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# STUCK IN THE CUL-DE-SAC

## How U.S. Defense Spending Prioritizes Innovation over Deterrence

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CNAS | AMERICA'S EDGE

## About the Authors

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## About the Defense Program

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## Acknowledgments

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# EXECUTIVE SUMMARY

**FOR MORE THAN A DECADE**, the United States has sought to modernize its military to deter China, but it has become stuck in a developmental cul-de-sac that has allowed China to steadily shift the balance of power in the Indo-Pacific in its favor. Recent U.S. defense budgets have disproportionately invested in long-term developmental programs at the expense of producing sufficient capabilities available for the near term. As a result, today's Joint Force is smaller, older, and less capable than at any other time in recent history.

Over the past 15 years, the average time and cost the Pentagon has taken to field major weapon systems has grown significantly, and the share of research, development, test, and evaluation (RDTE) spending within the broader defense budget has continued to steadily grow. Despite extended periods of very expensive research and development, major weapon systems have frequently failed to enter production on time or in numbers large enough to make a difference for U.S. warfighters. RDTE cost growth has also affected mature programs, where unexpected modernization challenges have interfered with plans to expand production of available capabilities.

Bolstering deterrence involves a challenging balance of time horizons: The Department of Defense (DoD) must expand procurement of today's capabilities to support near-term deterrence but cannot risk sacrificing next-generation modernization programs that sustain America's long-term military advantage in doing so. As China's accelerated conventional military buildup places significant pressure on today's Joint Force, the urgency to close near-term capability gaps has become critical. Reductions in the Joint Force's overall size and relative conventional capability have opened a dangerous window of opportunity for China.

This report finds that the fiscal year (FY) 2026 budget request and one-time reconciliation funding from the One Big Beautiful Bill Act (BBB) ultimately fail to make the needed investments to strengthen deterrence in both the near and long term. Instead, the current administration appears to be falling into the same mistake as many previous administrations by prioritizing costly development of next-generation systems at the expense of purchasing and fielding capabilities that are available to fill deterrence gaps today. Moreover, by pursuing modernization through reconciliation, the FY 2026 budget risks subjecting future modernization priorities to the political outcomes of nondefense debates. Absent a return to standard defense budgeting processes, modernization programs that received a down payment from the BBB will likely stall or fail entirely.

There are some opportunities in future defense budgets to produce greater numbers of existing high-end capabilities that can meaningfully contribute to deterrence in the near term while pursuing critical long-term modernization investments. This report's analysis highlights five major capability

areas where existing or near-ready capabilities, such as ground-based fires or combat aircraft, can be procured in meaningful quantities and contribute to important missions in the Indo-Pacific. Additionally, this analysis highlights important areas, such as hypersonic weapons, in which extensive developmental timelines and exorbitant procurement costs likely preclude near-term contributions to deterrence and in the long term will only be fielded in small quantities. Expanding the U.S. military's capacity and capability in the near term will likely require both larger budgets and the rapid development and production of complementary, less expensive capabilities.

The United States faces a generational inflection point in how it approaches its defense investments. Rather than continue the disproportionate focus on next-generation technologies, the White House, Congress, and the DoD must budget a sustained pivot to purchasing existing capabilities that close near-term deterrence gaps. While this pivot must be balanced with continued investments in long-term modernization, the United States can no longer afford to sacrifice near-term procurement imperatives. Breaking out of the developmental cul-de-sac will require future defense budgets to emphasize procurement *and* accelerated RDTE across major defense programs.

**This report recommends that in the near term the White House, Congress, and the DoD:**

- Evaluate and justify how annual procurement and RDTE investments contribute to deterrence across time.
- Procure viable and ready combat aircraft (such as the F-15EX and B-21) and ground-based long-range fires (such as the Precision Strike Missile Increment 2, Navy-Marine Expeditionary Ship Interdiction System, and Mid-Range Capability).
- Reduce runaway RDTE spending on mature weapons programs.
- Pursue the rapid development, production, and scaling of lower-cost weapon systems, such as cheap cruise missiles or drones, to bridge and complement the arrival of next-generation capabilities.
- Consider reallocating shipbuilding procurement funds away from nonpriority maritime platforms, such as amphibious transport ships, toward more pressing shipbuilding priorities, such as industrial capacity and undersea capabilities.

**This report recommends that in the long term the White House, Congress, and the DoD:**

- Continue to pursue annual increases to the topline defense budget to ensure deterrence across time.
- Require that priority modernization efforts are subject to regular budgeting and long-term planning and oversight processes.
- Strengthen critical space supply chains and expand national security space launch capacity.
- Continue to fund long-term investments in the surface and submarine shipbuilding industrial bases.

# INTRODUCTION

**SINCE TAKING OFFICE,** the second Trump administration has emphasized the importance of preserving America's military edge. The fiscal year (FY) 2026 defense budget request and one-time reconciliation funding provided by the One Big Beautiful Bill Act (BBB) represent the new administration's first major effort to advance this goal.

For over a decade, the United States has sought to modernize its military to deter great power adversaries like China and Russia. While the Department of Defense (DoD) has made considerable progress in some areas, it has struggled to consistently buy enough of the weapons and platforms that it needs to strengthen deterrence. In 2014, the Pentagon unveiled the Third Offset Strategy, which sought to develop advanced technologies such as artificial intelligence, autonomy, hypersonic weapons, stealth, directed energy weapons, and modernized space capabilities to counter China's and Russia's anti-access and area-denial capabilities.[1] Four years later, President Donald Trump's 2018 National Defense Strategy explicitly prioritized great power competition, identifying China as the U.S. military's "pacing challenge" and investing in many of the same technologies that were emphasized by the Third Offset.[2] President Joe Biden's 2022 National Defense Strategy reaffirmed the importance of deterring China and Russia and identified 14 critical technology areas that were essential to achieving this goal.[3]

Despite a decade of investing in new technologies, the United States has failed to deliver new capabilities at the scale warfighters need in order to maintain a favorable military balance against China. As of August 2025, many leap-ahead technologies the Third Offset promised in 2014 have yet to arrive, and the Joint Force is now in a worse position than it was in 2018.[4] Meanwhile, China has rapidly modernized the People's Liberation Army (PLA) and is steadily moving toward parity with the U.S. military in the Indo-Pacific.[5] The United States now faces a near-term window of increasing vulnerability in which China may believe that the PLA could defeat the United States and that it may be better to act now than to wait for the Pentagon's most advanced capabilities to reach the field.

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The Third Offset's unrealized potential is partially the result of unavoidable tensions between technological sophistication, time, and scale. In its modernization efforts, the Pentagon has prioritized exquisite next-generation military capabilities like stealth aircraft, ballistic missile submarines, and proliferated satellite constellations. While this approach exploits America's advantages in high-end technology, sophisticated weapons also take considerable time and resources to mature and are often

subject to lengthy delays and acquisition hurdles. These obstacles tend to preclude mass and scale. The war in Ukraine demonstrates that large quantities of relatively affordable and simple weapons, such as artillery shells and cheap drones, are still relevant to modern warfare. The DoD has ultimately struggled to maintain its qualitative edge while increasing the size of its force to provide the mass required for future great power conflict.[6]

At $961.6 billion, the DoD's budget is massive.[7] The bulk of it goes toward costs associated with military personnel (MILPERS) and operations and maintenance (O&M) (see Figure 3). While MILPERS and O&M investments do contribute to near-term deterrence by enhancing readiness, investments in these categories only improve the capability of current weapons and personnel. Readiness does not grow the force above its current size nor does it enable the fielding of new capabilities to fill gaps. The investment portion of the defense budget—those categories of the budget devoted to researching, designing, and purchasing new military systems—is a smaller portion of that total. In FY 2026, investments in capabilities for the future force constituted $384.3 billion—about 40 percent—of the total defense budget request.[8]

Major acquisition programs typically start with investments in basic science and technology research, which ideally progress into a pilot program that results in a prototype weapon system. Traditionally, both initial steps are funded by the DoD's research, development, test, and evaluation (RDTE) budget, although new defense companies are attempting to disrupt this process by building prototypes without formal requirements or DoD funds. Regardless, after a system matures and passes rigorous tests, it can then be purchased in large numbers and fielded to forces through the department's procurement budget. This final stage is typically referred to as "entering procurement" and usually involves significant reductions in a program's RDTE spending while procurement spending surges to bring the new capability to the field.[9]

Over the last several decades, the average time it has taken the Pentagon to field a new major weapon system has grown significantly due to prolonged and increasingly costly developmental phases.[10] As this report will show, RDTE cost growth has many causes, from the immaturity of a core technology to poorly tailored acquisition strategies. Growing RDTE spending is therefore not always a deliberate choice that can be easily reversed; instead, it is usually the product of a collection of factors.[11] However, this report highlights that while DoD RDTE costs have grown, overall procurement spending has remained stagnant, with many prototypes not yet entering full-scale production and fulfilling their procurement potential. In other words, the department is increasingly investing in research for sophisticated, leap-forward capabilities, but many such programs, from the *Constellation*-class frigate to the upgraded F-35, have fallen into a developmental cul-de-sac, failing to transition into procurement in large enough numbers to make a difference for U.S. warfighters.

To understand where and how this RDTE and procurement imbalance has emerged, this report analyzes Pentagon investments in five key capability areas important for deterrence in the Indo-Pacific since FY 2012: ground-based long-range fires, hypersonic weapons, combat aircraft, space modernization, and shipbuilding.[12] Although the authors examine ground-based fires and hypersonic weapons, munitions are excluded more broadly because prior Center for a New American Security research on that topic has already identified precision-guided munitions procurement shortfalls in several key categories.[13] However, the platforms required to position, target, and deliver missiles are squarely included in the focus of this report.

The analysis finds that since 2012, Pentagon spending on procurement has remained relatively static, while its spending on RDTE has steadily increased, exacerbating an overall trend dating to the end of the Cold War.[14] The result is that the Pentagon has failed to consistently purchase enough available military systems that would make a significant contribution to winning a war against China. As a result of this prolonged period of prioritizing development over procurement, the military balance in the Indo-Pacific is precarious. The PLA is making rapid gains in both the size and sophistication of its forces, while the U.S. force is shrinking and many next-generation weapons remain over the horizon.[15] To prevent a window of vulnerability from opening, the United States must procure more forces that can be fielded quickly while continuing to fund advanced technologies in RDTE and help them transition to production

as quickly as possible. Both actions are needed to strengthen deterrence against China in the near and long term.

The FY 2026 defense budget request provides a much-needed boost to the Pentagon's long-term modernization initiatives but fails to provide sufficient answers for the near-term capability gaps the department faces.[16] As a result, the FY 2026 budget request reinforces the trend of stagnant procurement alongside increasing research and development costs.

**As a result of this prolonged period of prioritizing development over procurement, the military balance in the Indo-Pacific is precarious.**

To bolster U.S. capability and capacity in the near term, future DoD budgets should prioritize procurement of ground-based long-range fires and combat aircraft that are already in production. Additionally, the Pentagon should accelerate hypersonic programs in development so that they move quickly into production. In contrast, further investments in shipbuilding are needed to strengthen the industry but will not yield a larger Navy in the next 5 to 10 years, given the backlog at U.S. shipyards. While RDTE investments in long-term modernization programs like the F-47, protected tactical satellite (PTS) communications, and Golden Dome may contribute to deterrence in the long run, they will not help to strengthen deterrence in the near term.

The first chapter of this report outlines the imperative of military modernization for the United States and discusses the challenges the Pentagon has faced turning RDTE investments into capabilities in the hands of warfighters. The second chapter makes the case that a continued emphasis on RDTE without an associated upturn in procurement spending is both out of step with comparable historical periods of military modernization and out of alignment with American national defense priorities. The third chapter looks closely at RDTE and procurement spending from FY 2012 to FY 2026 in the five key capability areas previously identified.[17] Finally, the report offers recommendations to expand, expedite, and improve procurement to bridge the gap between today's force and the completion of the Pentagon's long-term modernization plans.

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# "THE TIME FOR PREPARATION IS OVER"

## The Trump Administration's Military Modernization Down Payment

**THE TRUMP ADMINISTRATION** has made clear from the outset of its second term that deterring China is a primary defense policy objective.[18] Secretary of Defense Pete Hegseth began his tenure at the Pentagon by telling the force, "The time for preparation is over," which suggests a focus on near-term improvements.[19] Yet the BBB and FY 2026 budget request do not fulfill this promise and instead bank more on potentially game-changing next-generation capabilities, like the Golden Dome missile defense system and F-47 next-generation fighter, while underinvesting in capabilities that can be produced today. To turn this rhetoric into policy, the U.S. Department of Defense must now craft budgets that shift from preparing to confront China to fielding a force that can deter, and if necessary, fight and win a war with the PLA in the Indo-Pacific.[20]

Deterring and denying Chinese aggression is a wicked problem that requires the United States to manage competing risks across time. The DoD must balance modernizing the force over the long term with resourcing a military that is ready to deter and defeat China today. And yet, even as next-generation weapon systems consume limited investment dollars (and some face mounting delays), the DoD cannot afford to mortgage the future force by investing only in today's weapons technology. Conversely, the Joint Force cannot rely on next-generation platforms to plug capability gaps over the next 5 to 10 years. It needs to close shortfalls now, while moving the next generation of weapons over the finish line. This tension between today's military readiness and tomorrow's has stood at the heart of DoD budgetary tradeoffs for years.[21]

The risk of war with China is no longer a problem far out on the horizon for the U.S. military.[22] General Secretary Xi Jinping has repeatedly signaled that he wants China's military forces to be ready to act against Taiwan by 2027.[23] Whether this timing reflects Xi's true intentions to launch a military campaign against Taiwan is unknown.[24] Nevertheless, the threat is sufficiently credible that American military leaders have taken the challenge of deterrence seriously, with the Army, Navy, and Air Force aiming to have upgraded their forces by 2030.[25] However, this report's analysis demonstrates that the Joint Force has not been sufficiently producing the capabilities it needs to be prepared for war by 2030. This means that there is already a window when Chinese forces may be better equipped and prepared for a U.S.-China conflict than U.S. forces. This situation increases the likelihood that China may take advantage of this window of vulnerability to challenge U.S. forces in the Indo-Pacific before next-generation capabilities are fielded later in the 2030s.[26]

While time-to-deployment for American military platforms has steadily grown, China has rapidly reduced its development-to-deployment timelines. China takes, on average, seven years to deliver a new weapon to the PLA.[27] In contrast, the time necessary to transition a new U.S. weapon system from development to deployment has grown considerably, taking

four times as long to develop a new major weapon system in 2020 compared to 1950.[28] In 2025, the Government Accountability Office (GAO) determined that the average military system took 12 years to move from development to fielding—up from an average of 8 years in 2023.[29] The GAO further found that most major military systems are fielded three years behind schedule.[30] However, the problem is even more acute for some of the most important systems under development—F-35 upgrades, the Sentinel ballistic missile, the *Columbia*-class submarine, and the Army-Navy hypersonic weapon program are all either behind schedule, over budget, or both.[31]

The growth of the development-to-deployment cycle throughout the Pentagon has both financial and operational impacts. When programs take longer than expected to develop, they consume more RDTE spending than originally planned, driving the total program cost up before procurement even begins. In many cases, increases in total program cost during the development of a major weapon system drives the cost per unit of the weapon upwards, reduces the overall amount of money available for procurement, and limits the number of weapons that can be bought. Reductions in purchase quantities typically further increase unit cost as economies of scale are forfeited, ultimately creating a downward spiral. Moreover, the longer it takes for a system to move from development to delivery, the greater the likelihood that the capabilities first envisioned when the system began development no longer match the needs of the Joint Force.

The DoD's failure to deliver new military systems at speed and scale has forced it to rely on an increasingly outdated force structure that costs more to operate and maintain and that suffers from low readiness.[32] And though the Pentagon has spent many years investing heavily in developing the capabilities that will define the future force, it has reached a critical point: these future investments have yet to pay off, leaving the Pentagon with a smaller, older, and less capable force than it needs.

These problems suggest that the DoD should be urgently prioritizing procurement of the available capabilities most relevant to military competition in the Indo-Pacific and expediting the transition of future capabilities still in development toward procurement. Unfortunately, the DoD's RDTE and procurement spending over the past decade does not align with these urgent imperatives.

The Trump administration released an unusual budget plan, consisting of a FY 2026 base budget request and the one-time reconciliation funds provided by the BBB, which it claims provide a "down payment" on military modernization.[33] In its base FY 2026 request, the administration asked for a total of $848.3 billion for the Pentagon, which is nominally equal to the budget enacted in FY 2025.[34] After accounting for inflation, the FY 2025 enacted total is likely closer to $900 billion, making the FY 2026 discretionary budget a notable downturn from the previous year in real spending terms (see Figure 1).[35] The administration used the $113.3 billion in additional funding from the BBB to push the overall DoD budget for FY 2026 to $961.6 billion.

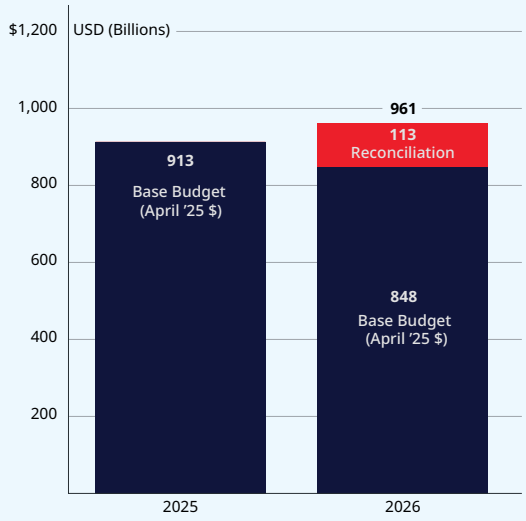
Problematically, the Pentagon is relying on the reconciliation process to fund many of its modernization objectives, substituting regularly programmed and appropriated defense spending for the much more volatile process of a single-year reconciliation package.[36] The reconciliation process provides supplemental funds to the DoD, but unlike previous supplemental funding vehicles, such as Overseas Contingency Operations (OCO) funding, the reconciliation process is more vulnerable to political conditions. OCO had widespread bipartisan support. The reconciliation process, however, requires one-party control of the federal government and near-unanimous support by the majority party within both chambers of Congress to pass. This sets up a challenge for continuing to fund major modernization programs like Golden Dome in FY 2027. If the Pentagon does not have access to reconciliation funds going forward, it will have to carve those dollars out of programs funded in the base budget or lobby for a significant increase in the base budget.[37]

Importantly, the FY 2026 budget request and the BBB reinforce the worsening relationship between RDTE and procurement that has persisted since 2012 and will increase the risks that deterrence fails in the near term. For its FY 2026 base budget, the Pentagon requested a total of $142 billion for RDTE, with an additional $37.01 billion included for RDTE in the BBB, for a total of $179.01 billion.[38] For procurement, the Pentagon requested $153.28 billion in its base budget, with an additional $51.95 billion included in

**The FY 2026 defense budget continues to invest in next-generation developmental weapon systems while underinvesting in procurement for many of the important capabilities that are available to bolster deterrence today.**

the BBB for a total of $205.22 billion.[39] As Figure 4 and subsequent analysis show, the FY 2026 defense budget continues to invest in next-generation developmental weapon systems while underinvesting in procurement for many of the important capabilities that are available to bolster deterrence today. Thus, the Trump administration is making the same mistake as its predecessors by betting on next-generation capabilities like the F-47 and Golden Dome to overmatch the PLA in the long run, while limiting investments in existing weapons, like the Mid-Range Capability (MRC), B-21, and F-15EX, to shore up deterrence today.

**Figure 1: The FY26 Defense Budget Fails to Push Pentagon Spending Forward[40]**




*Compared to the FY25 defense budget and considering inflation, the FY26 request is a real spending downturn. Reconciliation funding from the One Big Beautiful Bill Act is not long-term defense planning and represents, at best, a down payment on force modernization.*

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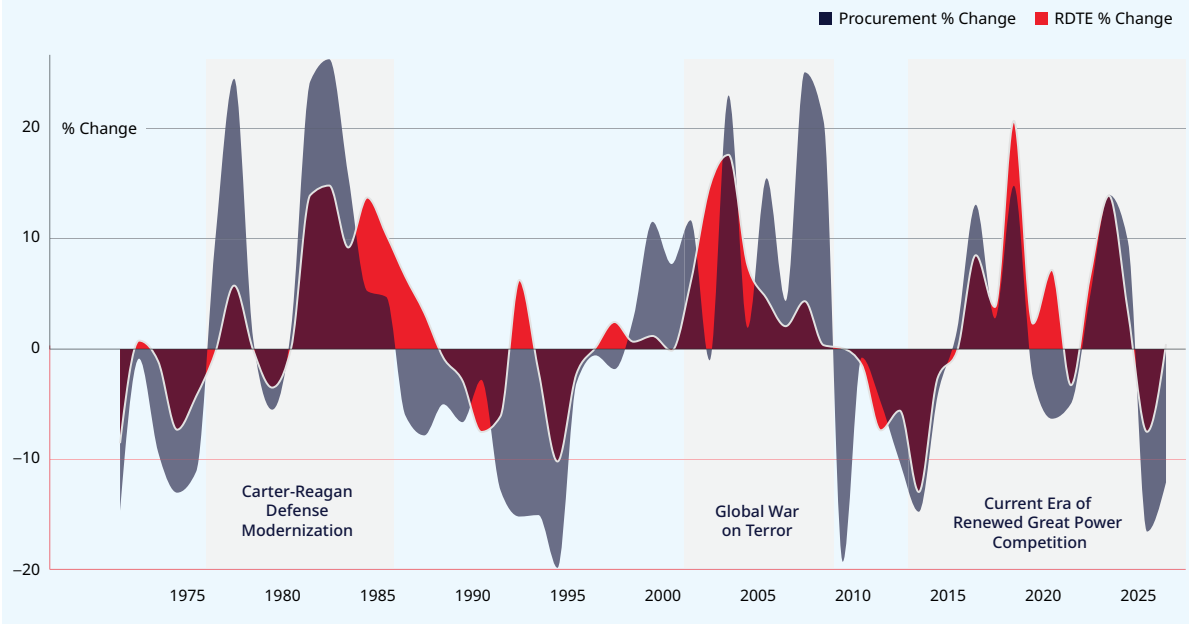
# HISTORICAL TRENDS IN RDTE AND PROCUREMENT

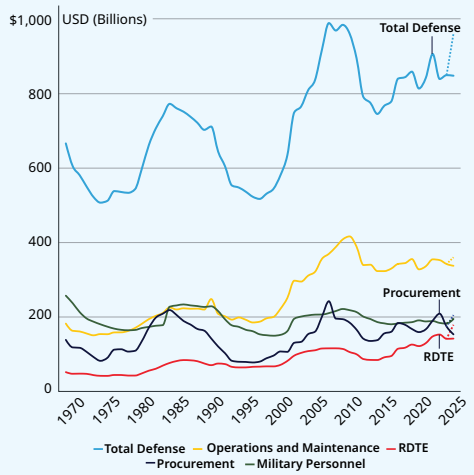
**TO FIELD NEW WEAPONS**, the Pentagon first increases research and development funding, which it then gradually reduces as it increasingly allocates resources to procurement so the weapon can begin initial low-rate production and eventually ramp up to full-scale production. This is the typical acquisition cycle: initial heavy investments in RDTE followed by a sharp decline in RDTE as procurement spending climbs. Figure 2 demonstrates this cyclical nature of investments that has characterized past periods of U.S. military modernization. Of note, RDTE spending has not decreased consistently since 2012, while procurement has remained stagnant.[41]

**Figure 2: Changes in Procurement and RDTE Spending Do Not Yet Align with Historical Precedents[41]**




*Compared with previous eras of strategic competition, recent and projected spending changes do not match the level of modernization commensurate with supporting renewed great power competition.*

**Figure 3: Despite Overall High Levels of Defense Spending, Procurement Spending Has Not Increased[42]**




*While spending on operations and maintenance (O&M) and RDTE has grown steadily, spending on procurement has plateaued and funding for military personnel has shrunk. Dashed lines indicate inclusion of BBB funding.*

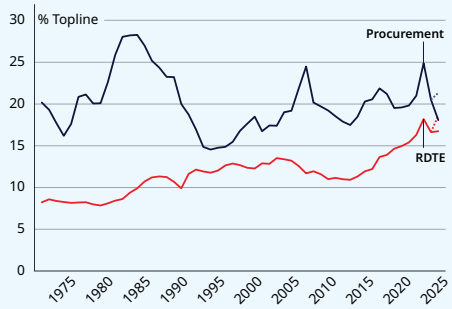
Historically, procurement spending has reflected trends in overall defense spending, but this relationship has not held in the last decade (see Figure 4). Procurement spending has been volatile over time and acts as a leading indicator of overall defense spending—procurement upturns precede overall upturns while procurement downturns precede overall downturns. Since 2012, however, instead of a procurement upturn resulting from heavy investments in RDTE, procurement has remained stagnant.

Though historically less volatile, RDTE spending has grown steadily as a share of overall defense spending. From a low of 7.78 percent in FY 1970, RDTE spending has grown consistently over the last several decades, peaking at 18.63 percent in FY 2026. While military systems have grown increasingly complex over this period, the relative growth in RDTE spending and the time associated with developing new military systems are anomalous. Recent research demonstrates that in private sector industries that have experienced similar growth in technological complexity, research and development costs have remained consistent and the time to market for new technologies has not increased.[43]

Pentagon spending on RDTE and procurement illustrates two basic principles. First, it costs more to acquire materials for and build a large number of items than it does to research and develop a few prototypes. For this reason, procurement spending will almost always be higher than RDTE spending and changes in procurement spending will almost always be greater in magnitude (defined as the change in percentage of overall spending year over year) since buying many weapons involves more upfront expenses compared to the slower burn rate experienced by RDTE initiatives.

Second, the overall cost of RDTE and procurement has grown steadily over time. As defense systems have grown more complex, the number of systems reliant on cutting-edge research has caused RDTE costs to climb. Similarly, the cost of major weapon systems has also grown, suggesting that in contrast to previous budgetary cycles, baseline expenditures for both procurement and RDTE will be higher. Nevertheless, despite the increase in the basic costs of these functions, overall changes in procurement and RDTE spending should still reflect cycles of investment in RDTE followed by eventual procurement. While not every developmental program can or should move from a prototype to fielding at scale, the DoD must still transition its needed capabilities to production and procure these weapons in large numbers.

**Figure 4: RDTE Has Steadily Grown as a Share of the Overall Defense Budget[44]**




*While procurement spending is more volatile and has trended down for decades, RDTE spending has trended up. Despite an overall increase, an infusion of funding from the One Big Beautiful Bill Act (BBB) reinforces this trend. Dashed lines indicate inclusion of BBB funding.*

## The Pentagon's Growing RDTE and Procurement Gap

Since 2012, the Pentagon has been in a developmental cul-de-sac, engaged in an extended period of RDTE growth with no corresponding shift toward procurement. The share of the defense budget allocated toward RDTE has grown steadily from 11 percent in 2012 to 18 percent in 2026. Spending on procurement for the same period has remained relatively constant, generally hovering between 18 percent to 21 percent of the overall defense budget.[45] This pattern has left the Joint Force increasingly undersized, outdated, and less likely to prevail in high-intensity conflict against a peer.

Almost by necessity, RDTE involves making mistakes and losing money on projects that do not pan out. In many instances, this trial and error can be productive, as early developmental mistakes and subsequent corrections preempt even more costly errors further down the road.[46] But since 2012, the relationship between RDTE and procurement spending has well exceeded the expected amount of trial and error

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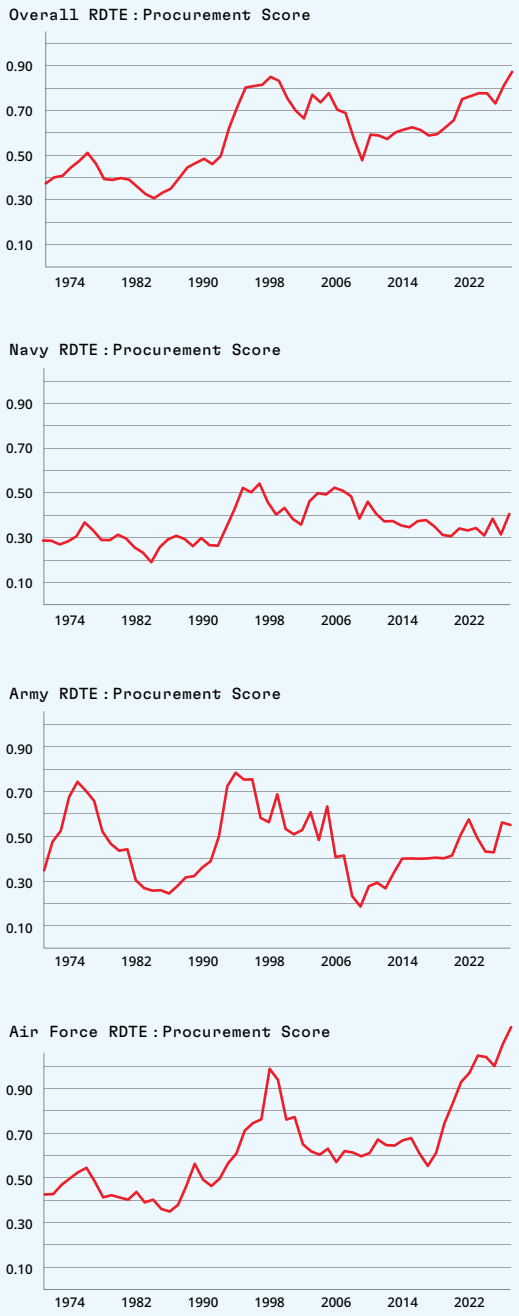
and resulted in a period of anomalous spending on development without a concomitant surge in procurement. In theory, the trends should soon reverse with a procurement spike and an RDTE drop. Indeed, recent future years defense programs (FYDPs) predict a procurement upturn.[47] But follow-through on FYDP plans is notoriously poor, making it an unreliable indicator of future investment.[48] Moreover, the current administration's most significant budget priorities, such as the Golden Dome and F-47, are major development projects likely to compete with funds for programs in procurement and could skew the balance further toward research.

**Figure 5: The RDTE:Procurement Relationship Varies by Service[49]**




*Since the 1990s, Air Force RDTE spending has surged compared to other services without a corresponding procurement upturn.*

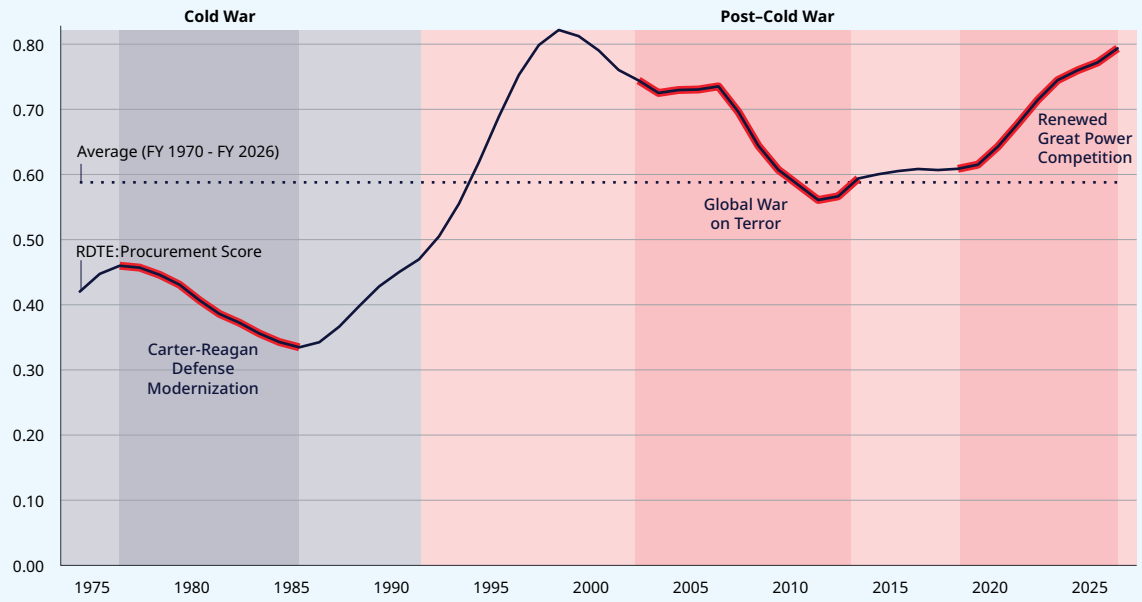
To better illustrate how the relationship between RDTE and procurement has changed over time, the report authors developed an RDTE:Procurement Score, which is the ratio of RDTE to procurement spending each year as percentages of the overall defense budget. In the simplest terms, the greater the RDTE:Procurement Score, the more biased toward RDTE a defense budget is compared to procurement in a specific year (see Figure 5).

From FY 1970 to FY 2026, the mean RDTE : Procurement Score was 0.5879. This means that on average during that time, the Pentagon spent close to half as much on RDTE as it did on procurement each year. By placing the trailing five-year average RDTE:Procurement Score for each year against this mean historical value, the authors observe a stark contrast (see Figure 6). From FY 1970 to FY 1993, the Defense Department's budget placed an above average emphasis on procurement. In FYs 1992–1994 however, the situation changed dramatically—with the Pentagon beginning to flip its spending toward an above average emphasis on RDTE.

The sudden shift in the relationship between RDTE and procurement could be explained by the end of the Cold War and the peace dividend that followed. Naturally, with the primary security threat to the United States no longer present, the Pentagon could reduce the size of the force it planned to buy and reduced many planned acquisitions. But RDTE spending remained relatively constant, with important programs like the F-22, F-35, *Virginia*-class attack submarine, and the *Ford*-class aircraft carrier driving the RDTE:Procurement Score up. In the 2000s, these weapons as well as additional capabilities needed to fight terrorism transitioned to procurement, pushing the RDTE:Procurement Score back toward its historical average.

Compared with previous periods of military modernization, the present period lacks the expected the RDTE : Procurement Score shift commensurate with a decade-long modernization investment. During the Carter-Reagan modernization effort from FY 1978 to FY 1985, the average RDTE : Procurement Score was 0.3564—with average spending on procurement

**Figure 6: The Relationship Between RDTE and Procurement Has Yet to Approach Historic Modernization Trends[50]**




*At the end of the Cold War, the Pentagon decreased its emphasis on procurement in favor of RDTE. Since then, it has yet to approach the intensity of procurement seen in previous periods of modernization.*

and RDTE at $157.8 billion and $55.1 billion, respectively. During the relatively less resource-intensive period of the Global War on Terror from FY 2003 to FY 2012 the average RDTE:Procurement Score was 0.6312. In this period, procurement and RDTE spending averaged $177.4 billion and $109.5 billion, respectively. By contrast, from FY 2012 to FY 2026, the Pentagon has spent an average of $168.8 billion on procurement and $118.2 billion on RDTE for an average RDTE : Procurement Score of 0.6933. For comparison, at the peak of the peace dividend years from FY 1991 to FY 1998, the RDTE : Procurement Score was 0.7427 and the Pentagon spent an average of $95.6 billion and $68.33 billion on procurement and RDTE, respectively. Put bluntly, despite an overall increase in the defense budget, the DoD is making investments in a way that more closely resembles the much less competitive period from the end of the Cold War to the start of the Global War on Terror than previous periods of large-scale military modernization.

While this historical parallel provides important strategic context, this report does not argue that there is an ideal ratio of spending between RDTE and procurement. For instance, intensive procurement of key capabilities, such as affordable antiship munitions and platforms, could significantly impact deterrence in the Indo-Pacific without drastically reversing the budget's total RDTE:Procurement balance.[51] The DoD's goal must be deterrence, not chasing a palatable RDTE:Procurement ratio or any other fixed metric for modernization. The above metrics are therefore alarms pointing to an acute risk rather than a benchmark in need of correction for its own sake. To address this risk, the following sections explore the major opportunities and challenges the DoD must confront in the capability areas relevant to deterrence in the Indo-Pacific.

**Despite an overall increase in the defense budget, the DoD is making investments in a way that more closely resembles the much less competitive period from the end of the Cold War to the start of the Global War on Terror than previous periods of large-scale military modernization.**

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# RDTE AND PROCUREMENT SPENDING IN KEY AREAS, FY 2012–FY 2026

**MAINTAINING DETERRENCE** in the Indo-Pacific requires the United States to field forces capable of imposing costs on China and denying its military objectives in the region.[52] Yet, in critical areas, the United States is failing to procure and field the force structure it needs to support deterrence in the Indo-Pacific.

The following analysis highlights investment spending in five key capability areas from FY 2012 to FY 2026: ground-based long-range fires, hypersonic weapons, combat aircraft, space capabilities, and ships. These areas were selected because they comprise military capabilities across different domains most relevant to operations in the Indo-Pacific.

## Ground-Based Long-Range Fires

Long-range precision fires are a major modernization priority for the Joint Force, particularly in the Indo-Pacific. Although the Indo-Pacific region is unquestionably a maritime theater, ground-based long-range fires enable the Joint Force to strike land-based targets, as well as to perform vital sea-control and sea-denial roles. As Admiral Samuel Paparo, commander of U.S. Indo-Pacific Command, emphasized in May 2025, "Fires is the capability from the Army and the land forces that I most treasure in [the Indo-Pacific] region."[53] The United States' ability to deter China in the Indo-Pacific and deny freedom of maneuver in the event of war thus relies on successfully fielding long-range precision fires.

While the Army and Marine Corps (USMC) have made significant investments to bring short-range land-attack weapons into production, longer-range missiles and those intended for maritime strike have lagged behind.[54] However, given that many of these programs build on existing missile technology, there exists a significant opportunity to scale ground-based missile production.

### SPENDING TRENDS IN LONG-RANGE PRECISION FIRES, FY 2012–FY 2026

Until 2019, the Intermediate Nuclear Force treaty prohibited the United States from fielding ground-based missiles with ranges of 500–5,500 km, so it is not surprising that most of its procurement spending has been on shorter-range systems, which have limited operational relevance in the Indo-Pacific.[55] Since FY 2012, over 90 percent of procurement spending for major precision fires systems has been dedicated to High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) platforms and their associated short-range ground attack munitions (less than 500 km).[56] As of the most recent FY 2026 budget, short-range weapons still represent 79 percent of major ground-based fires procurement. Beginning in 2019, the Army and Marine Corps started to develop missile systems for use in the Indo-Pacific with antiship and land-attack variants,

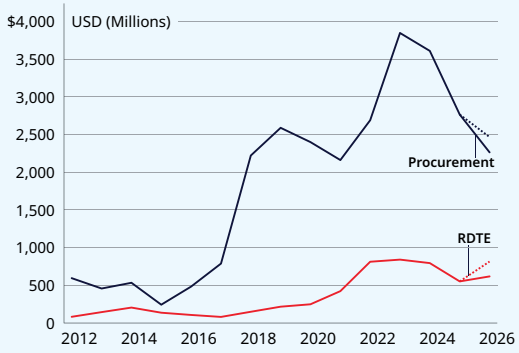
including the MRC, extended-range Precision Strike Missile (PrSM) variants, Navy-Marine Expeditionary Ship Interdiction System (NMESIS), and Long-Range Fires (LRF). Because these programs adapted either existing missiles (e.g., Tomahawk, SM-6, Naval Strike Missile [NSM]) or launchers (e.g., HIMARS), they are well positioned to quickly transition from development to full-scale production, which would improve the Joint Force's ground-based long-range fires in the Indo-Pacific.[57]

The MRC, for example, which is capable of launching existing maritime-strike and land-attack Tomahawk missiles (1,700 km range), as well multi-mission SM-6 missiles (250 km range), could expand the range of Army missiles and targets that it could hold at risk in the near term if rapidly scaled and transitioned to full production.[58] FY 2023 MRC RDTE funding supported an initial procurement of one prototype battery, which was deployed to northern Luzon in the Philippines for operational testing in 2024.[59] The FY 2026 RDTE budget request funds three additional prototype batteries.[60]

**Because these programs adapted either existing missiles or launchers, they are well positioned to quickly transition from development to full-scale production, which would improve the Joint Force's ground-based long-range fires in the Indo-Pacific.**

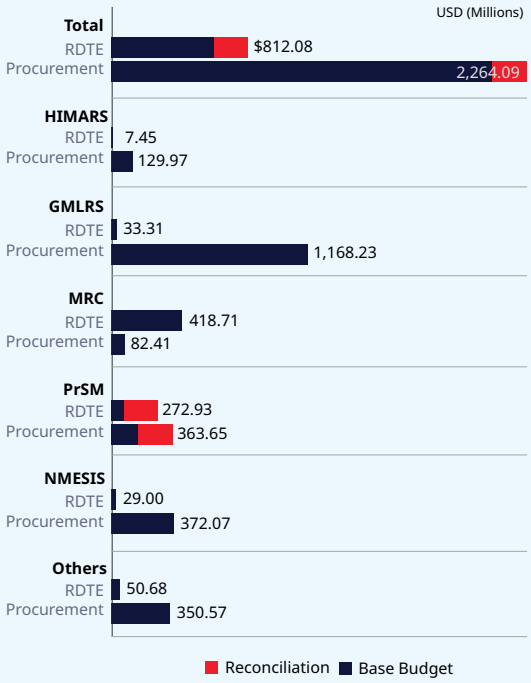
The Army's PrSM has different models, or "increments," in development and production, each of which have various levels of utility in the Pacific. Since FY 2021, the Army has procured 399 PrSM Increment 1 missiles, which is a 500 km-range land-attack weapon with limited usefulness in the vast Indo-Pacific theater, and 10 Increment 2 missiles, which are designed to engage maritime targets at a similar range. PrSM Increments 4 and 5 will extend PrSM's range to 1,000 km but remain firmly in RDTE, with no timeline for delivery yet confirmed. In FY 2026, the Army procured 35 PrSM Increment 1 variants and the first 10 missiles of PrSM Increment 2, and the DoD has announced that PrSM Increment 2 will enter

**Figure 7: After a Surge to Replace Stockpiles Provided to Ukraine, Long-Range Precision Fires Procurement Continues to Diminish[61]**




*Funding from the One Big Beautiful Bill Act for fires fails to shift the overall trend line. Dashed lines indicate inclusion of BBB funding.*

**Figure 8: Long-Range Fires Stand Out for High Levels of Procurement Funding[62]**




*Next-generation and key legacy long-range precision fires received a bulk of their funding through the base discretionary budget.*

initial operational testing in 2027—a year earlier than initially planned.[63] However, the Army's FY 2026 procurement Justification Books indicate that the first of the 10 operational Increment 2 missiles will not be delivered until September 2029.[64]

In contrast to the Army, the Marine Corps recently canceled its LRF program but is procuring NMESIS launchers and the shorter-range (100 km) antiship NSM. To rapidly bolster the USMC's maritime denial capabilities, the DoD should accelerate NMESIS production and increase its annual buys of NSMs. The FY 2026 budget includes $372.07 million to purchase 32 NMESIS launcher systems and 90 NSMs, for a total of 80 launchers and 385 NSMs purchased through FY 2026. By moving NMESIS into full-rate production and buying more NSMs, the Marine Corps can more quickly field its 14 batteries of launchers and build up its stockpile of antiship missiles.[65]

Due to the adoption of existing technologies and launch platforms, these programs have avoided prolonged periods of development and are poised for a significant procurement upturn. MRC, NMESIS, and PrSM Increment 2 all offer viable near-term scaling options to help close this important capability gap.

## Hypersonic Weapons

Hypersonic weapons combine maneuverability, speed, and promptness to engage time-sensitive and well-defended soft targets from long distances (from 3,000 km to 5,000 km).[66] Russia and China have both fielded a number of different hypersonic weapons, and Russia has already employed its hypersonic weapons in Ukraine.[67] The U.S. DoD has invested significant time and money researching and developing both hypersonic cruise missiles and glide vehicles, but the department has thus far been unable to transition these programs to procurement at scale. Further, the authors' analysis suggests that the financial intensity of hypersonic weapons development and production places an inherent limitation on the weapons' future contributions.[68]

### SPENDING TRENDS IN HYPERSONIC WEAPONS, FY 2012–FY 2026

U.S. hypersonic weapons development is one of most RDTE-intensive investment portfolios currently underway in the DoD.[69] Since FY 2012, spending for hypersonic weapons RDTE ($15.2 billion) has outstripped hypersonic weapons procurement ($2.6 billion) by a ratio of 5.85:1. In the FY 2026 budget, RDTE spending on hypersonic weapons ($2.2 billion) continues to outpace procurement ($923.6 million) at an albeit slightly improved ratio of 2.40:1. At present, large-scale hypersonic weapons procurement ultimately remains distant and unlikely to impact deterrence in the near term.

In an effort to keep costs down, the Army's Dark Eagle (formerly known as the Long-Range Hypersonic Weapon [LRHW]) and the Navy's Conventional Prompt Strike (CPS) have developed a common hypersonic glide body, but the programs have been defined by high RDTE costs and delays. Since the programs' inception in FY 2019, the Army and Navy have spent a combined $11.7 billion dollars on the RDTE, making up just under two-thirds of the United States' total hypersonic weapons investment over that span.[70] The Army initially planned to field Dark Eagle in 2023 with the Navy's variant following shortly thereafter in 2025, but multiple aborted tests in 2023 have pushed that timeline back.[71] The Army announced in February 2025 that it planned to field its first LRHW battery by the end of FY 2025, though despite successful recent tests, Army leaders have now said that the final decision for advancing Dark Eagle to operational status rests on the service's senior civilian leadership, leaving ultimate approval in limbo.[72] The Air Force's newly resuscitated Air-Launched Rapid Response Weapon (ARRW) boost glide weapon joins Dark Eagle as the only other hypersonic weapons program that has progressed to initial procurement; however, ARRW's procurement quantities, unit cost, and delivery timeline currently remain classified.[73]

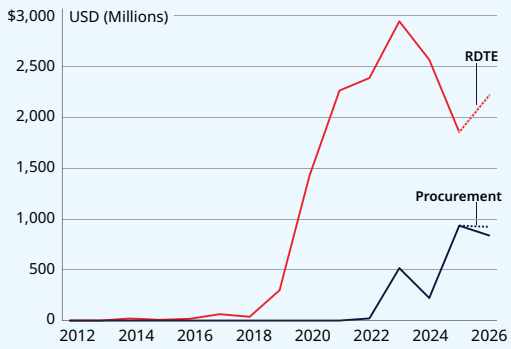
Air-breathing hypersonic cruise missiles have fared no better than hypersonic glide vehicles. For instance, the Navy's Hypersonic Air-Launched Offensive Anti-Surface (HALO) program was canceled in 2025, leaving the service without a hypersonic antiship missile.[74] Meanwhile, the Air Force's Hypersonic Attack Cruise Missile (HACM), which cost $802.8 million in FY 2026 and is intended to equip fighter aircraft with a tactical complement to ARRW, has seen testing schedules delayed by design problems and is unlikely to be delivered before the end of the decade.[75]

The sheer budgetary weight of hypersonic weapons development poses a fundamental challenge to U.S. efforts to build a substantial hypersonic weapons inventory. The unit procurement cost of a single LRHW missile stands at over $117 million.[76] To procure an unknown number of missiles, the revived ARRW program requested $387.06 million in FY 2026.[77] These early procurement costs fall on top of ever-intensifying RDTE spending; from FY 2021 to FY 2023, the department's spending on hypersonic weapons nearly tripled, growing to $2.81 billion dollars annually. Barring major increases in the overall defense budget or significant reductions in other budget priorities, these figures likely prohibit the United States from closing the gap in hypersonic weapons in the near term. Limited industry capacity compounds this problem: the total lead time for a single LRHW missile is over three years.

**The sheer budgetary weight of hypersonic weapons development poses a fundamental challenge to U.S. efforts to build a substantial hypersonic weapons inventory.**

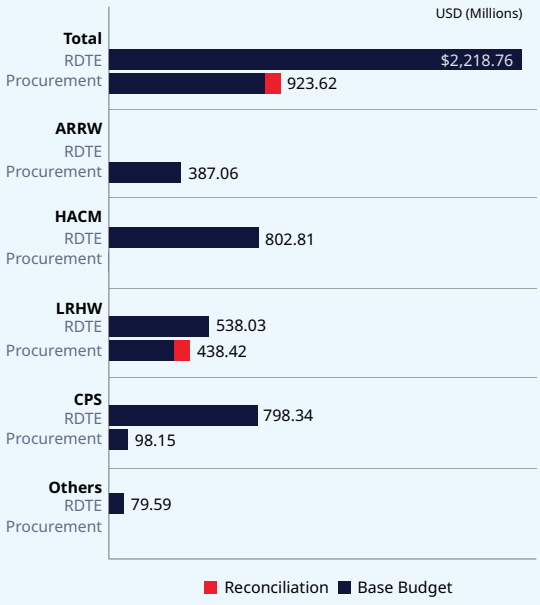
U.S. prospects for procuring and fielding hypersonic weapons at scale are limited and the prospects for a meaningful contribution to near-term deterrence in the Indo-Pacific appear low. Development and integration timelines, unit procurement costs, and limited industry capacity are likely to preclude the rapid fielding of hypersonic weapons at scale. Instead, the Army, Navy, and Air Force will be forced to work with a small hypersonic weapon inventory, postured to execute only extremely high-value missions when needed.

**Figure 9: Hypersonic Weapons Remain Firmly in a Developmental State[78]**




*Despite successful operational tests, approvals for procurement remain under review. Dashed lines indicate inclusion of BBB funding.*

**Figure 10: RDTE Consumes the Majority of FY 2026 Hypersonic Weapons Spending with Limited Transitions to Procurement[79]**




*Among active hypersonic weapons programs, the Army's Dark Eagle, formerly known as the Long-Range Hypersonic Weapon (LRHW) program, appears closest to transitioning to procurement.*

## Combat Aircraft

Delays and cost growth have stalled U.S. air modernization plans and left the U.S. combat aircraft fleet smaller than at any other time in recent history.[80] Meanwhile, China's modernization and expansion of both its air and missile forces and its air defenses pose a growing challenge to American air superiority. U.S. air forces must now operate from more distant bases, and require greater survivability to conduct penetrating attacks in the Indo-Pacific. To enhance and expand the U.S. combat fleet, the Pentagon will need to reduce runaway RDTE spending and prioritize procurement of ready and viable programs, while next-generation aircraft investments continue over the long term.

### SPENDING TRENDS IN COMBAT AIRCRAFT, FY 2012–FY 2026

The FY 2026 budget continues a long-standing trend of combat aircraft spending that disproportionately favors RDTE. This trend is largely driven by funding for the next-generation B-21 and F-47 and bloating RDTE costs to upgrade existing fighters. While major investments in the Trump administration's FY 2026 budget increase aircraft procurement, this boost is driven entirely by funding provided within the one-time reconciliation package included in the BBB (see Figure 12). Reductions in runaway RDTE for mature programs and more consistent procurement funding for existing combat aircraft will be needed to improve U.S. combat aircraft capacity.

The root of the DoD's growing RDTE investments in combat aircraft is twofold. The first and unavoidable driver is the Air Force's effort to develop the next generation of fighters and bombers. The B-21 stealth bomber is one such effort: Since FY 2012, unclassified RDTE spending on the B-21 totals $35.41 billion, averaging $2.21 billion annually. The recently named F-47 sixth-generation fighter (formerly the Next-Generation Air Dominance [NGAD] program) is another, totaling $16.72 billion and averaging $1.05 billion annually over the same span. Together, RDTE spending for these next-generation capabilities have increasingly consumed resources, growing from 2 percent of all major combat aircraft investments in FY 2012 to 24 percent in FY 2026.[81]

The surprising second source of the RDTE spending lies with upgrades to mature, existing aircraft programs. Since FY 2012, the Pentagon has spent $29.24 billion total on RDTE for legacy aircraft, with the F-22 alone averaging $654.7 million dollars in RDTE annually. Most notable is the F-35, whose annual RDTE costs have been almost four times as much. At $2.22 billion since FY 2012, the F-35's unclassified average annual RDTE costs surpass those of the B-21 ($2.21 billion).[82] While the B-21's classified RDTE spending may well exceed the F-35's, even the general proximity of these figures is notable.

RDTE spending for a mature program is problematic because it drains resources from procurement and has ultimately resulted in fewer deliveries of F-35s optimized for a high-end conflict. In July 2025, Air Force Chief of Staff General David Allvin announced that delays with the F-35 Block 4 upgrade drove the service to cut its F-35 procurement plans roughly in half for FY 2026 and that the service expects to limit F-35 procurement until the upgrades are complete.[83] In FY 2024 and FY 2025, 51 and 44 F-35As, respectively, were programmed, but the FY 2026 budget requested only 24. Similarly, the Marine Corps requested only 11 F-35B aircraft in FY 2026, down from 16 and 13 in FY 2024 and FY 2025, respectively. The Navy requested 12 F-35C variants for its carrier air wings, a reduction from the 19 and 17 F-35C programmed in FY 2024 and FY 2025, respectively. The DoD must continue to seek ways to expedite the F-35's Block 4 upgrade while minimizing costs so that the service can ramp up production of its most advanced stealth fighters.

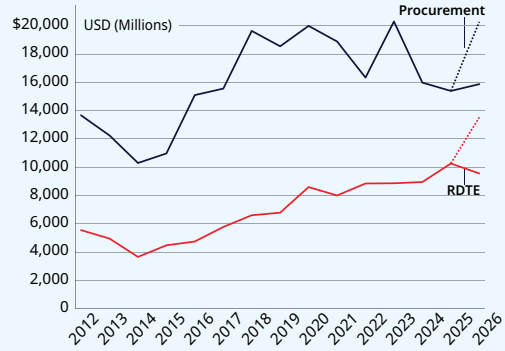
A pivot to aircraft procurement should leverage opportunities with existing, in-production aircraft. The long-range B-21 stealth bomber is central to the U.S. ability to defeat a Chinese invasion of Taiwan and is progressing ahead of schedule, raising the prospect of an accelerated production timeline.[84] The most recent FY 2026 budget allocates $5.6 billion in procurement spending to continue preparation for B-21 production. Increasing the rate of B-21 procurement and delivery would allow the Joint Force to bolster its firepower in the Indo-Pacific, particularly as other bomber assets such as the B-2 undergo additional modernization efforts, and older, non-stealth bombers are limited to standoff missions. While the Air Force initially planned to acquire 100

B-21s delivered by the mid- to late 2030s, changes to the program in April 2025 now reportedly enable faster production rates to support a larger fleet. The reported increase at Northrop Grumman's Plant 42 in California would align with recent calls by senior Air Force and U.S. Strategic Command officials to expand the B-21 fleet from 100 to a minimum of 145.[85]

Additionally, the F-15EX, a heavily upgraded F-15E Strike Eagle, is not a fifth-generation aircraft capable of penetrating defended airspace, but its enhanced capabilities and large payload make it well suited for air defense and standoff strikes, as well as for direct attack in permissive environments. Increasing F-15EX procurement could help to fill the fighter deficit left by the retirement of F-15C/Ds, F-16s, and F-22s and the delayed fielding of upgraded F-35s. The Air Force first laid out a plan to procure 135 F-15EX aircraft starting in FY 2021 and has since successfully acquired 72 of them. Following President Trump's announcement of personal support for the fighter, the BBB included $2.41 billion to buy 21 additional F-15EXs, bringing the total fleet to over 90. This is an important step toward a stronger, modernized Air Force. However, the Air Force will need to execute on at least the full planned buy, which is not currently included in its five-year budget plan.[86] To this end, a robust F-15EX purchasing plan will need to be reflected in the Air Force's next FYDP.

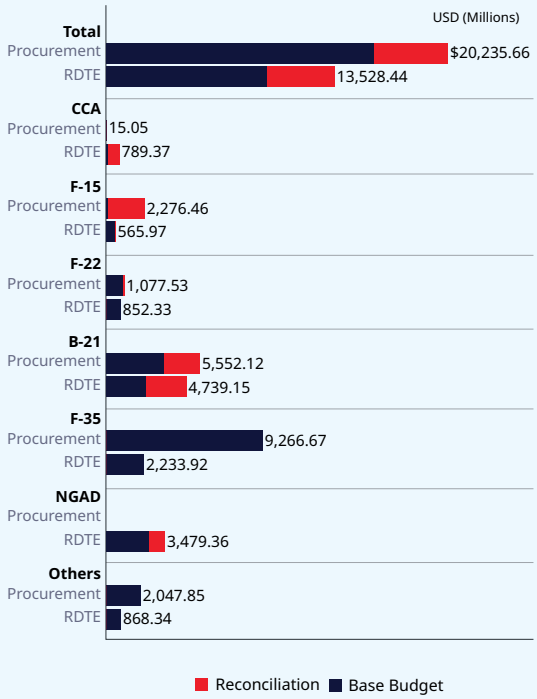
As it weighs this procurement pivot, the DoD must be realistic about the timelines in which the next-generation aircraft will be able enter into the fleet. The FY 26 budget continues to allocate major resources—nearly 10 percent of total combat aircraft investment—to the development of the F-47. While the F-47 is a needed step forward, full-scale procurement, delivery, and deployment are unlikely in this decade and may not even occur in the 2030s.[87] The future contributions and timing of the Navy's sixth-generation F/A-XX are even more uncertain, as the Navy cut its investment in the program from $438.8 million in FY 2025 to $74.3 million in FY 2026, effectively putting the program on ice.[88] While these programs may offer game-changing range, payload, and survivability improvements in the long term, they will not arrive in time to close widening near-term deterrence gaps. With this in mind, a procurement pivot that prioritizes existing aircraft already in production is as urgent as ever.

**Figure 11: Significant Increases to Strike Aircraft Funding Come from the One Big Beautiful Bill Act[89]**




*Since 2020, strike aircraft spending has trended away from procurement and toward RDTE. Dashed lines indicate inclusion of BBB funding.*

**Figure 12: FY 2026 Strike Aircraft Spending Relies Heavily on One Big Beautiful Bill Act Funds for Key Procurement Initiatives[90]**




*Key development and modernization efforts received considerable support from the One Big Beautiful Bill Act, rather than the Pentagon's base budget.*

## A Cautionary Tale: F-35 Procurement and Modernization for the Future Air Fleet

For years, the F-35 Lightning II has been central to U.S. airpower, replacing legacy F-15s, F-16s, A-10s, AV-8B, and F/A-18s with a fifth-generation stealth fighter designed primarily for air-to-ground and air-to-air operations.[91] Its three variants (the F-35A, F-35B, and F-35C for the Air Force, Marine Corps, and Navy, respectively) enable a range of conventional, vertical, and carrier-based takeoff and landings and possess sensor fusion and networking systems to support joint all-domain command and control and the use of collaborative combat aircraft (CCA).[92] Given the many roles that the platform is intended to fill, the F-35 unsurprisingly represents the DoD's largest active procurement effort in terms of cost.[93]

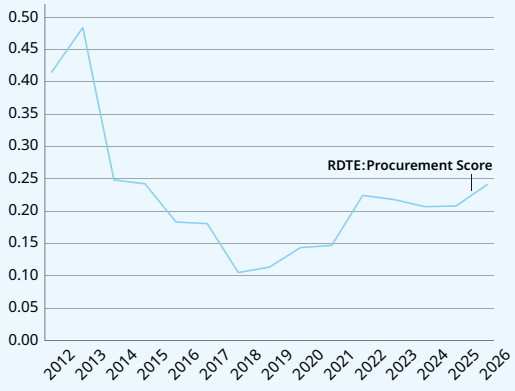
Due to the complexity of designing an aircraft that completes all of these missions, a defining feature of the F-35 program has been its prolonged and cost-intensive development timeline. The F-35 first entered systems development and demonstration in 2001.[94] Seventeen years later, the F-35 entered initial operational test and evaluation, where it remained until March 2024, when the DoD finally approved full-rate production.[95]

Despite the F-35 recently reaching full-rate production, its procurement has plateaued in recent years, with both the Air Force and Navy buying the aircraft at or below their FY 2021 rates because of delays to major upgrades that are needed to make the aircraft capable against high-end adversaries.[96] At the same time, F-35 RDTE costs have been trending up to support these technology upgrades (see Figure 13).[97] These trendlines are problematic, as the F-35's persistent developmental costs are now directly sapping resources and opportunities for increasing procurement of upgraded aircraft in the future.

This situation is largely attributable to the F-35's persistent modernization challenges, which stem from concurrent production and development.[98] In 2023, hardware and software upgrades for Block 4 and Technical Refresh 3 (TR-3) failed to deliver as expected due to developmental shortcomings and supply chain weaknesses.[99] These software deficiencies have proven especially burdensome for the aircraft, as they create second-order functionality and performance problems resulting in further cost growth.[100] In 2023, the incomplete upgrades resulted in a year-long pause on jet deliveries, which resumed in 2024 with only "truncated" TR-3 deliveries, which sacrificed overall performance for completion.[101] As of September 2025, Block 4's completion is delayed until at least 2031.[102] Because nonupgraded F-35s will be significantly less capable and will need to undergo costly and time-consuming retrofits once Block 4 is available, ongoing F-35 procurement efforts have stalled.

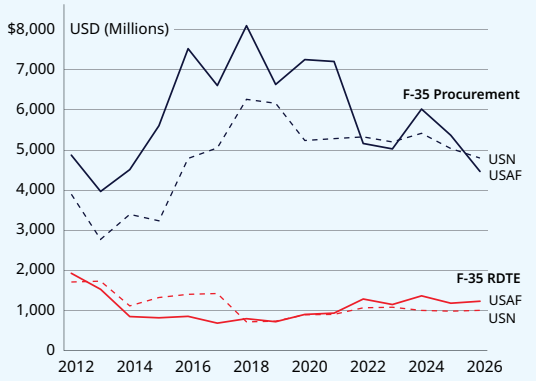
The F-35's budget profile is therefore regressing: Rather than achieving cost savings and procurement efficiencies as a mature program should, the fighter's procurement is declining while RDTE spending is rising, driving up the program's overall cost. With the F-47 far from complete, the F-35 remains the only U.S. stealth fighter in production, making it imperative to correct its investment profile by driving down the cost of block upgrades and buying more upgraded jets. Moreover, as the Air Force now invests in the F-47 sixth-generation fighter, it needs to learn from its experience with F-35 upgrades. Senior F-47 program managers will need to more efficiently integrate regular technological updates and more effectively bound development timelines to avoid trading aircraft procurement on the altar of such advanced capabilities that they inhibit the achievement of acquisition objectives.

**Figure 13: F-35 RDTE Costs Are Trending Back Upward[103]**




Despite the program's recent maturation to full-rate production in 2024, relative RDTE spending is on the rise.

**Figure 14: F-35 Procurement Has Stalled Since Entering Full-Rate Production[104]**




Meanwhile, RDTE spending associated with technology upgrades has grown.

## Space Modernization

Military space programs are vital to modern joint, conventional operations. From positioning, navigation, and timing (PNT) to communications and missile tracking, the U.S. military relies on satellites to collect and transmit vital information. However, Russian and Chinese advancements in antisatellite capabilities are shifting the balance in the space domain and holding U.S. satellites at risk. In response, the U.S. Space Force (USSF) is pursuing a strategy of rapid proliferation to create redundancy and resilience in the event of future disruptions to space.[105] These efforts include the development and launch of more sophisticated missile tracking satellites, more resilient satellite communications networks, and even space-based missile interceptors and antisatellite weapons to respond to potential attacks from space.[106] However, the procurement and launch of new space assets to date has been limited and delayed, with the vast majority of space modernization spending allocated to long-term development programs at great expense. As the Pentagon aims to bolster the scale and resilience of its space systems to support deterrence in the near term, it will need to emphasize accelerating payload deliveries and expanding launch capacity to support the continued expansion of its space modernization program.

### OVERALL SPENDING TRENDS IN SPACE MODERNIZATION, FY 2012–FY 2026

U.S. proliferation of new satellite constellations has been a cost- and time-intensive developmental effort. Since FY 2012, investments in RDTE for space modernization ($55.75 billion) have nearly doubled space procurement investments ($28.17 billion), and in the FY 2026 budget, space RDTE ($8.11 billion) outpaced space procurement ($2.38 billion) by a ratio of nearly 3.5:1. The technical sophistication of satellite technology and the unique physical requirements of space launch make the development phase for space capabilities extensive and expensive and procurement at scale difficult. Supply chain issues, manufacturing constraints, and limited launch infrastructure capacity further hamper space procurement and proliferation efforts. Taken together, these challenges increase the risks of operational vulnerabilities in space in the near and medium term.

Space proliferation delays can be heavily attributed to manufacturing and supply chain shortcomings. Redundant missile warning and missile tracking (MW/MT) satellites are one such delayed area with major implications for future space security. In July 2025, USSF's first planned launch of the MW/MT Medium-Earth Orbit (MW/MT MEO) constellation was pushed from late 2026 to spring 2027 due to challenges with component viability.[107] In March 2025, supply chain issues also impeded the delivery of MW/MT Low-Earth Orbit (MW/MT LEO) tracking satellites and delayed launches until later in the year.[108] The Next-Generation Overhead Persistent Infrared program, another feature of future U.S. missile tracking, has cost $16.54 billion in RDTE since FY 2018 but has experienced over a year of delays in development and was delayed even further in June 2025 due to crowded launch manifests prohibiting its launch.[109] Although a total of $18.33 billion has been invested in RDTE since FY 2023 to develop each of these three critical satellite constellations, none have remained on schedule.

GPS III, the United States' next-generation constellation for PNT has also been delayed due to manufacturing issues with at least three key components.[110] Originally slated for an April 2026 "available for launch" delivery, manufacturing difficulties and supply chain gaps have delayed GPS III's delivery to November 2026, with all successive deliveries also pushed back several months. These GPS proliferation delays further extend the vulnerability of existing U.S. PNT capabilities, which senior defense officials have repeatedly emphasized are a lucrative potential space target for adversaries in a great power conflict.[111]

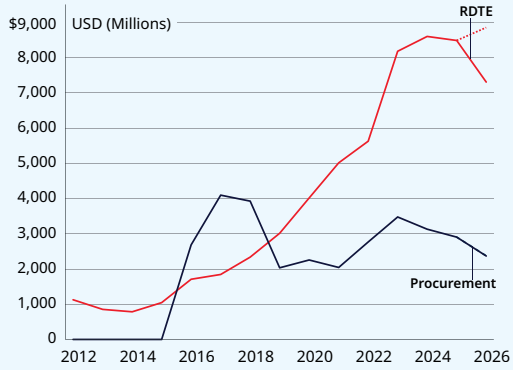
To keep pace with its satellite proliferation goals, the DoD will also need to significantly expand its space launch capacity to keep pace with ongoing development, planned fielding, and an overall surge in launch demand. Since 2021, the rate of commercial launches at federal launch sites has quadrupled, placing significant strain on launch infrastructure.[112] From 2017 to 2025, USSF's number of planned annual launches increased from 16 to 192, a 12-fold jump.[113] This surge is bound to strain the United States' aging and now overtaxed launch infrastructure. A June 2025 GAO report highlighted that "federal launch infrastructure is aging and, in general, was not designed to accommodate high launch cadence, larger launch vehicles, or the logistics of modern launches."[114]

Recapitalization and expansion of U.S. space launch facilities will thus be necessary to sustain proliferation and reconstitution of space capabilities in the near and medium term. Otherwise, a decaying launch infrastructure will lead to even more extended delivery timelines, leaving the United States reliant on fewer and more vulnerable satellite constellations in the near term.

Already, the U.S. National Security Space Launch (NSSL) has seen consistent delays to its launches and has thus far failed to complete a full award on time.[115] According to the Space Force's budget Justification Books, the first NSSL award for three launches was planned for completion in May 2023 but did not begin until April 2024.[116] The awarded launches themselves were not complete until September 2024, constituting a full year and a half delay. The second NSSL award for five launches was planned for completion in January 2024 but did not deliver its final launch until April 2025, also over a year late. The third NSSL award for three launches was planned for delivery by January 2025 but was still incomplete as of September 2025. These delays have been the result of combined industry and infrastructure limitations, ranging from limited payload processing capacity to rocket retirements and delayed deliveries.[117]

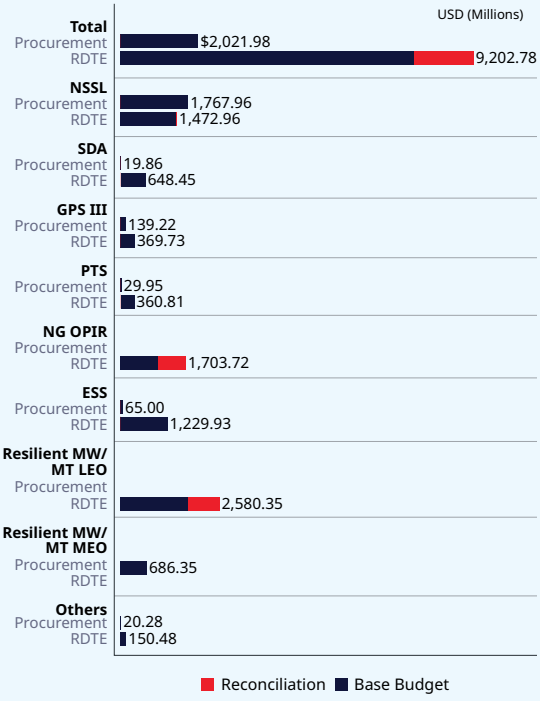
U.S. efforts to increase the survivability of its space capabilities have thus struggled to gain momentum and move at the speed of relevance. While major capability improvements are under development, these programs have been heavily delayed in reaching their initial launches and are likely several years away from full completion. Industry difficulties in producing required components and completing supply chains have added further uncertainty to space proliferation timelines. To ameliorate this situation, the United States will need to prioritize its launch capacity and space industry, which are aging, increasingly overwhelmed, and currently unable to deliver launches on schedule.

**Figure 15: RDTE Spending on Space Modernization Continues to Surge While Procurement Has Steadily Declined[118]**




*Funding from the One Big Beautiful Bill Act contributes significant support to space RDTE efforts. Dashed lines indicate inclusion of BBB funding.*

**Figure 16: Space Modernization Spending Has Yet to Transition to Procurement in FY 2026[119]**




*Funding from the One Big Beautiful Bill Act (BBB) provides significant RDTE increases, but no major procurement support for space modernization exists in the BBB or base budget request.*

### The Next Big Thing: Golden Dome

One of President Trump's top defense priorities is to develop Golden Dome, a "next-generation missile shield" to protect the U.S. homeland from a range of advanced aerial threats.[120] This ambitious objective is sure to be expensive and is poised to drive further resources away from procurement of near-term capability needs and instead toward research and development for next-generation air and missile defense.[121] By straining existing resources and limiting the amount of investment available to buy existing capabilities, Golden Dome could further widen the imbalance of power emerging in the Indo-Pacific. The risk of this eventuality is particularly high due to Golden Dome's initial funding coming via reconciliation in the BBB.

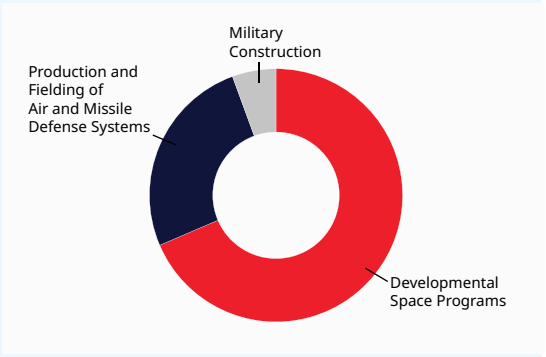
The Trump administration's current approach to Golden Dome relies on a roughly $25 billion "down payment" from the BBB.[122] As a major defense initiative aiming to build several new elements into the U.S. missile defense architecture, Golden Dome requires consistent and significant funding increases over many years—increases that are not currently factored into the USSF's base budget plans.[123] As a result, the DoD will either need to request additional resources to fund Golden Dome or, if the topline budget remains essentially static, reallocate funds from other planned programs.

Unfortunately, the BBB legislation lacks detailed long-term projections and plans for Golden Dome–related investments, a major hindrance to effective program management and cost-effective industry preparation.[124] Moreover, BBB's Golden Dome spending heavily favors developmental funding (see Figure 17) and does not involve major procurement and integration funding nor any long-term timelines for transitioning those efforts, further challenging cost effectiveness and program management.[125]

Existing delays and challenges in planned space programs underscore the need for more rigorous Golden Dome budgeting. Supply chain problems have undercut space launch projections for the Space Development Agency (SDA) and the Missile Defense Agency, slowing the fielding of new satellites, including new MW/MT constellations that are a key part of any homeland missile defense system.[126] Space-based interceptors, which are firmly in the development stage, are likely years away from deployment and integration at the scale needed to be able to intercept even a handful of inbound intercontinental ballistic missiles.[127]

Although BBB's "down payment" is a significant investment, Golden Dome's execution and long-term survival depends on a more structured acquisition pathway being outlined in the regular President's Budget request. Absent this change, Golden Dome risks falling victim to cost overruns from a lack of oversight and inconsistent funding, which will fuel rising costs and delays while limiting the Pentagon's ability to buy other weapons in the next 5 to 10 years.

**Figure 17: Golden Dome Funding in the One Big Beautiful Bill Act[128]**




*The One Big Beautiful Bill Act's Golden Dome spending heavily emphasizes developmental funding over procurement and integration.*

## Shipbuilding

Perhaps the starkest gap between the United States and China lies at sea. While China's world-leading shipbuilding industry has rapidly expanded the size of the People's Liberation Army Navy (PLAN), the United States' atrophied shipbuilding enterprise is failing to deliver vessels on time and on budget.[129] As of 2025, the PLAN operates over 370 naval combatants and is increasingly capable of projecting Chinese naval power into the First Island Chain and beyond. The U.S. Navy, on the other hand, operates just under 300 naval combatants, many of which are aging and distributed across several theaters. Beyond the fleet size, China is also accelerating and threatening to surpass the United States in naval firepower: From 2014 to 2024, the PLAN more than quadrupled its total vertical launch systems (VLS), cutting the U.S. Navy's VLS lead in half.[130] The U.S. Navy retains a considerable advantage in undersea warfare, but it cannot build *Virginia*-class attack submarines fast enough to meet growing demand. The U.S. Navy's maritime advantage in the Indo-Pacific is shrinking and at an increasing risk of failing to meet peacetime deterrence requirements, much less wartime operational needs.[131]

### OVERALL SPENDING TRENDS IN SHIPBUILDING, FY 2012–FY 2026

China is estimated to have launched approximately 170 new warships since 2010, compared to the United States' 66.[132] The U.S. Navy has been consistently procuring new ships and submarines, but American shipyards cannot produce them fast enough. China's dual military and civilian shipbuilding industry far outstrips the capacity of the United States' military shipyards, which are small and suffer from workforce and supply chain shortfalls. Indeed, the Navy's FY 2026 budget request for RDTE is historically quite small relative to its procurement funding (see Figure 18). While some Navy programs have suffered from developmental delays, its greatest challenge is not a lack of procurement dollars but its ability to produce the ships necessary to support its procurement programs on time and on budget.[133]

U.S. Navy submarines are one of the most critical capabilities for deterring a Chinese invasion of Taiwan, but procurement is impeded by a lack of production capacity. From FY 2012 to FY 2024, shipbuilders have failed to match production to the annual procurement rate of two attack submarines, creating an increasing backlog. In FY 2026, the Navy requested $11.08 billion to go toward building two *Virginia*-class attack submarines.[134] However, as it currently stands, the two U.S. submarine yards are building only approximately 1.5 boats per year, contributing to an increasing backlog in submarine production.[135] As a result, the two *Virginia*-class submarines requested in FY 2026 are not scheduled for delivery until December 2034 and May 2035.

As part of its investments in the submarine industrial base (SIB), the U.S. Navy requested $2.5 billion in FY 2026.[136] And as of August 2025, Australia has invested $1.6 billion out of a total planned $3 billion investment in the American SIB.[137] The Navy is seeking to expand shipyard capacity to hit two boats per year by 2028 and subsequently to 2.3 boats per year to fulfill the requirements of the AUKUS agreement, but doing so will place major demands on the shipbuilding workforce and require the Navy to address long-standing facility capacity and supply chain issues.[138]

Navy ambitions for *Virginia* production rates are also balanced with the Navy's top-priority program, the *Columbia*-class submarine, which has also been delayed by shipbuilding challenges.[139] In June 2025, then-Acting Chief of Naval Operations Admiral James Kilby testified that the first *Columbia* boat would be delayed by at least 17 months and would not be delivered until March 2029.[140] The United States relies on its undersea dominance for both conventional deterrence and the survivability of its nuclear arsenal. U.S. shipbuilding challenges thus threaten not just near- and medium-term deterrence but also the long-term viability of the U.S. nuclear deterrent, which is critical to strategic stability and deterring possible Chinese escalation in a limited war.[141]

Efforts to expand the surface fleet also are encountering shipbuilding delays, which have been exacerbated by overly ambitious and shifting requirements.[142] The Navy wants to expand the fleet so that it can generate offensive firepower from ships operating in a distributed manner to enhance their survivability. After the *Zumwalt* destroyer and Littoral Combat Ship (LCS) programs not only ran significantly over schedule and cost but also failed to deliver ships that performed as expected, the Navy sought to avoid these pitfalls with its *Constellation*-class frigate program by adopting the same design as an existing Italian frigate. Yet this plan fell apart because the Navy kept shifting the frigate's requirements. From FY 2017 to FY 2026, the Navy spent $1.1 billion on *Constellation*-class RDTE as it required repeated modifications to the ship's design. These modifications were so extensive that GAO concluded in 2024 the *Constellation* and the original Italian model ultimately "now resemble nothing more than distant cousins."[143]

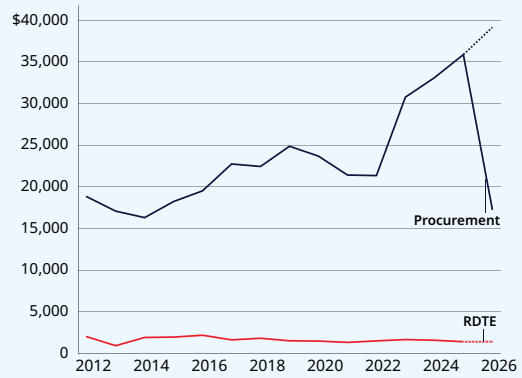
Further delays have been introduced as a result of beginning construction of the first frigate before the ship's design was finalized and as a result of workforce shortfalls and supply chain problems.[144] Since FY 2020, the Navy has spent a total of $1.09 billion and $8.21 billion on *Constellation*-class RDTE and procurement, respectively, and it has yet to deliver the first completed ship. These cost increases and delays have resulted in the Navy freezing *Constellation* procurement in the FY 2026 budget, casting doubt on its continuation. A pause in procurement may allow the ship's design to be finalized before funding additional ships, but without a FYDP and 30-year shipbuilding plan, shipbuilding stakeholders will not know what the Navy's intent is. Another seriously truncated buy or canceled major warship program would deal a major setback to the Navy's ability to close maritime capability gaps in the Indo-Pacific.

Despite these shipbuilding challenges, the Navy continued to spend an average annual amount of $27.6 billion on procurement from FY 2017 to FY 2026. The FY 2026 budget request was shocking in that it slashed its base request for shipbuilding nearly in half, but reconciliation funds made up the difference. In FY 2025, the Navy requested a total of $35.88 billion for major shipbuilding programs. In FY 2026, that base request dropped to $17.32 billion, while an additional $21.83 billion in shipbuilding funds were provided by the BBB, for a total of $39.15 billion. While this number may seem staggering, these funds will not manifest in near- or even medium-term increases in the Navy's fleet due to delays, backlogs, and shortages across the Navy's shipbuilding industrial base.

Looking forward, the shift to reconciliation spending in Navy procurement creates new uncertainty over the future of U.S. shipbuilding: Will future base budgets match the funding provided by the BBB, or is BBB funding the first step toward a decline in base defense spending on Navy shipbuilding? While continued support for the Navy's procurement efforts is positive, tying so many shipbuilding programs critical to the military balance in the Indo-Pacific to a highly partisan reconciliation process risks destabilizing future shipbuilding and Navy modernization efforts.

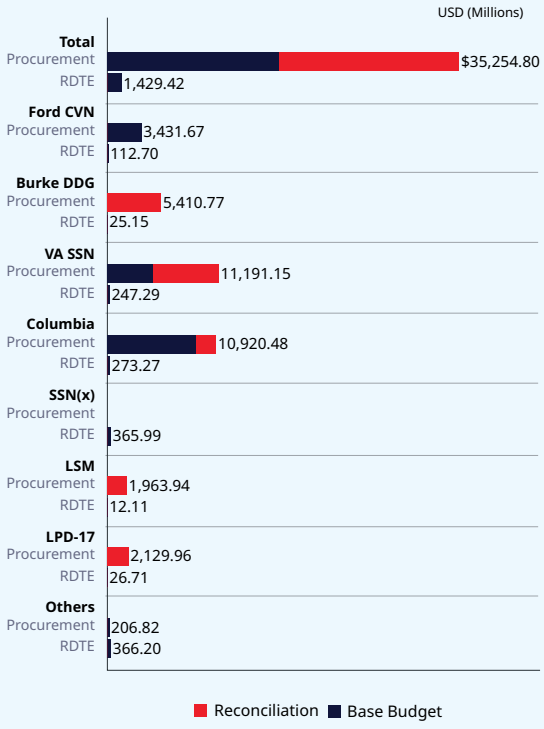
Additionally, the Navy may consider a review of its overall shipbuilding priorities for the near term with an aim toward closing critical maritime capability gaps without exacerbating existing shipbuilding delays. The objective of this effort would be to optimize shipbuilding funding toward those ships that contribute relevant capabilities in the Indo-Pacific and redirect investments in ships that do not toward improvements in the shipbuilding industrial base. For instance, since FY 2017, the Navy has spent a total of $24.35 billion producing amphibious transport ships for the U.S. Marine Corps. While these ships are important for supporting the Marines' expeditionary warfighting capabilities, the reality of the combat environment expected in an Indo-Pacific fight renders these platforms less valuable than more combat-oriented platforms such as the *Arleigh Burke*-class destroyer, the *Constellation*-class frigate, and the *Virginia*-class attack submarine. If the Navy paused or significantly reduced future amphibious warship procurement and invested future spending in improving

**Figure 18: Without the Passage of the One Big Beautiful Bill Act, Shipbuilding Risked a Major Drop in Procurement[146]**




*Several shipbuilding programs now rely almost entirely on One Big Beautiful Bill Act funding for their procurement spending. Dashed lines indicate inclusion of BBB funding.*

**Figure 19: Shipbuilding Spending Transfers a Majority of Procurement Spending to One Big Beautiful Bill Act Funding for FY 2026[147]**




*Major platforms, such as the* Arleigh Burke*–class destroyer DDG, rely almost entirely on One Big Beautiful Bill Act funding for procurement in FY 2026.*

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# CONCLUSION

**SINCE FY 2012**, U.S. military modernization plans have gotten stuck in a research and development cul-de-sac where new technologies are too often developed but not transitioned into capabilities purchased at scale to deter China. The Pentagon has continually passed on buying more of the weapons that are in production now and waited for sophisticated next-generation capabilities to enter the force. But many of these big bets have not lived up to their promise. They have taken longer to develop, cost more than planned, and provided less performance than promised and therefore have not been purchased in great numbers. In contrast to the United States' slower modernization, the PLA has rapidly expanded the quality and quantity of its forces, creating a significantly growing risk that deterrence fails in the near term. The United States urgently needs to take steps to shore up the balance of power in the Indo-Pacific today while continuing to make smart investments in advanced capabilities for tomorrow.

The FY 2026 budget request and the BBB do not make the needed investments to strengthen deterrence across time. This analysis demonstrates that the United States is not approaching its military modernization priorities with the intensity needed to maintain deterrence. Instead, the Trump administration seems to be making the same mistake of many predecessors: prioritizing costly next-generation developmental programs at the expense of purchasing capabilities that are available today or rapidly developing cost-effective complementary capabilities. The FY 2026 budget release continues the worsening trend of increasing RDTE spending alongside stagnant procurement outcomes. There is a significant risk that many of the president's priorities will consume an even larger share of the base investment budget in future years because they were funded through one-time reconciliation and are not included in the services' long-term budget plans. Future defense budgets will have to increase significantly to carry on the modernization efforts initially funded by the BBB. Absent this change, it is likely that these efforts will stall or fail entirely.

Detailed analysis of the Trump administration's budget across the five major capability areas critical to deterrence in the Indo-Pacific demonstrates that there are some opportunities to procure more existing high-end capabilities to foreclose the potential for China to successfully take aggressive actions against the United States. But these options are few and far between given the status of many programs and because of limitations in the defense industrial base. Expanding the U.S. military's capacity and capability in the near term will likely require larger budgets and the rapid development and production of complementary, simpler capabilities that will yield a high-low mix with mass and capability.

Finally, by relying on unprecedented levels of funding through reconciliation, this year's defense budgeting process stands apart from its predecessors and ultimately risks undermining the Joint Force's long-term modernization goals. Funding major modernization initiatives using one-time reconciliation funds decouples modernization from the traditional

defense budgeting process by tying it to a wider range of nondefense political issues and thus sets the stage for future hyper-politicization of defense modernization. Moreover, if subsequent base budget requests attempt to recoup the budget increases provided by the BBB, congressional fiscal hawks would remain well positioned to oppose increases in base defense spending, placing the future of the Pentagon's modernization plans at risk.

This report emphasizes the generational stakes at hand for the U.S. military's modernization efforts and argues that modernization must accelerate and endure over time to deter China in the Indo-Pacific. Rather than pursue this modernization through reconciliation and a disproportionate focus on next-generation capabilities, the DoD, the White House, and Congress must budget a sustained pivot to procurement of existing defense assets that close near-term deterrence gaps alongside balanced investments in long-term modernization.

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# RECOMMENDATIONS

## Near Term

### Evaluate and justify how annual procurement and RDTE investments contribute to deterrence across time.

Across capability areas, the DoD is confronting a range of emerging gaps and is struggling to seize opportunities for increased procurement. To better account for emerging capability gaps in the budgeting process, the secretary of defense should require the services to consider and justify how its investments support deterrence in the short and long term when writing their Program Objective Memorandums and Budget Estimation Submissions at the start of each budget cycle. While the secretary provides the services with the Defense Planning Guidance, which directs defense investments, the guidance does not necessarily require the services to reckon with the long-term trends of their purchasing and transition cycles. By requiring the services to account for these long-standing investment trends and their potential impacts on capability gaps, future defense budgets may better align investments to capability needs.

### Procure viable and ready combat aircraft and ground-based long-range fires.

While many next-generation capabilities remain years away, several aircraft and fires systems can be procured now to fill immediate capability gaps and bolster deterrence. The DoD should accelerate procurement of the F-15EX and modernized F-35 variants (as upgrades allow) to improve combat aircraft capabilities to the Indo-Pacific. Similarly, the department should expand its procurement of extended-range fires and maritime-strike capabilities such as the PrSM Increment 2, MRC, and NMESIS, which have proven their capability and can be procured in greater numbers to bolster the Joint Force's land-based fires reach. The B-21 represents one significant opportunity to bring a new capability to the field in the near term. Increasing the size of the B-21 fleet would cement the U.S. Air Force's advantage in the long-range penetration strike domain and expand much-needed capacity for such missions.

### Reduce runaway RDTE spending on mature weapons programs.

The U.S. Air Force has publicly stated that cost-intensive delays in F-35 modernization have limited further procurement. However, the F-35 requires upgrades to its compute power, sensor capabilities, data networking, interoperability, and weapons capacity to compete into the future.[148] To get F-35 procurement back on track and continue to expand the size of the fleet, the Air Force and its industry partners must overcome the aircraft's modernization hurdles. Looking forward, congressional leadership should hold new hearings on the F-35's upgrade program, mandate a lessons learned report, and ensure DoD

acquisition leadership understands how to avoid similar mishaps in future platform upgrade efforts.

Delays in the design and development of the *Constellation*-class frigate have similarly hampered the delivery of this system. The U.S. Navy's decision to pause procurement of the future frigate platform in FY 2026 is the direct result of years of delays and cost overruns that have prevented the Navy from accepting delivery of a single *Constellation*-class frigate to date. To address delays and cost overruns in the development and modernization of critical systems, the services must work with industry partners to streamline the requirements and delivery process to ensure that new or modernized capabilities arrive on time and on budget.

#### Pursue the rapid development, production, and scaling of lower cost weapon systems to bridge and complement the arrival of next-generation capabilities.

Despite opportunities for increasing production of available systems included in these five categories of major weapons, the per-unit cost of these systems remains relatively high. Emphasis must be placed on quickly developing, producing, and scaling inventories of complementary systems that are relatively lower cost and capable of contributing alongside costlier platforms. For instance, the department has allocated $1.5 billion in unclassified spending since FY 2025 in developing the lower cost CCA. The latest estimates place the cost of a single CCA at $20 million to $27 million for initial variants, with improved variants ranging from $25 million to $30 million each.[149] These aircraft provide greater capacity at a relatively lower cost than crewed next-generation platforms and will significantly improve the capabilities of the country's air fleet. Going forward, the department must fully fund CCA procurement and expedite production and fielding of these systems.

#### Consider reallocating shipbuilding funds away from nonpriority maritime platforms toward more pressing shipbuilding priorities.

The FY 2026 budget requests $39.2 billion for building the maritime capabilities included in the authors' shipbuilding analysis. Of that total, $8.1 billion is programmed for building amphibious warfare ships to support the U.S. Marine Corps. However, amphibious ships make limited contributions to warfighting in the Indo-Pacific. Given the backlogs associated with building all major maritime platforms programmed in the FY 2026 budget, the Pentagon should carefully consider whether future spending on amphibious platforms could be temporarily redirected toward reducing production lead times for other capabilities through investments in the shipbuilding and submarine building industrial bases.

## Long Term

#### Continue to pursue annual increases to the topline defense budget to ensure deterrence across time.

Shifting from an emphasis on research and development to procurement will require significantly higher defense spending over a prolonged period. The FY 2026 base budget of $848.3 billion does not provide an increase from the FY 2025 base budget, and after accounting for inflation, the FY 2026 budget is a downturn from FY 2025. Without annual increases to the Pentagon's topline budget, there will have to be tradeoffs in other budget areas. To avoid sacrificing procurement of key capabilities, annual increases are essential. While the BBB does inject $113.3 billion in Pentagon funding with an emphasis on modernization, that process cannot be relied upon in subsequent years. Without committing to significant annual increases in the defense budget, the modernization programs that received a down payment through the BBB in FY 2026 will stall in future years.[150] The Joint Force will be unable to maintain deterrence across time if future base budgets fail to resource the near-term procurement of available capabilities and the long-term development of next-generation systems.

#### Require that priority modernization efforts are subject to regular budgeting and long-term planning and oversight processes.

The Pentagon's priority modernization programs require the stability and oversight the regular defense

budgeting and appropriations process provides. The BBB sidesteps traditional processes in that it lacks the requirement for long-term program planning and justifications for how funds will be allocated at the program level. After the BBB was passed, lawmakers requested that the Pentagon provide detailed spending plans for all the programs funded by the reconciliation bill. As of September 2025, however, the Pentagon has failed to provide long-term spending plans for many of the programs included in the BBB.[151] The lack of transparency surrounding the Pentagon's most critical modernization programs undercuts the ability of Congress to conduct effective oversight, casts doubt on the viability of the services' long-term plans for developing and fielding next-generation capabilities, and provides an incomplete picture for industry partners tasked with developing and producing these systems in the years to come.

**Strengthen critical space supply chains and expand NSSL capacity.**

The DoD, USSF, and SDA must scale launch capacity to meet both current and future demand. Existing space launch capacity is overwhelmed by increasing demand from the commercial space industry, and aging launch infrastructure is unable to keep pace with the current and projected scale of launch and payload deliveries. As proliferated satellite constellations develop over the long term, increasing launch capacity is critical to ensuring new space capabilities can be launched when ready. USSF and SDA must also continue to invest in securing their materials supply chains to ensure that upcoming satellite capabilities can be delivered on time. Doing so prevents space modernization objectives from encountering the logistical bottlenecks created by constrained launch capabilities and fragile supply chains.

**Continue to fund long-term investments in the surface and submarine shipbuilding industrial bases.**

U.S. shipbuilding industrial base currently lacks the capacity to deliver, maintain, and repair critical naval platforms at the speed and scale needed to compete in the Indo-Pacific. Congress must work with the DoD to continue to invest in domestic shipbuilding capacity and must continue to collaborate with allies and partners on international U.S. shipbuilding investments like those ongoing through the AUKUS partnership. In doing so, the Navy should consider a new, modular shipbuilding model to leverage underutilized or unutilized shipbuilding facilities and labor pools across the United States and abroad.[152]

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# APPENDIX I: DATA COLLECTION

**THE DATA COLLECTION** for this report comprises the RDTE and procurement spending for 54 programs of record over the course of 15 fiscal years. Covering combat aircraft, ground-based long-range fires, shipbuilding, hypersonic weapons, and space modernization, the subject programs were selected based on their importance to the current and future U.S. defense strategy in a world of heightened great power competition and international conflict. These systems were also chosen for their relevance to deterrence and warfighting in the Indo-Pacific.

The authors used budget documentation and data from Justification Books (J-Books) on the Office of the Under Secretary of Defense (Comptroller) website.[153] The authors made use of Obviant data intelligence software to facilitate data collection for FY 2017–FY 2024 and manually collected data for FY 2012–FY 2016.

For FY 2012–FY 2024, "settled" figures are reported, reflecting the enacted budget for a given fiscal year as opposed to the appropriated or requested budget. As an example, the Army Tactical Missile Systems procurement budget for FY 2021 reflects the settled FY 2021 number from the FY 2023 J-Book instead of the requested FY 2021 number from the FY 2021 J-Book or the appropriated FY 2021 number from the FY 2022 J-Book. This method allows for the most accurate representation of the money spent by the department and avoids issues with volatility and follow-through that frequently accompany requested or appropriated figures.[154]

As of August 2025, the Department of Defense has not released updated "deflators" for FY 2026. Deflators are the department's way of handling inflation and deflation over time and are calculated for each of the budget's major spending categories. Instead of a blanket treatment of inflation or deflation for the entire budget, discrete deflators are calculated differently for RDTE, procurement, operations and maintenance, and so on. In lieu of FY 2026 deflators, the authors have opted to use the most recently available deflators from FY 2025. In doing so, the budgetary figures for FY 2025 and FY 2026 were left undeflated from their original status.

Over the course of the data collection, the authors made several decisions on inclusion and exclusion criteria to ensure rigorous and consistent accounting of procurement and RDTE spending. As a rule, the authors sought to isolate the program's prime RDTE and procurement costs from ancillary or indirect costs, such as weapons integration research, common support equipment, or repair costs. For example, the RDTE figures for the F-35 omit the RDTE conducted for each F-35 munition's independent integration with the aircraft. Similarly, procurement of common support equipment was excluded unless it was explicitly and exclusively associated with the program in question. Additionally, the authors sometimes excluded or combined costs as necessary to manage double-counting risks, as with the CCA and NGAD programs. These decisions are further outlined below by category.

## Combat Aircraft

The F-35 program is one of the most complicated programs for budget analysis due to its joint status and multiple variants across services. The authors collected initial F-35 RDTE and procurement spending on a service-by-service basis, but a more detailed breakdown of the F-35 program is provided in the expanded case study.

The authors separated CCA and NGAD spending to avoid double-counting risks in the platforms' respective RDTE. Additionally, the authors combined all F/A-18 variants to provide continuity with the active Super Hornet program and mitigate double-counting risks across earlier versions of the aircraft. Weapon and other payload integration costs were excluded on the basis that those costs reflect independent spending for the respective weapon or payload programs rather than spending for the principal weapon platform itself.

## Fires

In certain programs, such as the Multiple Launch Rocket System, the authors found that demilitarization or divestment spending was included in the

program's procurement lines. While nominally categorized as procurement, divestment reduces the number of defense items in service. On this basis, the authors excluded demilitarization or divestment spending from this report's procurement figures.

## Shipbuilding

Shipbuilding repair costs are a persistent feature of data collection for shipbuilding programs and were excluded by the authors. While some repair costs are labeled as procurement spending in Navy budget documentation, these costs are not associated with the primary construction and initial delivery of the vessel and can fluctuate depending on a ship's employment history. For example, the analysis did not include every cost element from "Ship Maintenance, Repair, and Modernization (Line Item Number 1000)," which varied significantly on a ship-per-ship basis and were not associated with the vessels' original construction and delivery. Exclusion of these costs allowed for a more precise and consistent rendering of each ship's procurement.

As with all other peripheral or support costs, the authors only included ancillary RDTE and procurement spending such as peculiar support equipment or modernization initiatives if they were explicitly and exclusively tied to the platform or weapon in question. This approach ensures the figures reported are wholly attributable to the program in question and do not include spending provided for or shared by other programs.

## Hypersonic Weapons

While variant or evolving programs such as the F-35 and FA-18 variants were combined for continuity and simplicity, Hypersonic Air-Breathing Weapon Concept and More Opportunities with the Hypersonic Air-Breathing Weapon Concept were distinguished from each other due to their existence as two distinct programs in the budget.

## Space

Budget data on U.S. space programming can be inconsistent and difficult to track due to the high classification barriers associated with U.S. space programs. Additionally, the unique character of space research, testing, and launch, where different satellite models are iteratively launched, tested, and yet remain in service after, blurs the line between space RDTE and procurement spending. For this report, the authors relied on the unclassified data from the U.S. Space Force's budget materials and maintained the Space Force's categorization of RDTE and procurement spending. However, these distinctions are qualitatively examined and analyzed in the report.

# APPENDIX II: LIST OF SYSTEMS

**THE AUTHORS COLLECTED** budget data on 54 systems for FY 2012–FY 2026. The authors selected these systems based on their relevance to deterring and, if needed, engaging in a potential U.S.-China conflict. While not exhaustive, these programs are representative of the major legacy and next-generation weapon systems that would likely be brought to bear in such a conflict and are thus central to this study of the Department of Defense's modernization efforts.

| Category | System | FY of Data Collection |
|---|---|---|
| Combat Aircraft | A-10 | FY 2012–FY 2026 |
| Combat Aircraft | A/V-8B | FY 2012–FY 2026 |
| Combat Aircraft | Collaborative Combat Aircraft (CCA) | FY 2025–FY 2026 |
| Combat Aircraft | E/A-18 | FY 2012–FY 2026 |
| Combat Aircraft | F/A-18 | FY 2012–FY 2026 |
| Combat Aircraft | F-15 | FY 2012–FY 2026 |
| Combat Aircraft | F-16 | FY 2012–FY 2026 |
| Combat Aircraft | F-22 | FY 2012–FY 2026 |
| Combat Aircraft | B-21 | FY 2012–FY 2026 |
| Combat Aircraft | F-35 | FY 2012–FY 2026 |
| Combat Aircraft | F-47 | FY 2015–FY 2026 |
| Combat Aircraft | F/A-XX | FY 2017–FY 2026 |
| Fires | High Mobility Artillery Rocket System (HIMARS) | FY 2012–FY 2026 |
| Fires | Guided Multiple Launch Rocket System (GMLRS) | FY 2012–FY 2026 |
| Fires | Multiple Launch Rocket System (MLRS) | FY 2012–FY 2026 |
| Fires | Mid-Range Capability (MRC) | FY 2020–FY 2026 |
| Fires | Precision Strike Missile (PrSM) | FY 2021–FY 2026 |
| Fires | Army Tactical Missile System (ATACMS) | FY 2014–FY 2026 |
| Fires | Navy-Marine Corps Expeditionary Ship Interdiction System (NMESIS) | FY 2019–FY 2026 |
| Fires | Organic Precision Fires (OPF) | FY 2020–FY 2026 |
| Fires | Long-Range Fires (LRF) | FY 2021–FY 2026 |
| Hypersonics | Hypersonic Air-Breathing Weapon Concept (HAWC) | FY 2014–FY 2026 |
| Hypersonics | More Opportunities with the Hypersonic Air-Breathing Weapon Concept (MOHAWC) | FY 2023–FY 2026 |
| Hypersonics | Air-Launched Rapid Response Weapon (ARRW) | FY 2019–FY 2026 |
| Hypersonics | Hypersonic Attack Cruise Missile (HACM) | FY 2022–FY 2026 |

| Category | System | FY of Data Collection |
|---|---|---|
| Hypersonics | Long-Range Hypersonic Weapon (LRHW) | FY 2020–FY 2026 |
| Hypersonics | Conventional Prompt Strike (CPS) | FY 2019–FY 2026 |
| Hypersonics | Hypersonic Air-Launched Offensive Anti-Surface (HALO) | FY 2023–FY 2026 |
| Shipbuilding | *Ford*-class aircraft carrier (CVN) | FY 2012–FY 2026 |
| Shipbuilding | *Constellation*-class frigate | FY 2017–FY 2026 |
| Shipbuilding | DDG (X) | FY 2020–FY 2026 |
| Shipbuilding | *Zumwalt*-class destroyer (DDG) | FY 2012–FY 2026 |
| Shipbuilding | *Arleigh Burke*-class destroyer (DDG) | FY 2012–FY 2026 |
| Shipbuilding | *Virginia*-class attack submarine (SSN) | FY 2012–FY 2026 |
| Shipbuilding | *Ohio*-class ballistic missile and guided missile submarines (SSBN/GN) | FY 2012–FY 2026 |
| Shipbuilding | *Columbia*-class ballistic missile submarine (SSBN) | FY 2012–FY 2026 |
| Shipbuilding | SSN (X) | FY 2021–FY 2026 |
| Shipbuilding | Landing Ship Medium (LSN) | FY 2021–FY 2026 |
| Shipbuilding | LSD/LHA amphibious warfare vessels | FY 2012–FY 2026 |
| Shipbuilding | Littoral Combat Ship (LCS) | FY 2012–FY 2026 |
| Shipbuilding | *San Antonio*-class Landing Platform Dock (LPD) | FY 2012–FY 2026 |
| Space | National Security Space Launch | FY 2012–FY 2026 |
| Space | Space Development Agency (Tranche 0 and Tranche 1) | FY 2020–FY 2026 |
| Space | Rocket Systems Launch Program (RSLP) | FY 2017–FY 2026 |
| Space | Global Positioning System (GPS III) | FY 2012–FY 2026 |
| Space | Air Force Wideband Enterprise Terminal (AFWET) | FY 2017–FY 2026 |
| Space | Wideband Global SATCOM (WGS) | FY 2012–FY 2026 |
| Space | Protected Tactical Satellite Communications (PTS) | FY 2017–FY 2026 |
| Space | Next-Generation Overhead Persistent Infrared (NG OPIR) | FY 2018–FY 2026 |
| Space | Space-Based Infrared System (SBIRS) | FY 2016–FY 2026 |
| Space | Evolved Strategic SATCOM (ESS) | FY 2018–FY 2026 |
| Space | Advanced Extremely High Frequency (AEHF) | FY 2017–FY 2026 |
| Space | Resilient Missile Warning and Missile Tracking Low Earth Orbit (MW/MT-LEO) | FY 2023–FY 2026 |
| Space | Resilient Missile Warning and Missile Tracking Medium Earth Orbit (MW/MT-MEO) | FY 2023–FY 2026 |

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