-for-profit-not-security/>; Sean McFate, "I Was a Mercenary. Trust Me: Erik Prince's Plan Is Garbage," *Politico*, August 31, 2017, <http://www.politico.com/magazine/story/2017/08/31/i-was-a-mercenary-trust-me-erik-princes-plan-is-garbage-215563>; Terry Rubin, "Trump would be bonkers to listen to Blackwater founder's plan to use mercenaries in Afghanistan," *Philly.com*, August 18, 2017, http://www.philly.com/philly/columnists/trudy_rubin/trump-blackwater-erik-prince-afghanistan-blackwater-iraq-nisour-square-20170818.html; Bernard, Andrew, "Mercenaries Are a Bad Idea for Afghanistan," *The American Interest*, August 9, 2017, <https://www.the-american-interest.com/2017/08/09/mercenaries-bad-idea-afghanistan>.

DOD-Wide

Readiness and full-spectrum warfighting

DOD defines operational readiness as “The capability of a unit/formation, ship, weapon system, or equipment to perform the missions or functions for which it is organized or designed” and distinguishes it from force structure and modernization.²⁰⁷ Sequestration in 2013, which required DOD to cut \$32 billion in six months, severely reduced readiness because cuts had to be made quickly, and readiness accounts are easy to adjust in the short term.

The services are still rebuilding readiness after those cuts, and Secretary Mattis identified readiness as the focus for the FY 2017 and FY 2018 budgets after stating his shock that readiness had deteriorated so much after he had left active duty.²⁰⁸ All of the services have highlighted severe readiness shortfalls:²⁰⁹

- Army: Only 3 of 58 total brigade combat teams are full-spectrum ready. “The end result is excessive casualties to civilians and to our forces.”
- Navy: Sixty-two percent of F-18s and 54 percent of all aircraft are out of service. The service describes itself as being in a “downward readiness spiral,” with equipment failures and the removal of ships and aircraft from service because of maintenance shortfalls.
- Marine Corps: Eighty percent of Marine aviation units do not have the minimum number of aircraft they need for training and basic operations. Flight hour averages per crew per month are below the minimum standards.
- Air Force: Fewer than half of Air Force aircraft are prepared to take on and defeat a peer adversary.

²⁰⁷ U.S. Department of Defense, “Operational Readiness,” *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02 (Washington, DC: Department of Defense, last updated February 15, 2016), 214–15, https://fas.org/irp/doddir/dod/jp1_02.pdf. The national security community uses readiness in two different ways, broadly to encompass all warfighting capabilities, and narrowly to focus on unit training, manning, and supplies. This paper uses the latter definition. For a detailed explanation, see Russell Rumbaugh, *Defining Readiness: Background and Issues for Congress*, Congressional Research Service, June 14, 2017.

²⁰⁸ James Mattis, Secretary of Defense, *Testimony to the Senate Armed Services Committee*, 115th Cong., 1st sess., Washington, DC, June 13, 2017.

²⁰⁹ John Cooper, “Defense Leaders Agree: U.S. Military Readiness Is at a Dangerous Low,” *Real Clear Defense*, February 10, 2017, http://www.realcleardefense.com/articles/2017/02/10/defense_leaders_agree_us_military_readiness_is_at_a_dangerous_low_110787.html; Christopher P. Cavalas, “Grounded: Nearly Two-Thirds of U.S. Navy’s Strike Fighters Can’t Fly,” *Defense News*, February 6, 2017, <http://www.defensenews.com/naval/2017/02/06/grounded-nearly-two-thirds-of-us-navys-strike-fighters-cant-fly/>; Joe Gould, “Military Chiefs Warn of Force-Readiness Struggles,” *Defense News*, February 7, 2017, <http://www.defensenews.com/congress/2017/02/07/military-chiefs-warn-of-force-readiness-struggles>.

In the FY 2017 and FY 2018 budgets all the services put substantial resources towards improving readiness in areas such as increased unit manning, depot maintenance, and spare parts. This will likely help readiness metrics in the department's classified readiness reporting system (now called the Defense Readiness Reporting System, or DRRS), which reports the readiness status of every unit for personnel, equipment, maintenance, and training.

However, as shown in Table 12, progress in rebuilding readiness at the macro activity level has stalled. A few indicators increase—Army training miles, for example—but most remain steady and two important indicators—Navy and Air Force flying hours—decrease, though both services argue that this is the maximum executable level. Future progress is uncertain because future budgets are uncertain. Last year the services stated that they would not achieve targeted readiness levels until FY 2020, 2023 for the Air Force,²¹⁰ but the lack of progress in FY 2018 puts that schedule in doubt. The Marines and Navy now say “early 2020s” and the Air Force “eight years,” which would be 2025.

Table 12: Major Readiness Metrics, by Service²¹¹

	2017	2018
Army – CTC rotations	21 (total)	21 (total)
Army – Training Miles (live and virtual) Regular/ARNG/USAR	1,102/672/1,153	1,188/734/1,224
Navy – Steaming Days per ship per quarter	58 deployed/24 not deployed	58/24
Navy – Flying Hours (000s total per year)	1018.6	992.2
Marine Corps – Integrated Training Exercises Mountain/Ground/Air	2/19.5/30	2/24.5/30
Marine Corps – Deployable Days Active/Reserve	86,412/18,951	86,412/18,951
Air Force – Flying Hours (000s total per year)	1,165.2	1,153.3
Air Force – Red Flag/Green Flag	7/18	7/18

Readiness shortfalls primarily affect nondeployed forces. The services deploy forces at a high level of readiness because these forces will conduct real-world operations, either immediately as in Afghanistan, or potentially as with carrier battle groups. Forces at home are inevitably at a

²¹⁰ Lt. Gen. Mark Ramsay, cited in Courtney McBride, “McCord: Budget deal not a ‘net contributor’ to services’ readiness,” *Inside Defense*, November 13, 2015, <http://insidedefense.com/login-redirect-no-cookie?n=173801&destination=node/173801>.

²¹¹ Data from: Office of the Under-Secretary of Defense (Comptroller) Chief Financial Officer, *Defense Budget Overview for FY2018*, Figures 2-1, 2-3, 2-4 and Chapter 3, figure 1; Office of the Under-Secretary of Defense (Comptroller) Chief Financial Officer, *Operation and Maintenance Overview for FY2018*; Secretary of the Navy, *Highlights of the Department of the Navy FY 2018 Budget*, base funding includes 45/20 deployed/not deployed, indicating OCO funding for an additional 13/4 days; U.S. Air Force, Financial Management & Comptroller, *Fiscal Year 2018 Budget Overview*, includes additional flying hours funded by OCO. FY 2017 figures are for the Presidential Budget proposal, not enacted.

lower level of readiness as they wind down after deployment, then rebuild and train up for the next deployment. The risk is that these forces will drop to a readiness level that is too low. Then, if unexpected demands arise, these units would need to deploy before they are ready. Gen. Mark A. Milley summed up the goal of all the services when he said, “readiness to fight and win in combat is, and will remain, an inviolate benchmark; no American soldier must ever deploy to combat unready.” Low readiness puts that pledge in doubt.

Achieving adequate readiness has become more challenging because of the department’s strategic shift to “full-spectrum” warfighting and away from the narrower focus of counterinsurgency operations that had been needed for the wars in Iraq and Afghanistan. That broader focus means being able to conduct operations in high-end operations against peer adversaries like Russia and China. All the services are building readiness programs to meet this broader requirement.²¹²

This shift also means that the services are moving away from cyclic readiness models like the Army Force Generation (ARFORGEN) to higher levels across the board or at least for a larger proportion of the force. Cyclic readiness meant that units would be at a relatively low level of readiness until they started to build up for the next deployment and then deployed at high readiness. This worked for predictable force demands as seen in the Iraq and Afghanistan wars. For larger and unpredictable conflicts, like a war in Korea or in Europe, the services want to have more units ready to deploy quickly, hence the move to “sustainable readiness” models.

The notion of a “readiness crisis” has received some pushback. Two former DOD comptrollers, Mike McCord and Robert Hale, both acknowledged shortfalls but not a crisis and that the services were “likely putting their ‘worst foot forward’” to position themselves in budget negotiations.²¹³ Similarly, Gen. David Petraeus and Michael O’Hanlon argued that, while sequestration has been a challenge, U.S. forces remain “second to none.”²¹⁴

Indeed, the readiness debate gets distorted because of the multiple audiences. To the Congress, the services are inclined to emphasize readiness shortfalls in order to secure adequate funding. To allies and adversaries, the services emphasize strength and combat capability. Further, as Todd Harrison asks, ready for what?²¹⁵ He points out that readiness measures cover inputs and, sometimes, outputs, but never outcomes. That is, for aircraft DOD measures training sorties flown in but not whether pilots can actually hit targets.

The challenge is that readiness—however it is defined—is both expensive and perishable. Service members need to practice their skills continuously, and there is a lot of turnover in the ranks so that new personnel are constantly coming in and needing to be trained. It is expensive because

²¹² DOD Comptroller, *Defense Budget Overview FY 2018*, Chapter 3, “Improving Warfighting Readiness.”

²¹³ Travis J. Tritten, “Former DOD Comptroller: Be Skeptical of Claims of Readiness Crisis,” *Military.com*, February 22, 2017, <http://www.military.com/daily-news/2017/02/22/former-dod-comptroller-be-skeptical-of-claims-readiness-crisis.html>; Tony Bertuca, “Former Pentagon Comptrollers Question Alarming Readiness Claims,” *Inside the Pentagon*, February 23, 2017, <https://insidedefense.com/daily-news/former-pentagon-comptrollers-question-alarming-readiness-claims>.

²¹⁴ Gen. David Petraeus and Michael O’Hanlon, “The Myth of a U.S. Military Readiness ‘Crisis,’” *Wall Street Journal*, August 9, 2016, <https://www.wsj.com/articles/the-myth-of-a-u-s-military-readiness-crisis-1470783221>.

²¹⁵ Todd Harrison, *Rethinking Readiness* (Washington, DC: Center for Strategic and Budgetary Analyses, August 29, 2014), <http://csbaonline.org/research/publications/rethinking-readiness>.

it requires more money for operations and supplies, particularly when conducting large-scale, complex exercises like the Army’s Combined Arms Training Centers, the Air Force’s Red Flag, and the Navy’s Top Gun. Further, replacement systems are much more expensive to operate than existing systems. For example, the flying hour cost of an Air Force F-35A is two and a half times that of F-16.²¹⁶

The table below uses CSIS’s Force Cost Calculator to give a rough sense of the tradeoffs involved in funding a high-readiness force within a constrained top line (in this case, the FY 2018 top line).

	Balanced Capabilities	High Readiness
Navy ships	305	282
Army regular manpower	476,000	450,000
Air Force fighter/attack	1,141	1,003
Marine Corps active duty manpower	185,000	180,000

Further, as noted earlier for SOCOM, a major readiness risk for all services is that large elements are funded in OCO, for example, about 25 percent of Navy ship steaming days. If this funding were to go away, readiness would decline.

The bottom line: a “readiness crisis” may be the new normal as warfighting demands for higher readiness collide with rising readiness costs and the need for budget tradeoffs within a constrained top line.

National Security Reform and Reduction in Management Headquarters

The 2017 NDAA directed many changes to make the national security decisionmaking process operate more effectively: radically restructuring the acquisition organizations; revising requirements for the National Security Strategy and National Military Strategy; establishing the National Defense Strategy (as described earlier); establishing a commission on national strategy to replace the previous National Defense Panel; capping the NSC staff at 200; restructuring acquisition organizations and processes; and creating a “Delivery Unit” in OSD “composed of individuals from outside the government . . . and responsible for providing expertise in support to improve the limitation of policies and priorities.” The effects on forces, however, will be indirect and remains to be seen.

The NDAA capped the active duty number of general officers at 882 (as well as capping the number of civilian SES, as described earlier). Although described as a cut of 110, it, in effect,

²¹⁶ Office of the Undersecretary of Defense (Comptroller), *Fiscal Year 2017 Department Of Defense Fixed Wing and Helicopter Reimbursement Rates*, October 18, 2016, <http://comptroller.defense.gov/Financial-Management/Reports/rates2017>.

limited the services to their current levels since many authorized positions were not filled. There were no caps on four-star positions, which had been in both the House and Senate bills, likely because of the major restructurings that would have been involved. Guard and reserve generals were also not capped, although they were included in the original Senate marks, reflecting their political strength in Congress.

In 2015 the Congress directed a 25 percent reduction in headquarters spending. DOD had already been reducing its headquarters staff as a result of 2013 guidance from then-Secretary Chuck Hagel. To be consistent with congressional direction, the department increased its reduction target to 25 percent. This reduction affects both civilian and military personnel. However, since military personnel numbers are controlled separately, military personnel cut from headquarters can be reassigned elsewhere. Civilian personnel numbers are being reduced. It is unlikely, however, that any civilians will actually lose their jobs, as reductions typically will come through attrition.

OMB has directed that all agencies, including DOD, evaluate their organization and processes to identify management efficiencies and produce Agency Reform Plans.²¹⁷ Secretary Mattis included such direction in his early guidance to the department: “The FY 2019–2023 Defense Program will also contain an ambitious reform program, which will include horizontal integration across DOD components to improve efficiency and take advantage of economies of scale.”²¹⁸ How this plays out in terms of personnel and organizations will likely be revealed in the FY 2019 budget, which will be published in February 2018.

Facilities and infrastructure

DOD may be ending its “military construction holiday.” In recent years, DOD has been living off the large construction budgets of the 2000s and the construction activity of previous BRAC rounds, especially the massive 2005 round. Construction budgets declined from a peak of \$35 billion in 2009 to the FY 2017 appropriation of \$8.3 billion (both figures in FY 2018 dollars). The FY 2018 request—\$10.4 billion (base and OCO, including Family Housing)—is a large increase above the FY 2017 level and close to the average level of the 1980s and 1990s.²¹⁹ Nevertheless, the department points to substantial facility shortfalls. “Previous budgets have limited investment in facilities sustainment and recapitalization to the point that 23 percent of the Department’s facility inventory is in ‘poor’ condition (Facility Condition Index (FCI) between 60 and 79 percent) and another 10 percent is in ‘failing’ condition (FCI below 60 percent) . . . Further, the unfunded backlog of deferred maintenance and repair work exceeds \$140 billion.”²²⁰

²¹⁷ Office of Management and Budget, *Comprehensive Plan for Reforming the Federal Government and Reducing the Federal Civilian Workforce*, April 12, 2017.

²¹⁸ Secretary of Defense James Mattis, *Implementation Guidance for Budget Directives in the National Security Presidential Memorandum on Rebuilding the US Armed Forces*, January 31, 2017, <https://news.usni.org/2017/02/01/document-defense-secretary-james-mattis-budget-guidance>

²¹⁹ *National Defense Budget Estimates For FY 2018 (Green Book)*, June 2017, <http://comptroller.defense.gov/Budget-Materials/Budget2018>.

²²⁰ Peter Potochney, *Testimony before the Senate Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies*, 115th Cong., 1st sess., June 6, 2017,

It will take sustained investment to recapitalize DOD's existing facilities, meet new health and environmental requirements, and build facilities for new missions. The services have recognized this by putting facility funding, both construction and maintenance, on their FY 2018 unfunded requirements lists. To continue the momentum, they will also need to continue this level of investment in their five-year plans.

Unmanned Systems and Artificial Intelligence

A continuing theme in weapons development is the move toward unmanned systems and artificial intelligence. The use of such systems in the air has been well established for two decades. The use of such systems at sea and on the ground (other than for mine clearance) is just beginning. These technologies have the potential to profoundly shape future force structure. For example, the application of artificial intelligence (AI) raises the prospect of a time when weapons are only loosely connected to human actors. Although this revolution will take decades to fully implement, the U.S. military has already begun to enter this new realm. Described below is a sample of recent efforts.

Air. The Navy continues to develop its unmanned aerial platforms, focusing on issuing a request for proposals for the MQ-25A, as described earlier.²²¹ In addition, the Navy is preparing to deploy the MQ-4C Triton to Guam in 2018, where it will conduct patrol operations in the Pacific region.²²² The Naval Research Laboratory is developing a surveillance prototype follow-on to the Ion Tiger, which will eventually provide ISR capabilities with an expected flight endurance of up to three days.²²³

Ground. While advances in unmanned ground platforms lag those in the aerial and sea domain, the Army has begun testing unmanned trucks, which leverage technology developed in the commercial world and are now close to actual fielding.²²⁴ The marines have also resumed testing unmanned ground platforms. A four-legged robot, nicknamed Spot, would give the marines an added transport capability at squad and platoon level, without the noisy diesel engine that plagued the earlier Legged Squad Support System.²²⁵ Long term, the services envision teaming of humans and robots.

Sea. The Office of Naval Research's Sea Hunter Medium Displacement Unmanned Surface Vehicle (MDUSV) is expanding its mission portfolio, adding "plans for FY2018 [to] include adding intelligence, surveillance, and reconnaissance technology, and offensive antisubmarine

https://www.appropriations.senate.gov%2fdownload%2f060617-potochney-testimony%26download%3d1/RK=1/RS=kUuLA3uXJrHADyn_US3pzKGy9uc-

²²¹ Sam LaGrone, "Navy Issues New MQ-25A Stingray Draft RFP to Industry Ahead of Final RFP in the Fall," *U.S. Naval Institute News*, July 20, 2017,

<https://news.usni.org/2017/07/20/navy-issues-new-mq-25a-stingray-draft-rfp-industry-ahead-final-rfp-fall>

²²² Damian Kemp, "Avalon 2017: Triton UAV to deploy to Guam in 2018," *Janes's 360*, March 1, 2017,

<http://www.janes.com/article/68370/avalon-2017-triton-uav-to-deploy-to-guam-in-2018>.

²²³ Geoff Fein, "USN Seeks Multi-day Flight with Hybrid Tiger," *Janes 360*, August 14, 2017,

<http://www.janes.com/article/73060/usn-seeks-multi-day-flight-with-hybrid-tiger>.

²²⁴ Ashley Bunch, "Army to test self-driving trucks on Michigan highway," *The Army Times*, June 1, 2017,

<http://www.armytimes.com/news/your-army/2017/06/01/army-to-test-self-driving-trucks-on-michigan-highway/>.

²²⁵ Hope Seck, "Spot's Back: Marines Resume Testing with Four-Legged Robot," *Military.com*, April 5, 2017,

<http://www.military.com/daily-news/2017/04/05/spots-back-marines-resume-testing-with-four-legged-robot.html>.

payloads.²²⁶ The Defense Advanced Research Projects Agency (DARPA) is developing an undersea scout platform that would be launched from a submarine, use active sonar systems to identify adversary submarines, and send that information back to the main submarine, which could remain concealed.²²⁷

Artificial Intelligence. In October 2016, the Pentagon successfully tested a swarm consisting of 103 micro-drones that demonstrated the ability to engage in “collective decision-making, adaptive formation flying, and self-healing.”²²⁸ This advancement is one component of the nascent trend toward an increasingly autonomous battlefield. These advancements can reduce risk to human life and increase the agility of military operations. However, AI also raises ethical concerns that the continued depersonalization of combat might ultimately make warfare more likely to occur. Such a debate is not new; similar debates occurred throughout history as the effective range of weaponry increased from hand-to-hand combat to weapons with intercontinental range. A new fear is that future developments will allow autonomous systems to make decisions devoid of any human input and perhaps move beyond human control.²²⁹

DOD/National Nuclear Security Administration (NNSA) split

The National Nuclear Security Administration (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 relevant to DOD from a budget perspective because the BCA budget caps put NNSA and DOD in a zero-sum situation.

²²⁶ Katherine Owens, “Navy Anti-Submarine Drone-ship Conducts Minehunting Testing,” *Defense Systems*, May 4, 2017, <https://defensesystems.com/articles/2017/05/04/seahunter.aspx>.

²²⁷ Megan Eckstein, “DARPA, BAE Systems Developing Small Unmanned Underwater Vehicles to Hunt Enemy Submarines,” *U.S. Naval Institute News*, July 18, 2017, <https://news.usni.org/2017/07/18/darpa-bae-systems-developing-small-uuv-to-conduct-active-sonar-sub-hunting-on-behalf-of-us-navy-subs>.

²²⁸ U.S. Department of Defense, “Department of Defense Announces Successful Micro-Drone Demonstration,” January 9, 2017, <https://www.defense.gov/News/News-Releases/News-Release-View/Article/1044811/departement-of-defense-announces-successful-micro-drone-demonstration>.

²²⁹ For just a few examples: Veronica Ma, “The Ethics and Implications of Modern Warfare,” *Harvard International Review*, January 16, 2017, <http://hir.harvard.edu/article/?a=14494>; Daxson Teck, “Ethical Conduct in the Future of Unmanned Warfare,” *Pointer*, Volume 39, no. 3, 2013; Shannon Vallor, “The Future of Military Virtue: Autonomous Systems and the Moral Deskillling of the Military,” 5th International Conference on Cyber Conflict, NATO CCD COE Publications, Tallinn, 2013, https://ccdcoe.org/cycon/2013/proceedings/d2r1s10_vallor.pdf; James Walsh and Marcus Schulze, *The Ethics of Drone Strikes: Does Reducing the Cost of Conflict Encourage War?* (Carlisle, PA: Strategic Studies Institute, September 2015), <https://ssi.armywarcollege.edu/pdffiles/PUB1289.pdf>.

\$Billion	FY 2017 Authorized	FY 2018 Request	\$ Change FY 2018 vs. FY 2017	Percentage Change FY 2018 vs. FY 2017
Weapons Activities	9.2	10.2	1.0	11%
Defense Nuclear Nonproliferation	1.9	1.8	-0.1	5%
Naval Reactors	1.4	1.5	0.1	4%
NNSA Federal Workforce	0.39	0.42	0.03	8 %
Total	12.9	13.9	1.0	8%

The FY 2018 budget emphasizes military programs, consistent with the administration’s priorities for a “hard power” approach. Weapons activities and naval reactors increase while nonproliferation activities decrease. This has been a long-term trend, however, having begun in the Obama administration. From FY 2013 to FY 2018, weapons activities increased from \$7 billion to \$10.2 billion, naval reactors increased from \$1.0 billion to \$1.5 billion, while nonproliferation activities decreased from \$2.2 billion to \$1.8 billion.²³⁰

This trend represents the front end 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. This budget meets those commitments.

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. Intended to dispose of 34 tons of weapons plutonium, the 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 is keeping it alive.²³¹

NNSA’s organizational arrangement has always been uncomfortable, so reorganization proposals are continuous. NNSA constitutes about half of the Department of Energy’s total budget but is a semiautonomous agency. Most of its products support the Department of Defense. OMD Director Mick Mulvaney floated the idea of transferring NNSA to DOD, a change

²³⁰ National Nuclear Security Administration, *NNSA FY 2018 Congressional Budget Request*, May 23, 2017, <https://nnsa.energy.gov/aboutus/budget>.

²³¹ 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>.

that would profoundly change how the weapons labs operated. However, that proposal does not seem to be gaining traction.²³²

NNSA's funding has been disentangled from DOD's, at least on the agency side. (They are still linked through the "050" budget cap.) In 2009 then-Secretary of Defense Robert Gates wrote a letter to DOE asking that certain critical nuclear weapons programs be funded in NNSA's budget. A deal was struck whereby DOD would reserve a portion of its future funds for support of NNSA and reallocate the funds from DOD to NNSA in one-year increments during the annual budget formulation process. This gave DOD some influence over NNSA's budget. These transfers were substantial, \$1.6 billion in FY 2017. The administration has stopped that practice and, in the future, all outyear funding for NNSA will be included in its Future Years Nuclear Security Program, and none in DOD's Future Years Defense Program.²³³ The result is budget simplification but less DOD control.

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, not least because NNSA has a poor record of cost control on major projects (see MOX, above, but there are many others). Last year, the then-secretary of energy, Ernest Moniz, told the Office of Management and Budget that NNSA needed an additional \$5.2 billion over FY 2018 to FY 2021 to replace aging facilities, enhance stockpile assurance, and fully fund uranium enrichment programs.²³⁴ It is too early for the Trump administration to have done the analysis to be comfortable with such statements but there are areas of risk. These include the nuclear weapons life extension programs, like the B61; the multibillion-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.

U.S. allies

Although this paper is about U.S. armed forces, it must also recognize what allies are doing, and failing to do, both because the United States is unlikely to fight wars completely on its own and because the Trump administration has highlighted the need for allies to do more for their own defense. The literature on the subject is vast. Working with allies entails complicated diplomatic arrangements and military command and control, but also expands the military effort. As Winston Churchill once said, "the only thing worse than fighting a war with allies is fighting one without them." In general, the United States spends more on defense, both absolutely and relatively, than its allies, but the allies do provide extensive host-nation support by offsetting

²³² 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>.

²³³ U.S. Department of Energy, *Department of Energy FY 2018 Congressional Budget Request: Volume 1 National Nuclear Security Administration*, May 2017, https://energy.gov/sites/prod/files/2017/05/f34/FY2018BudgetVolume1_1.pdf

²³⁴ "Mr. Moniz's Nuclear Warning," *Wall Street Journal*, January 12, 2016, <http://www.wsj.com/articles/mr-monizs-nuclear-warning-1452644053>.

basing costs. Also, often unappreciated in the United States is the fact that future wars will likely be fought on, and devastate, allied territory, not ours.

NATO. The 29 nations of NATO have a large armed force in aggregate, including over 3.3 million service members (2 million of whom are non-U.S.). With its interoperable forces and standing command structures, NATO can bring powerful capabilities to bear when it decides to do so. All NATO members have contributed something to the coalition effort in Afghanistan, though only Italy, Germany, Romania, Turkey, and the UK sent contingents larger than 500 (Georgia also, but as a NATO partner, not ally).²³⁵ Over 1,000 non-U.S. NATO troops have been killed fighting alongside U.S., Afghan, and partner forces in the 16-year conflict. All NATO nations (and NATO as the organization) are contributing in some degree to assurance and deterrence efforts that aim to bolster alliance readiness in the face of Russian aggression, for example, staffing the four NATO battlegroups in the Baltics and Eastern Europe.²³⁶

Nevertheless, U.S. frustration with uneven burden sharing among NATO allies is long-standing, dating back to the beginning of the alliance.²³⁷ More recently, Secretary Donald Rumsfeld in 2003 complained about “new Europe,” which was helpful to U.S. efforts, and “old Europe,” which was not.²³⁸ Secretary Gates likewise complained about “nations that are unwilling to devote the necessary resources . . . in their own defense.”²³⁹ As a candidate, President Trump called the alliance obsolete. Secretary Mattis affirmed the U.S. commitment to NATO but urged NATO members to spend more, noting, “Americans cannot care more for your children’s security than you do.”²⁴⁰ Given the rich economies of its member states and their large militaries, NATO punches below its weight.

At the Wales conference in 2014, the alliance members affirmed the importance of collective defense, recognized the need for a more robust defense effort, and set a goal of spending 2 percent of their GDP on defense.²⁴¹ Since then, alliance defense spending has increased each year with a 4.3 percent overall increase planned for 2017 and an aggregate increase of \$46 billion since 2014. However, only six members—the United States, Poland, Estonia, Romania, United Kingdom, and Greece—have reached the 2 percent target (up one member—Romania—in the last two years, with Lithuania and Latvia set to hit the 2 percent target in the coming year),

²³⁵ NATO Public Diplomacy Division, *Resolute Support Mission (RSM): Key Facts and Figures*, May 2017, http://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_05/20170523_2017-05-RSM-Placemat.pdf.

²³⁶ NATO Public Diplomacy Division, *NATO’s Enhanced Forward Presence*, May 2017, http://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2017_05/1705-factsheet-efp.pdf.

²³⁷ Michael H. Creswell, “A History of Vexation: Trump’s Bashing of NATO Is Nothing New,” *War on the Rocks*, August 21, 2017, <https://warontherocks.com/2017/08/a-history-of-vexation-trumps-bashing-of-nato-is-nothing-new>.

²³⁸ Anne Applebaum, “Here Comes the New Europe,” *Washington Post*, January 29, 2003, <http://www.washingtonpost.com/wp-dyn/articles/A57913-2003Jan28.html>.

²³⁹ Slobodan Lekic, “Trump’s Claims on NATO Burden-sharing Have Long History,” *Stars and Stripes*, July 30, 2011, <https://www.stripes.com/news/trump-s-claims-on-nato-burden-sharing-have-long-history-1.421645#.WZ6GvMa1vcu>.

²⁴⁰ James Masters and Ryan Browne, “Trump Defense Chief Mattis Tells NATO Members to Pay Up,” CNN, February 15, 2017, <http://www.cnn.com/2017/02/15/politics/james-mattis-nato-brussels/index.html>.

²⁴¹ NATO, *The Wales Declaration on the Transatlantic Bond*, September 5, 2014, http://www.nato.int/cps/en/natohq/official_texts_112985.htm

and the median is still a low 1.31 percent.²⁴² Overall, NATO 's defense effort is trending in the right direction, but it has a long way to go.

Asian allies. Japan only spends 1 percent of its GDP on defense, but its GDP is so large that Japan fields one of the largest and most modernized militaries in the world. For example, its Maritime Defense Force is twice the size of the Royal Navy, and Japan has ships with the most modern combat systems, such as Aegis on its Kongo and Atago-class destroyers. It is building "helicopter destroyers," which look a lot like small aircraft carriers. Japanese ground and air forces have seen similar improvements. Japan has expanded its definition of "self-defense" in the face of increasingly assertive Chinese actions and is considering further expansion.²⁴³

Similarly, South Korea only spends 2.4 percent of its GDP on defense but that provides a very large military. It has an army of 495,000 on active duty with another 4,500,000 reservists, a navy with 60 battle force ships, and an air force with 480 fighter/attack aircraft. It is also undergoing a substantial modernization, with the army procuring artillery and armored vehicles, the navy procuring Aegis-capable ships, and the air force procuring F-35s.²⁴⁴ To counter the North Korean nuclear threat, South Korea agreed to deployment of the U.S. Terminal High-Altitude Area Defense (THAAD) missile defense system.

The United States also has security treaties with Australia, Thailand, and the Philippines. Thailand and the Philippines have strategic locations in any conflict with China but are generally consumers of security. Australia, on the other hand, has high-quality military forces that have deployed globally with the United States in conflicts against ISIS. Australia is implementing a long-term plan to improve the Australian Defence Force's (ADF's) capability, especially for maritime expeditionary operations, by purchasing F-35s, new destroyers with Aegis combat system, landing craft, aerial tankers, and air defense missiles.

²⁴² NATO, "Defence Expenditure of NATO Countries (2010-2017)," June 29, 2017, http://www.nato.int/cps/en/natohq/news_145409.htm.

²⁴³ International Institute for Strategic Studies, *The Military Balance 2017*, February 14, 2017, Chapter Six: Asia, 117:1, 237–350; Michael Green and Zack Cooper, *Postwar Japan: Growth, Security, and Uncertainty since 1945* (Washington, DC: Center for Strategic and International Studies, 2017), https://csis-prod.s3.amazonaws.com/s3fs-public/publication/170126_Green_PostwarJapan_Web.pdf?uYRKPhNSeCdMm2hw6wgeRctU_ofN3Zbp.

²⁴⁴ International Institute for Strategic Studies, *The Military Balance 2017*.

About the Author

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