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Outside the Wire

Force Modernization and its Market Impact



F-35 Lightning II fighter jets at Hill Air Force Base, Utah. Photographer: Ronald Bradshaw/U.S. Air Force

Moving into Q2, the 2021 defense spending plan is underway. The annual defense spending plan (also called the defense budget or the “National Defense Budget Estimate”), is the distribution of our government’s spending which gets allocated to the Department of Defense. This takes up 2-5% of the United States’ annual GDP (See figure 1). In April of 2020, the office of the Comptroller of Defense released its [2021 budget](#), which shows the current year’s spending plan as well as projections for defense spending through 2025. The Department of Defense has prioritized “force modernization” which includes funding for defense asset procurement, RDT&E (Research, Development, Testing & Evaluation) and Operations & Maintenance (O&M). We look at how these funding allocations may affect defense sectors and the subsequent markets that support them.

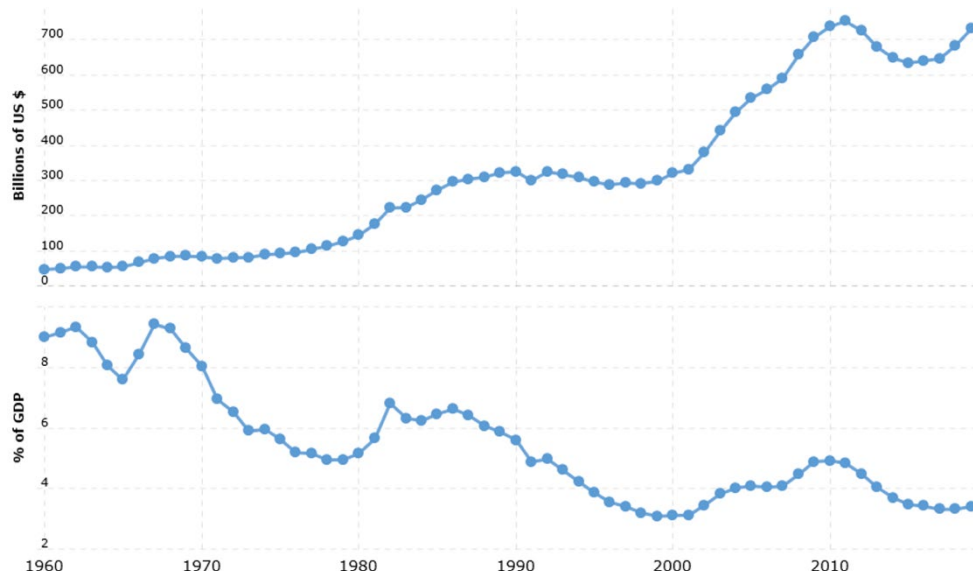


Figure 1: A chart showing the amount of each year’s defense budget (top line), and its percentage of the GDP for the corresponding year (bottom line).

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Figure 2: Increases in spending by certain categories.

2021 Defense Budget Breakdown:

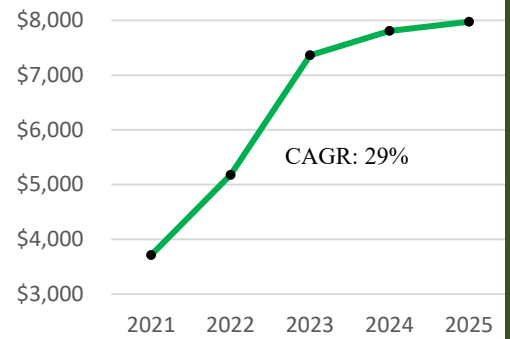
Under the [2021 plan](#), we see noticeable changes with most categories of procurement from 2021 to 2025. Shipbuilding contracts for example will see an increase of 37.66% over the next five years. This may be of interest for those watching the industry’s dominant shipbuilding companies such as Huntington Ingalls, General Dynamics, L3Harris, Lockheed Martin, Raytheon, and Northrop Grumman. Spending on cyber space developments through the Space Force will increase by 93% during the next five years, while allocations for defense-wide cybersecurity will increase by 20.74%. Other sectors that are being targeted for force modernization include drones, portable drones, software development, microchips, semiconductors, long-range missile delivery systems, and technology that deals with climate change (See figure 2).

Research, Development, Testing & Evaluation (RTD&E):

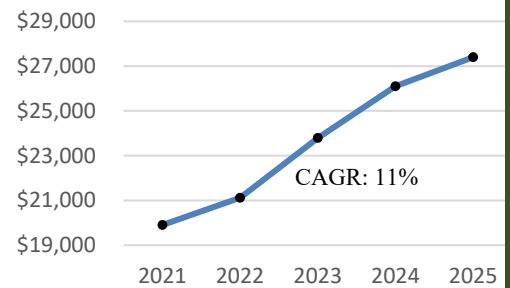
The DOD has a large number of projects related to force modernization as well as improving defense infrastructure. Further developments to integrated circuits, cybersecurity, and material technology are being driven by the DOD’s initiative to maintain a modern force. While the current budget estimates show only a slight increase in funding for these types of projects over the next few years, recent developments show greater-than-anticipated increases. In response to the ongoing investigation of the SolarWinds attack last year, President Biden stated a few weeks ago “We’ve elevated the status of cyber issues within our government. We are launching an urgent initiative to improve our capability, readiness and resilience in cyberspace.”

Aside from IT related programs, each military branch is shifting to bring new technologies to military field work. The development of electric vehicles, autonomous aircraft and ships, new weapon systems, and individual personal equipment are examples of current projects that will be receiving greater funding over the next few years. From 2019-2020 we noticed a +9.6% increase to total RDT&E and then another +1.9% increase from 2020-2021.

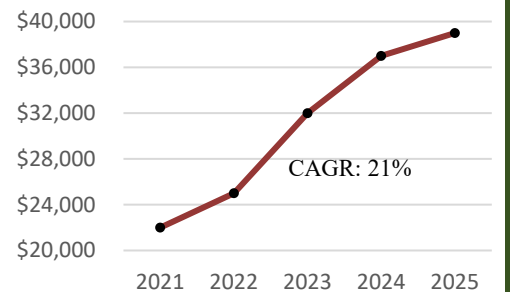
Projected Spending on Weapons & Tracked Vehicles (in millions)



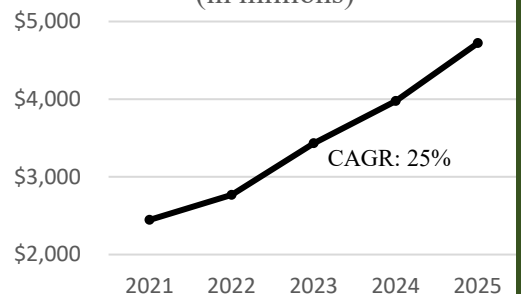
Projected Spending on Shipbuilding & Conversion (in millions)



Projected Spending on Microchip & Semiconductor production (in millions)



Projected Spending on Cyberspace & Networks (in millions)



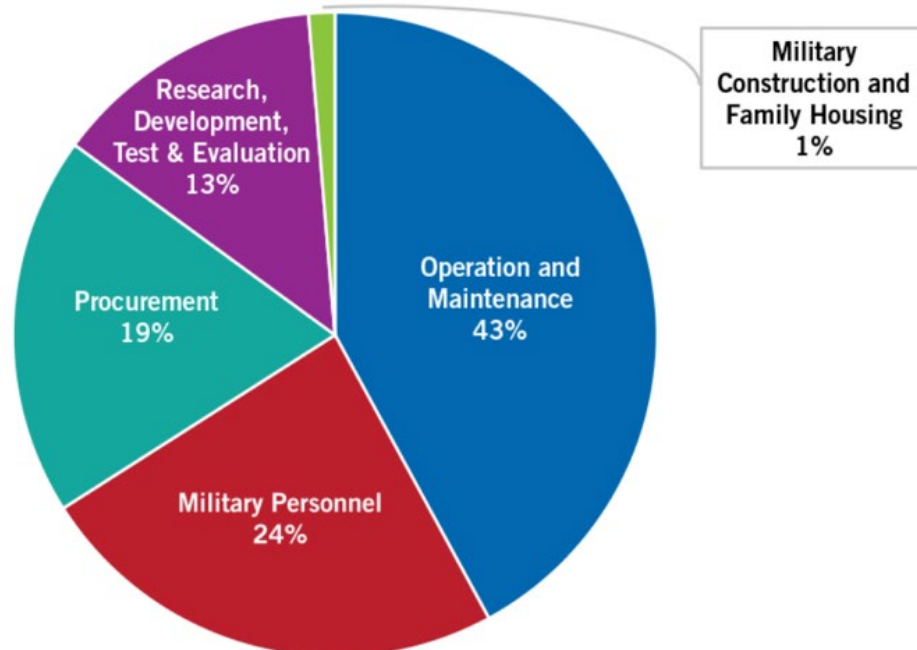
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President Biden’s Reallocation to Innovative Technologies:

A few weeks ago, the Biden Administration released a 24-page document that described formal guidance for a re-allocation of the annual defense budget over his term. This paper highlighted military policies, cybersecurity, the national security workforce, nuclear nonproliferation, a potential restructuring of national security policy, and clarifying priorities of the defense budget. While President Biden is striving for a flat budget during the next few years, he would like to see the priorities within it changed. Current issues like force modernization will be given greater funding, while older “legacy” programs such as nuclear arms maintenance (rather than replacement) are to be phased out.

Under DOD spending by category, most of the annual budget is currently allocated to Operations and Maintenance (See figure 3) which provides funding for legacy programs. These are older programs that can effectively be phased out due to improvements in military technology and capabilities. Nuclear weapons maintenance for example, costs approximately \$35 billion annually for the upkeep of our nation’s 60-year-old Minuteman III ICBM’s. There are hundreds of programs like this within each military branch in which replacements have already been planned. However, these plans have only been on paper due to shortages in procurement and RDT&E funding. If we begin to see cuts to older programs and other portions within O&M, there may be opportunity during the next several years for procurement to replace legacy programs and expedite force modernization.

Figure 3: DOD Spending by Category in FY 2019 (% of Total DOD Outlays)



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Additionally, under the new administration, the DOD has highlighted climate change as a threat to national security. In January, Secretary of Defense Lloyd Austin [stated](#), “There is little about what the Department does to defend the American people that is not affected by climate change. It is a national security issue, and we must treat it as such.” This has prompted reviews of current DOD initiatives to reduce its carbon footprint and will require greater funding in the upcoming years. In a review that was published during the Obama Administration, extreme weather conditions were shown to be a threat to defense infrastructure. The DOD operates its own electricity grids which can be compromised by extreme weather similar to what happened in Texas last month. The effects of this new priority may boost government contracts for technologies like solar and wind power, batteries, electric vehicles, and the R&D that goes toward creating environmentally friendly alternatives. This week for example, the Pentagon gave contracts totaling around \$30 million to companies developing portable nuclear power generators.

Conclusion:

Current initiatives for efforts of force modernization are happening across the board within the defense industry. As it was described in both the 2017 and 2018 National Defense Strategy, the DOD is preparing U.S. forces for much larger future threats. America is in competition with countries like China and Russia to obtain and maintain technological advantages across every domain. While the strategies of the defense budget are already laid out in the estimates for 2021 and beyond, the new administration has not yet established what it plans to do. However, force modernization has been confirmed to take the highest priority for the next few years, and, as a result, we can anticipate allocations of money and resources to the technology that supports it.



Tech. Sgt. John Rodriguez patrols with a Ghost Robotics Vision 60 prototype during the Advanced Battle Management System exercise on Nellis Air Force Base.
U.S. AIR FORCE PHOTO BY TECH. SGT. CORY D. PAYNE/DVIDS

Office of the Under Secretary of Defense (2020, April 20). *National Defense Budget Estimates for FY 2021*. Comptroller of Defense. Retrieved from https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/FY21_Green_Book.pdf46a2903f5f02

Office of the Under Secretary of Defense (2020, May 13). *Defense Budget Overview*. Comptroller of Defense. Retrieved from https://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2021/fy2021_Budget_Request_Overview_Book.pdf

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