INSTITUTE FOR DEFENSE ANALYSES

Support for the Planning, Programming, Budgeting, and Execution (PPBE) Reform Commission

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Executive Summary

Background

The Department of Defense (DoD) has used evolving versions of the Planning, Programming, Budgeting, and Execution (PPBE) system to govern resource allocation for over 60 years. Given the importance of defense resource allocation, it is not surprising that there is an extensive literature on PPBE strengths and weaknesses and strong views among current and former officials about its successes and failures. With an increasingly dangerous security environment and National Defense Strategy (NDS) guidance to realign DoD to the threats of near-peer competitors, there is a renewed focus on making DoD's resource allocation process more efficient and effective. To further this effort, Section 1004 of the Fiscal Year (FY) 2022 National Defense Authorization Act (NDAA) established a Commission on PPBE Reform.

Tasking

The Institute for Defense Analyses (IDA) was tasked with providing analytic support to the Commission to: (1) examine the development of key PPBE documents, (2) analyze the timelines involved in developing the President's Budget (PB) request and the associated Future Years Defense Program (FYDP), (3) answer specific sponsor-provided questions related to key documents and timelines, (4) analyze reprogrammings, and (5) provide recommendations on improving PPBE products, timelines, and processes.

Methodology and Findings

Extensive interviews conducted with current and former officials who have worked in or with the PPBE system constituted the primary source of information for this report. Interviews were supplemented with a literature review, empirical analysis, and the subject matter expertise of the IDA team members. The interviews and other sources, which covered a wide range of topics and revealed a number of concerns with the performance of the PPBE system, led to deeper examinations of specific areas of concern by the IDA team that are included in this report. These deeper examinations aimed to help the Commission in its deliberations in two specific ways:

- Provide a wide-ranging review of the PPBE system's performance to help the Commission identify the key challenges it wants to focus on and begin to identify root causes for these challenges. This report uses a "point-counterpoint"

structure to discuss many issues raised by interviewees to illustrate the range of (sometimes contradictory) views provided.

- Provide preliminary analysis for some of the criticisms identified and suggest additional analyses that might help identify root causes of the identified problems and develop effective solutions for them.

Making extensive use of interviews to identify PPBE system challenges runs the risk of providing a skewed picture by emphasizing the negative without equal treatment of the positive. Although focused on challenges, many interviewees highlighted strengths and accomplishments of the PPBE system, such as its having contributed to victory in the Cold War and consistently producing the most capable military in the world. But the interviews mainly focused on what could be improved in the PPBE system and therefore tended to highlight criticisms.

Following an overview of the PPBE system, the report provides a detailed review of each phase. The overview includes two overarching criticisms. The first concern is with the relationship between the PPBE system and modernization efforts to maintain overmatch against near-peer competitors. Interviewees held two relatively distinct positions: one position held that the PPBE system is a significant impediment to accelerating modernization. This position focuses on the programming and execution phases and believes that their timing and rigidity slow technology adoption and capability development. The second position is that these "symptoms" observed with respect to the programming and execution phases have "root causes" elsewhere. This position believes that PPBE challenges affecting modernization are "upstream" in the planning phase, and that reforms focused on the symptoms would not result in a material acceleration of modernization.

The second overarching criticism concerned the importance of incentives and institutional arrangements within DoD to the functioning of the PPBE system and the types of decisions that must be centrally made. This criticism prompted us to examine three areas of incentives in this report: buyer-seller relationships, pricing, and account structure. For example, several interviewees raised account structure with respect to technology adoption. The most frequent examples used were artificial intelligence (AI), cloud services, and fifth generation mobile networks (5G). One position stated was that to accelerate adoption of these technologies, they should be funded in centralized accounts (i.e., there should be centralized AI, cloud, and 5G accounts). These interviewees believe that centralized accounts would reduce the "valley of death" (i.e., the failure to advance promising technologies into the next stage of the product development lifecycle) in the adoption of these technologies by providing the flexibility to fund new advances as they are made and consolidating technical expertise into a single program to gain economies of scale in technical proficiency.

Other interviewees stated that using centralized accounts would actually exacerbate "valley of death" challenges. These interviewees believe that technologies must be embedded in the platforms that use them—that the proper account structure is to fund (e.g., AI) in the programs that primarily draw upon it, as the Optionally Manned Fighting Vehicle, Large Unmanned Surface Vehicles, and Next Generation Air Dominance programs do. These interviewees stated that separating the control of technology funding from the users of the technology creates a valley of death by engendering upstream technologists disconnected from the end users (programs or operating forces).

Following the overview, the report reviews each phase in detail, including: a description of what the phase does, some history of how it has evolved over time, criticism and concerns raised by interviewees, some analyses on specific topics, and, finally, recommended areas for reform.

The *planning phase* begins a PPBE cycle and initiates the downstream phases with the Defense Planning Guidance (DPG). Many interviewees mentioned the timing of the DPG (frequently late), but had mixed views on its impact. More importantly, some interviewees raised strong criticisms about the content of the DPG and what they believed to be a lack of analytic rigor and clear decision-making in this phase. When strategic and leadership decisions about military objectives and priorities for capabilities, forces, and posture are not rigorously examined in the planning phase, key questions on how to implement the NDS fall to the programming and budgeting phases. However, trying to make strategic decisions through a series of tactical programmatic and budgetary decisions results in inconsistent, unstable, and ineffective resource allocation plans and an undue burden on the execution phase to fix poor decisions made upstream.

One set of criticisms of the *programming phase* focused on its long lead times and narrow budgetary line items, although there was disagreement on the extent to which this was a root cause of modernization challenges. Other criticisms focused on the programming phase being overburdened, for reasons that included the lack of strategic decision-making upstream, too many decisions being elevated to the programming phase instead of being decentralized, and unnecessary re-examination of decisions across cycles. The report examines these issues, with deep dives on modernization funding levels over time, the valley of death, and account structure over time.

The primary criticisms of the *budgeting phase* were that it is overburdened and compressed. The general lack of strategic decision-making, which leads to an over reliance on the programming phase for resolving strategic disputes, frequently results in compressed time for the Component comptrollers and the Office of the Secretary of Defense (OSD) Comptroller to properly price and review executability of the budget.

One set of criticisms of the *execution phase* mirrored the programming phase criticisms—that narrow budgetary line items and limited reprogramming thresholds reduce

flexibility of funding. Interviewees disagreed, however, on the extent that this reduced funding flexibility was a root cause of modernization challenges or symptoms of problems with root causes elsewhere. Another criticism was the limited time spent in assessing performance results as programs execute.

Following the discussion of each phase, the report provides detailed descriptions of the timelines used and the Military Department processes. Appendices provide more information on the methodology of the report, answers to the sponsor provided questions, and a detailed history of the planning phase.

Recommendations

Major areas for reform include redesigning the *planning* phase to be a decision-making process, strengthening strategic analysis capability to support this decision-making, and formally organizing the office of the Under Secretary of Defense for Policy to focus globally on near peer adversaries.

Major reform areas for the *programming* phase emphasized the focus and content of the phase rather than the process by which the phase was executed. The planning phase reform areas would reduce the overwhelming volume of strategic decisions and allow time within the programming phase to focus on building a balanced Future Years Defense Program.

Concerning the *budgeting* phase, interviewees' opinions varied on the weight applied to different solutions (e.g., increasing staff and time versus reducing burden through improvements elsewhere). Interviewees also raised reform options in how the budgeting phase interacts with Congress and suggested that more regular updates in the form of budget amendments and supplemental appropriation requests be used.

Major reform areas for the *execution* phase include account structure and reprogramming processes, as well as making greater use of data on actual (i.e., realized or experienced) performance.

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1. Introduction

The Planning, Programming, Budgeting, and Execution (PPBE) system has governed Department of Defense (DoD) resource allocation for over 60 years. Section 1004 of the Fiscal Year (FY) 2022 National Defense Authorization Act (NDAA) established the Commission on PPBE Reform. The Institute for Defense Analyses (IDA) has been tasked with providing analytic support to the Commission.

The Commission gave IDA five primary taskings:

- Examine the development of key PPBE documents, including the Defense Planning Guidance (DPG), the Program Objective Memorandum (POM), the Future Years Defense Program (FYDP), the Budget Estimate Submission (BES), and the President's Budget Request (PBR).
- Analyze the timelines involved in developing the PBR and the associated FYDP, including the ability to make changes to such request or such program within those timelines, inclusive of the Military Departments, select Agencies/Combatant Commands (COCOMs).
- Answer sponsor-provided questions related to key documents and timelines. (A list and summary of the answers to the sponsor-provided key questions are provided in Appendix B. More detailed answers are provided throughout the report).
- Provide recommendations on improving PPBE products, timelines, and processes, including budget execution monitoring, and development of requirements and performance metrics. (In accordance with subsequent discussion with the Commission, this report provides recommendations on reform areas and, within these reform areas, a range of options for reform).
- Examine DoD's ability to take reprogramming actions within the various appropriation titles, with or without congressional notification, at all points within the PPBE timeline, and provide recommendations on how to improve the efficacy and efficiency of the reprogramming process.

As directed by the Commission, the primary source of information for this report is numerous interviews conducted with current and former officials who have worked in or with the PPBE system. These interviews covered a wide range of topics related to the PPBE system and provided a variety of views on what was working well and what was not. Interview information was supplemented with a literature review, limited empirical

analyses, and the subject matter expertise of the IDA study team in its examination of key issues raised by interviewees.

These detailed examinations are intended to help the Commission in its deliberations in two specific ways:

- Provide a wide ranging review of the PPBE system's performance to help the Commission identify the key challenges it wants to focus on and begin to identify root causes for these challenges. This report uses a "point-counterpoint" structure to discuss many issues raised by interviewees to illustrate the range of (sometimes contradictory) views provided.
- Provide preliminary analysis for some of the criticisms identified and suggest additional analyses that might clearly identify root causes of the identified problems and develop effective solutions for them. This preliminary analysis may help the Commission target its analytic activities on the most valuable areas to complete its work.

Because the interviews used in this report were focused more heavily on challenges and areas for improvement rather than on PPBE system strengths and successes, the report risks providing a skewed picture of the PPBE system. Still, many interviewees highlighted strengths and accomplishments of the PPBE system (e.g., it contributed to victory in the Cold War and has consistently produced the most capable military in the world). Where appropriate, positive interviewee responses are provided throughout the report.

The next chapter of this report provides an overview of the PPBE system, including its history and principles, a brief introduction to the process, key relationships with other DoD governance processes, a review of the use of performance measures, and a detailed review of overarching criticisms and challenges raised by interviewees. The following chapters are organized by PPBE phase, providing a description of the phase, the history of the execution of the phase, interviewee comments and criticisms relevant to that phase, analyses conducted on the phase, and recommended reform areas and options. The chapters on each phase are then followed with a chapter providing detailed timelines and process descriptions at the Office of the Secretary of Defense (OSD) and Military Department levels.

After concluding remarks, the report contains three appendices. Appendix A provides details on the methodologies used by the IDA study team, Appendix B provides summary answers to the key questions provided by the Commission, and Appendix C provides a more detailed review and history of the planning phase.

2. PPBE System

This chapter provides an overview of the PPBE system, including its history and principles, a brief introduction to the process, key relationships with other DoD governance processes, a review of the use of performance measures, and a detailed review of overarching criticisms and challenges raised by interviewees.

A. History and Principles

Attempting to unify and set strategic direction for the sprawling defense establishment is a nearly impossible task for even the most capable Secretaries of Defense. Shortly after the 1947 creation of a unified DoD, a policy process was developed that included the National Security Council (NSC) and Joint Staff (JS) and a budget process led by a new DoD Comptroller that worked with the then Bureau of the Budget (later the Office of Management and Budget (OMB)). As Hale (2021) relates, these functions struggled through the 1950s to produce unified, strategy-directed resource plans.[1] By the end of the 1950s, "military service budgets were still not tied closely to defense plans and were not well integrated."[2]

In 1961, the new Secretary of Defense, Robert McNamara, introduced the Planning, Programming, and Budgeting System (PPBS) to help remedy this situation. As initially described by Enthoven and Smith (2005) and summarized by Whitley (2022),[3] the intent was to ensure that top-level goals and objectives were in fact reflected appropriately in the budgets submitted to Congress (i.e., to make the policy and budgeting processes talk to each other). The PPBS did this by introducing two new elements. The first was an analysis and decision process placed between policy formulation and budgeting. This new process encompassed both of the Ps in PPBS: Planning and Programming. The process was intended to allow the Secretary of Defense to make strategic and cost-effective decisions on force structure and major acquisition programs and the funding and manpower that these

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1 Robert F. Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes," Brookings Institution, April 2021.

2 Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

3 Alain C. Enthoven and K. Wayne Smith, "How Much is Enough: Shaping the Defense Program 1961-1969," (Santa Monica, CA: RAND Corporation, 1971). Republished by the RAND Corporation, 2005; and John Whitley, "Three Reforms to Improve Defense Resource Management," IBM Center for The Business of Government, 2022.

decisions entailed. The second new element was a detailed multiyear force and financial plan: the Future Years Defense Program (FYDP). The combination of the two elements was to focus decision-making on analytically based tradeoffs about future end states.

PPBS's founders identified six principles that guided development of the system and its operations:[4]

- Resource decisions should be based on explicit criteria of national interest.
- Resource decisions should be based on choices among explicit, balanced, and feasible alternatives.
- Needs and costs should be considered simultaneously.
- Open and explicit analysis, available to all parties, should form the basis for resource decisions.
- An independent analytic staff should support the Secretary of Defense.
- A multiyear force and financial plan should project the consequences of present resource decisions into the future.

The name of the process was eventually changed to Planning, Programming, Budgeting, and Execution (PPBE).

B. Process Overview

This section provides a brief overview of the PPBE system. More detailed reviews are provided in the following chapters, but given the interconnectedness of the PPBE system it is difficult to examine specific phases or activities without a general understanding of the overall process and how it fits together.

A strategy-driven allocation of defense resources begins with identifying and prioritizing DoD's key missions, goals, and strategies. This strategy development process produces enduring (i.e., multiyear) documents like the National Security Strategy (NSS) and the National Defense Strategy (NDS). The PPBE system translates these enduring policies and strategies into annual budgets and, subsequently, oversees the expenditure of resources during the year of execution to achieve the policies and strategies. It does this through a series of overlapping phases, repeated annually:

- Planning Phase: The planning phase translates the broad, enduring missions, goals, and strategies of DoD into specific priorities and goals for the resource allocation cycle in areas like capabilities, force structure, and posture. Planning is usually led by the Under Secretary of Defense for Policy (USD(P)) with support from Cost Assessment and Program Evaluation (CAPE) and Joint Staff.

[4] Enthoven and Smith, "How Much is Enough: Shaping the Defense Program 1961-1969."

The phase culminates with USD(P) development of the Defense Planning Guidance (DPG) providing direction for Components in the programming phase and, from CAPE, Fiscal Guidance, which provides resource controls for the cycle.

- Programming Phase: The programming phase identifies, prioritizes, and allocates resources to the programs that are required to deliver these capabilities, forces, and posture. DoD Components produce a recommendation to OSD for this allocation across programs in their respective Program Objective Memorandum (POM) submissions to OSD. CAPE then runs the Program Review to produce the consolidated DoD Future Years Defense Program (FYDP), a multiyear resource allocation plan for funding, forces, and equipment. Program Review decisions are documented in Program Decision Memorandums (PDMs).
- Budgeting Phase: The budgeting phase identifies the resources required to produce these programs. DoD Components produce a recommendation to OSD in their respective Budget Estimate Submissions (BESs). The Under Secretary of Defense for Comptroller (USD(C)) then runs the Budget Review and produces the consolidated DoD portion of the President's Budget (PB) submission. Budget Review decisions are documented in Program Budget Decisions (PBDs). USD(C) then leads the defense of the PB submission in Congress and supports the congressional authorization and appropriation process.
- Execution Phase: The execution phase includes obligating and expending resources to deliver the programs, capabilities, forces, and posture prioritized in the "upstream" phases. Overseen by USD(C) and executed by elements across DoD, the execution phase spans the fiscal year and may lead to activities like supplemental appropriation requests and reprogramming actions.

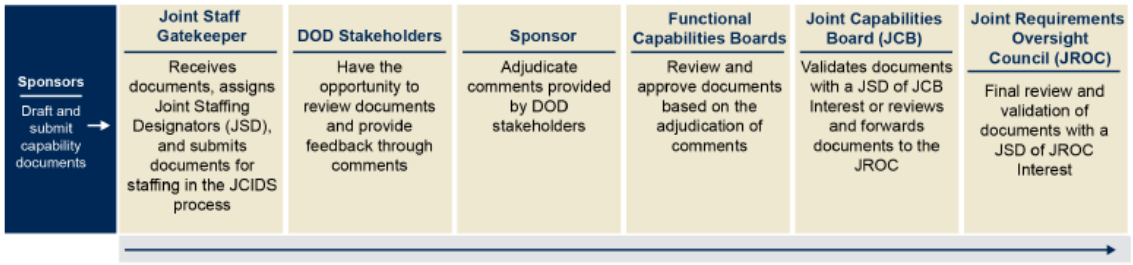
C. Relationships Among PPBE, Requirements, and Acquisition Systems

DoD uses three sets of systems to support decision-making when allocating resources and managing acquisition programs, which comprises about 40 percent of the DoD budget.[5] Generally, the system works as follows:

1. Defining the attributes of what is acquired. The Joint Capabilities Integration and Development System (JCIDS) and the analogous military Service

[5] This calculation includes research, development, test, and evaluation (RDT&E) funding as well as procurement funding.

requirements processes identify the capabilities the military Services need to fulfill their missions consistent with strategic guidance issued by the Secretary of Defense and Chairman of the Joint Chiefs of Staff (CJCS), and define the resulting programmatic requirements.[6] The JCIDS and the Service requirements processes involve numerous stakeholders.[7] As will be discussed, several capability areas have requirements systems independent of JCIDS. Figure 1 provides the general phases of the requirements process.



Source: GAO-22-104432 October 2021.

Note: The Service requirements processes, while different in the specifics, also involve review by multiple stakeholders, boards, and councils.

Figure 1. JCIDS Review and Validation Process

2. Determining the means and managing the process of acquisition. The Defense Acquisition System (DAS) defines the systems that can fulfill the requirements developed under JCIDS and/or the Service requirements processes and manages

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6 *Charter of the Joint Requirements Oversight Council (JROC) and the Implementation of the Joint Capabilities Integration and Development System*, CJCSI 5123.011, October 30, 2021, https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%205123.01I.pdf, accessed January 30, 2023.

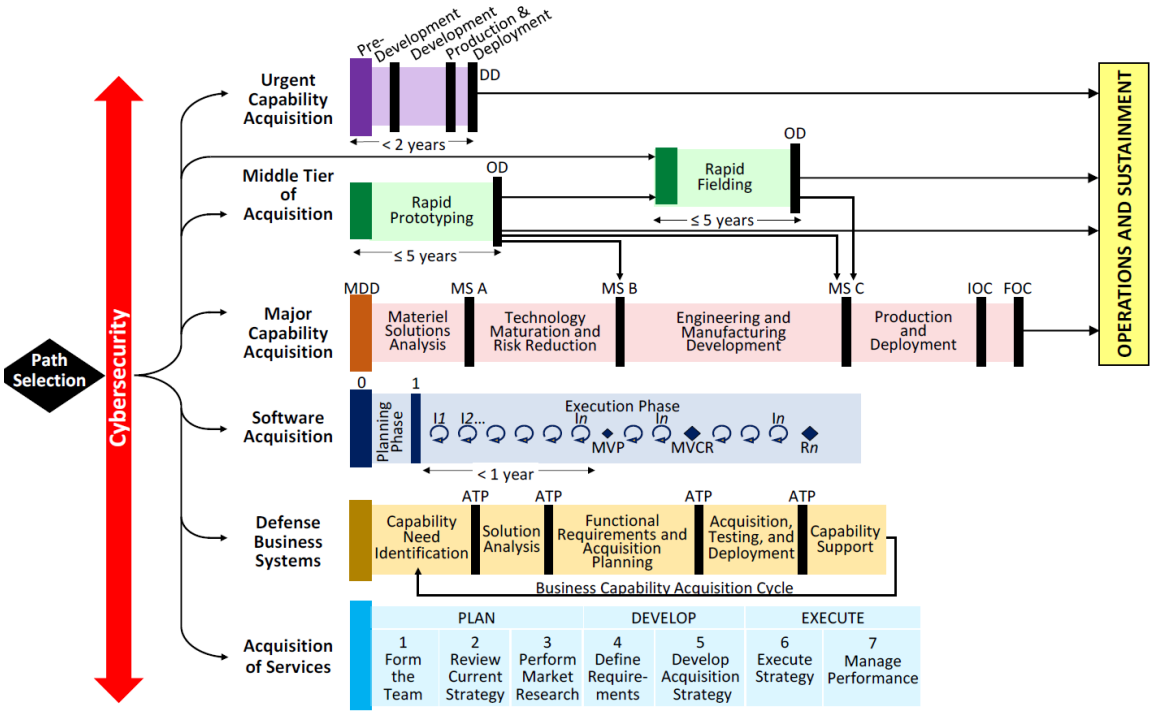
Warfighting Capabilities Determination, Army Regulation 71-9, Headquarters, US Army, June 29, 2021, https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN31331-AR_71-9-000-WEB-1.pdf, accessed January 31, 2023.

Resources and Requirements Review Board and Naval Capabilities Board, OPNAV instruction 5420.117A, Department of the Navy, Chief of Naval Operations, April 16, 2021, https://www.secnav.navy.mil/doni/Directives/05000%20General%20Management%20Security%20and%20Safety%20Services/05-400%20Organization%20and%20Functional%20Support%20Services/5420.117A.pdf, accessed January 31, 2023.

Operational Capability Requirements Documentation and Validation, Air Force Instruction 10-601, Headquarters, Department of the Air Force, April 27, 2021, https://static.e-publishing.af.mil/production/1/af_a5/publication/afi10-601/afi10-601.pdf, accessed January 31, 2023.

7 *Charter of the Joint Requirements Oversight Council (JROC) and the Implementation of the Joint Capabilities Integration and Development System, Warfighting Capabilities Determination, Resources and Requirements Review Board and Naval Capabilities Board,* and *Operational Capability Requirements Documentation and Validation.*

the development and procurement of those systems. Among other functions, the DAS identifies and manages the programmatic content, costs, and schedules associated with executing system development and procurement.[8] The DAS comprises six categories of programs: Urgent Capability Acquisition (UCA), Middle Tier of Acquisition (MTA), Major Capability Acquisition (MCA), Software Acquisition, Defense Business Systems, and Acquisition of Services (Figure 2).



Legend:

ATP: Authority to Proceed	DD: Disposition Decision	FOC: Full Operational Capability
I: Iteration	IOC: Initial Operational Capability	MDD: Materiel Development Decision
MS: Milestone	MVCR: Minimum Viable Capability Release	MVP: Minimum Viable Product
OD: Outcome Determination	R: Release	

Source: DODI 5000.80.

Figure 2. Adaptive Acquisition Framework of the DAS

Generally, those programs identified as MCAs or MTAs will have requirements approved using the Service and/or Joint Staff requirements processes, although

[8] *The Defense Acquisition System,* DODD 5000.01, July 28, 2022, https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/500001p.pdf, accessed January 30, 2023. Also see *Operation of the Adaptive Acquisition Framework*, DODI 5000.02, June 8, 2022, https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500002p.pdf, accessed January 30, 2023.

definition of requirements for MTAs is, by law, mandated to be rapid.[9] Programs under the DAS are overseen either by the Service Acquisition Executives or by the Under Secretary of Defense for Acquisition and Sustainment.

3. Resourcing the acquisition—and in so doing prioritizing across acquisition programs and other competing resource needs. As discussed previously, the PPBE system defines strategic guidance and allocates the resources needed to fulfill that guidance, including allocating the funding needed to acquire systems managed under the DAS. The PPBE system also allocates resources to science and technology (S&T) activities, including basic research (budget activity 6.1), applied research (budget activity 6.2), advanced technology development (budget activity 6.3), and software and digital technology pilot programs (budget activity 6.8). The PPBE system also supports all the other activities DoD undertakes (e.g., paying military and civilian personnel, operating and sustaining equipment, constructing and maintain facilities, etc.).[10]

The FY 2017 NDAA noted the JCIDS process was taking too long and revised and reduced the responsibilities of the Joint Requirements Oversight Council (JROC) to include only those capabilities containing Joint Performance Requirements (JPRs), rather than all major acquisition programs.[11] JPRs are intended to have a significant effect on Joint warfighting, ensure interoperability, or fulfill a capability gap of more than a single Service.

Several important investment areas are excluded from JCIDS. For example, missile defense programs have been excluded from the JCIDS since the 2000s. The Director of the Missile Defense Agency consults with the Commander of U.S. Strategic Command to determine requirements for missile defenses. Similarly, programs pursued by the Space Rapid Capabilities Office (RCO) are, by law, exempt from JCIDS. Requirements for its

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9 *Operation of the Middle Tier of Acquisition (MTA)*, DODI 5000.80, December 30, 2019, https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/500080p.PDF, accessed January 31, 2023.

10 *The Planning, Programming, Budgeting, and Execution System (PPBES) Process*, DODD 7045.14, August 29, 2017, https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodd/704514p.pdf, accessed January 30, 2023.

11 The nominal timeline for completing review of selected capability documents reported by the Joint Staff is 103 days using the JCIDS; but, the Government Accountability Office (GAO) found no evidence that any program had completed JCIDS review consistent with that timeline. Moreover, there was great variance between the Joint Staff and the Services in the timeline data available, with differences between the two being as great as a factor of about 10. See *Weapon System Requirements: Joint Staff Lacks Reliable Data on the Effectiveness of Its Revised Joint Approval Process*, GAO-22-104432, (Washington, DC: GAO, October 2021).

systems, which are assigned by the Space RCO Board of Directors chaired by the Secretary of the Air Force, are validated by the Commander of U.S. Space Command.[12] Generally, any program managed under the DAS must have requirements approved either through JCIDS or through one of the Service requirements processes.

S&T projects and their contents are defined and approved via a number of means and processes used within the Services, as well as within the Defense Agencies and Service laboratories.[13] DoD and Congress have intervened to remove certain types of S&T and acquisition activities from the JCIDS and Service requirements processes, as well some activities from the oversight typically conducted under the DAS. Nonetheless, all these activities must compete for funding as part of the PPBE system. And, to be eligible to compete in the PPBE system, S&T projects and activities, acquisition programs, and all other types of activities generally must have some approval pedigree provided by officials in the Services, the Defense Agencies, the COCOMs, or OSD.

Prioritization of funding for S&T and acquisition programs with approval pedigrees is generally determined in the Component POM development processes, including the balancing between S&T and acquisition programs and other activities (e.g., operating forces, operational tempo, facilities investments, etc.). The funding totals in those POMs must adhere to the fiscal guidance provided by the Secretary; so, competition occurs for funding S&T and acquisition activities and alternative uses of the funding.

Changes can occur to established programs. For example, an acquisition program might experience cost growth. The options available to acquisition authorities include entering the PPBE system to compete for additional funding to cover the cost growth or restructuring the program to fit within the previous allocated resource level (e.g., by reducing quantity purchased and/or performance or extending schedules). These changes to the acquisition program would generally be examined in a milestone decision meeting and documented in an acquisition decision memorandum.

Alternatively, a change could occur from the PPBE system. For example, in order to fund higher-priority activities, leadership may decide to cut funding to an acquisition program. This decision would be determined in a PPBE forum (Component-level POM meeting or an OSD Deputy's Management Action Group (DMAG)) and documented in a resource allocation decision (Component-level or a PDM/PBD from OSD). Depending on

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[12] Title 10 USC Sec 2273a, *Space Rapid Capabilities Office*.

[13] See for example, *Management of Science and Technology, Air Force Instruction 61-101*, March 14, 2013, Headquarters, US Air Force, https://static.e-publishing.af.mil/production/1/saf_aq/publication/afi61-101/afi61-101.pdf. The Deputy Secretary of the Army for Research and Technology within the Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology coordinates all Army S&T activities. The Office of Naval Research is the S&T provider for the Navy, reporting to the U.S. Secretary of the Navy through the Assistant Secretary of the Navy for Research, Development, and Acquisition.

its magnitude, such a decision might trigger a milestone review for the acquisition program to determine how to restructure the program (e.g., extend timeline, reduce quantity, limit scope of program, etc.).

D. Measuring Performance and Categorizing Resources

Measuring the performance of programs, activities, and investments is a key element of resource allocation decision-making. To make an informed decision among competing alternatives, decision-makers need an estimate of the benefits and costs of each alternative. Performance measures (or analytic forecasts of expected performance results) provide the estimate of benefit. The estimate of cost comes from aggregating the resources across the accounts that support the investment option.

Similarly, measuring performance of process execution is important for determining if the organization is on track to achieve process objectives, such as effectively obligating all of the available budget. The legislation establishing the Commission directed an assessment of the development of performance measures for the PPBE system. This section provides an overview of how performance measures are used in the PPBE system and relates that use to how resources are categorized.

Measuring performance outcomes is difficult in DoD because major wars are infrequent. In contrast, agencies that execute their mission every day generate operational data that can be used to evaluate performance results and inform resource allocation decisions. In what is now a classic example, New York City's Compstat program measures crime rates (reducing crime is the mission outcome of a police department) at the jurisdictional level with high frequency. Operational decisions and investment decisions can be evaluated for their expected performance results and then, once implemented, evaluated to see if expected results were actually achieved. For example, a precinct considering adding 20 new patrol officers or 10 new investigators or installing 20 new surveillance cameras can evaluate the likely reductions to murder, robbery, assault, and rape rates based on actual performance data and, in execution, evaluate if the expected impact was observed.[14]

Although DoD executes some missions (e.g., presence and some special operations missions) on a regular basis, it seldom executes its primary missions (i.e., conventional and

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[14] For a more detailed discussion of these examples of performance management and performance-budget integration, see John Whitley, "Five Methods for Measuring Unobserved Events: A Case Study of Federal Law Enforcement," IBM Center for The Business of Government, 2012, https://www.businessofgovernment.org/sites/default/files/Five%20Methods%20for%20Measuring%20Unobserved%20Events.pdf and John Whitley, "Four Actions to Integrate Performance Information with Budget Formulation," IBM Center for The Business of Government, 2014, https://www.businessofgovernment.org/sites/default/files/Four%20Actions%20to%20Integrate%20Performance%20Information%20with%20Budget%20Formulation.pdf.

nuclear wars). DoD has never engaged in a nuclear war and engages in large conventional wars about every 20 years, on average. It cannot estimate the likely return from specific investments from operational or experiential data and, in execution, cannot evaluate if this expected return is actually realized. For example, DoD cannot evaluate the effectiveness of a new electronic warfare system by installing it on aircraft and flying them on multiple combat missions to measure aircraft survival, target engagement, and related measures of performance. DoD instead relies on analytic methodologies (e.g., exercises, experiments, modeling and simulation, and wargames) to estimate performance outcomes. For supporting activities that do execute their mission on a regular basis and for processes that are executed, performance outcomes can be measured with experiential data.

The PPBE system makes extensive use of performance measures (or analytic estimates of expected performance results) and attempts to organize resource data in useful ways to allow benefit-cost tradeoffs. The specific nature of the measures and resource information depends on the PPBE phase:

- Planning phase:
  - Mission performance: Mission and capability outcomes beyond the trivial (e.g., no war occurred, a war was won or lost, etc.) are difficult to quantify. The classic example of a successful measure used in the planning phase was the number of divisions that could be moved to Europe per unit of time. The performance measure target (i.e., requirement) became 10 divisions in 10 days. Analytic forecasts of warfighting performance have been a major element of the planning phase in the past. Measures for campaign-level analysis for priority conflicts are currently provided by the Analysis Working Group (discussed later). The affordability of the strategy is a key measure examined in previous planning phase eras.
  - Process performance: Measuring this relatively small analytic process is traditionally not a critical element. However, in past periods when greater analyses were performed, their progress was regularly tracked.
- Programming phase:
  - Mission performance: Program performance is estimated (and occasionally measured) extensively in programming. The measures depend on the issue being examined. For example, a long-range fires issue team may consider the rates at which targets are destroyed, the losses suffered, and the time it takes to accomplish the mission. An intelligence, surveillance, and reconnaissance (ISR) issue team may consider geographic coverage rates, persistence of the coverage, and granularity of the coverage. Readiness (e.g., personnel fill and operational availability of systems) can be used in programming as well as budgeting.

  - Process performance: Running totals of program balance, the level of "corporate taxes" that must be levied on Components, and the progress of issue teams are all important elements of the performance of the programming phase.

- Budgeting:
  - Mission performance: Most budget activities have defined performance measures, although the degree to which they measure mission or programmatic outcomes varies. DoD's business support activities include extensive measurements of performance, and these are one area of focus in the budgeting phase. Examples of performance results measured or estimated include the annual and net operating results of the working capital fund, spare-part availability and delivery times, number and speed of depot overhauls that can be accomplished, facility condition scores, personnel fill rates, hiring times, etc.
  - Process performance: Similarly to the programming phase, running balance totals, bills levied on Components, and completion of required analyses are key measures of process performance.
- Execution:
  - Mission performance: The mission performance results expected in planning, programming, and budgeting are all realized in execution. All things estimated in the upstream processes can be measured (or estimated more precisely) in execution and compared to the expectations used in the earlier decisions. As will be discussed in Chapter 5.D, interviewees criticized the PPBE system for not measuring realized performance and using this information to revise projections in the upstream processes. Some areas that are measured in detail include schedule, cost, and performance of acquisition programs and various business support activities such as recruiting, retention, security incidents, base incursions, etc.
  - Process performance: Execution process performance is measured extensively in obligation rates, outlay rates, and deobligation rates.

Decisions are made considering the benefits and costs of competing options; resources are therefore categorized and displayed in the most useful and amenable way during the different PPBE phases. The budget is appropriated according to input categories (personnel costs, operating costs, research costs, etc.). The input cost structure is central to funds control and provides numerous insights in support of decision-making but has limitations in supporting many categories of decisions. For example, the input cost structure is not helpful for understanding the costs of various DoD activities, such as our

Pacific presence or the Apache helicopter program, which contain expenditures from every budget category. It is also not helpful for resource allocation decisions comparing the relative costs of obtaining ISR capability from a helicopter squadron, an unmanned aerial system, a DoD-owned-and-operated satellite system, or from satellite imagery purchased as-a-service.

To account for these challenges, the PPBE system also uses an output-oriented resource structure called Program Elements (PEs). PEs categorize resources according to programs and activities—output-oriented collections of resources that cut across the input-based appropriations structure. PEs divided into appropriation resource categories form the building block data structure for the FYDP. They can be aggregated by resource category to provide an appropriation view of resources and aggregated by PE to examine major program areas and organizations.

The appropriate view of resources to support decision-making depends on the decision being made. For each PPBE phase, the most appropriate resource categorization to match performance results for benefit-cost analysis include:

- Strategic Planning: Funding displayed to show the costs of missions and strategies.
- Planning Phase: Funding displayed to show the cost of capabilities, force structure, or posture options. In past planning eras, an estimate of the cost of complying with the DPG was an important cost calculation.
- Programming Phase: Funding is categorized into programs (i.e., the PE view of resources).
- Budgeting and Execution Phases: Funding is generally viewed in the input-based appropriation categories and associated budgetary line items.

E. Commentary on the Overall PPBE System

The 60-year history of the PPBE system and the importance of defense resource allocation have engendered an extensive literature on PPBE strengths and weaknesses and strong views among current and former officials about its successes and failures. Interview participants and the public literature provide views ranging from "the PPBE system works incredibly well, is a vital element of defense decision-making, and does not require major adjustments" to—at the opposite end of the spectrum—"the PPBE system is a major challenge, slowing the pace of modernization and placing overmatch with China at risk."

Two consistent but distinct sets of comments emerged from the interviews addressing the overall working of the PPBE system. This section addresses these overarching issues that cut across the individual PPBE phases. The first set of comments regarded competing views of challenges with the PPBE system's supporting the NDS imperative to accelerate

modernization. The second set concerned the balance between centralized and decentralized decision-making and the importance that institutional structures and incentives play.

1. PPBE System and Modernization Acceleration

One clear division in the interviews was between two distinct and, in some ways, contradictory positions on the PPBE system's role with respect to modernization. The first position is that the PPBE system is a significant impediment to accelerating modernization. This position focuses primarily on the programming and execution phases and believes that their timing and rigidity slow technology adoption and capability development. The second position is that these "symptoms" observed with respect to the programming and execution phases have "root causes" elsewhere. This position believes that PPBE challenges affecting modernization are "upstream" in the planning phase and that reforms focused on the symptoms would not result in a material acceleration of modernization.

The views expressed by some interview participants were in between these two positions or emphasized only a few specific elements of the positions, but a large number of interviewees aligned directly or closely with one of the two positions. This section provides an overview of these two positions. Specific elements of these two positions are examined in more detail in the subsequent chapters organized by PPBE phase.

a. Position One: The PPBE system is an impediment to modernization.

Greenwalt (2021) provides a succinct summary of concerns expressed by some interviewees that "Our current budget process is the primary factor behind the decline in U.S. defense productivity and innovation. The archaic defense budget process based on five-year plans, long decision-making, and excessive time to revenue keeps the most innovative companies from ever wanting to partner with the US government."[15]

Although there were a wide range of specific views expressed by interviewees, IDA identified three broad concerns from this group of interviewees:

- Insufficient pivot to modernization for the China fight: The 2018 NDS directed a significant refocus for DoD, but the PPBE system is slow, rigid, and bureaucratic. It consumes thousands of man-years of staff time but results in little change. Risk aversion and bureaucratic inefficiency result in perpetuation of the status quo. There has been insufficient prioritization of modernization and

[15] William Greenwalt, "New defense budget commission could be last hope for fixing DoD spending," Breaking Defense, December 13, 2021, https://breakingdefense.com/2021/12/new-defense-budget-commission-could-be-last-hope-for-fixing-dod-spending/, accessed January 30, 2023.

identification of offsets from current operations and legacy platforms to implement the NDS mandate.

- New technology is not being adopted rapidly enough (valley of death): Long lead times for programming and appropriating funds using large numbers of specifically defined program elements (PEs), budget line items (BLIs), and appropriations categories; constrained ability to move funds among those numerous specific line items and categories during year of execution; and lack of trust leading to adversarial oversight within the DoD and by Congress all slow the adoption of new technology.
- Inconsistent and unstable modernization funding further slow the adoption of new technology: The programming and budgeting phases re-evaluate the entire budget every year, consuming staff time across DoD unnecessarily. The result is continual change to program plans and churn of decisions, leading to program cost overruns, schedule delays, and the inability to effectively and rapidly advance technology.

Interviewees raised an interrelated set of concerns: the programming, budgeting, and execution phases are staff-intensive and overburdened—both as a result of and contributing factor to the three broad concerns above. The end result is that these phases are failing to provide consistent and coherent resource allocation plans for modernization.

These interviewee concerns have gained attention in the public literature. Lofgren (2022) observes that the current implementation of the PPBE system used both within DoD and by Congress lacks the flexibility needed to take advantage of rapid technological advance and outcompete China, citing:[16]

- Planning for resource allocation must begin at least two years ahead of appropriations and the ability to initiate an effort, a cycle time inconsistent with the pace of technological advance.
- Funds are appropriated for finite times and very specific purposes using a large number of budgetary line items. DoD's ability to move funds among these many line items to pay for activities not originally envisioned is constrained by Congress due to lack of trust.

Greenwalt also cites problems outside the PPBE system. For example, he observes "the predictive and lumbering requirements process forecloses innovation opportunities

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[16] Eric Lofgren, Jerry McGinn, and Lloyd Everhart, "Execution Flexibility and Bridging the Valley of Death," *George Mason University School of Business*, Center for Government Contracting, October 21, 2022, https://business.gmu.edu/news/2022-10/execution-flexibility-and-bridging-valley-death-acquisition-next-report, accessed January 30, 2023.

from the start as it is the gateway to the acquisition and budgeting system."[17] He also indicates adversarial oversight has limited the ability of program officials to accomplish their work.

Spoehr et al., (2022) echo the concerns cited by Lofgren and Greenwalt, stating that the 1960s-era rational design model upon which the PPBE system is based, which relies on predictability and consistency of outputs, is not well suited to the current era's defense matters that lack predictability, given that "game-changing technological advances come rapidly."[18] Spoehr notes numerous critics have called for "reducing the bureaucracy, increasing flexibility, and allowing for quicker responses to global events."[19] Despite these concerns, he cautions that proposing a total overhaul of the PPBE system or a fundamental change in the behavior of a stakeholder (e.g., Congress) is unlikely to succeed. For example, using activity-based accounting, where funds are aggregated for all activities associated with a given outcome, would not succeed because adopting it would require substantial change to extant congressional oversight.

Zakheim (2021) focuses on the execution phase of the PPBE system, criticizing the low thresholds set by Congress for moving funding among appropriation line items during the year of execution as substantially constraining DoD's ability to take advantage of rapidly advancing technologies.[20]

Etherton et al., (2022) argue that the current structure and use of DoD's PPBE system both creates and responds to incentives and disincentives for behavior that have arisen over time and that successful reform of the PPBE system must account for those incentives and disincentives.[21] For example, the allocation of every dollar over the FYDP "creates an

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17 Lofgren, McGinn, and Everhart, "Execution Flexibility and Bridging the Valley of Death."

18 Thomas Spoehr and Frederico Bartels, "Reforming the Defense Department's Planning, Programming, Budgeting, and Execution Process," *The Heritage Foundation*, January 14, 2022, accessed January 30, 2023.

19 Spoehr and Bartels, "Reforming the Defense Department's Planning, Programming, Budgeting, and Execution Process."

20 D. Zakheim, "Reform the Pentagon's budget process, or lose our military and tech advantages," The Hill, April 2, 2021, https://thehill.com/opinion/546097-reform-the-pentagons-budget-process-or-lose-our-military-and-tech-advantages/, accessed January 30, 2023.

21 J. Etherton et al., "Stepping Back from Acquisition Reform: How Our Resourcing Processes Drive Defense Outcomes," *National Defense Industrial Association*, January 2022, https://www.ndia.org/-/media/sites/policy-issues/acquisition reform/ndia_acquisition_reform-final3.pdf, accessed January 30, 2023.

existential competition for resources between existing, legacy programs, funded within the POM, and new capabilities, which require resourcing trades to become reality."[22]

The Defense Innovation Board has argued that the PPBE system, with its two-year planning horizon, "limits the ability to quickly adapt systems against rapidly changing threats and increases the barrier for integrating advancements in digital technology in a timely and effective manner."[23]

The Government Accountability Office (GAO) (2007) recommended that an integrated portfolio approach to deciding on and managing investments in weapon systems would benefit DoD.[24] Such an approach would group programs within and across the Services based on missions and outcomes. However, GAO notes that the PPBE system, which allocates resources to individual programs within each of the Services, inhibits the use of such an approach. Jones and McCaffery (2005) cite similar concerns regarding what they characterize as "friction" among DoD's requirements, resourcing, and acquisition systems.[25]

Similarly, Modigliani et al., (2021) argue that DoD's PPBE system, the requirements-setting process, and the acquisition system operate independently and "lack the speed and flexibility to react to shifting operations, threats, budgets, and technologies, which risks missions and wastes tens of billions of dollars."[26] They recommend that a portfolio management approach using integrated suites of capabilities be "the foundational structure for requirements, budgets, and acquisitions."[27]

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22 J. Etherton et al., "Stepping Back from Acquisition Reform: How Our Resourcing Processes Drive Defense Outcomes."

23 Final Report of the Defense Innovation Board (DIB), *Software Acquisition and Practices (SWAP) Study*, Software Is Never Done: Refactoring the Acquisition Code for Competitive Advantage, May 3, 2019, https://innovation.defense.gov/recommendations/, accessed January 30, 2023.

24 *Best Practices: An Integrated Portfolio Management Approach to Weapon System Investments Could Improve DOD's Acquisition Outcomes*, GAO-07-388, (Washington, DC: GAO, March 2007), https://www.gao.gov/assets/gao-07-388.pdf, accessed January 30, 2023.

25 L. Jones and J. McCaffery, "Budgeting for Acquisition: Analysis of Compatibility Between PPBES and Acquisition Decision Systems," *Naval Postgraduate School*, NPS-AM-05-050, May 1, 2005, https://apps.dtic.mil/sti/pdfs/ADA496641.pdf, accessed January 30, 2023.

26 Pete Modigliani, Dan Ward, and Matt MacGregor, "FIVE BY FIVE: Five Disciplines and Five Strategic Initiatives for the Pentagon in the Digital Age," *MITRE Center for Technology and National Security*, February 25, 2021, https://www.mitre.org/sites/default/files/2021-11/prs-20-03241-1-five-disciplines-and-five-strategic-initiatives-for-the-pentagon-in-the-digital-age.pdf, accessed January 30, 2023.

27 Modigliani, Ward, and MacGregor, "FIVE BY FIVE: Five Disciplines and Five Strategic Initiatives for the Pentagon in the Digital Age."

Eric Schmidt, co-chair of the National Commission on Artificial Intelligence (AI), has stated that DoD's budgeting process "creates a valley of death for new technology, allowing basic research funding and also procurement of weapons systems, but preventing the flexible investment needed in prototypes, concepts, and experimentation of new concepts and technologies like AI."[28]

b. Position Two: PPBE challenges are earlier in the process and only indirectly related to modernization challenges.

Many interviewees stated that they believed some of the challenges identified in position one are, at least to some extent, valid, but that these are symptoms of deeper problems with root causes elsewhere. For example, most interviewees agreed that the programming and budgeting phases are frequently overburdened and have failed at times to provide consistent and clear resource allocation plans for modernization, that execution is similarly overburdened, limiting the effective use of reprogramming authority and execution flexibility, and that congressional limitations on BLI breadth combined with reprogramming limits are a further obstacle to agile modernization. But many interviewees stated that these challenges are caused by deeper, underlying problems and that recommendations to address these symptoms (e.g., by increasing CAPE and Comptroller staff, submitting broader BLIs to Congress, and requesting greater reprogramming authorities)—while potentially useful in their own right—would not substantively accelerate modernization or systematically address the challenges that motivated Congress to establish the Commission.

The root causes identified by these interviewees arise in both PPBE system challenges and challenges elsewhere (e.g., requirements system, acquisition system, and Congress). But to these interviewees, the key issue is not the process *per se*; instead it is when and how key strategic questions raised by the NDS get answered. Within the PPBE system, these interviewees cited challenges with the planning phase (and particularly with analytic support to the planning phase) as root causes or exacerbating factors of the problems with programming and execution. The 2018 and 2022 NDS documents set a dramatic new direction for DoD, but they stop short of saying what this direction means for the specific military objectives DoD should plan for and achieve, prioritization of new capability investments, force structure tradeoffs, and posture requirements.

Translating broad multiyear strategies into annual guidance for resource allocation is a key purpose of the planning phase, and interviewees stated that the planning phase is

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[28] Testimony of Eric E. Schmidt, in U.S. Congress, Senate Committee on Armed Services, Emerging Technologies and Their Impact on National Security, hearings, 117th Congress, 1st sess., February 23, 2021, 11–12, https://www.armed-services.senate.gov/imo/media/doc/Schmidt_02-23-21.pdf, accessed January 30, 2023.

struggling to provide a robust, analytically informed decision venue for key questions implied by the NDS (e.g., what the NDS means for military objectives, capabilities, force structure, and posture). These questions need to be addressed to allocate resources, so when they are not analyzed and decided in the planning phase they (implicitly) fall to the downstream phases (programing, budgeting, and execution) to resolve. But the downstream phases are focused on more tactical questions (e.g., program tradeoffs and properly pricing pay raises). Interviewees stated that trying to resolve strategic questions using a series of tactical decisions results in:

- Overburdening the downstream phases: too much is trying to be done in the phase, resulting in overworked staff and lower quality decisions.
- Inconsistent decisions: one decision may be driven by one approach to a strategic question, while another decision is driven by another approach to the same strategic question (based on who makes the decision and when it is made). The callout box below gives an example of balancing near-term and long-term risks. In the programming phase, Joint Staff sets current operational deployments at a high rate, prioritizing near-term risks, while OSD sets operational deployment funding at a lower level, prioritizing investment for long-term risks.
- Unstable resource plans: without Departmental answers to the strategic questions, decisions get made based on the decision-maker's views at that time; subsequent cycles may revisit the same decisions and decide different resource allocations.
- Execution overload: the staff and flexibility authorities that are available in execution get overwhelmed by the churn caused by inconsistent and unstable decisions, rendering them unavailable or less effective at addressing true emergent needs from rapid technological change and other fact-of-life matters.

The callout boxes in the following pages illustrate three specific challenges raised by interviewees: setting military objectives implied by the NDS, balancing near-term and long-term risks, and investing in specialized versus generalized forces. Other examples are provided in subsequent chapters. A key point made by these interviewees is that changing the process (e.g., by completely getting rid of the PPBE system or making more tactical changes to programming and execution, like reprogramming thresholds and account structure) won't solve the problems Congress intended the Commission to address if these higher-level questions resulting from the NDS are not resolved.

Setting Military Objectives

The NDS has directed a refocus on near-peer competitors China and Russia, while continuing to be prepared for terrorists and threats from Iran and North Korea. Establishing specific military objectives (or a range of objectives) driven by these threats is a key element of force-structure sizing, prioritizing capability gaps and modernization needs, and—importantly—identifying the offsets that can be used to fund these force and modernization investments. Several interviewees stated that the PPBE system's struggle to translate the NDS into sufficiently actionable military objectives has been a root cause of challenges within programming and execution.

Interviewees stated that the military objective that largely guided the PPBE system for the first several years after the NDS was released was to deny a Chinese amphibious landing on Taiwan. Some stated this objective was not operationally practical—that with realistic force flows and political decision-making timelines, this objective is almost impossible to achieve. In their view, rather than confront these challenges, DoD initially chose to make progressively less-realistic assumptions about the timing of force flow and the engagement authorities that will be delegated to DoD. Assessing the merits of this argument is well outside the scope of IDA's support to the Commission, but interviewees identified what they believed to be its impacts on the PPBE system.

Interviewees stated that the requirements generated by unrealistic military objectives were unaffordable. For the programming phase to develop a clear, stable, and balanced resource plan to achieve military objectives, there have to be identifiable enhancement and offset options. When the guidance is to invest more in everything but resources are fixed, a balanced and executable program cannot be developed. Instead, investments are spread across too many programs (underfunding each), and resources are realigned every cycle to address whichever program happens to be perceived as the most important at the time. This realigning of funds leads to a constantly changing and confused modernization plan, a root cause of valleys of death that slow technology maturation and adoption.

In this view, the early focus on "deny" also limited DoD's analysis of more feasible and affordable objectives that should be considered holistically, like "porcupine" (hardening Taiwan to an invasion), "protraction" (supporting Taiwan with military force, or assistance, as in Ukraine), and balancing risks across the range of threats faced (e.g., Russia, North Korea, and Iran, in addition to China). Without adequate analysis on risk tradeoffs available to leadership, leaders are forced to make intuition-based judgements that tend to change from leader to leader and from cycle to cycle.

These interviewee observations are not new. IDA identified significant debates in the 1990s and 2000s about feasibility of military objectives and the impact they have on the PPBE system and the efficacy of DoD resource allocation. As will be discussed in Chapter 3, an analytic process in support of the planning phase was established in the 2000s to assess risk tradeoffs and affordability of military objectives (among other things). That process was disestablished in 2011, and some interviewees identified the current challenges with establishing realistic and affordable objectives as a root cause of current problems. Some interviewees also noted that the most recent cycles are beginning to make progress on these challenges and that the AWG has begun increasing its emphasis on a wider range of potential military objectives.

One of the most common examples provided by interviewees of the unaffordability of a strategy and its impacts on PPBE decisions is Navy shipbuilding. In recent years, the Navy has averaged a fleet size of just under 300 ships. For a variety of internal and external reasons (including statutory direction), the Navy maintains a requirement for over 355 ships. As the Congressional Budget Office (CBO) and others have identified, the Navy is not funded to this requirement.[29] In addition to the release of unrealistic 30-year shipbuilding plans each year with the budget, interviewees stated that this mandate has forced the Navy to allocate resources inefficiently in its POM (e.g., to fund overreaching shipbuilding objectives, the Navy must underfund shore facilities, weapons accounts, and RDT&E). Shortages in shore facilities and weapons cause readiness challenges, and shortages in RDT&E reduce investment for future capabilities.

IDA team members also recalled vigorous debates in the 1990s and 2000s over the affordability of military objectives and what is called in the planning phase the "force structure sizing construct." Chapter 3 provides a detailed history on the evolution of these issues. Hammes (2020) provides an example of a more recent discussion of affordability in the context of the NDS.[30]

As with position one, these interviewee concerns are reflected in an extensive body of literature. Examples include the Aldridge Report (2004), Beyond Goldwater-Nichols (2008), and Soule (2009). These reports will be described in Chapter 3. Figure 3 from the Aldridge Report illustrates the concern expressed by interviewees.

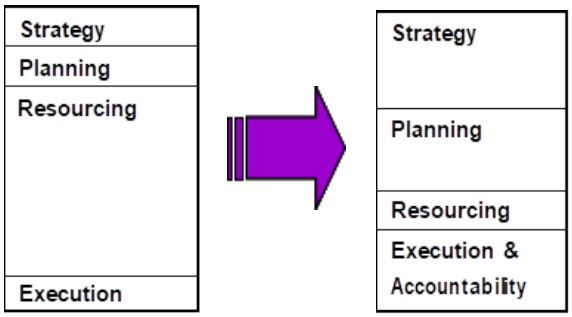

Figure 3. Aldridge Report Problem Assessment

In the current PPBE system illustrated on the left (as executed in 2004 according to the Aldridge Report and recently according to some IDA interviewees), insufficient time is paid to strategic-level questions in strategy development and the PPBE planning phase. The time and human capital resources are instead spent on resourcing (programming and

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[29] CBO, *An Analysis of the Navy's Fiscal Year 2020 Shipbuilding Plan*, October 2019, https://www.cbo.gov/publication/55685.

[30] T. X. Hammes, "An Affordable Defense of Asia," *Atlantic Council*, June 2020, An-Affordable-Defense-of-Asia-Report.pdf (atlanticcouncil.org).

budgeting), but as discussed above, the time is spent inefficiently because strategic questions are being addressed with tactical decisions. Moreover, the execution phase is so overwhelmed with the "cleanup" required for these upstream challenges that needed agility is lost and there is little time for true execution review related to accountability and ensuring planned performance results are actually achieved.

Balancing Near- and Long-Term Risk

Another example of how the phases interconnect and upstream challenges can cause or exacerbate inefficiencies downstream is balancing near-term readiness with long-term modernization. Interviewees described disagreements among key DoD components and within the national security enterprise and how the lack of a clear decision process in the planning phase was leading to inconsistent guidance, resource plans that lacked clarity and stability, and overburdening the execution phase with corrections.

In their simplest form, the competing views are straightforward. Some view the threat from China as near. Post-NDS, DoD is now focused on matching (exceeding) recent Chinese technological advances, causing China to believe it has a shrinking window of opportunity to engage in military action against Taiwan, creating a "fight tonight" priority. Parts of the White House and National Security Council, the Joint Staff, and Indo-Pacific Command (INDOPACOM) hold this view. Investment priorities under this view are current operational presence, readiness, and maximizing the fielding of forces today.

The alternative view is that China will focus in the near-term on political approaches to reunification. In this view, military force will be considered as a last resort as 2049 (100th anniversary of the Peoples Republic of China) approaches. Some in OSD and the Military Departments hold this view, and it implies that the investment priorities are capabilities that can be fielded in the coming decade (with offsets coming from near-term readiness, e.g., divest to invest).

As with the above discussion of military objectives, assessing these views is well outside the scope of IDA's support to the Commission. But the implications of this disagreement on the PPBE system are within scope. Interviewees stated that the DPG and OSD leadership of the Program Review tend to emphasize the long-term view and direct investment in modernization. Joint Staff-issued documents like the Global Force Management Allocation Plan and the Directed Readiness Table guidance tend to emphasize the near-term view, driving increasing near-term operational and readiness requirements. This conflicting guidance to Components leads to inconsistent POMs and back-and-forth movements of resources between operations and support (O&S) and modernization as the phases progress, ultimately resulting in an overburdened execution phase dealing with must-pay bills and overwhelming the available staff and the effective use of available flexibility authorities. CAPE reports that it is beginning to focus more attention on the consistency of these guidance documents.

The challenges in balancing near-term and long-term priorities are not new, but they have become increasingly important with the issuance of the NDS. Interviewees stated that the concern that modernization is not being sufficiently prioritized and resourced may be valid, but the root cause is that there is disagreement within DoD and the NSC about whether it should be the priority. Changing downstream processes won't result in a different outcome. To change the outcome, DoD needs the planning phase to drive a decision-making process on how to balance these competing priorities.

Interviewees provided numerous examples to IDA about the differences in view of threat timing. The most often cited example was then U.S. Indo-Pacific Command (USINDOPACOM) commander Admiral Philip Davidson's 2021 testimony to the Senate

Armed Services Committee, stating that he viewed Chinese aggression likely by 2027.[31] More recently, the Secretary of State has stated that he believes China has made "a fundamental decision that the status quo was no longer acceptable and that Beijing was determined to pursue reunification on a much faster timeline."[32] One recent article shows different elements of DoD making different arguments (an Air Force commander argues it is a near-term threat while an anonymous defense official says that is not DoD's view).[33] Interviewees stated that having such large, unreconciled views across key leaders is a root cause of PPBE challenges.

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[31] https://www.armed-services.senate.gov/hearings/21-03-09-united-states-indo-pacific-command.

[32] https://www.washingtonpost.com/world/2022/10/18/china-seize-taiwan-plan-blinken/.

[33] https://www.msn.com/en-us/news/world/us-general-warns-troops-that-war-with-china-is-possible-in-two-years/ar-AA16PoPI.

Specialized Versus General Purpose Forces

A third example provided by interviewees is that decisions different from what the modernization advocates (e.g., A&S, R&E, CAPE, etc.) desire may also reflect a difference of perspective held by senior leadership outside of the modernization community. The modernization community is focused on specific military objectives in the future (most prominently, to deny an amphibious landing on Taiwan). They are focused intensely on these problems, have long lists of capabilities they believe are needed for these problems, believe that other problems are secondary, and that the obvious resource allocation decision is to focus the budget on this issue while taking risk against other challenges.

The White House and Secretary of Defense (the decision-makers in the process) often have a different perspective. Interviewees stated that when the Secretary of Defense gets briefed, he generally doesn't dispute that if the next war is the modernization community's preferred scenario, then their preferred investment plan is optimal. But the Secretary asks a different question: "What if you are wrong?"

In the post-Cold War era, Defense Secretaries have generally approached the PPBE system with a focus not on how to optimize the force for one risk, but instead on how to manage a range of risks in a world of high uncertainty. These Secretaries ask, "How robust is this program and force against the range of possible scenarios we might face?" Interviewees stated that they saw the Secretary of Defense overrule the modernization community's views on specializing the force in order to retain a broader force focus numerous times before and after the most recent NDS-driven change in military priorities. In the views of these interviewees, it is not a failure of programming or budgeting phases that DoD has not invested in a specialized force for one military objective; this outcome is likely a reflection of what the leadership wants. As one interviewee stated, the White House wants options from the Defense Secretary when a problem emerges, and it is a DoD failure to say that few options are available because DoD was planning for a different war.

As to why previous strategic analysis capabilities were disestablished, interviewees gave several reasons, one being that such capabilities tended to reinforce the status quo and did not support larger and more rapid shifts in, for example, force-structure investments. Some interviewees agreed with this criticism of past efforts. Other interviewees criticized this justification, arguing that it effectively meant stopping analysis because some advocates didn't like the results the analysis was providing. These interviewees argued that a better approach would have been to develop a deeper understanding of why the analysis was providing a result that did not support the assumptions of the advocates.

Interviewees also identified root causes beyond the PPBE system, including challenges in the requirements and acquisition systems, and with Congress. IDA spent less time exploring these challenges but relates some examples here.

One example is the long history of acquisition challenges that emerge from the tendency to start programs with optimistic (too low) cost estimates. These underestimates

may arise for various reasons (e.g., the desire to improve the chances of the program's being funded and a genuine belief that this program will not suffer from the challenges typically experienced by other complex programs). One result is that the resource plan (POM and FYDP) becomes "overprogrammed" as more programs are included than can be afforded (exacerbating the challenge identified above of overprogramming because of an unaffordable military objective). In subsequent programming and execution cycles, however, the realized costs for programs exceed the funded amounts, and funding has to be moved from other programs to cover these cost overruns. This shuffling of funds then creates another round of shortfalls and corrections, followed by another and another.

The result is a resource plan that is unstable as resource allocations are continually changed to shuffle funding from one program to another to cover shortfalls. Funding priorities end up being driven by whichever programs are in most distress that programming cycle. Similarly, execution becomes another outlet for fixing program shortfalls. Attempts to fix program shortfalls in turn lead to excessive consumption of staff resources and reprogramming authority, limiting the effectiveness of execution at addressing truly emergent needs and challenges related to technology adoption and accelerating the product development lifecycle.

GAO, among others, has studied this challenge. GAO (2007) states, "When cost and schedule problems occur in one program, DoD often attempts to pay for the poorly performing program by taking funds from others. Doing so has destabilized other programs and reduced the overall buying power of the defense dollar as DoD and the military services are forced to cut back on planned quantities or capabilities to stay within budget limitations. The F-22A Raptor program is a case in point: As costs escalated in the program, the number of aircraft the Air Force planned to buy was drastically reduced [for this and other reasons] from 648 to 183. Similarly, as the Joint Tactical Radio System (JTRS) encountered development problems, the number of requirements was reduced or deferred by about one-third. As a result, several programs that were dependent on JTRS also had to make adjustments and go forward with alternative, less capable solutions. DoD's approach to managing weapon system investments ultimately results in less funding being available for other competing needs in DoD as well as other federal priorities, as the expenditure of tax dollars within DoD reduces the amount of funding available for those priorities."[34]

Another non-PPBE-related root cause raised by interviewees was Congress. This issue was raised by interviewees aligned to both positions, but there were differences in how it was characterized. Some interviewees stated that the narrowing of accounts and limitations on reprogramming amounts were fundamentally driven by a lack of trust among

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[34] GAO, *Best Practices: An Integrated Approach to Weapon Investments Could Improve DOD's Acquisition Outcomes*, GAO-07-388, (Washington, DC: GAO, March 2007), https://www.gao.gov/assets/gao-07-388.pdf.

the branches of government. One solution offered by interviewees was to dramatically increase the transparency of Executive Branch deliberations and data with Congress.

Other interviewees pointed out that DoD already provides a large amount of information to Congress with the budget and that entering Congress into the Executive Branch's decision cycle was not likely in the U.S. constitutional framework. The root cause question becomes, "What information is Congress not getting in the thousands of pages of justification material provided with the budget?" Some interviewees stated that the failure to provide the analytical justification for key decisions is the primary challenge. These interviewees stated that the justification material has become "boilerplate" and, while valued by individual staffers for individual programs, was not providing the level of understanding required by Congress for resource allocation decision-making.

c. Analyzing the two positions

Differentiating between these two positions is an important challenge facing the Commission. As is frequently the case, reality may be between these positions, and the best recommendations may draw on insights from both. The two positions are not comprehensive of all challenges faced within DoD with respect to resource allocation and modernization, so the Commission's work must extend beyond them. But the frequency and distinctiveness with which these positions were provided to IDA by interviewees places them front and center to the Commission's deliberations.

The following chapters provide further elaboration on some of the elements of these positions and some limited empirical analysis on the PPBE system that helps to begin quantifying and measuring the stated concerns. As the Commission continues its work identifying the primary challenges DoD faces, the root causes of these challenges, and the best solutions, the following questions can help guide the analysis:

- What are the current NDS-driven military objectives and force-sizing needs guiding DoD budget development? Are they defined in guidance? Have they been assessed for affordability? If the structured process for defining and assessing military objectives within the PPBE system has atrophied, does it need to be rebuilt, and is it a root cause of other observed challenges in resource allocation?
- What decisions should be made centrally by the Secretary of Defense, and what decisions should be made in a decentralized manner by Components? Are the right types of decisions being made by the Secretary of Defense in the PPBE system (but perhaps being made poorly because of narrow BLIs and timelines)? Is the PPBE system currently focusing Secretary of Defense time on the wrong decisions (e.g., tactical programmatic decisions instead of strategic planning decisions)?

- Which challenges identified by the modernization community are caused by process flaws, and which are caused by continuing disagreements within DoD on strategic questions raised by the NDS?
- Is the programming phase systematically misallocating resources between O&S and modernization and within the modernization portfolio? Examining Program Review allocation decisions over time, along with congressional changes and reprogrammings, might provide insights here.
- Is reprogramming authority constrained in the realignment of resources? If so, is this a cause of inflexibility or a symptom of upstream challenges? Examining the extent to which accounts are constrained or come close to being constrained by their thresholds and if there are trends in reprogramming movements might provide insights here.

2. Institutional Arrangements, Incentives, and the PPBE System

After leading a major performance management effort at DoD, one interviewee reported that the experience led him to consider DoD to be, in many ways, more like an economy than a company or single, unified organization. DoD's enormous size, scope, and complexity limit any Defense Secretary's ability to centrally direct its activities. Interviewees pointed out that the original purpose of the PPBE system was to enable the Secretary of Defense to take control of DoD (in this case, by creating a strategy-driven allocation of resources), and they raised key questions that should be considered in any changes to the PPBE system. Many of these questions overlapped the questions above, such as: what decisions should be centralized and made by the Secretary of Defense, versus what decisions can be decentralized? Interviewees added an important additional question: for decisions that are not reserved for the Secretary of Defense and are decentralized, what institutional arrangements provide the best incentives for efficient decision-making?

Some interviewees stated that a lack of process and analytic support for the Secretary of Defense to make decisions in the planning phase was leading to OSD micromanagement of more tactical decisions in the programming and budgeting phases. But reallocating tactical decisions back to operational organizations requires more than simply providing adequate strategic guidance in the planning phase. As one interviewee stated, "Operational decisions get pushed to leadership in the PPBE system when they fail to get made in efficient and effective ways at lower levels. If you want to push these decisions back down to the operational level, then there have to be structures in place (e.g., markets) to

incentivize better decision-making." This section examines these questions in more detail.[35]

Many different institutional arrangements within DoD have a significant impact on the workings of the PPBE system. Three of the most important examples raised by interviewees are:

- To whom is funding allocated (e.g., end users or intermediate producers)?
- Do internal prices accurately reflect the cost of resources?
- Are similar functions placed into common portfolios (trade-spaces)?

a. Funding end users versus intermediate producers

Fielding an air squadron, surface action group, or brigade combat team requires numerous intermediate steps to produce these forces. One example is parts and maintenance for unit equipment. DoD operates large supply and depot organizations that consume billions of dollars of the defense budget. DoD has a choice of how to fund these support activities.

One option is to fund the end user (operational units) for parts and maintenance, who then purchase these goods and services from the support activities. The support activities are funded within a working capital fund. This strategy creates a buy-seller relationship (market) within DoD that allows decision-making on funding levels for support activities to be decentralized within DoD, allowing senior leaders to focus on strategic questions about the force they want to fund. Advantages of these relationships include stronger incentives for efficient part and maintenance management (e.g., if they are a free good to operating forces, then operating forces demand an unlimited amount, leading to organizational disagreements that must be resolved by leadership, frequently in the PPBE system). Other advantages include greater transparency on cost and operations of the support activities, and improved efficiency of the support activity, as it operates more like a business on a revenue and cost basis.

While funding the end user reduces the burden on senior leaders in resource allocation, it creates an oversight burden on OSD and Military Department comptrollers to enforce pricing and fund management policies (i.e., making sure the market functions efficiently). Working capital funds have been used by the military since 1870,[36] and many supply and depot activities in DoD are funded this way today.

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[35] This section draws on the statements made by several key interviewees that focused on these issues and Don Shycoff, *The Business of Defense*, JKS Publishing Company, 1995.

[36] Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

An alternative option is to directly fund the support activities. Navy shipyards began transitioning to working-capital funds in the 1950s and transitioned back to direct funding about two decades ago. The advantage of direct funding is that it gives senior leaders more direct control and decision-making ability over the support activity (e.g., the Navy believed that for the shipyards it would allow for more flexible and direct workforce management and alignment to priorities).[37] However, direct funding shifts the key resource allocation decisions concerning fleet overhauls (frequency and scope), depot capital investments, and overall management of fleet readiness back into the PPBE system, adding more content to an already stressed system.

The key point raised by interviewees with respect to the PPBE system is that these institutional arrangements directly affect the decisions that must be made in the PPBE system and the practical execution of PPBE phases. If lower-level organizations are not organized to interact efficiently with each other in a decentralized manner, then there must be central planning (i.e., decisions get centralized in the PPBE system). This reality means that changes to the PPBE system (e.g., recommendations to decrease the decision scope of the PPBE system and decentralize more decisions) would likely need to be accompanied by changes to institutional relationships to be successfully executed.

Shycoff (1995) identified several principles for funding the support establishment, which he defined broadly to include supply activities, depots, healthcare, facilities, test and evaluation, etc. Key principles included:

- The support establishment must be capable of responding to military customers in peacetime and in the event of a mobilization or any other contingency.
- The budgets of the military forces should include all operating and support costs of those forces.
- The support establishment should respond to requirements established by the Military Departments and be funded by them on a reimbursable basis.

In the most extreme application of these principles, the PPBE system would shift its focus almost exclusively to key strategic questions concerning military objectives, capability investments, force requirements, and posture. The PPBE system would then relegate most operational decisions concerning the support establishment to lower levels while increasing its execution oversight (e.g., for pricing) to ensure proper function of the decentralized markets.

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[37] See, for example, *Comparing Working-Capital Funding and Mission Funding for Naval Shipyards*, CBO, April 2007, https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/79xx/doc7997/04-12-shipyards.pdf.

b. Accurate prices

All decision-makers in DoD face explicit or implicit prices for the resources they consume and the options they consider. For example, for an organization that uses military, civilian, and contractor personnel to accomplish its mission, does it pay the full price for each category of personnel? Some interviewees raised the accuracy of these prices as an important factor affecting decisions and the PPBE system. One of the most frequently raised examples—and one with a large literature—is military medical personnel.

While the medical force is a relatively small share of deployments for war (5 percent or less during the wars in Iraq and Afghanistan), it averages over 10 percent of the active duty military force and as much as 25 percent of O-6-level officers. This share became a particularly acute issue in the 2000s as the wars in Iraq and Afghanistan began to extend in duration and the military force became stressed. Relieving stress on the force became a major focus in DoD and the PPBE system. As then Secretary of Defense Rumsfeld stated:

> Now think of that. The force is stressed and we're only sustaining 200,000-plus in the Central Command region out of a total of 2 million. So the question is, well, why is that … [O]ne of the folks here, General Schoomaker, puts it this way. He says, think of [a] rain barrel. And you've got a rain barrel filled with water. And you turn the spigot on and you can only access 10 percent of it because the spigot's up at the top of the rain barrel. See, you're only accessing a very small portion of that water.
>
> Now the choice you have is to get a bigger barrel – increase the size of the armed forces in this case – or move the spigot down and figure out ways that you can have access to more of those people. And that's what we're doing.[38]

Whitley et al., (2014) examined this issue and its impacts on the PPBE system.[39] The core challenge is the extensive use in military hospitals of military providers for nonreadiness functions (e.g., employing military pediatricians and obstetricians when the military wartime requirement is for trauma surgeons and emergency medicine physicians). To understand the root cause of this challenge, Table 1 provides the prices paid for a military physician by different decision-makers in DoD.

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[38] Secretary Rumsfeld interview with Roger Hedgecock, June 30, 2004.

[39] J. Whitley, B. Gould, N. Huff, and L. Wu, "Medical Total Force Management," IDA Paper P-5047 (Alexandria, VA: Institute for Defense Analyses, May 2014).

Table 1. Military Physician Prices

	Prices Faced by Different Decision Makers		
	Hospital Director	Service Programmer	Secretary of Defense
Military Physician	$0	$180,000	$410,000
Civilian Physician	$300,000	$300,000	$305,000

Source: Data taken from Whitley et al., (2014). Prices are in 2013 dollars and rounded for simplicity of exposition.

The first thing to note is that a civilian physician is significantly cheaper than a military physician for DoD. But it is not until the Secretary of Defense level that this cost difference is observed. For a hospital commander, the military personnel are provided free of charge, and civilians must be paid out of the hospital's Operations and Maintenance (O&M) budget. For the Service programmer building a POM, a military composite rate is used that does not fully consider the high special pays that medical personnel receive and, importantly, the high accession and training costs for military physicians (which, in part, are not paid by the Military Departments). Although medical is an extreme example of this phenomenon, it extends widely across DoD for personnel.

To illustrate the impact this pricing disparity has on the PPBE system, review the key strategic points:

- Having sufficient forces to maintain DoD operations is an ongoing challenge to DoD. It became particularly acute in the 2000s during the "relieving stress on the force" era and is again becoming acute in the face of recruiting crises with increased NDS-driven operational needs.
- A root cause of this challenge is the overuse of more expensive military personnel for nonmilitary essential functions.
- Tactical leaders and Military Department resource managers create the root cause but believe they are making the best decisions for the efficient use of resources given the prices they face.
- The root cause is only observed at the OSD (PPBE system) level.

This chain of events results in repeated, contentious attempts at large realignments of military manpower in the PPBE system that frequently fail. Interviewees stated that this is another contributor to overloading the programming and budgeting phases of the PBBE system (including taking a significant amount of the Deputy Secretary's time over the last two decades). For example, one interviewee estimated that DoD has averaged one to two DMAGs a year on medical manpower alone over the last 20 years, a large investment of leadership time for what should be a technical issue. These issues would be less likely to arise in the first place if decentralized decision-makers faced accurate prices.

One contributor to inaccurate prices is the time difference between when a decision is made and when a cost is incurred. For military and civilian personnel, the decision to hire someone today drives a cost today and a cost (liability) tomorrow (for deferred compensation). In some cases, the future cost is recognized today in the budget, whereas for other future costs there is no budget recognition until the cost is ultimately paid. For military personnel, examples include:

- Military retirement pay: Future costs are included in today's budget through accrual funding.
- Medical retirement benefit for non-Medicare-eligible retirees: Future cost is paid in future budgets. Today's budget pays the cost of past retirees (today's budget is paying costs for personnel decisions made a generation ago–a fixed cost that today's leaders cannot materially change).
- Medical retirement benefit for Medicare-eligible retirees: Future costs are included in today's budget through accrual funding.

Accrual funding (i.e., recognizing future liabilities incurred by decisions made in today's budget with a payment into an accrual fund) future liabilities is another action that contributes to more accurate prices.[40]

c. Common trade-space

The organizing structure of resources (i.e., their account structure), is an important element of a resource allocation system. As GAO has stated, "[t]he method of budget reporting represents much more than a technical discussion about how to measure costs; rather it reflects fundamental choices about the types of controls and incentives that are important in the decision-making process."[41]

The first GAO point—that account structure reflects choices about the control of resources—has been raised extensively in the literature and by interviewees and discussed above in Section D. Legally, all DoD resources are controlled according to the structure they are appropriated in by Congress. This appropriations structure includes the broad resource categories identified in Section D, but it also includes the narrower PE or similar granularity for many accounts (primarily RDT&E and Procurement). While DoD can move funding among those accounts in an unlimited manner during planning, programming, and budgeting, once an appropriation bill is enacted, the current convention is to move only

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[40] For a detailed review of this issue, see GAO, *Accrual Budgeting: Experiences of Other Nations and Implications for the United States*, Report to the Honorable Benjamin L. Cardin, House of Representatives, GAO/AIMD-00-57, (Washington, DC: GAO, 2000).

[41] GAO, *Accrual Budgeting: Experiences of Other Nations and Implications for the United States*.

significant funds among accounts with reprogramming actions that Congress must approve.

The second area highlighted by GAO is incentives. Whitley (2022)[42] examined this issue, and the callout box below on the Defense Health Program is adapted from that report.

[42] J. Whitley, "Three Reforms to Improve Defense Resource Management," *IBM Center for The Business of Government*, 2022, https://www.businessofgovernment.org/sites/default/files/Three%20Reforms%20to%20Improve%20Defense%20Resource%20Management.pdf.

Defense Health Program (DHP) Account

The DHP account provides an example of the impact of account structure on incentives. DoD has two primary medical missions: delivering casualty care in wartime and providing a high-quality healthcare benefit to service members, retirees, and their families. The first is a military mission provided by uniformed healthcare providers and, during peacetime, is a readiness priority (i.e., maintaining clinical currency of the military medical force). The benefit mission is a commercial activity and an element of compensation like pay, retired pay, and commissary benefits.

If the resources for these missions were organized by function, they would be in separate accounts. The readiness mission (combat casualty care) would be funded and managed with other readiness functions so that senior leaders can evaluate readiness tradeoffs (e.g., will investing more in medical readiness, logistics, or weapons provide a bigger return on achieving military objectives at minimal loss of life?). The benefit mission would be funded and managed with other compensation functions so that senior leaders can evaluate compensation tradeoffs (e.g., will DoD be more likely to achieve recruitment and retention goals by adding to health benefits or increasing base salaries?).

This is not how DoD has traditionally been structured. The readiness and healthcare benefit missions have been combined into a single program. The DHP is both a management structure and appropriation account. It puts a key lifesaving readiness function into a direct trade space with a key compensation function.

The result has been that during peacetime, the benefit function—which is primarily pregnancy and childbirth, pediatric, and family practice care—dominates attention and historically wins the trade space. Pediatricians, obstetricians, and family practice physicians become the priority specialties for military physicians, with risk taken against the trauma surgeons, emergency medicine physicians, and critical care specialists required for the battlefield. Medical research funding is focused on cancer research instead of tourniquets and lifesaving trauma care. When the next war starts, the medical community finds itself ill-prepared for its military mission. This "peacetime effect" has been estimated to account for over 100,000 of the combat deaths that have occurred from World War II to present (Cannon et al., 2020).

This challenge is beginning to be recognized. The Fiscal Year 2017 NDAA directed a major restructuring of the DHP to align readiness functions with the Services and benefit functions with the Defense Health Agency. In developing the Fiscal Year 2021 budget, Secretary of Defense Esper moved about two billion dollars per year of readiness funding out of the DHP account, realigning it to Service readiness accounts.

Several interviewees raised these issues with respect to technology adoption. The most frequent examples used were Artificial Intelligence (AI), Cloud services, and Fifth Generation Mobile Networks (5G). One position stated by some interviewees was that to accelerate adoption of these technologies, they should be funded in centralized accounts (i.e., there should be centralized AI, Cloud, and 5G accounts). These interviewees believe that centralized accounts would reduce the valley of death in the adoption of these

technologies by providing flexible accounts for funding as new advances are made and consolidating technical expertise into a single program to gain economies of scale in technical proficiency.

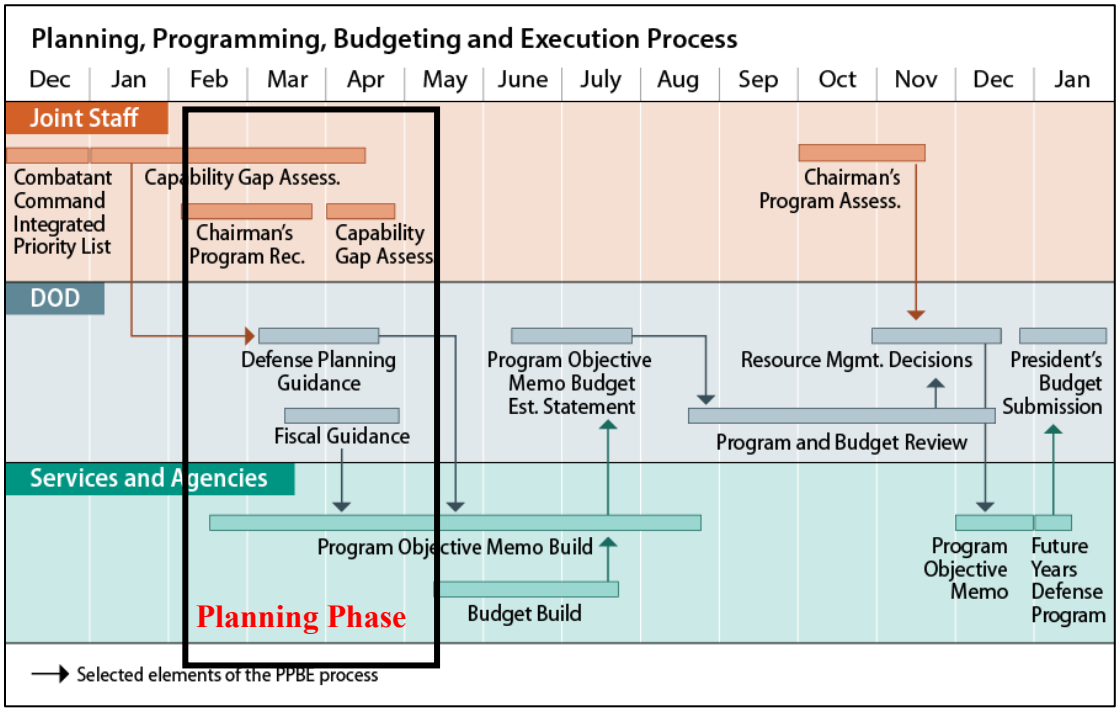
Other interviewees stated that centralized accounts would actually exacerbate valley of death challenges. These interviewees believe that these technologies must be embedded in the platforms that use them. For example, the proper account structure for this position would be to fund AI in the programs that primarily draw upon it—like the Optionally Manned Fighting Vehicle, Large Unmanned Surface Vehicles, and Next Generation Air Dominance. These interviewees stated that separating the control of technology funding from the users of the technology creates a valley of death (i.e., the desire to go faster than the traditional program offices go) because creating centralized accounts engenders upstream technologists disconnected from the end users.

3. Planning Phase

This chapter reviews the planning phase, its history, interviewee concerns with the planning phase, a high-level assessment of the impact of the DPG on NDS implementation, and recommended priorities and options for reform.

A. Planning Phase Overview and Key Documents

The first stage of the PPBE system is the planning phase (see Figure 4). It is led by USD(P) in coordination with other stakeholders. The most significant partners are CAPE and the Director, Joint Staff J8 (DJ8) Force Structure, Resources, and Assessment Directorate.[43] Other Components are coordinated with during development and other subject matter experts are included as needed.



Source: Adapted from Congressional Research Service, DOD Planning, Programming, Budgeting and Execution (PPBE): Overview and Selected Issues for Congress, July 11, 2022, 11.

Figure 4. Calendar-Driven Events in the Annual PPBE Process (Notional Timeline)

[43] 10 U.S.C. §113.

The planning phase involves assessing various sources of strategic guidance (e.g., the President's National Security Strategy (NSS), the Secretary of Defense's National Defense Strategy (NDS), and the Joint Staff Chairman's National Military Strategy (NMS)) to identify key implementation priorities, including military objectives, force sizing, capability investments, and posture enhancements. This assessment ensures that DoD's force development guidance aligns both with the administration's strategy and any prior strategy DoD has already published.

The CJCS provides the Chairman's Program Recommendation (CPR) to the Secretary of Defense that conveys the Chairman's advice on programming priorities. The CPR is based in part on an assessment of gaps in military capabilities performed under the auspices of the JROC and includes input from the Combatant Commanders and the Chief of the National Guard Bureau.

The DPG is the primary output of the planning phase. The DPG is supposed to include:

> **(i)** the priority military missions of the Department, including the assumed force planning scenarios and constructs;
>
> **(ii)** the force size and shape, force posture, defense capabilities, force readiness, infrastructure, organization, personnel, technological innovation, and other elements of the defense program necessary to support the [National Defense Strategy];
>
> **(iii)** the resource levels projected to be available for the period of time for which such recommendations and proposals are to be effective; and
>
> **(iv)** a discussion of any changes in the strategy and assumptions underpinning the strategy.[44]

The structure and length of the DPG vary from year to year. In addition to providing direction for allocating resources, it can also contain force-planning constructs for conducting major wars and contingencies, general guidance on where to decrease or accept risk, and direction to conduct specific studies or other planning activities. Regarding the latter, the DPG can provide guidance on data, assumptions, and scenario development.

Fiscal Guidance (FG), which provides detailed projected funding for DoD Components, constitutes another key step that occurs as part of the transition from the planning phase to the programming phase (CAPE prepares FG with assistance from the Comptroller; the Deputy Secretary usually issues the guidance).[45] FG is based on the most

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[44] 10 U.S.C. §113(g)(2)(A).

[45] DoD Directive 7045.14 (August 29, 2017).

recent top-line information provided by OMB and on leadership expectations of top-line funding. FG is typically in memo format, signed and issued by the Director of CAPE or the Deputy Secretary of Defense. It is issued individually to each DoD Component that submits a POM. FG for defense agencies reporting to a single principal staff assistant (PSA) may be issued in a single memo to the PSA. The memos provide fiscal top-line funding levels (control totals) for the budget year and following four years. These control totals govern Component POM and BES development. The FG may also establish military end strength and civilian full-time equivalents by PE.[46] FG is the Secretary of Defense's "topline fiscal control" provided to each DoD Component in preparing its respective program objective memoranda.[47] FG may also include any other special topics or instructions for the Component, and it specifies what is and is not included in the funding level provided.

Three key documents—the DPG, FG, and integrated program and budget review process instructions—transition the process from planning to programming. The program and budget review instructions provide detailed instructions for how the programming and budgeting phases will be conducted, including their specific timelines and the templates for key supporting documents. This detailed guidance document often is over 100 pages long. The table of contents typically contains several chapters, starting with general instructions, electronic and exhibits submission requirements, Program Review instructions, Budget Review instructions, and other sections, as needed.

B. History of the Planning Phase

This section reviews the history of the planning phase and DPG. It includes a focus on the types of decisions and guidance that have been conveyed over time. Given the importance many interviewees placed on this issue, we provide a more extensive historical review in Appendix C.

Since the start of the PPBE system, the programming and budgeting phases have consistently operated as decision processes. In other words, they are conducted to identify specific decisions to be made, develop and analyze alternative options, and present these options to leadership for decision. The degree to which this decision process discipline applies to the planning phase has varied over time. Interviewees identified periods (e.g., the 1980s and the late 2000s) when they believed strategic questions were systematically analyzed and presented to leadership for decision, and other periods (including currently)

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[46] CAPE/OSD Comptroller, *Technical Instructions for Program Review and Budget Review Guidance*, FY 2017 and FY 2020.

[47] For more information, see DOD, CJCSI 8501.01B, *Chairman of the Joint Chiefs of Staff, Combatant Commanders, Chief, National Guard Bureau, and Joint Staff Participation in the Planning, Programming, Budgeting, and Execution Process*, December 15, 2021, GL-4, https://www.jcs.mil/Portals/36/Documents/Library/Instructions/CJCSI%208501.01B.pdf.

when this systematic analysis and presentation did not occur. The changing nature of the planning phase is a key element of its history.

1. Defense Planning Guidance

The DPG provides the Secretary's guidance for developing and employing future forces. It is the link between the planning and programming phases and provides guidance to the DoD Components (Military Departments and Defense Agencies) for the development of their program proposals. DPG-like documents have been used to convey guidance since the 1960s, although the DPG started as a much smaller document and contained scenarios from time to time. Most of the Secretary's guidance documents have been prepared by OSD Policy, although during part of the 1990s it was developed by OSD Programming Analysis and Evaluation (PA&E, now CAPE). The names have changed over time, with examples being Strategic Planning Guidance, Guidance on Development of the Force, Defense Planning and Programming Guidance, Transformation Planning Guidance, Global Defense Posture, and Science and Technology Priorities. In 2010, the DPG replaced the Guidance for the Development of the Force (GDF) and the Joint Programming Guidance (JPG).

The structure of the document has remained essentially the same over the years, but the organizations involved may have changed significantly. For example, some DPGs have been prepared bottom-up, with OSD Policy requesting inputs from several sources, including other OSD policy organizations, the Joint Staff, and COCOMs. The Secretary of Defense provides inputs as edits or additions at the end of the process. At the other end of the spectrum, the Secretary is involved at the beginning of the process, with little input requested from others prior to final coordination. Finally, the level of analysis used to inform the DPG has varied widely, depending on the availability of credible Joint analysis.

2. Strategic guidance and military objectives

The DPG is informed by the NSS, NDS, and NMS. Analyses may be conducted by the JCS, Military Departments, and CAPE, among others, which inform both the planning and programming phases of the PPBE system. This basic structure—guidance from the President that is then interpreted by the Secretary and CJCS—has been used, with much variation in the specifics, since the advent of the (then) PPBS in 1961.

During the Cold War, the U.S. nuclear arsenal's purpose and its wartime goals were a preeminent consideration of DoD. Nonetheless, the role and size of U.S. conventional forces were an important budgetary driver, and scenarios for using conventional forces were developed and debated. With the end of the Cold War, the preeminent scenarios centered on using conventional forces.

The first planning phase occurred in Secretary McNamara's first use of PPBS in 1961. McNamara directed "more than one hundred studies of military requirements" be performed to support preparation of the fiscal year 1963 budget.[48,49] During the Kennedy and Johnson administrations, beliefs about what might constitute major wars in Europe and Asia determined general purpose force requirements. But, consideration was also given to scenarios involving "brushfires" (i.e., smaller wars). The result was a 2½-war strategic concept. In the following decade, as a rift developed between the Soviet Union and China that made their coordinated action against U.S. allies unlikely, the 2½-war concept was downsized to 1½-wars.

Strategic force planning was threat-based and centered on the Soviet Union. Military conventional force planning remained resource-unconstrained and disconnected from the PPBS. "Scenario-based studies, war games, and military judgment continued to predominate on the military side while systems analysis techniques continued to be refined and were increasingly employed within OSD. There also was increasing use of combat simulation and other models in support of strategic analysis during the period."[50]

The invasion of Afghanistan by the Soviet Union, the Iranian revolution, and deteriorating nuclear and conventional force balances in Europe made requirements for conventional forces a priority midway through the Carter administration's term. Presidential Decision (PD) 62, "Modifications in U.S. National Strategy," released shortly before the end of the administration, indicated that need for general-purpose forces in Europe, Korea, and the Persian Gulf region remained; Soviet moves in Africa and Afghanistan, as well as the Iranian revolution, prioritized assuring security in the Persian Gulf region, which would be the highest priority for increasing strategic lift and conventional forces.

The Reagan administration expanded military objectives to a 2+ 2(½) war (two and two half-wars) construct featuring planning for a global war with the Soviet Union comprising major conflicts in Europe and Northeast Asia, a simultaneous Soviet action in Southwest Asia, and a "half-war" somewhere else. With the fall of the Soviet Union during the first Bush administration, the focus on one or more simultaneous major wars involving potential use of nuclear weapons changed to consideration of one or more regional wars, analogous to the half-war scenarios used during the Cold War; conflicts in Iraq and Korea were used.

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[48] Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

[49] Eric V. Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning," RR-2173/1-A (Santa Monica, CA: RAND Corporation, 2019), https://www.rand.org/pubs/research_reports/RR2173z1.html, accessed February 8, 2023.

[50] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

The Clinton administration conducted the 1993 Bottom Up Review (BUR) and the 1997 Quadrennial Defense Review (QDR) mandated by Congress. In both cases, the primary scenarios used to assess conventional force structure needs were two major regional contingencies (MRCs): a North Korean attack on South Korea, and an Iraqi attack on Kuwait and Saudi Arabia occurring nearly simultaneously. Consistent with capabilities-based planning, the 1997 QDR considered a total of 45 scenarios, including an aggression by an unidentified regional great power. Capabilities needed for homeland defense were also considered, as were those for peacetime forward presence. However, the capabilities needed for other than the two MRCs were generally considered to be lesser and included in the forces required for the two MRCs.[51]

As these military strategies evolved, the specificity and terminology used has also evolved. By the time of the 1993 BUR, the terminology had evolved to the "force planning construct"—a conceptual depiction of the types of operations to which DoD wants to size and shape its military forces. The construct can vary in its specificity but typically includes some combination of the scale (size), scope (number), and simultaneity (timing) of operations for which the military must prepare. Table 2 provides the force planning constructs that guided the DPG for the two decades following the 1993 BUR.

[51] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

Table 2. DoD Force Planning Constructs, 1993–2012

	1993 BUR	1997 QDR	2001 QDR	2006 QDR	2010 QDR	2012 STRATEGIC REVIEW
FORCE PLANNING CONSTRUCT	2 Major Regional Conflicts	2 Major Theater Wars	1 - 4 - 2 - 1	Refined Wartime Construct; the "Michelin Man"	No Name	No Name
MAJOR ELEMENTS	Defeat 2 Regional Threats Nearly Simultaneously	Defeat Large-Scale Cross-Border Aggression in 2 Theaters in Overlapping Timeframes + Smaller-Scale Contingencies	Homeland Defense + 2 Swiftly Defeats (Win 1 Decisively)	Homeland Defense + 2 Conventional Contingencies or 1 Conventional + 1 Irregular Warfare Contingencies	Homeland Consequence Management Events + 2 Large-Scale Land Campaigns or 1 Large Air/Naval Campaign + Campaign in 2nd Theater or 1 Large Land Campaign + Long-Term IW Campaign	Homeland Defense, Provide Support to Civil Authorities + 1 Full Combined Arms Campaign Across All Domains + Deny Objectives or Impose Unacceptable Costs on 2nd Opportunistic Aggressor
FOCUS	Size for 2 MRCs, other contingencies are lesser included cases	Size for 2 MTWs plus steady-state SSCs; swing some forces to 2nd major conflict	Emphasize forward defense; focus on four priority theaters; accept risk in a 2nd major conflict	Shift capabilities to address 4 focus areas; long-duration irregular warfare; address steady-state and surge demand	Size as well as shape; multiple scenario cases for the near- and far-term; address surge and steady-state demand, including long-term irregular warfare	Do not size the force for large and protracted stability operations; rebalance to the Asia-Pacific region; reversibility
CONTEXT	Gulf War, demand for a peace dividend	Bosnia, peace dividend	Transform the force, support War on Terror	Long War, change capabilities mix, force is sized about right	Support for overseas contingency operations, defense budget cuts	Post-war budget and force structure cuts, prepare for future challenges

Source: Mark Gunzinger, "Shaping America's Future Military: Toward a New Force Planning Construct," *Center for Strategic and Budgetary Assessments*, 2013.

A major change occurred in 2011 with the disestablishment of the Analytic Agenda. Since that time, force planning constructs have become less specific, and the DPG has provided less guidance on force sizing, development, and design. The 2018 and 2022 NDSs directed a major change in DoD's focus, but interviewees stated that the planning phase has struggled to translate these documents into concrete strategies.

3. Analytic Support

As mentioned above, the PBRs are focused decision processes that identify key questions, conduct analyses on options, and present the options to leadership for decision. The analytic processes vary (e.g., Program Review uses issue teams and conducts analysis on the outputs of different program options, whereas Budget Review uses coordination of papers and conducts analysis on pricing, executability, and other budgetary issues), but both phases have dedicated analyses supporting decision-making. The use of strategic

analysis (as opposed to programmatic and budgetary analysis) to support the planning phase has varied over time.

The key producers of strategic analysis for the planning phase are Policy, CAPE, and the Joint Staff. Within the Joint Staff, the lead has historically been the DJ8, but recent years have seen an expanded role for Director for Joint Force Development (DJ7). Interviewees also stated that Military Departments frequently support analysis because of the lack of capacity and capability in OSD and JS (for example, the Center for Army Analysis (CAA) currently provides analysis in support of the planning phase).

As noted above, the initial planning phase included "more than one hundred studies of military requirements" be performed to support preparation of the fiscal year 1963 budget, including a general purpose forces study.[52,53] The next two decades saw "[s]cenario-based studies, war games, and military judgment [continue] to predominate on the military side while systems analysis techniques continued to be refined and were increasingly employed within OSD. There also was increasing use of combat simulation and other models in support of strategic analysis during the period."[54]

The report of the Packard Commission and the Goldwater-Nichols Act of 1986 (Pub. L. 99-433) provided the CJCS with the authorities needed to develop integrated, joint assessments of military needs, instead of forwarding consensus-based assessments amalgamating Service inputs. However, commentators report that it was not until General Colin Powell became CJCS in 1989 that practical use of these authorities occurred and integration with the PPBE system improved. Ever faster computers enabled continued improvement in combat and other simulation models during this period.[55]

The Base Force Study conducted by General Powell provided a new strategy and force structure reflecting the end of the Cold War while defining a floor below which force reductions should not be made in order to avoid breaking the force. The Base Force was the basis for reducing force structure by 25 percent and active manpower by 20 percent; lesser reductions were made in reserve manpower. DoD subsequently developed illustrative planning scenarios (IPSs) to be used for analyzing the capabilities of its forces. The IPSs included major contingencies in Iraq, Korea, Iraq and Korea simultaneously, a

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52 Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

53 Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

54 Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

55 Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

Russian-Belarus attack on the Baltics and Poland, a coup in the Philippines, a threat to the Panama Canal, and an emerging near-peer competitor.[56]

The 1993 BUR and the 1997 QDR used scenarios for a North Korean attack on South Korea and an Iraqi attack on Kuwait and Saudi Arabia occurring nearly simultaneously. Consistent with capabilities-based planning, the 1997 QDR considered a total of 45 scenarios, including an aggression by an unidentified regional great power. Capabilities needed for homeland defense were also considered, as were those for peacetime forward presence.[57]

During this period, the Commission on the Roles and Missions (CORM) report (1995) proposed a "…comprehensive strategy and force review at the start of each new Administration" to guide the Department's activities.[58] The report further argued that such an effort:

> Requires that planning and analyses be done beforehand. Feasible alternative solutions must be developed…These options should include various mixes of forces, materiel, and support in the context of a balanced assessment that addresses threats to U.S. interests, level of risk, and cost. Carrying out this process requires the ability to quickly furnish "roughly right" answers so that decisions can be made from a range of alternatives. These assessments will be used in the planning and direction phase of the process to develop guidance to the Services and Agencies.[59]

The report also recommended "front end assessments" to inform the planning cycles not preceded by a comprehensive review.[60] These front-end assessments were meant to support Secretary decisions during the planning phase rather than at the end of the programming and budgeting phases. Other analytical efforts were conducted, such as the Deep Attack Weapons Mix Study (DAWMS), which sought to use linear programming to derive the optimal mix across all the services of deep attack weaponry needed to conduct two nearly simultaneous MRCs.

Following the Clinton administration, the Bush administration continued to use threat-based scenarios for near-term planning and capabilities-based assessment for long-term planning. Longer-term planning began to play a smaller role following the 9/11

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[56] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[57] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[58] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, by the Commission on Roles and Missions of the Armed Forces, (Washington, 1995), 4–9.

[59] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 4–8.

[60] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 4–11.

terrorist attacks. In addition to the force sizing construct, transforming the force to take full advantage of the critical technologies needed to maintain a clear and decisive lead against any future adversary was meant to be a determinant of resource allocation.[61] A series of Mobility Capabilities Studies and Operational Availability Studies were also conducted and became foundations for planning guidance.[62]

The Aldridge report repeated the call for enhanced "top-down" senior leadership guidance and making decisions at the "front end" of the process "…when there is more time for deliberate analysis and greater solution space for the Secretary's decision making."[63] By that time, the front-end assessments (FEA) process had atrophied, and the Aldridge report recommended an "enhanced planning process" (EPP) to "…link strategy to program development by assessing current capabilities, analyzing gaps and excesses, and recommending alternatives for the SecDef's decision."[64]

Beginning in 2002, DoD launched an effort to establish a standing or ongoing strategic analysis capability, called the "Analytic Agenda." The effort, co-led by OUSD(P), PA&E, and J-8, was intended to create common, transparent analytic datasets that could be used by all DoD Components to explore alternative approaches to addressing challenges.[65] The Analytic Agenda eventually developed three primary products:

- Defense Planning Scenarios (DPSs): A "high-level description of a plausible [future] threat, the strategic approach to address it, and assumptions that should be used to guide Concept of Operations (CONOPS) and force development, including information on adversary capabilities and the strategic objectives."[66] DPSs were produced by OUSD(P).
- Concept of Operations and Forces: A "description of the operational approach to address the threat identified in the Defense Planning Scenario and the major

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61 U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*.

62 U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*.

63 U.S. DoD, *Joint Defense Capabilities Study: Final Report,* Joint Defense Capabilities Study Team, (Washington, December 2003) 3-4.

64 U.S. DoD, *Joint Defense Capabilities Study: Final Report*, 2-11.

65 Kathleen H. Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report," (Washington, DC, 2008), 31.

66 GAO, *Defense Strategy: Revised Analytic Approach Needed to Support Force Structure Decision-Making*, (Washington, DC: GAO, March 2019), 8.

force structure elements (e.g., ships and fighter squadrons) used in that approach."[67] These documents were produced by the J-8.

- Analytic Baseline: "This was a refined estimate of the numbers and types of units needed to support the CONOPS" and provided the base case that served as a starting point for Component analyses.[68] These databases were produced by PA&E and then CAPE.

By April 2009, DoD had developed 11 scenarios that would be used during the QDR, including stability operations in Iraq and Afghanistan, regime collapse in North Korea, a major conflict with China over Taiwan, Russian coercion of the Baltic states, a nuclear-armed Iran, loss of control of nuclear weapons in Pakistan, and homeland defense and cyberattacks on the United States.

A major inflection point was the 2011 disestablishment of the Analytic Agenda. Reasons included its overreliance on campaign modeling (causing it to be slow and unresponsive) and anticipated budget cuts as the sequester era began to emerge. Some interviewees agreed with the identified challenges of the campaign modeling centric approach but criticized ending the function instead of repairing it. Other interviewees thought the concerns with the analytic approach were overstated.

There has been relatively little significant strategic analysis capability in OSD since the 2011 disestablishment of the Analytic Agenda reasons, which interviewees stated has significantly reduced the ability of the planning phase to support strategic-level decision-making. From 2012 to 2018, the loss of capability and the challenges it created were beginning to emerge. Some interviewees stated that the issuance of the NDS in 2018, which raised a significant number of strategic-level questions that the current planning phase has struggled to analytically inform and decide, has brought the issue to a crisis point. Examples provided in this report include: identifying military objectives and a force planning construct from the NDS, balancing near-term readiness with modernization, and prioritizing posture investments in the Pacific.

In evaluating the 2018 NDS, the Commission on the National Defense Strategy, expressed "…concern that the NDS too often rests on questionable assumptions and weak analysis, and it leaves unanswered critical questions of *how* the United States will meet the challenges of a more dangerous world."[69] In 2019, likewise, the GAO issued a report calling for a revised analytic approach to support force planning.

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[67] GAO, *Defense Strategy: Revised Analytic Approach Needed to Support Force Structure Decision-Making*, (Washington, DC: GAO, March 2019), 8.

[68] GAO, *Defense Strategy: Revised Analytic Approach Needed to Support Force Structure Decision-Making*, (Washington, DC: GAO, March 2019), 8.

[69] https://www.usip.org/sites/default/files/2018-11/providing-for-the-common-defense.pdf, vi.

Interviewees stated that DoD is seeking to revitalize strategic analysis within the Department, including by establishing an Analysis Working Group, reviving the DPSs, and promoting the use of baseline data (currently called "control variables") as a starting point for analysis. Interviewees stated that rebuilding strategic analysis capability was a priority of the current Deputy Secretary (who was in Policy in 2011 and, according to interviewees, did not support the disestablishment of the Analytic Agenda). Interviewees also stated, however, that these efforts have struggled to gain traction and provide systematic decision support.

C. Planning Phase Commentary and Challenges

The overview Section 2.E and above history of the planning phase identified the key challenges raised by interviewees and provided a review of relevant literature. This section provides a brief summary of the full range of concerns the interviewees raised.

Organizing for Great Power Competition and Global Conflict. Related to analytic capabilities, some interviewees thought that the planning phase was hindered because OSD in general and Policy in particular were not well organized to confront near-peer adversaries. Confronting China in competition (e.g., in its belt and road initiatives) and in conflict (e.g., in the role of horizontal escalation and a global response to aggression against Taiwan), require a comprehensive or holistic view of global conflict that is not provided by Policy's activities, many of which are organized by region. Issues requiring global integration generally fall to Assistant Secretary of Defense for Strategy, Plans, and Capabilities (ASD(SPC)) and, for force development and design, the Deputy Assistant Secretary of Defense for Strategy and Force Development (DASD(SFD)) within ASD(SPC). However, these offices are not staffed and do not have the formal responsibilities to create a global focus to great power competition.

Decision-making. As reviewed previously, one of the most significant criticisms interviewees made concerning the planning phase is that it is not organized and executed as a decision-making process. In contrast to Program Review and Budget Review, the planning phase generally iterates draft documents through coordination processes until consensus is achieved or disagreements have been sufficiently mitigated to move forward. Interviewees stated that the planning phase should identify a limited number of key decisions that should be made that cycle in areas like military objectives, capabilities, force structure, and posture. Moreover, the planning phase should develop analytically informed decision options and formally present them to the leadership for decision to provide guidance to the programming and budgeting phases.

Analytical Capabilities. Several comments were made indicating that the analytical capabilities of DoD are inadequate to support planning and programming. Comments on the capabilities needed included the availability of a wider variety of scenarios for force planning covering potential future world conditions and adversaries. Other necessary

capabilities would include the tools to generate credible assessments of the implications of those scenarios to inform the size and composition of future forces and the modernization programs needed to equip them. The need for tools that optimize force structure across scenarios also was mentioned. However, specifics of the composition of tools that provide credible assessments were not discussed, and some interviewees expressed skepticism that such tools could ever be developed. If such tools were available, interviewees indicated they could provide the rationale needed for guidance on changes in force structure, which can be contentious when attempted. Other interviewees noted that even when DoD has conducted rigorous analyses, argument and contention regarding inputs and methodology has occurred. One interviewee stated that attacking assumptions and models is a common tactic when one disagrees with the results.

Defense Planning Guidance (DPG). Some interviewees favorably viewed these documents to articulate the priorities of the Secretary of Defense and CJCS. However, other interviewees indicated the DPG was often ambiguous and/or filled with direction on matters not reflecting the Secretary's priorities and thus less useful for programming. As discussed at length already, some interviewees believed failure of the planning phase to address questions raised by the NDS was a major PPBE system challenge. The value of the DPG depends on the willingness of the Secretary of Defense to actively engage in the process, to understand the big issues, and make the tough resource allocation decisions.

Although the annual DPG has often not been made final until after the Services and Components begin preparing their Program Objective Memoranda (POMs), draft versions are usually available that have content closely aligned with the final DPG promulgated by the Secretary. However, some interviewees observed that the coordination process for the DPG can require substantial and continual participation by presidential appointees, particularly within the Office of the Under Secretary of Defense for Policy (OUSD (Policy)). This senior-level participation is needed to assure that the document focuses on the Secretary's priorities and does not comprise numerous statements of guidance reflecting the desires of lower-level officials and staff the Secretary does not regard as priorities, or that it conflicts with his/her priorities. The coordination needs to assure all key stakeholders can make their views known, but it should not have consensus as its goal. Most interviewees found the timeliness of guidance provided by Military Department leadership to be adequate.

Some interviewees also stated that compliance of Service and Component POMs with the DPG is evaluated by OUSD (Policy) working with CAPE. In most cases, evaluating and enforcing compliance are straightforward exercises because the associated language in the DPG is not ambiguous. However, a comment was also made by an interviewee with long experience in programming that the DPG was useless for that purpose.

Fiscal Guidance. Comments regarding fiscal guidance were limited primarily to the observation that it has been delayed in some years as continuing resolutions (CRs) are used

and appropriations are delayed. This delay in guidance can affect the ongoing preparation of the Components' POMs. Interviewees noted that the use of CRs has become the rule rather than the exception.

Timing. Many interviewees judged the timeliness of the DPG, as well as the higher-level documents on which it is based—including the NSS and NMS—to be frequently late, but there was disagreement over its impact. Some argued that the DPG changes little from year to year and was usually circulated in draft form relatively early, so there was little impact. However, other interviewees thought the lateness had a detrimental impact on programming. Some interviewees expressed concerns with the need within the PPBE system to begin planning for activities that could incorporate advanced technologies two years in advance of when appropriations would be enacted—that useful technologies might not exist when planning must begin. A comment was also made that the need to plan two years in advance of appropriations can make it difficult to handle unforeseen problems that occur in programs of record during the two-year interregnum. Other interviewees, including those from the acquisition community, did not share this concern, indicating that sufficient authority and flexibility exist for officials to fund and take advantage of technological advances and problems that materialize during the two-year period between the beginning of planning and enactment of appropriations. For example, working with Congress to provide regular and cogent reporting on its activities and progress, the Army's Rapid Capabilities and Critical Technologies Office during each budget has been able to fund new projects that had not been defined in detail when the President's Budget was planned, nor when it was submitted.[70]

D. Assessing the Planning Phase and DPG Since the Release of the 2018 NDS

The Commission faces an important question: what is the extent to which the PPBE system is enabling versus hindering the implementation of the NDS? Assessing that question was outside the scope of IDA's analysis, but IDA did ask two questions related to this matter in many of its interviews:

- What key changes to capabilities, forces, and posture have been made in response to the NDS?
- To what extent has the DPG driven or hindered these NDS changes?

The most positive response concerned capabilities. Interviewees provided examples of significant investments being made across DoD (e.g., hypersonics, space, and microelectronics) that are directly related to implementing the NDS. When asked about the role of the DPG, interviewees responded that it had been helpful. The office of

[70] See https://rapidcapabilitiesoffice.army.mil/, accessed January 17, 2023.

USD(R&E)—in particular its articulation of clear priorities and its forceful advocacy for them across multiple decision venues over time—was generally cited as the primary reason for the progress. Interviewees stated that the DPG has played a valuable role in supporting R&E's efforts, but improvements could be made to the role of the planning phase and to analytic support of the planning phase in generating capability gaps and ensuring consistency of priorities across DoD.

With respect to forces, the Military Departments provided examples of force structure changes. The Army mentioned the Multi-Domain Task Force for experimenting with operations within an anti-access, area denial (A2AD) umbrella, creation of its Alaska command, and a refocusing on corps and division organization for large-scale combat operations and Multi-Domain Operations. The USMC mentioned its comprehensive force redesign effort (Force Design 2030). The Navy emphasized investments to expand the Virginia class submarine industrial base and production rate, the MK-48 torpedo investments, and its Distributed Maritime Operations (DMO) concept that envisions surface action groups (SAGs) as a fighting force that can maneuver in combat independently of a carrier strike group. The Air Force raised the creation of the Space Force as a major force change in support of the NDS.

Interviewees stated that Military Departments often initiated these changes; they gave the specific examples of the prioritization of Virginia class submarine and unmanned naval vessels to illustrate how the planning phase or analytic support to the planning phase used in programming contributed to such changes.

With respect to posture, there was a more negative response concerning the planning phase and DPG. The Military Departments provided examples of some progress (e.g., the Army cited capacity building activities in Thailand, Vietnam, the Philippines, Indonesia, and on Taiwan itself, while the Air Force, Navy, and USMC cited investments in Darwin Australia), but overall, interviewees stated that they thought progress had been slow. Furthermore, they attributed some of this lack of progress to the planning phase and its inability, to date, to develop clear priorities. One specific example provided was the role of inside versus outside forces in the Pacific, described further in the callout box below.

Posture in the Pacific Stalemate

Some interviewees stated that disagreements about priorities were partly to blame for the lack of progress in implementing Pacific posture investments. The planning phase would be the venue for resolving these differences and setting clear investment priorities, but interviewees stated that it has struggled to do so (although CAPE reports progress beginning to be made now).

Military Department interviewees stated that their organizations had been engaged in planning for a future fight in the Pacific and developing priority locations that would be needed to position forces before and during the fight. Some of these locations are inside the first and second island chains that span the Pacific. The Military Departments have argued that having forces inside these island chains is essential for deterrence and early success in a war and that failing to possess this terrain early in the fight would mean having to fight back in after war broke out, which could be very costly.

OSD has generally viewed inside forces as high risk. The advanced Chinese A2AD umbrella gives China the capability to quickly target inside forces (there are some exceptions, like submarines), making these forces too vulnerable to be effective. OSD offices have generally advocated for greater investment in standoff capabilities to fight as much of the war from outside the island chains as possible.

The result has been a stalemate. In general, the DPG has not encouraged larger, self-initiated Military Department posture investments, and OSD investment priorities have favored standoff capabilities over investments on inside posture and improving survivability and the ability to fight within the A2AD umbrella. Some interviewees connected this choice to the previous discussion of what they viewed to be unrealistic mobilization timelines to support deny (one way to mitigate mobilization delay risk is to be prepositioned). Interviewees were concerned that the planning phase to date has not enabled the needed progress on Pacific posture.

E. Reform Priorities and Options

Three key reform priorities arose from the interviews IDA conducted: redesigning the planning phase to be a decision-making process, building a strategic analytic capability to support planning-phase decision-making, and ensuring that USD(P) is properly organized for global competition and conflict. Together, these priorities address most of the concerns interviewees expressed with the planning phase and, because of the interconnectedness of the phases, address some of the "downstream" challenges identified as well.

1. Redesign Planning Phase as a Decision-Making Process

As reviewed above, interviewees described the current planning phase as iterative document reviews to a largely consensus-driven DPG. Failure to make key decisions about military objectives, force structure priorities, posture investments, and prioritized capability gaps pushes them, implicitly, into the programming phase. The programming phase then becomes overwhelmed with strategic decisions (instead of programmatic

decisions), resulting in FYDP instability and timeline compression for the budgeting phase. Resolving strategic questions in the planning phase would allow for a more stable, timely, and balanced FYDP which, in turn, would facilitate a higher quality budget submission.

Interviewees highlighted several key aspects of a redesigned planning phase that should inform its ultimate implementation:

- Timing: OSD leadership planning phase decisions must be issued in time to inform Component POM/BES development. POM/BES submission occurs in the summer (and there are no recommendations to change that in this report), meaning that planning phase decisions need to be issued by around February. For a three-month decision phase with DPG issuance in mid-February, the planning phase would be conducted in earnest from November through February.
- Analytic Support: To inform decisions, the planning phase must be analytically based. This is the topic of the next recommendation and will be discussed in more detail there.
- Decision Content: Making decisions early in a cycle is challenging—a major reason why decisions get "piled up" in "end game." To enable senior leaders to make decisions at this point in the cycle, the focus must be on the right types of decisions and options. For example, as discussed above, senior leadership generally views resource allocation as risk-balancing across competing threats and demands. In the Taiwan example, a decision on whether to specialize force structure for *deny* or for *protraction* is not the type of decision that most senior leaders believe is appropriate. Instead, the planning phase should focus on identifying key investments for *deny*, key investments for *protraction*, the key overlaps and differences in these investment plans, and the risks associated with different weightings between these investment plans.

  Similarly, decision-makers are focused on the bureaucratic and political feasibility of decisions. For example, a senior leader who wanted to reprioritize Navy shipbuilding from a carrier-centric force to a distributed surface action group (SAG)-centric force may be reluctant to direct cuts to carriers in the shipbuilding plan and increases to destroyers, frigates, and unmanned surface vehicles a year before budget submission. In addition to violating the risk-balancing approach identified above, this would also give elements of the carrier community a year to engage with Congress to undermine DoD's budget submission before it was even submitted. A planning phase decision might be to provide specific guidance on military objectives and force structure that leads to the development of multiple force-structure options that balance carrier versus SAG investments, with different weights for evaluation of their performance.

The goal is to—early and definitively—begin the process of iteratively and incrementally moving DoD stakeholders to large decisions.

- Process Structure: Decision processes must be structured and transparent. Like the programming and budgeting phases, a redesigned planning phase should start with a leadership briefing (e.g., to the DMAG and then Secretary of Defense) on the key questions that will be addressed in the cycle, the timelines that will be followed, and the analytic approaches. This structuring would occur in November when the DMAG is largely finished with the prior cycle's Program Review and Budget Review decisions. Updates are provided during the process, and decision briefs are then provided to leadership (e.g., to the DMAG and then to the Secretary of the Defense). In accordance with long-developed best practices in programming, decision briefs should contain options (not single recommendations or solutions), fairly represent the views of all stakeholders, and provide analysis on the pros and cons of each option to inform leadership decision-making.
- Measurable: For decisions to be meaningful and for leadership to be able to hold subordinates accountable for complying with decisions, the decisions must be specific enough to be measurable. In other words, it must be knowable/observable if an organization complied with a decision or not.

Interviewees had different views on how best to implement this recommendation and how it should be organized within OSD. There were a range of views, but the clearest representations are the following:

- USD(Policy)-led Planning Phase: This approach maintains continuity with most of the history of the PPBE system and maintains the current division of labor within OSD. Policy is responsible for key, enduring, multiyear strategy documents like the NDS that guide the planning phase. This approach has an important advantage of forging a tight connection between multiyear strategies and annual PPBE guidance. Similarly, Policy is the most strategically focused PPBE leader within OSD, and it maintains the connection of three distinct organizational views and perspectives (i.e., those of Policy, CAPE, and Comptroller) in the annual cycle. A disadvantage of continuing this approach, however, is that it is currently failing to work. Policy is very large and has many diverse responsibilities, including a significant focus on policy and short-term issues. Some interviewees believed Policy treated the DPG as an "afterthought" and that it was not sufficiently disciplined to run a decision-making-focused planning phase.
- CAPE-led Planning Phase: One source of CAPE's enduring value to leadership is that it runs neutral, transparent, analytically based resource-allocation

decision-making processes free from the distractions that come with diverse responsibilities and reporting requirements. Some interviewees suggested consolidating planning and programming in CAPE would be necessary to have a decision-making-focused planning phase because it would leverage CAPE's strength in analysis and process management. These interviewees believed that CAPE leadership would create a sharper interface between Policy's role in strategy (e.g., multiyear strategic documents like the NDS) and the transition to the annual PPBE cycle, with the skill sets required for the annual cycle consolidated in CAPE. This would also allow CAPE to balance and allocate content (i.e., decisions) between planning and programming with easier coordination between the phases. Key disadvantages of this approach are that it could diminish CAPE's effectiveness in programming and eliminate the positive tension created by having three different offices with three different perspectives and approaches being forced to work together in the PPBE cycle.

2. Strengthen Strategic Analysis Capability to Support Planning Phase

The current Deputy Secretary has prioritized expanding DoD's capacity for conducting strategic-level analysis in areas such as military objectives, force structure, posture, and capabilities.[71] This prioritizing is a necessary step for establishing the planning phase as a decision-making process within the PPBE system. Interviewees identified key aspects of planning phase analytic support:

- Enduring: The analyses conducted in the programming and budgeting phases tend to be rapid and finite. For example, a Program Review issue team will be formed in July, conduct analysis for eight weeks, present its findings to the DMAG for decision, develop the PDM language, and then disband. Similarly, Comptroller analysts in Budget Review can receive updated inflation and pay raise guidance, reprice the current services baseline budget, identify and present key decisions for leadership, and document the results in a PBD within a few months in the fall. Interviewees highlighted that strategic analysis is fundamentally different in its production process. Conducting wargames, building campaign models, and commissioning exercises and experiments can take extended periods of time, must be done iteratively with many different "runs" that tend to evolve over time as analyses are refined and strategic context evolves. In other words, strategic analysis of the type needed to support the planning phase is not an activity that can be started from scratch, conducted over eight weeks, and then terminated until the next cycle. Instead, strategic analysis

[71] See, for example, Deputy Secretary of Defense Hicks memorandum *Principles and Standards for Analysis Supporting Strategic Decisions,* dated February 2, 2022.

must be a standing set of activities that grows and evolves over time and "feeds" the planning phase (and other processes) with current results at the appropriate times (e.g., November through February).

- Tool-agnostic: A major concern with DoD's last major focus on strategic analysis was the perception that it became too focused on specific tools, in particular campaign analysis. Campaign analysis is an important tool for strategic decision-making that, among other things, forces analysts to clearly identify the assumptions they are making. But campaign analysis can also be slow and unresponsive to the timelines needed to inform leadership decisions. An enduring strategic analysis capability should make use of all available tools (e.g., campaign analysis, exercises, experiments, war games, etc.), and flexibly use them as appropriate for the individual questions asked by leadership.
- Transparent: A fundamental principle of all analytic functions that are intended to support complex, contentious decisions is that they must be conducted transparently, including participation and access to data for all relevant stakeholders.

As with the organization and leadership of a decision-making-focused planning phase, interviewees had different views about how to organize and lead the activities of strategic analysis. Interviewees generally agreed that all stakeholders (e.g., Military Departments, Joint Staff, Combatant Commands, Combat Support Agencies, etc.) needed to be included and that some division of labor was required around the leaders of the function. However, there were various options for the division of labor. Some options identified by interviewees included:

- Traditional Division of Labor: The traditional division of labor and allocation of responsibilities used in the last major DoD focus on strategic analysis included: Policy leading development of scenarios, Joint Staff leading developing of Joint concepts of operations and force allocations, and CAPE leading the conduct of the detailed modeling and development of baseline analyses. Advantages of this approach include that it brings together key perspectives and differences in approach, forcing positive tension into the process. It also leverages existing organizations' strengths and existing functions. One disadvantage, however, is that although this tri-chaired process has often worked, it hasn't done so consistently, and the lack of clear leadership limited effectiveness and progress.
- CAPE-centric Leadership: One alternative recommended by some interviewees was to have a clearly assigned leader for the function, with CAPE as one option for that leader. These interviewees maintained that a division of labor was still required to have diversity of perspectives, skill sets, and functions, but that CAPE should be designated as the overall leader and tasked with supporting and

integrating the input from the other key organizations. This structure would create a lead for "strategic integration" within OSD, a function that CAPE performed in previous generations of the PPBE system but some interviewees thought was not occurring now, contributing further to disjointed decision-making. This "first among equals" approach would streamline decision-making and, in the view of these interviewees, be necessary to grow strategic analysis to the size and scope required to have a planning phase focused on decision-making. Disadvantages of this approach include the potential to dilute CAPE's programmatic focus and diminish the roles of the other key stakeholders, which—at least in part—is due to the current structure of the AWG, where CAPE serves as the Executive Secretary.

- New Organization Leadership: Some interviewees thought that a single organization in charge of the function was key but that it should be a new, distinct organization separate from Policy (with its short-term and policy focus) and CAPE (with its resource allocation and programmatic focus). One suggestion was to repurpose the Office of Net Assessments to this role, while others suggested creating a new organization. Yet another suggestion was to separate the Deputy Assistant Secretary of Defense for Strategy and Force Development (DASD(SFP)) from Policy to use as the starting point for a new organization. A disadvantage of these new organization approaches is that building a high human-capital-analytic organization and accumulating the stature and political capital of a Policy, CAPE, or Comptroller are difficult in government. Some interviewees thought that this approach would be very unlikely to succeed.

3. Organize for Global Competition and Conflict

Currently, OSD lacks a formal global integrator. The Joint Staff has this role but does not have command authority, and it is frequently a consensus-driven organization more focused on balancing competing demands between Combatant Commands and Military Services. The majority of Policy is organized around regional portfolios or key capability areas like special operations and space. Within Policy, ASD(SPC) frequently gets tasked to perform the global integration role because it is cross-cutting and has many of the key functions (e.g., plans and posture, strategy and force development, and global partnerships). But ASD(SPC) is not formally tasked with this role, does not have the formal authority to execute it, and is not resourced to adequately perform it.

Interviewees highlighted this situation as a challenge to implementing the above two recommendations (focusing the planning phase on decision-making, and developing a strategic analysis function). The re-emergence of near-peer competitors creates strategic and analytic challenges that OSD has not had to focus on since the end of the Cold War.

Competition with China and Russia occurs across the globe, with some of the most important activity occurring far from the Pacific or Europe (e.g., countering the Belt and Road Initiative in Africa and South America). Similarly, conflict with a near-peer adversary would likely be global as well (e.g., horizontal escalation options might be used against China in an escalation response countering aggression in the Pacific).

Although interviewees raised multiple options that were similar in structure to the organizational options for the above two recommendations, the predominant view was the ASD(SPC) should be designated with the global integration function and resourced to execute it. These interviewees further recommended that for future force development and design global integration challenges, the DASD(SFD) office within ASD(SPC) should be the lead and, similarly, resourced to perform this function.

4. Programming Phase

This chapter describes the planning phase and its key documents; reviews the history of the programming phase; identifies interviewee concerns with the programming phase; provides deep dives into modernization funding levels, the valley of death, and funding specificity in programming; and recommends reform areas and options.

A. Programming Phase Overview and Key Documents

The primary purpose of the programming phase is to develop a detailed plan for allocating resources over the multiyear FYDP, consistent with direction prepared during the planning phase. Much of the programming phase is conducted in the DoD Components. At the OSD level, programming is led by CAPE, with participation by the Military Departments, Joint Staff, Combatant Commanders (COCOMs), and Principal Staff Assistants (PSAs) to the Secretary, including (but not limited to) the Under Secretary of Defense for Comptroller (USD(C)), Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), Under Secretary of Defense for Research and Engineering (USD(R&E)), Under Secretary of Defense for Intelligence and Security (USD(I&S)), Under Secretary of Defense for Personnel and Readiness (USD(P&R)), and DoD Chief Information Officer.[72]

The programming phase begins with each budget-owning Component (which includes the Military Departments, some DoD Agencies and Field Activities, and the Special Operations Command (SOCOM)) developing their Program Objective Memorandum (POM). The POM provides their proposed plan for forces, manpower, acquisition programs, and other activities and associated resources to satisfy planning guidance spanning the budget year and subsequent four years. The POM provides an electronic database submission to OSD with funding by account and year, along with supporting material. The POM submission must comply with the resource controls provided in FG.

Upon submission of the POMs, CAPE leads the Program Review, where Components' POMs are assessed, identifying compliance with the DPG and other guidance and proposing alternatives and their resource implications for consideration by the DMAG, co-chaired by the Deputy Secretary of Defense and Vice-Chairman of the Joint Chiefs of

[72] DoD Directive 7045.14.

Staff.[73] In the FY 2024–2028 Program Review, CAPE used focus areas as the basis for organizing issue teams, which were renamed to program review teams (the historic organization is around programmatic issues). Recommendations for alternatives to the POMs developed by the issue teams are generally presented for consideration to the 3-Star body called variously the Program-Resource Management Group (PRMG) and, currently, the Resource Management Group, chaired by CAPE for programmatic issues. Issues not resolved at this level are forwarded to the DMAG, chaired by the Deputy Secretary for adjudication and resolution. The methods used by the Deputy Secretary and Secretary to reach final decisions vary based on the preferences of the two senior leaders. Some decisions can be made by the Deputy Secretary, some are made using briefings by the Deputy Secretary to the Secretary and other select senior leaders in small group meetings, and some decisions are made final following meetings with larger groups of senior leaders spanning DoD. Decisions made during the Program Review are documented in PDMs signed by the Deputy Secretary or Secretary.

A primary goal for establishing the (then) PPBS was to create strategy-informed budgets from what had been policy and budgeting processes that struggled to connect with each other. Planning and programming were introduced to identify clear choices among competing forward-looking end states, analyze the relative benefits of these end states (including affordability), select among the choices based on national interest, and produce the FYDP (the multiyear force and financial plan) as a resource plan to achieve the selected end state. Figure 5 illustrates the idea of programming resources to achieve future end states (diagram on right), compared to the single-year budgeting process in place prior to PPBS (diagram on left).

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[73] *Governance Structure for Deputy Secretary Managed Processes,* Deputy Secretary of Defense Memorandum, March 11, 2021, https://media.defense.gov/2021/Mar/11/2002598613/-1/-1/0/GOVERNANCE-STRUCTURE-FOR-DEPUTY-SECRETARY-MANAGED-PROCESSES-FINAL.PDF, accessed February 7, 2023.

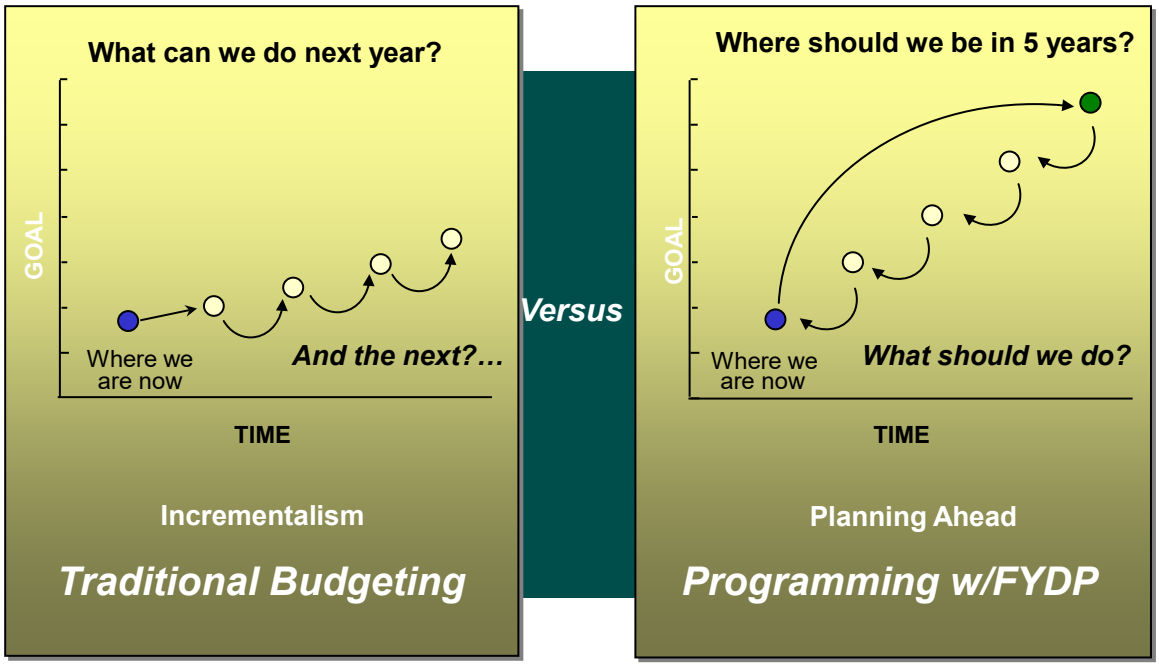

Figure 5. Programming versus Incremental Budgeting

A related innovation was to focus this decision-making on programmatic outputs instead of on resource inputs. This innovation was discussed in more detail in Section 2.D. Figure 6 illustrates the idea of a program of outputs versus a budget of inputs.

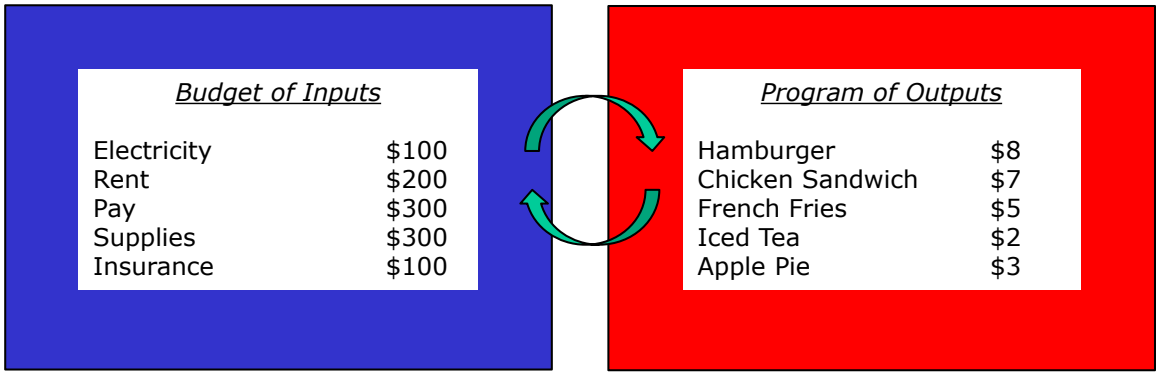

Figure 6. Programming for Outputs

The final product of the programming phase, the FYDP required by 10 USC § 221, details DoD's recommended allocation of forces, resources, and equipment associated with all DoD programs. The FYDP displays total DoD resources and force-structure information for five years: the current budget year, and four additional years.

The FYDP is provided to Congress in hard copy following the PB submission (statute directs that it be submitted no later than five days after the PB). The FYDP is a classified

document, and the FYDP database resides on the Secure Internet Protocol Router Network (SIPRNet).

Figure 7 provides a notional example of the format used for the FYDP, which comprises PEs describing the resources allocated to activities and programs. The example in Figure 7 provides the notional breakdown for a single PE for F-16 squadrons. PE 0207133F includes manpower authorizations, resources for peculiar and support equipment, necessary facilities and costs for wing headquarters, tactical fighter squadrons, avionics maintenance, field maintenance, consolidated aircraft maintenance, munitions maintenance, and weapons system security. The first two digits, in this case "02," refer to the Major Force Program (MFP) with which F-16 squadrons are associated, General Purpose Forces.[74] The PE code assigned to the particular activity or program is the next set of numbers, "07133"—in this case, F-16 squadrons. The final letter F represents the Component code—in this case, the Air Force.

DOD FYDP Program Element Example
(PBR 2016 Notional Data)

F-16 Squadrons Program Element *(0207133F)*

	Prior Year (PY)	Current Year (CY)	Budget Year (BY)					*Forces Only*
Dollars - millions	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**FY21-23**
Research & Development	297	110	81	71	97	86	86	
Aircraft Procurement	624	240	298	542	512	298	298	
Other Procurement		0	0	0	0	0	0	
Military Construction		0	0	0	0	0		
O&M	685	830	708	703	695	690	690	
Military Personnel	595	644	687	703	713	742	742	
Total Funding	**2,205**	**1,823**	**1,774**	**2,019**	**2,017**	**1,817**	**1,817**	
Manpower								
Active Officers	1,150	1,153	1,135	1,135	1,135	1,135	1,135	
Active Enlisted	12,199	13,478	13,324	13,320	13,320	13,323		
Civilian - Direct Hire	188	185	185	185	185	185	185	
Civilian - Fgn Hire	17	17	17	17	17	17	17	
Total Personnel	13,554	14,833	14,661	14,657	14,657	14,660	14,660	
Forces/Equipment								
F-16 Aircraft (PAA)	420	420	414	414	410	400	390	390

Figure 7. Notional Example of FYDP system data.

[74] According to the FYDP Structure Handbook, an "MFP is an aggregation of PEs that contain the resources needed to achieve an objective or plan." There are 12 MFPs used in the FYDP: (1) Strategic Forces; (2) General Purpose Forces; (3) C3, Intelligence and Space; (4) Mobility Forces; (5) Guard and Reserve Forces; (6) Research and Development; (7) Central Supply and Maintenance; (8) Training, Medical and Other General Personnel Accounts; (9) Administration and Associated Accounts; (10) Support of Other Nations; (11) Special Operations Forces; (12) Space.

All of the Military Departments, SOCOM, and OSD have component codes (e.g., A (Army), N (Navy), F (Air Force), BB (SOCOM), D8Z (OSD)). Overall, there are 65 component codes currently used in the FYDP. There are over 4,000 currently active PE codes and several thousand historical PE codes used to track legacy programs. DoD 7000.14R, "Financial Management Regulation (FMR)," Volume 2A, Chapter 1, Section 7.0 provides details on the management, sustainment, and reporting requirements for the automated FYDP databases.[75]

B. History of the Programming Phase

At the outset of the PPBS in 1961, programming was accomplished by a group of systems analysts working in the Office of the DoD comptroller. The process featured:[76]

- No fiscal guidance allocating toplines for each Service, to encourage innovation and allow for flexibility to adjust spending depending on the results of subsequent analysis
- Use of Draft Presidential Memoranda, with input from the group of systems analysts sent to the Secretary to obtain Service comments and input, as well as to document decisions on programs
- Use of PEs to define activities (such as operating weapons and paying personnel) and programs (such as developing and procuring fighter aircraft) and their associated resources
- Grouping PEs into force packages, appropriations categories, or other aggregations useful for an integrated understanding of capabilities and spending
- Five-year projections of resource needs, in what ultimately became the FYDP
- Use of analysis to determine priority military capabilities and cost-effective means to provide them.

As currently accomplished, programming retains all of these features except the first two, as discussed below.

In 1970, Secretary Laird decentralized execution of the PPBS, seeking greater involvement by the Joint Staff and Services. In developing the fiscal year 1972 program and budget, Laird assigned each Service fiscal guidance and directed them to analyze, develop, and propose their own resource plans and document them in a POM, as opposed to the Draft Presidential Memoranda prepared previously by OSD. Laird also extended the

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[75] Available at https://comptroller.defense.gov/FMR/fmrvolumes.aspx, accessed February 14, 2023.

[76] Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

PPBS process by four months to allow for analysis of the Service POMs and more time for considering decisions. POMs prepared by the Services and Components are still used in the PPBE system, and the Secretary still issues fiscal guidance to initiate preparation of the POMs.

Subsequent to Secretary Laird's changes, the Program Review began with the submittal of the Component POMs to what became the Office of PA&E. PA&E formed issue teams to assess the POMs, identify issues with their content, and develop alternatives to the Service's program proposals addressing the issues. By the 1990s, those alternatives were considered first by a three-star-level review group chaired by PA&E, with membership consisting of the Service programming offices and other OSD officials. The three-star group could then forward alternatives for consideration by the Defense Resources Board, chaired by the Deputy Secretary of Defense, with membership consisting of the Military Department Secretaries and Service Chiefs, as well as the Vice Chairman of the JCS. The Program Review was conducted during the summer, followed by the Budget Review in the fall.

Secretaries Weinberger and Rumsfeld both led attempts at biennial budgeting and programming, and Secretary Rumsfeld sought to combine the Program and Budget Reviews and compress their conduct into the late summer and fall. In the biennial periods, programs and budgets would be prepared the first year and modified the next year using a limited number of program change proposals and budget change proposals. Proposals that increased funding had to be offset with reductions.

The earlier attempt received some support from the Senate Armed Services Committee with an attempt to implement a two-year authorization. The off-year Program Review was replaced by an execution review focused on whether major programs were achieving their programmatic results. The effort was not supported by the House Armed Services Committee and eventually ended. The latter attempt failed, as the number of program and budget changes in the off-year became so large as to be equivalent to preparation of new POMs and BESs. Combining the Program and Budget Reviews also proved problematic, as programming and budgeting have different goals. Programming seeks to assess activities across multiple years and consider competing alternatives for satisfying guidance. Budgeting, on the other hand, focuses on adherence to fiscal guidance, correct pricing, and executability of funds during the upcoming budget year. Therefore, programming and budgeting were conducted serially both by the Services and by OSD, and schedule compression left insufficient time for budgeting.[77] The timing, duration, and

[77] Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes."

overlap of the Program and Budget Reviews has varied over the years; but, they are still, for all practical purposes, conducted serially.

Another attempted programming reform was an attempt to create a consolidated POM for the DoD Fourth Estate. The Fourth Estate consists of the DoD activities that are not in the Military Departments, with the bulk of the funding in Defense Agencies and Field Activities, such as the Defense Health Agency, the Defense Logistics Agency, and the Defense Threat Reduction Agency. It comprises about 20 percent of the DoD budget, making it almost as large as the Military Departments but without any central resource allocation control or dedicated oversight. Interviewees stated that Secretary of Defense Esper established a goal of a consolidated Fourth Estate POM in the FY 2021 PPBE cycle and made initial progress, but that efforts had not continued after his departure.

PA&E is now CAPE. The DMAG has replaced the Defense Resources Board and is generally attended by the Service Under Secretaries and Vice Chiefs.[78]

C. Programming Phase Commentary and Challenges

The overview in Section 2.E and the above history of the programming phase identified the key challenges raised by interviewees and provided a review of relevant literature. This section provides a brief summary of the full range of concerns raised by interviewees.

CAPE. Some interviewees criticized CAPE for being too focused on modernization accounts at various times over its history, and insufficiently focused on operating accounts (e.g., readiness, operations, etc.). These interviewees believed insufficient focus on readiness and O&S accounts in Program Review leaves a void in the largest element of the defense budget (there was appreciation of the progress being made in O&S by the cost estimating portion of CAPE). CAPE points out that it has increased focus on readiness in recent cycles, and interviewees cited F-35 sustainment as a specific example of progress. But interviewees stated that the O&S accounts continue to receive less attention in Program Review than modernization accounts and, for example, there is frequently no consistent, clear connection between resource decisions and readiness outcomes. Moreover, although the establishment and growth of the AWG has made substantial progress, CAPE does not produce the volume and depth of strategic analysis that it has in some past periods—a void that, as noted above, many interviewees stated was a challenge with the current PPBE system.

Program Review Content. Comments were made that the Program Review is not capable of surmounting the problems inherent in a weak DPG, such as not stating the

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[78] *Governance Structure for Deputy Secretary Managed Processes*, Deputy Secretary of Defense Memorandum, March 11, 2021.

Secretary's priorities and their resource implications clearly, which has too often been the case. Absent such clear guidance, more program content than will be affordable can be inserted into the Services' programs, leading to substantial changes the next year to reallocate funding to cover the shortfalls and precipitating program instability. A rigorous planning phase is a prerequisite to a successful programming phase, and, as noted above, some interviewees judged that at present it is not occurring.

Some interviewees believed that poor strategic decision-making resulted from strategic decisions sliding into the programming phase and that important programming functions were getting pushed out because of excessive burdens on resources and lack of time. The Military Department interviewees discussed the steps they take to build a "balanced" POM. Balanced generally included prioritization (i.e., the most important programs were funded within the FG constraint), consistency across accounts within the Military Department (e.g., a program increase in procurement had the requisite changes to O&M, military personnel (MILPERS), and RDT&E), and synchronization over time (e.g., actions funded in one account in one year had requisite follow-on actions funded in future years). Some interviewees called these "housekeeping" checks and programming best practices. The degree to which these housekeeping checks to ensure a balanced FYDP are conducted by OSD in the Program Review has varied over time, and some interviewees stated that recent years have seen this core element of Program Review atrophy.

Program Review Timing and Process. Comments indicated the timing of the Program Review (two to three months, spanning late summer to early fall) allocates enough time to consider only a limited number of issues and alternatives to the Service POMs. Nonetheless, the timing of the Program Review can, in conjunction with other factors discussed subsequently, compress the time available to prepare all the detailed documentation needed to submit the PB to Congress. One interviewee suggested that CAPE consider beginning its activities earlier in the year, before formal submission of the Service POMs, because certain (unspecified) issues tend to recur frequently. This suggestion might enable more time for budget preparation.

Some interviewees suggested that for the Program Review to be successful, the Secretary and Deputy Secretary must take an early and active role in defining the issues to be considered and then actively and continually participate in their assessment, tracking the progress made by the various staff elements in accomplishing the needed work and guiding it as it is done. Absent this strong leadership, no resource allocation process can be effective. The way Secretary Weinberger and Deputy Secretary Carlucci functioned was cited as an example of this approach, which recognized that the PPBE system provides a means to define and implement the Secretary's (and President's) priorities. Interviewees noted that this kind of leadership and involvement, which requires trust and familiarity among the Department's most senior officials, is more the exception than the rule.

Analytical Capabilities. Comments made echoed the concerns regarding inadequate capacity in the planning phase. Concern was expressed that inadequate analytical capacity has limited the Secretary's understanding of risks, thereby constituting a failure of the PPBE system. For most of the period since the NDS was issued, the predominant focus has been on the deny version of a Taiwan conflict. CAPE reports that the focus is broadening, and more variations of Taiwan and other challenges are being analyzed. As this report has noted, however, the capacity to produce these analyses is smaller than it has been in past periods.

Some interviewees took the opposite view (e.g., questioning the value of analytic tools in support of strategic questions). One interviewee thought that many of the strategic choices DoD faces, such as what would and would not be priorities for force structure and modernization if responding to aggression by the Chinese in the Pacific, can be informed by relatively simple analyses of specific warfighting problems in conjunction with expert judgment. Comments also indicated that decisions concerning such strategic questions, while informed by analysis, would always incorporate substantial elements of judgment and would never be settled definitively by analyses, campaign modeling, and/or wargaming.

Program Elements. Some interviewees believed there were too many PEs in the current FYDP. These PEs describe the funding for procurement of specified types and numbers of weapon systems, specified numbers of personnel, and other activities in separate funding categories, including S&T, RDT&E, and O&S. The specifics of the activities associated with each PE and funding category limit DoD's flexibility to re-allocate funding among them once appropriations have been enacted, as well as after the Component POMs have been submitted to OSD. Suggestions were made to provide flexibility by broadening the definition of the activities associated with a (perhaps substantially) reduced number of PEs. Varying views were provided on the reasons for the large number of relatively small PEs, with some interviewees attributing their large number to congressional direction and micromanagement. Others placed more of the responsibility on DoD program managers and their desires to have protected funding.

Other suggestions included broadening the use of authorities—such as currently exist for funding software development and fielding pilot programs—to other activities, using a single category of funding (i.e., "colorless" funding in Budget Activity 8). For example, an interviewee noted during the conflicts in Iraq and Afghanistan that DoD requested (and Congress appropriated) substantial amounts of funding that could be used at the Secretary's discretion to fund a wide variety of activities, from procurement of equipment to paying personnel. The specific purpose and color of the funding was determined when DoD decided how the funds would be used, providing inherent, substantial flexibility.

Another more far-reaching comment regarding PEs, but also germane to budgeting (including congressional appropriations), is that the PE structure should be substantially

revised to associate outcomes with resources, rather than associating specific individual projects, hardware, and activities with resources, as is done currently. What those outcomes might be was not described in any detail, nor was the methodology for determining how resources would be definitively associated with those outcomes and how progress achieving them would be tracked or measured. However, if such an approach could be implemented, and if it were used by Congress for appropriations, it could provide substantial flexibility to re-allocate funding across activities being conducted and funded under a given outcome.

Information Technology (IT). Interviewees noted that the IT systems used by the Military Departments, as well as those used by OSD, which support both programming and budgeting, are being modernized. For example, OSD now uses a single system, and the Army is using a relatively new cloud-based system. The Air Force is developing an integrated set of tools accessing authoritative Service-wide databases to perform analyses supporting development of the Service's program. The inputs, methodologies, and outputs of the Air Force toolset will be available and transparent across the Air Force. The toolset would generate resource data that would populate the Air Force's separate IT system for programming and budgeting. Although the number of different systems used to conduct programming and budgeting is being reduced, single common systems used by all parties within the Services do not exist, nor does a DoD-wide common system. A comment was made that use of a common DoD-wide system throughout all phases of the PPBE system that all stakeholders could access—and to which Congress would be provided access with submission of the PB—could produce the transparency needed to engender understanding and establish trust. Several interviewees indicated trust is needed to lessen contention and enable new initiatives and major programmatic changes to be approved both within DoD and by Congress.

Two-Year Programming and Budgeting. Interviewees observed that two-year budgeting with the goals of increasing stability in funding and reducing workload within DoD had been attempted and failed. However, a version of it using advance appropriations each year for the next fiscal year is being employed successfully by the Veterans Administration (VA). For example, the advance appropriation for FY 2024 in the VA FY 2023 budget request for medical care totals $132B. The most recent attempt during the second Bush administration developed POMs and BESs every two years, with the intervening year intended for considering only a limited number of changes to the plans provided in those initial submissions. Comments indicated that inside DoD, this approach failed because the number of changes proposed became large and the dollar values substantial. In effect, the Components submitted a POM and BES each year. Moreover, Congress enacted appropriations for only a single year.

Other Comments. Regarding trust and transparency, one interviewee stated that DoD needs to be completely open and transparent with Congress and the Executive Office of

the President (EOP) regarding what is occurring throughout the PPBE system. DoD should fully inform the authorization and appropriations staffs, as well as the staffs at OMB and NSC, of the issues being considered in the Program and Budget Reviews, the changes being considered, and the rationale for them. Thus, the entire notion of predecisional material and information should be abolished. Rather than assigning blame to the PPBE system itself, the interviewee regarded this lack of transparency—and the corresponding inability to achieve agreement among the EOP and Congress concerning DoD's proposals—as the root cause of the difficulty to successfully pursue new initiatives and major changes to the status quo. Other interviewees expressed skepticism that DoD would ever be fully transparent with Congress regarding its ongoing deliberations, as well as with details of the analyses and rationale supporting final decisions incorporated in the PB once it is submitted.

Some interviewees observed that several organizations have been created during the past several years that have been exempted from the multiple levels of review and oversight used within the PPBE system but also from those used within DoD's acquisition and requirements processes. Such organizations include the Space Development Agency, the Defense Innovation Unit, the Air Force Rapid Capabilities Office, and the Army's Rapid Capabilities and Critical Technologies Office (RCCTO). One interviewee observed that the creation of these organizations with authorities to bypass DoD's extant processes is a clear indicator of significant problems with those processes. A related comment was that the PPBE system had too many steps and levels and other processes at which someone can say "no" to new initiatives or proposals to change the status quo, and "yes" can often be obtained only at the highest levels (e.g., the Deputy Secretary and Secretary, in the case of the PPBE system). Reducing the numbers of those levels and the associated stakeholders and/or delegating decision authority to lower levels could help mitigate these problems, consistent with the ways in which the organizations listed above have been provided authority to operate, bypassing the extant processes.

Some comments indicated that the fundamental cause of instability in acquisition programs is initial optimistic and unrealistic goals for costs and schedules. The resource shortfalls that are subsequently generated because costs grow and schedules slip forces funding to be taken from other programs and sources. These reductions can result in a potentially cascading series of replanning and reprogramming spanning numerous activities, projects, and programs to accommodate the changes made in available funds.

D. Programming Phase and Modernization

This section provides deep dives into three key topics raised by interviewees: modernization funding, valley of death, and the size of accounts.

1. Modernization Funding

The modernization community is concerned that insufficient resources are being allocated to modernization. Using historic data from the DoD Green Book,[79] this section examines how total defense spending has been allocated to O&S (MILPERS and O&M) and modernization (procurement (PROC) and RDT&E) over time. Figure 8 shows the budget shares for these categories from 1948 to present.[80]

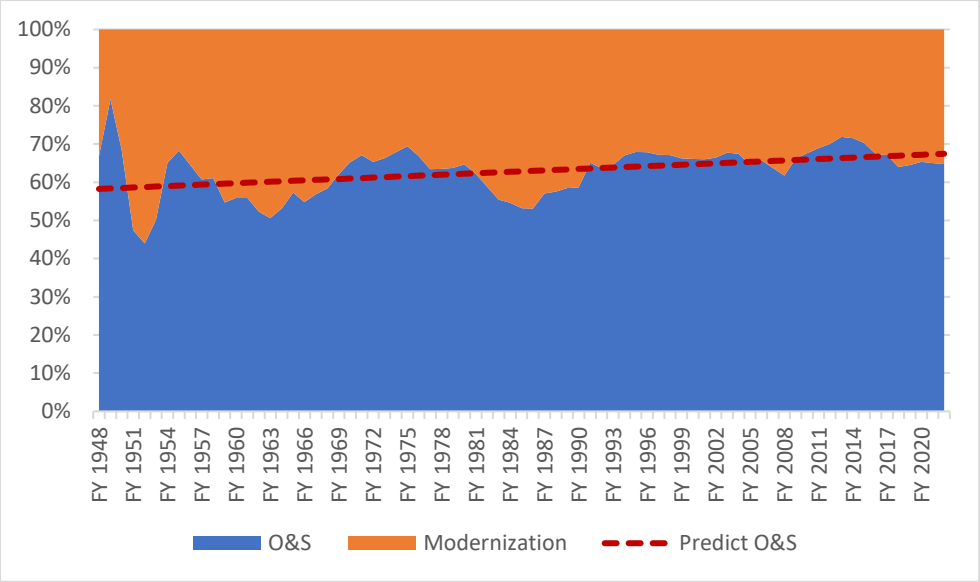

Figure 8. Defense Budget Shares, FY 1984 to FY 2022

As can be seen, the split of the budget between O&S and modernization varies over time. Figure 8 also shows a fitted trendline for the O&S budget share. The trendline indicates that there has been a gradual trend towards O&S over the last 70 years. Early in the period, O&S and modernization each received about 50 percent of the budget. In recent years, however, must-pay bills (in the short run) in O&S accounts have grown to about 60 percent of the defense budget, leaving only 40 percent available for modernization. To further assess this trend, two high-level analyses were conducted, looking at trends over specific periods (i.e., war periods and budgetary policy periods), and the causes of O&S cost increases.

Many factors interact to determine these long-term budget shares, including factors beyond any features of the PPBE system. Examples of such factors include combat operations and expectations of future operations, labor market and systems maintenance

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[79] https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2023/FY23_Green_Book.pdf.

[80] Smaller accounts like Military Construction and Revolving Funds are excluded for simplicity. They do not impact the trends examined in this section.

cost trends, and external public policy choices regarding federal budgeting rules and operations. In addition, the budget has increased significantly over time, and modernization funding has similarly increased significantly, even while its budget share has declined.

a. Budget trends during specific periods

Figure 9 highlights defense budget trends during different periods of war (i.e., the light-shaded periods). The specific wars with their time periods covered are listed in Table 3.

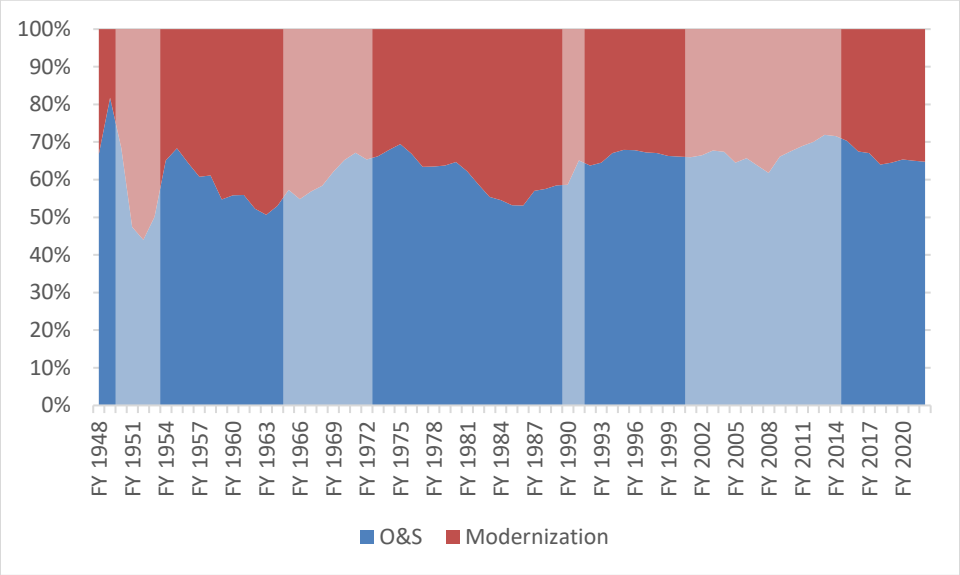

Figure 9. Wartime Defense Budget Shares, FY 1948 to FY 2022

Table 3 provides the share of the budget allocated to modernization for the year before the wars' start (pre-event), the average over the war period, and the year after the war ends. During the Korean War, modernization dramatically increased its budget share.[81] At the end of the war, the O&S/modernization split was exactly 50/50. For the remaining three wars, the opposite occurred: the modernization budget share decreased over the war and ended at a lower postwar level.

[81] There are challenges with comparing this era with later eras because there have been significant changes to budget and appropriations policies (e.g., acquisition funding did not expire in the Korean War era).

Table 3. Modernization Budget Share During Wartime

	PRE-EVENT	AVG. EVENT	POST EVENT
KOREA (1950-1953)	18%	47%	50%
VIETNAM (1965-1972)	47%	43%	38%
DESERT SHIELD/DESERT STORM (1990-1991)	42%	38%	36%
OEF/OIF (2001-2014)	34%	34%	30%

Of greater relevance to the Commission is how budget allocations have changed during several periods with distinct budget policies. These periods had intentional changes in defense spending or priorities with the potential to affect the allocation of resources between O&S and modernization. Figure 10 shows these budget eras over time, and Table 4 summarizes the changes that occurred during them.

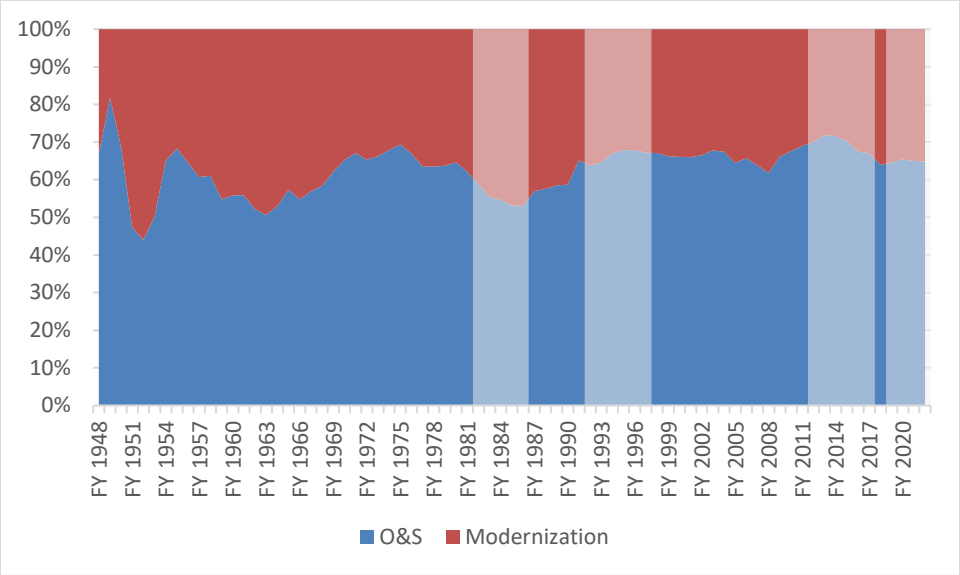

Figure 10. Defense Budget Shares (Budget Eras), FY 1948–2022

Table 4. Modernization Budget Share

	PRE-EVENT	AVG. EVENT	POST-EVENT
REAGAN BUILDUP (1982-1986)	38%	45%	43%
POST COLD WAR DRAW DOWN (1992-1997)	35%	34%	33%
SEQUESTER (2012-2017)	31%	30%	36%
POST NDS (2019-PRESENT)	36%	35%	n/a

During the Reagan buildup, the defense top-line was increased significantly, and a large share of the growth was allocated to modernization funding. Modernization funding increased from 38 percent to an average of 45 percent during the era. In the early 1990s, following the end of the Cold War and the Gulf War, defense spending began to fall, and as it did, O&S costs began rising once again as a share of the total budget. Defense spending was cut significantly, and modernization funding experienced a larger share of the cuts.

Toward the end of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), Congress enacted the Budget Control Act, known as "sequester." Prior to sequester, O&S had increased its budget share to 71 percent of the DoD topline. Over the sequester period, the O&S budget share initially increased but then began to fall, averaging 70 percent for the period but ending closer to 64 percent. Interviewees pointed out that on one hand this decline represents a more balanced budget drawdown, but on the other hand it left DoD in what some described as a readiness crisis that became apparent when tensions flared with North Korea in 2017, followed by a dramatic increase in spending, with an early focus on rebuilding readiness.

Since 2018, the year after sequester effectively ended and the year the new NDS was released, modernization has been a relatively constant 36 percent of the budget. This figure does not reveal much change post-NDS, but when examined in more detail there is one change that can be seen. Figure 11 shows the budget era breakdown, with RDT&E and procurement separately displayed. Although modernization as a whole has had a constant budget share, there has been an increase in the portion going to RDT&E, with a reduction in budget share to procurement. RDT&E's rise in budget share began during sequester and has continued during the post-NDS period.

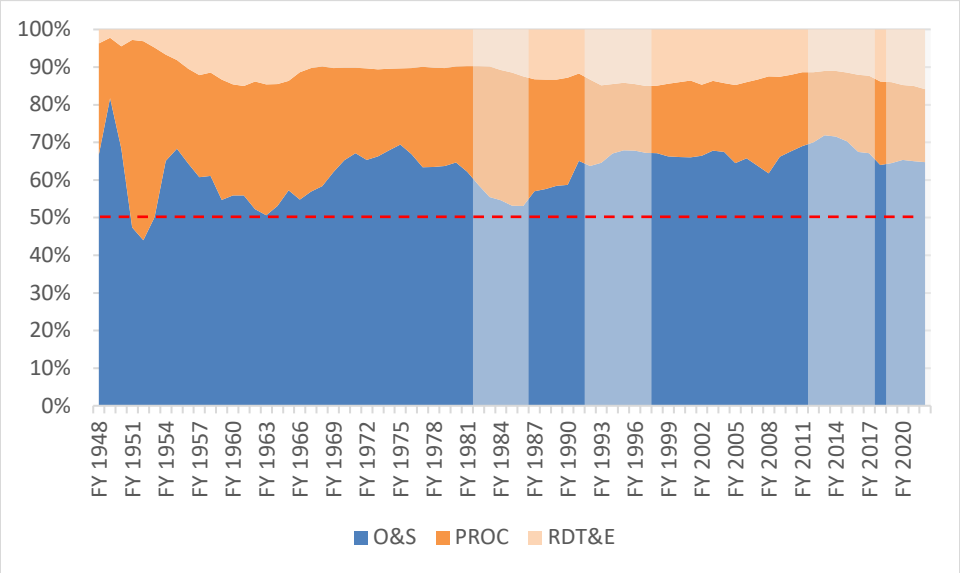

Figure 11. Breakdown of RDT&E and Procurement Budget Shares, FY 1948 to FY 2022

Some of the reasons for this long-term rise in O&S costs are examined below. To illustrate the impact this rise has had on available funding for modernization, two simple simulations were conducted and resulting budgets calculated. First, if the DoD topline remained the same but the budget had been reallocated to a 50/50 split between O&S and modernization funding, then modernization funding would have been about $75B higher in 2019 and would have risen a projected $100B higher in the outyears of the current budget. Second, if the topline had been increased so that modernization funding had risen at the same rate as O&S funding, then modernization funding (and the DoD topline) would have been about $150B higher in 2019, rising to over $200B higher in the outyears of the current budget.

b. Why is modernization getting squeezed?

A challenge for the modernization community is that in the short run, O&S costs tend to be must-pay bills, whereas modernization spending is more discretionary, meaning that modernization funding gets crowded out as O&S costs increase. There are many reasons for growing O&S costs; two of the most important and most analyzed reasons are rising personnel costs and rising O&S costs for weapon systems.

To examine personnel costs, Figure 12 divides O&S costs into three categories: military pay (MILPERS); civilian workforce pay (CIVPERS), which is a component of O&M; and O&M excluding CIVPERs. The MILPERS and CIVPERS accounts capture pay (e.g., base pay and incentive/special pays for military and salaries for civilians), some benefits, and some additional personnel costs, such as change-of-station costs.[82] The last category, O&M excluding CIVPERS, includes nonpersonnel O&S costs (e.g., operating costs for weapon systems, training costs, supply costs, infrastructure costs, etc.) as well as some large benefits costs like the Defense Health Program (DHP).

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[82] We note the definition of what is included in civilian pay has changed over the fiscal years. See Green Book, 301. The main change appears to have occurred in 2011. From that point onward, civilian pay no longer included foreign hire funding, civilian retirement benefits, and a small portion of other personnel benefits.

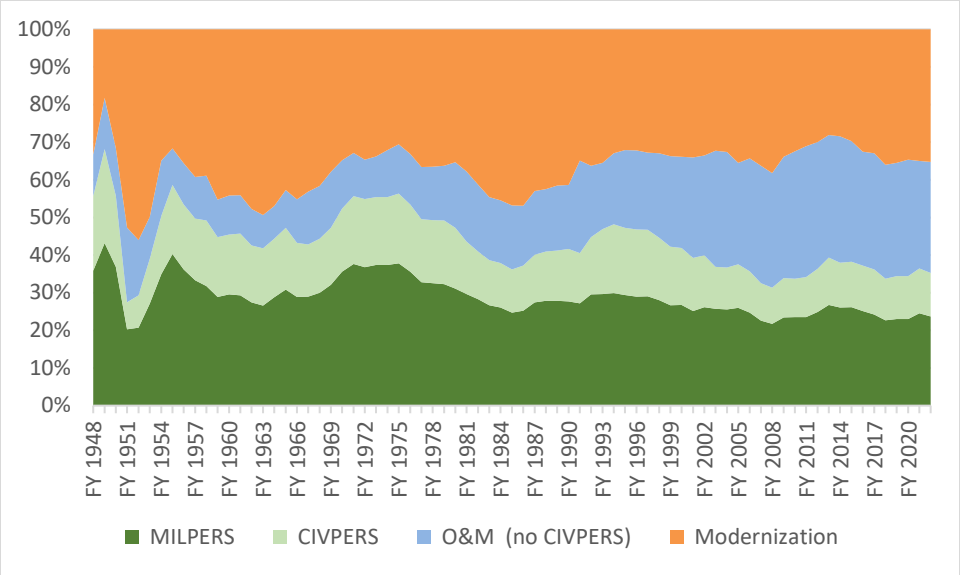

Figure 12. Budget Shares, With Personnel Cost Categories

While MILPERS and CIVPERS show a slight decrease in budget share over the last 70 years, this change is overwhelmed by the reduction by about 50 percent in both military personnel and civilian personnel during this period. Figure 13 shows total end strength and average cost per person, defined as the MILPERS (CIVPERs) account divided by end strength.[83] For example, military end strength has fallen considerably from a high of over 3.5M in the 1960s to a current low of roughly 1.4M. The result is that cost per military member has doubled in real terms (i.e., in addition to inflation) over this period. For military personnel, the increase in per-person cost is actually larger because a major contributor to the growth in O&M excluding CIVPERS is military healthcare. Commentary has highlighted different interpretations of these data. One factor is the shift from the draft system (which masked the true cost of military personnel) to the all-volunteer force, where military compensation must match civilian compensation growth across the economy. This fundamental shift led to a multidecade calibration and adjustment to military compensation levels. Another factor for the dramatic increase in personnel costs is that the design of the military compensation package, with its heavy use of deferred and in-kind compensation, is significantly out of step with civilian best practices of more efficient cash compensation.

[83] The Green Book reports total active military end strength, which includes active duty personnel, activated guard/reserves, and full-time guard/reserves.

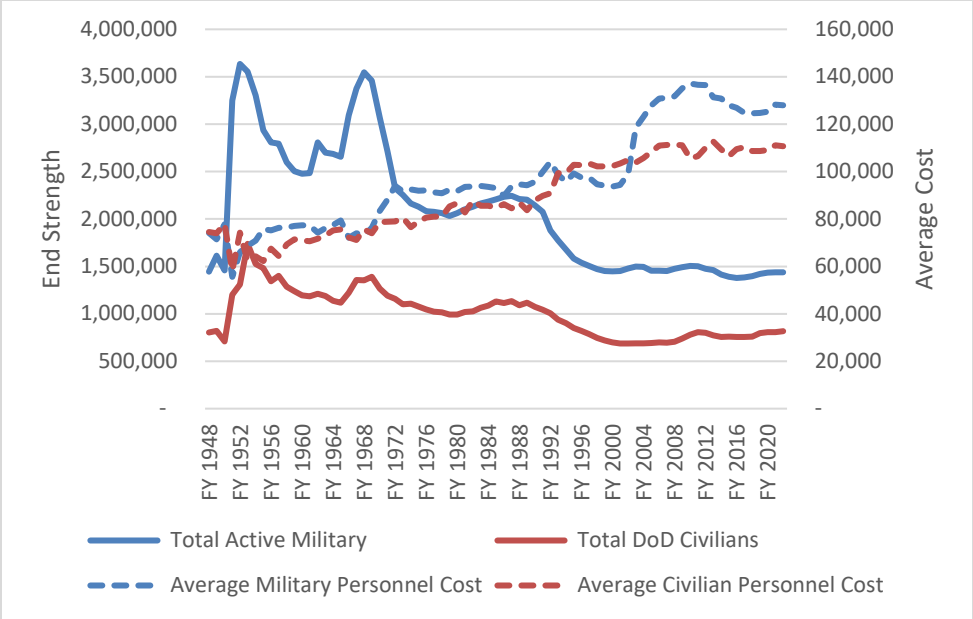

Figure 13. End Strength and Average Personnel Costs in Real (Inflation-Adjusted) Dollars

Another prominent cause of rising O&S costs is the O&S for weapon systems, which is included in the O&M account.[84] However, O&M also includes the personnel costs discussed above, training costs, equipment and supply costs, and service costs. This accounting makes it harder to examine weapon systems O&S costs in isolation.[85]

One recent IDA analysis used FYDP data to show that the Force and Infrastructure categories that proxy for weapon system O&S costs had the fastest growth rate in O&M plus MILPERs per active duty member. More specifically, over the period 2010–2015, these costs grew 5.3 percent compared to an overall growth rate of 1.5 percent.[86]

This analysis went on to examine three key questions:

- To what extent are new weapon systems more expensive to operate and maintain than the systems they replace?
- To what extent do programs experience cost growth in O&S relative to the baseline established at Milestone C?

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84 The military personnel operating and maintaining these systems are in the MILPERS account.

85 A more detailed analysis of O&M spending would require detailed FYDP data and was beyond the scope of this analysis. IDA has requested access to the FYDP for use in its final report.

86 Lance Roark, IDA Research Paper for Addressing Weapon System O&S Costs, IDA Central Research Program project 7165 (Alexandria, VA: Institute for Defense Analyses, May 2016).

- To what extent do mature systems experience growth in actual O&S costs (possibly due to aging or other reasons)?

To answer these questions, the report used data from Selected Acquisition Reports (SARs), finding that, on average, new weapon systems were 13 percent more expensive than their predecessor (measured in annual unit cost per system).[87] Second, they found that the average cost growth in O&S relative to the Milestone C baseline was 33 percent.[88] Finally, they found the average annual growth in maintenance costs for a set of mature aircraft programs to be approximately 1.5 percent (but with wide variation).

In other studies, aircraft O&S costs have been shown to increase with aging. Estimates ranged from 0 to 3 percent for studies that used 1990s data and 3 to 8 percent for studies that used data from the 2000s. A more recent CBO study attempted to reconcile these estimates and found growth rates in the 2 to 4 percent range.[89]

In summary, there is evidence that modernization funding has been crowded out of the budget as O&S costs have risen. It is beyond the scope of IDA's support to the Commission to determine if that situation is a good result or a bad result, but the PPBE system implications are within scope. Key questions raised by interviewees with respect to the PPBE system include:

- If the rise in O&S costs is viewed negatively, to what extent has the PPBE system failed to control this problem? Some interviewees pointed to challenges outside of the PPBE system, such as the acquisition community's failing to consider O&S costs in selection decisions. But other interviewees (e.g., interviewees who raised the incentive challenges discussed in Section 2.E.2) stated that the PPBE system has been a contributor to this challenge by failing to incentivize better manpower management decisions and acquisition lifecycle cost management practices.
- If there is a desire to restrain O&S cost growth in the future, what changes to the PPBE system would be required? Some interviewees stated that major reforms in areas like military healthcare and considering O&S costs in weapons procurement would likely require dedicated focus in the PPBE system at the strategic level (i.e., planning phase) to succeed. These are major issues that have been discussed for decades, without substantive improvement. Changing the incentives created by institutional arrangements within DoD governance may be required.

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[87] This simple estimate does not adjust for the fact that new systems have greater capabilities. Growth rates varied across high-cost and low-cost platforms.

[88] The growth rate showed improvement in the later part of the sample.

[89] CBO, *Operating Costs of Aging Air Force Aircraft*, cbo.gov.

2. Valley of Death

In its simplest form, the product development lifecycle can be divided into three successive primary steps:

1. Science and technology (S&T)
2. Development
3. Production and fielding

When a capability gap is identified, if it requires new technology the first step is likely S&T funding for scientists and technologists. Once the technology is mature, DoD provides development funding to turn it into an actual product, with prototypes and tests. Once a product is developed, it is then produced and deployed. These steps are usually conducted by separate organizations with separate budgetary accounts.

One definition of the valley of death is when a DoD-funded project fails to transition from one of these steps to the next. A project can be funded in S&T, succeed, and then not be funded by the developers. Similarly, a project can successfully complete development and not be funded by procurers and fielders.

In analyzing these projects that fail to transition, the first question becomes: *Is this necessarily a problem*? DoD's objectives include developing and delivering technology advantages to our warfighters. This commitment means funding a portfolio of leading-edge technology projects, most of which—as in the corporate world—are not ultimately successful and, even if successful, may not ultimately deliver enough benefit to justify their cost of adoption. Identifying and terminating technological or operational "dead ends" as soon as possible—and thereby rapidly churn the technology portfolio—is seen as a core competency. The concern with the valley of death, therefore, is not with focused, conscious decision-making about which projects to continue in the technology portfolio; the concern is with implicit project terminations that are unintended by the institutional processes.

With the significant shift from DoD-funded S&T and development to commercial investor funding in many new high-technology growth areas, a new potential valley of death challenge is emerging. In this case, a startup company funded by private investors may develop a new technology (with little or no DoD funding or visibility). As that technology matures, the startup company needs to develop a customer base with contracts to be competitive for further rounds of funding. But unless the company coordinated with DoD early in the process, DoD is now seeing the technology for the first time as it is ready to transition. It takes DoD time to do due diligence research on new technologies and establish contracts for acquiring it, which the startup company may not be able to endure as its investors grow impatient. The private sector is now the primary funding source for S&T in many areas that are important to DoD (e.g., artificial intelligence and autonomy).

This new valley of death is more complex because it does not have DoD organizations and funding on both sides of the valley.

To summarize, in its simplest form (there are many more complex permutations of this simple framework), there are four basic valleys of death:

- DoD-funded S&T project failing to transition to DoD-funded development
- DoD-funded development failing to transition to DoD-funded production and fielding
- Private sector-funded S&T failing to transition to DoD-funded development
- Private sector-funded development failing to transition to DoD-funded production and fielding

IDA asked interviewees about the challenges of transitioning programs across these potential valleys of death. Some interviewees (consistent with position one identified in Section 2.E.1 above) stated that the long lead times required in programming (around two years prior to execution) is a major cause of the valley of death. At the pace of technological change, it is hard to predict where future advances will take place. Having to place very specific (narrow BLIs) "bets" two years in advance is becoming increasingly difficult, and limited realignment authority in execution prevents correction when the new technologies suddenly emerge.

Other interviewees stated that the root causes of the valley of death were different.[90] These interviewees emphasized lack of communication as a key cause of the valley of death—particularly the "upstream" organization's failing to coordinate and have buy-in from the "downstream" receiving organization before initiating the project.[91] These interviewees stressed that for DoD-funded projects, the best practice is to have a technology transition agreement (TTA) signed by all three phases before initiation of a project. They also noted that this scenario does not mean that the downstream organizations have an automatic veto over potential upstream projects. If the S&T or development project has been leadership-directed as a "forcing function" for the deploying community to modernize faster, then the leadership can direct the downstream organizations to support the project and sign the TTA.

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[90] This issue was also discussed in John Whitley, Three Reforms to Improve Defense Resource Management, *IMB Center for The Business of Government*, 2022. https://www.businessofgovernment.org/sites/default/files/Three%20Reforms%20to%20Improve%20Defense%20Resource%20Management.pdf.

[91] This challenge was discussed earlier in Section 2.E.2. Combining S&T or development funding into centralized account that are distinct from the acquisition programs that will ultimately procure the system increases the communication challenge between upstream and downstream partners.

For these transition problems, interviewees stated the PPBE system is not a cause of the valley of death and, in fact, is part of the solution. The FYDP provides a multiyear plan of resources so that an S&T organization initiating a new project that is expected to take, for example, three years can observe in the FYDP if the development community has funded it three years later (or has a funding allocation for a set of projects that may transition). Similarly, a developer initiating a project can observe if the procurer has funded it at the appropriate time in the FYDP. Without the FYDP and programming phase of the PPBE system, there would be no database or process to initiate and validate these funding decisions.

This coordination challenge becomes more complicated with private-sector-funded upstream S&T or development. Interviewees described the sequence of a typical scenario:

1. An engineer has an idea to advance technology and receives venture capital investment.
2. The engineer establishes a startup company that spends three years proving the technology.
3. Upon successful proof of the technology, the venture investors then provide the startup with six additional months of funding to identify customers and win a contract to demonstrate viability before receiving the next round of funding.
4. The startup approaches DoD with the new technology.
5. DoD is interested but cannot get a contract in place quickly enough to meet the startup's timeline requirements with its funders.

Interviewees described two actions that are required from DoD for this startup to meet its contracting deadline: a contracting action has to be initiated, and funding has to be aligned to this contracting action. The harder of the two is often the contracting action. DoD requirements, acquisition, and operational professionals may be seeing the new technology for the first time. It is unlikely that the technology is configured or presented in a way that matches DoD needs, and it may take extended interaction for the startup to learn DoD language, needs, and priorities, requiring reworking and reconfiguring the new technology. Similarly, contracting officers are focused on the reliability and reputation of the companies they work with. Contracting officers require an extended period of due diligence to ensure that taxpayer resources are being used in the interests of the taxpayer. Some interviewees stated that in many instances, these challenges are larger and take longer to resolve than moving the funding.

These interviewees stated that, again, the root cause of the challenge is communication. If the startup had been working with DoD during the three-year development period, much of this interaction would have already occurred. The startup would have been conversant in DoD language and would have configured its proofs of

concept in ways that are applicable to DoD needs. Contracting officers would have been familiar with the company and would have developed confidence in its ability to deliver. Aligning funding to a potential contracting action could have occurred over years, instead of there being a sudden need to do so in months. Interviewees stated the underlying contributors to this lack of communication include incorrect legal guidance that DoD should not engage openly with the private sector, insufficient market analysis and market outreach from DoD, and failure of investors to require early engagement with potential customers.

3. Account Size

This chapter has presented a number of challenges within the programming phase and, for some of these challenges, conflicting statements from interviewees about their root causes. Empirical analysis of the programming phase is one step that can be used by the Commission to identify the key challenges it will focus on and identify root causes. This section provides some preliminary analysis of account size. It then describes additional analysis that can be conducted on funding movement and stability.

Figure 14 shows average BLI dollar value (in FY 2023 constant dollars) over time. As can be seen, there is significant variability over time, with a sharp increase in average size for procurement and RDT&E during the early 2000s and then a down and up trend around $75–100M for RDT&E and $125–175M for procurement.

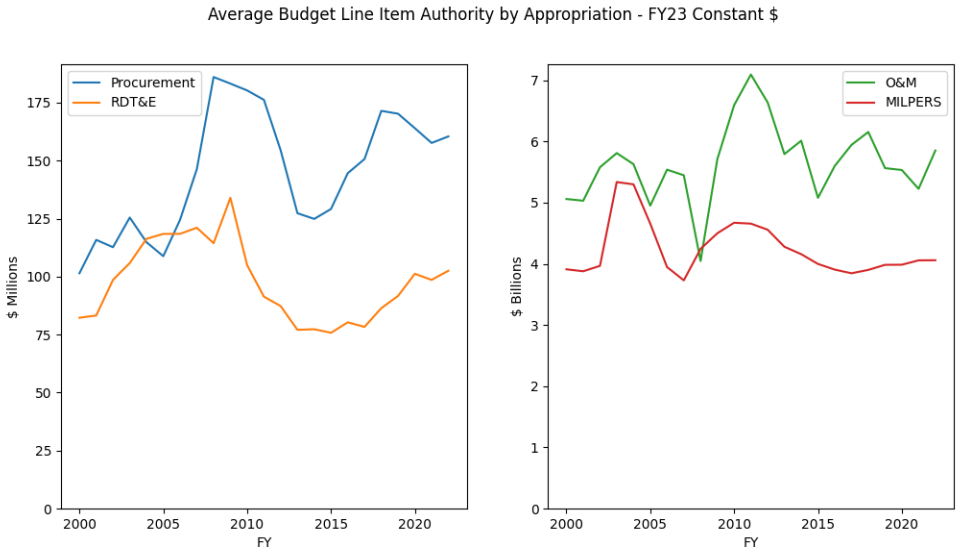

Figure 14. Average BLI Dollar Value, in Constant FY 2023 Dollars

One question about this pattern over time is to what extent changes to average BLI size correlate with changes in the number of BLIs or with total account funding level. Figure 15 provides the trends in average BLI size, number of BLIs, and total account funding over time. For procurement, the number of BLIs has remained approximately constant, and almost the entire change in BLI size is attributable to funding levels. For RDT&E, there has been some increase in the number of BLIs, but the dominant factor driving average BLI size is funding level. O&M and MILPERS have less clear patterns and would take further analysis to fully disentangle the causes of changes in average BLI size.

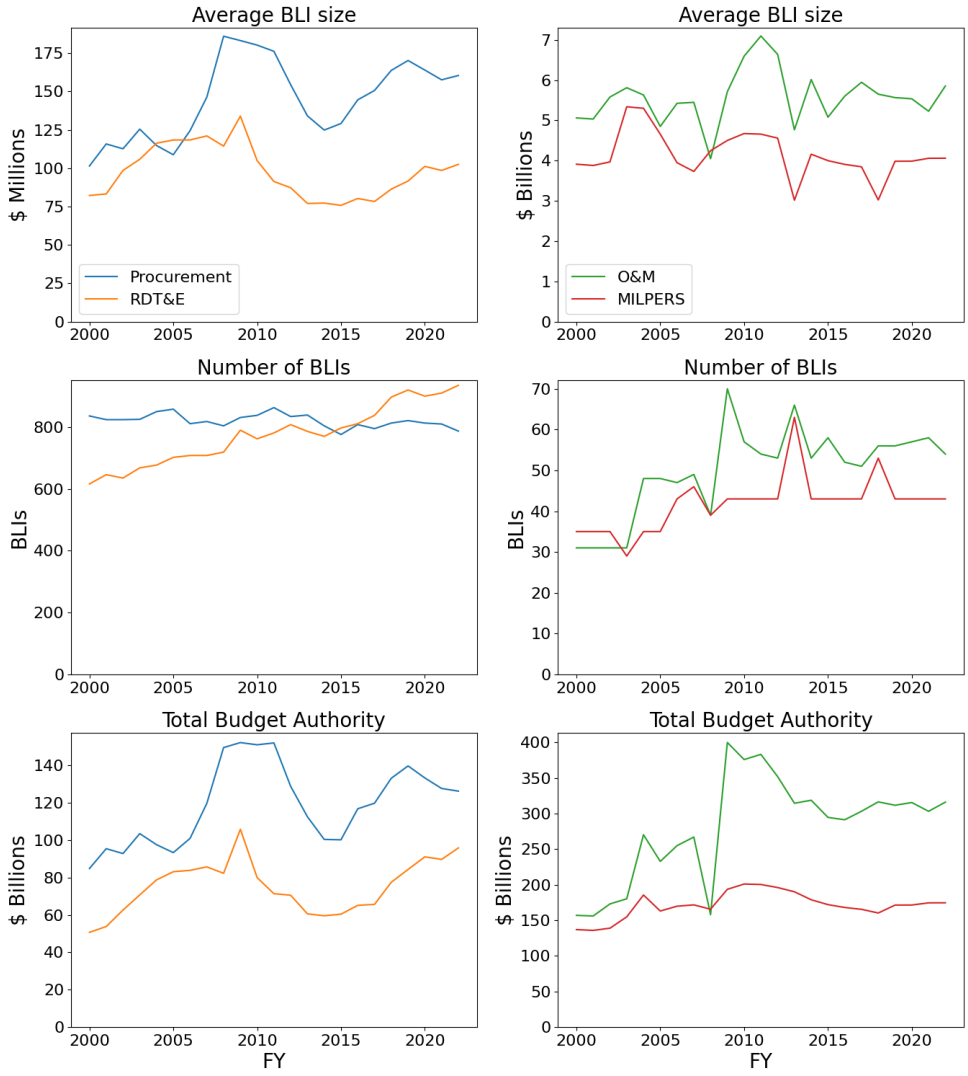

Figure 15. Breaking Out BLI Size Into Number of BLIs and Total Account Funding

Figure 16 provides these same charts for procurement and RDT&E broken out by Military Department and Defense-Wide. Procurement saw a small decrease in the number of Army BLIs, while the other Components had relatively constant BLI counts. For RDT&E, all Components experienced the increase in the number of BLIs shown in Figure 15.

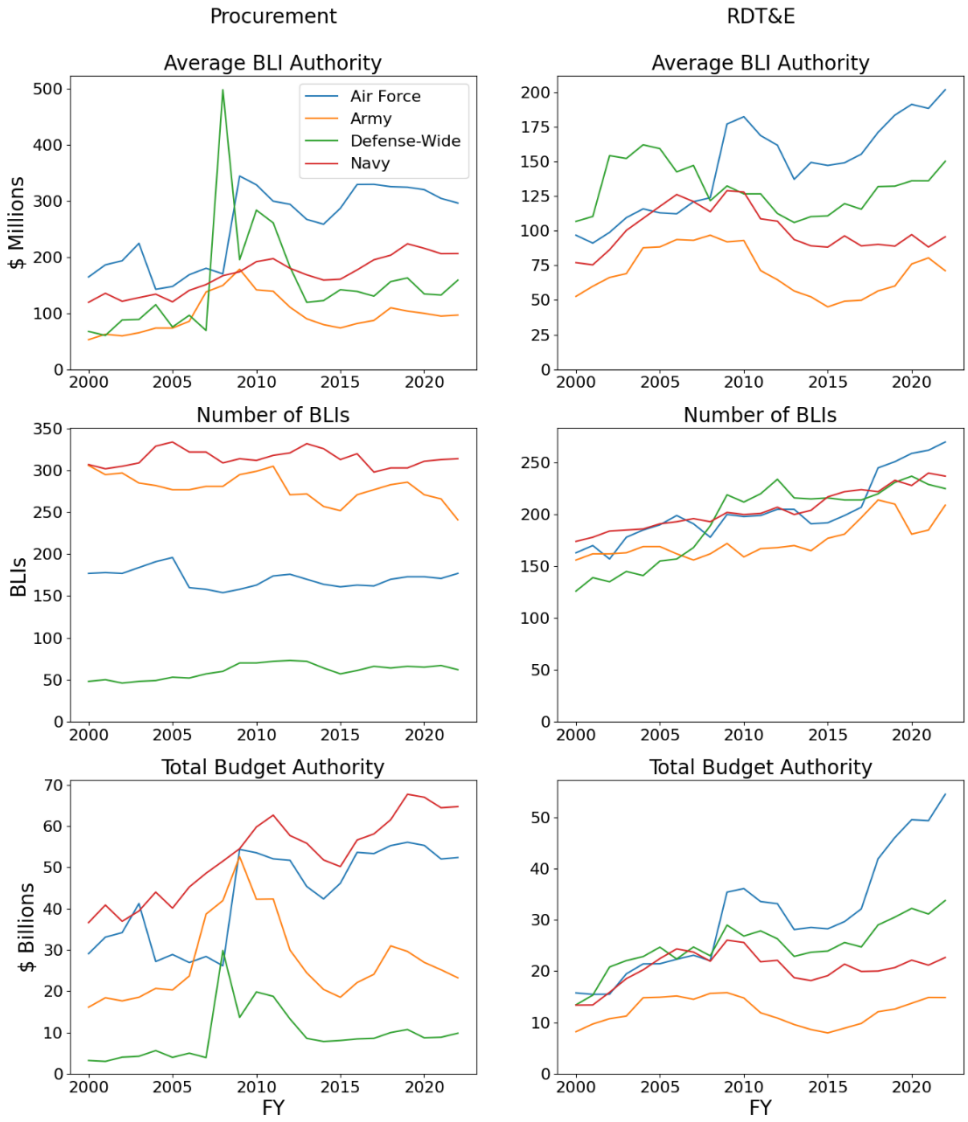

Figure 16. Component Breakout of Average BLI Size

Another question about this change in average BLI size over time is about the distribution of BLIs around this average. For example, are most accounts similar to the average account size, or are there many very small and large accounts significantly different than the average? To examine dispersion, Table 5 provides the quartile range for procurement and RDT&E using FY 2023 constant dollars. In recent years, about 25 percent

of both RDT&E and procurement BLIs were smaller than $10M, and 50 percent were smaller than $40M.

Table 5. Quartiles for Procurement and RDT&E BLI Size (FY 2023 Constant Dollars)

	Appropriation - FY23 Constant Dollars (Millions)							
	Procurement				RDT&E			
Percentile	25th	50th	75th	100th	25th	50th	75th	100th
FY								
2000	7	21	60	8,393	12	34	89	3,056
2001	8	22	62	8,840	12	35	87	2,865
2002	7	20	60	9,432	14	39	94	5,727
2003	9	24	76	11,956	15	39	97	4,635
2004	9	25	76	5,954	16	41	112	5,421
2005	8	22	72	5,700	15	39	115	6,366
2006	9	30	91	5,114	15	43	116	3,779
2007	11	36	110	5,870	13	41	111	4,094
2008	13	40	125	22,374	13	41	104	2,958
2009	14	47	139	5,757	11	37	98	15,284
2010	13	45	123	10,317	13	39	102	2,656
2011	11	39	124	9,274	10	32	90	1,926
2012	12	39	111	5,854	8	32	88	1,720
2013	9	30	85	5,716	8	27	77	1,898
2014	8	26	81	7,855	9	28	81	1,885
2015	9	27	92	6,981	9	29	78	1,435
2016	9	31	94	6,726	10	31	84	1,496
2017	10	36	112	5,857	10	31	86	1,552
2018	11	39	117	7,339	11	34	95	2,165
2019	12	41	128	7,871	11	37	99	2,529
2020	13	41	118	8,960	11	37	116	3,231
2021	11	39	118	7,085	10	35	112	2,990
2022	12	40	117	6,469	10	36	108	2,939

Figure 17 shows these RDT&E quartiles over time. As can be seen, there was some increase in BLI size in the 2000s followed by some decline during the following decade. However, overall the quartiles have been relatively stable over the last two decades.

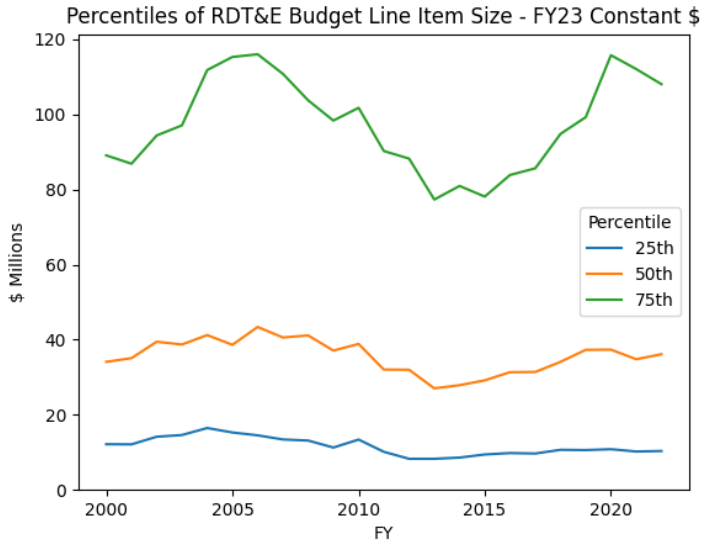

Figure 17. Quartiles of RDT&E BLIs, in FY 2023 Constant Dollars

To quantify how many BLIs were small, Figure 18 shows the number of BLIs below $30M over time, revealing an increase over the last 10 years.

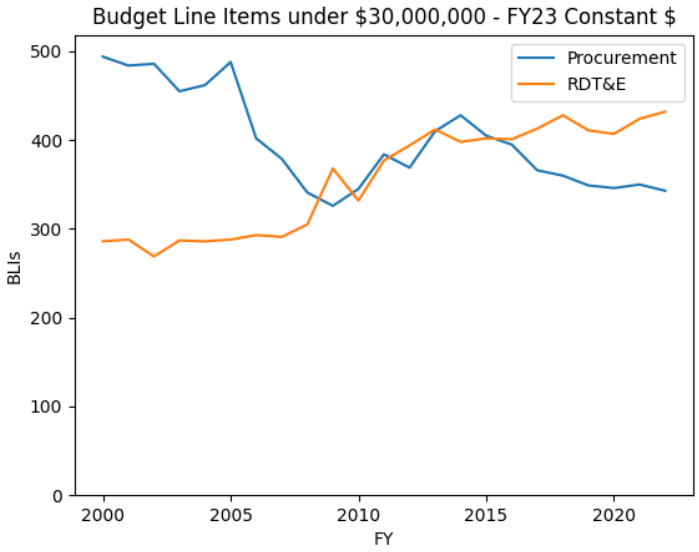

Figure 18. Number of BLIs Below $30M, in FY 2023 Constant Dollars

These charts indicate that there are many small BLIs in the RDT&E and procurement accounts. However, because they are small in value, these small BLIs do not represent much of the funding total for the accounts.

Figure 19 shows the share of the account total that is contained in BLIs less than $30M.

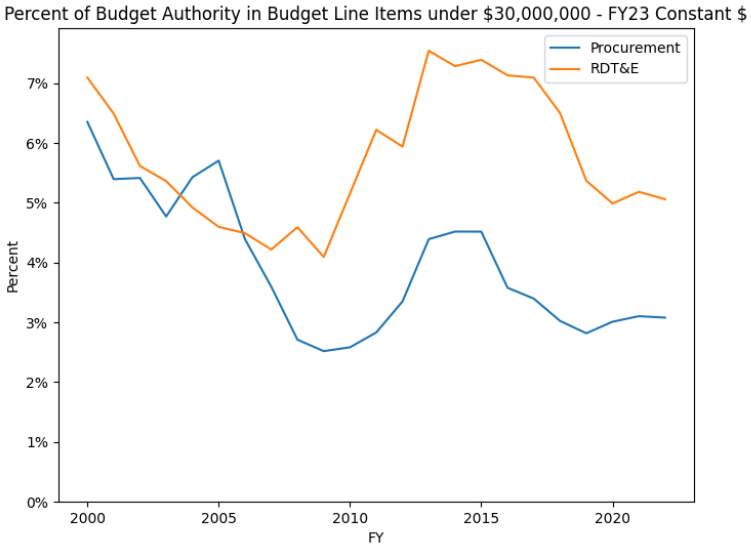

Figure 19. Percent of Budget Authority in BLIs Less Than $30M, in FY 2023 Constant Dollars

These charts indicate that there are a large number of small BLIs but that these small BLIs are a relatively small fraction of total RDT&E and procurement funding. IDA asked interviewees what was causing these small BLIs and got conflicting answers. One group of interviewees attributed the narrow BLIs to congressional micromanagement and lack of trust of DoD. Other interviewees stated that DoD program managers were frequently the requesters of small BLIs because they believed it protected their programs from encroachment by others.

The ultimate question with respect to BLI size is how constraining it is (e.g., with a 20 percent or fixed dollar below-threshold reprogramming (BTR) limit, does the small BLI size materially limit DoD funding flexibility?). This question will be examined in Section 6.D on reprogrammings.

E. Reform Priorities and Options

Interviewees generally did not provide concerns with the way that programming was conducted. The predominant concerns were with the content of the programming phase. Strategic decisions not being addressed in the planning phase were (implicitly) pushed to the programming phase, leading to inconsistency, overprogramming, and schedule slip. Because of the encroachment of planning functions, important "housekeeping" programming functions weren't being performed.

Interviewees identified three key areas of housekeeping checks that they believed need to be re-invigorated in Program Review:

- Reviewing for DPG compliance: Interviewees identified reviewing POMs for DPG compliance as a longstanding challenge in the programming phase. One challenge is when the DPG is vague and it is unclear how compliance can be measured. The other challenge is failing to measure compliance even when it is measurable. As described in the commentary section above, interviewees were mixed on current compliance; some thought it was adequate for recent DPGs and some thought it continued to be inadequate. But in discussions with interviewees about redesigning the planning phase to a decision-making process, most stated that doing so would create a stronger requirement for ensuring compliance in the programming phase.
- Reviewing for consistency across POMs and over time: Components attempt to submit POMs that balance within their Component but cannot ensure consistency with other Components' POMs. One example that has had consistent processes for an extended period of time is Defense-wide military manpower. But interviewees stated that there are many other areas where consistency is required that are not routinely reviewed in Program Review. They provided as an example the plans of operational forces for spending across the FYDP on maintenance and supplies compared to the projected receipts and capital investment plans of the working-capital-funded maintenance and supply activities. Interviewees stated that there was a standing issue team used to ensure consistency between these accounts in the 1990s. Another example was related to the valley of death concerns that were a motivating factor for the Commission. In past periods, there was systematic review of S&T accounts in POM submissions and development accounts in subsequent years to ensure developers were aware of and planning for potential transitions from the portfolio of funded S&T programs across the FYDP.
- Reviewing for "moral hazard" within POMs: Although Components make great efforts to develop sound POMs, there are times when incentives may not be aligned for efficient POM decisions, which creates an oversight role in the Program Review. Examples provided by interviewees and discussed earlier in this report include overprogramming and failing to take into account (or funding) O&S costs resulting from acquisition decisions.

Interviewees identified two broad areas of issues that needed this further attention (housekeeping checks) in Program Review:

- Investments: Although interviewees viewed investments as the primary focus of CAPE in program review in recent years, they also stated more time in Program

Review should be spent on the basics of building a balanced investment portfolio. The above examples of alignment between S&T and development funding, O&S costs not being adequately considered or funded in requirements determination and acquisition program selection decisions, etc. were all cited as failures that may originate in the acquisition community but that need to be addressed by the resource allocation community.

- Operations and Sustainment: Interviewees stated that the level of effort and emphasis on O&S programming were not commensurate with O&S's share of the budget and importance for peacetime deterrence and wartime success. They noted that, while some progress is beginning to be made, there is continued inconsistency between the various guidance documents like the Global Force Management Allocation Plan and Directed Readiness Table requirements and Program Review funding decisions. Interviewees also noted some recent progress in areas like F-35 sustainment, but stated there was still not widespread or consistent analysis linking resource decisions to readiness improvements. They recommended expanding focus on these issues in Program Review and increasing the investment in developing analytic tools related to O&S expenditures. CAPE reports that progress is being made (e.g., there is now a readiness full-funding review, and comparisons of funding levels and other guidance documents are starting to be conducted as part of Program Review). This progress should be continued and grown.

When the recommendations of the planning phase chapter and this chapter are combined, the result is a significantly different Program Review. Strategic decisions about military capabilities, force structure, posture, etc. are removed from Program Review and examined earlier in the process (or, they are reduced to review of DPG-directed option development, as opposed to conducting original analysis on option development within the Program Review). The Program Review that is conducted over the summer and early fall then becomes a more tactical (programmatic) review focused on DPG compliance, ensuring a balanced FYDP (consistent across Components, across time, and within Components). This more technically based Program Review should be quicker to accomplish and should ease the burden of large, last-minute changes and schedule slip experienced by Comptroller in the Budget Review.

5. Budgeting Phase

This chapter describes the budgeting phase and its key documents, reviews the history of the budgeting phase, identifies interviewee concerns with the budgeting phase, provides a deep dive into the timing of decisions and change requests, and recommends reform areas and options.

A. Budgeting Phase Overview and Key Documents

The primary purpose of the budgeting phase is to prepare a correctly priced and executable defense budget translated into appropriation-account categories for the upcoming fiscal year. The USD(C) leads the budgeting phase. Budgeting begins with the Components as they develop their BESs.

The BES is an electronic database transferred from the Components to USD(C), accompanied by supporting data and documents. Whereas the POM organizes resources by program or output, the BES organizes resources by appropriation or input categories. The appropriation categories are divided into budget activity groups and finer levels of detail per DoD FMR Volume 2A and 2B, with the associated budget exhibits providing the details Congress requires for appropriations. Using O&M as an example, the guidance in the DoD FMR directs Agencies/Activities to submit an exhibit at the lowest level of their budget structure. The purpose of the OP-5 (O&M) budget exhibit is to provide a summary of and justification for changes in the level of resources required for each budget activity, activity group, and subactivity group (SAG). Examples of O&M appropriations supported by OP-5 Exhibits include:

- Operation & Maintenance, Army, Army Reserve, and Army National Guard
- Operation & Maintenance, Navy and Navy Reserve
- Operation & Maintenance, Marine Corps and Marine Corps Reserve
- Operation & Maintenance, Air Force, Air Force Reserve, and Air National Guard
- Operation & Maintenance, Defense-Wide
- Defense Health Program
- Office of the Inspector General
- United States Court of Military Appeals for the Armed Forces
- Overseas Humanitarian, Disaster, and Civic Aid

- Support of International Sporting Competition, Defense

For example, OP-5 SAGs include—but are not limited to—flying hours, ship operations, and depot maintenance, training, and base operations support. DoD 7000.14R, "Financial Management Regulation," Volume 2A, Chapter 1, Section 3.0 provides details on the format, justification materials, and summaries required for the BES.

Upon submission of each Components' BES to USD(C), USD(C) begins the Budget Review. Budget Review examines the BES for compliance with fiscal controls, proper pricing, sufficiency of funding, and feasibility of expending proposed resources. OMB provides guidance USD(C) uses to conduct these reviews, which are accomplished working with the Components' Comptrollers. The BESs are reviewed and changes proposed to deal with pricing and phasing of resources in the budget year. Final decisions are documented and issued in PBDs generally signed by USD(C) or the Deputy Secretary. Nominally by late fall, OSD Comptroller transmits the final PB recommendations to OMB and receives OMB passback guidance. After a brief appeal process for passback decisions, the DoD systems are locked and there is a final transmission to OMB systems. The PB submission material is then finalized in preparation for submission to Congress, nominally the first week of February. The passback and final submission of the PB to Congress can be delayed when final appropriations enacted by Congress for the fiscal year are late.

The PB consists of a core federal government submission by OMB, a core DoD submission by OSD Comptroller, and extensive supporting documentation provided by the DoD Components.[92] The DoD portion of the PB contains the President's proposed allocation of resources for defense by account, as well as justification material, such as the budget exhibits for O&M described above, providing additional detail. This material is governed by OMB Circular A-11 and DoD 7000.14R, "Financial Management Regulation," Volume 2A, Chapter 1, Section 4.0, which provides instructions for preparing the justification material/exhibits required by Congress' authorization and appropriations committees. The PB comprises an extensive set of unclassified documents with classified exhibits.

Once the PB is submitted, OSD and the Components brief their submissions and review the budget justification material with the Authorization and Appropriations Committees' staffs. Congressional hearings usually begin around April and continue through June. The House and Senate then develop their markups of the National Defense Authorization Act (NDAA), Appropriation Act for defense, and Appropriations Act for military construction (and Veterans Affairs). Congress may then conference and reconcile the differences in the bills from each chamber. Once an appropriation is enacted, apportionment and spend plan processes begin. In recent years, the fiscal year has almost

[92] OMB Circular A-11, "Preparation, Submission, and Execution of the Budget," August 2022.

always started under a Continuing Resolution (CR), which causes delays in development and submission of the final PB. Moreover, rather than separate appropriations bills for Defense and other executive departments, Congress has frequently used omnibus appropriations covering much or all of the government.

B. History of the Budgeting Phase

From the inception of the PPBS under Secretary McNamara, the purpose of the Budgeting Phase has remained the same: preparation of the Department's portion of the President's Budget, beginning with review of Component BESs. However, a number of aspects of budgeting have changed over the years, including (but not limited to) the following:

- The number of budget line items has grown, as has the documentation required for submittal to Congress, including the now voluminous justification books for all the major appropriation categories prepared for each Service and budget-submitting office. Congress generally requests this detail in documentation to support the authorization and appropriation processes and in order to maintain oversight.
- DoD has consistently been forced to operate for several months under a CR, as full appropriations for the new fiscal year have been delayed, sometimes into the new calendar year.
- The passback from OMB can be delayed, forcing last-minute changes to the budget that, in conjunction with other late-emerging bills such as those for inflation, can result in a cascading series of changes to allocated resources that break programs.
- DoD's submittal to OMB has sometimes slipped from December into the first quarter of the next year, in part because the PB for the next fiscal year cannot be made final until appropriations for the current fiscal year are enacted and known.

The only other significant changes that interviewees identified with respect to the process of Budget Review were the changes in the previous section for programming that affected both phases (e.g., sequential versus concurrent Program and Budget Review and every-other-year budgeting). Interviewees also talked about incremental improvements to the software systems supporting Program Review and Budget Review.

C. Budgeting Phase Commentary and Challenges

This section provides a review of interviewee comments concerning the budgeting phase. There were no significant concerns raised with the process of the Budget Review

itself. Most concerns that were raised by interviewees had to do with the workload, timing, or interfaces of the process.

Connection to Programming. Translation is sometimes needed between the PEs used in programming and the detailed budget material generated for Congress. Comments were made suggesting additional work should be done to either reduce the need for such translation or automate it. Comments were also made that conducting the PR, even if done in conjunction with the Budget Review, can leave insufficient time to complete the PB submission, particularly if the Program Review and its decisions extend into November or December.

Continuing Resolutions (CRs). Comments indicated CRs can substantially compress the time available to make final the PB submission using the Services' and OSD's IT systems, as well as to generate the thousands of pages of detailed budget justification material that must be submitted to Congress. Final adjustments to the PB for the next fiscal year cannot be made until the current year's appropriation is known. Compression of the timeline available occurs when appropriations are delayed, but the deadline for submitting the PB to Congress is not allowed to slip substantially. This compression requires budget staffs across DoD to work long hours under stressful conditions, contributing to retention challenges.

Late appropriations also create pernicious effects on obligation of funding and the work that can be accomplished. Prior plans for obligating funds and accomplishing work over 12 months must be revised to account for obligating funds incrementally and over shorter time periods, preceded by potentially several months operating at unplanned budget levels as well as under the other restrictions imposed under a CR, such as constraints on initiating new programs.

Appropriations. Comments indicated the appropriations committee members as well as staffs continue to feel strongly that detailed oversight and control of DoD's use of resources is essential. This oversight translates to appropriations' being made and tracked in detail for specific purposes, thereby constraining DoD's flexibility to re-allocate funding during execution for purposes other than originally specified in the appropriation bill. Absent corresponding changes in the extant ways in which funds are appropriated, substantial changes in the budgeting structure made by DoD to increase flexibility will not be feasible. Although there are examples such as those cited above in the "Programming" section in which Congress has agreed to provide flexibility (e.g., BA 8 and rapid capabilities offices), the appropriators have not agreed to provide such flexibility widely across DoD's activities. Comments were made that steps to increase transparency with Congress, such as those discussed previously, might motivate the appropriators to grant wider flexibility.

D. Timing of Decisions and Change Requests

An important concern with the PPBE system discussed in Section 2.E.1 is the lead time between when decisions must be made and when the budget is executed. With the fast pace of technological change, it is hard to predict years in advance where resources will be most needed. To understand the challenges that timing of decisions imposes on the PPBE system, this section examines when decisions are made and how late changes get implemented. For ease of explanation, this section divides implementation of late changes into two categories: major decisions using official processes, and minor decisions using unofficial processes.

For late decisions to be implemented by formal processes, they usually need to be considered major decisions; also, senior leader engagement is essential. The first factor to consider is "who owns the pen" at the time a late change is requested. Table 6 lists who owns the pen at various stages of the process.

Table 6. Who Owns the Pen

Process Step	Approximate Timing	Who Owns the Pen	Change Process
Component POM/BES development	Start of cycle until summer	Component Head	Incorporate into POM/BES submission
Program/Budget Review	Summer until Fall	Secretary of Defense	PDM or PBD
Post OMB lock, pre congressional submission	Fall until February	OMB	Passback
Post PB submission, pre enactment	February to enactment	Congress	Appropriation Act
Post enactment	Enactment to September 30	Congress	Reprogramming or Supplemental Appropriation

For late changes that the leadership of a Component wants to make prior to its POM/BES submission (i.e., when the Component still owns the pen), the Component head can make the change in the POM/BES submission. Similarly, the Secretary of Defense can direct changes to the submission prior to lock with OMB, and the head of a Component can make a request to the Secretary of Defense during this period as well.[93,94] The situation becomes more complex once the budget has left DoD.

Unlike most federal agencies, OMB is included in DoD's formulation process and there is not an extended period following agency submission to OMB, OMB review, and issuance of passback guidance. Following budget lock with OMB, the bar can be very high to make changes to the budget, but doing so is not impossible. The callout box below

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[93] One simple way Component heads make requests to the Secretary of Defense is through a PDM or PBD reclama. Requests can also be sent in a memorandum to the Secretary. One of the IDA team members was part of a significant change to the budget that was made late in the process through a memorandum from the Military Department to the Secretary of Defense.

[94] A concern expressed in interviews was that the submitter of a change runs the risk that the source (offset) will be accepted but the use (enhancement) will be denied. In other words, the new technology identified by the office requesting the change turns out to be a lower priority than an alternative use for the proposed offset. This situation would be viewed as a loss by the organization trying to use the new funding but would be considered a gain in aligning funding to its highest return uses by DoD.

provides a case study IDA developed from interviews of when DHS made a major change working with OMB.

DHS and OMB Respond to Christmas Bomber

On December 25, 2009, DHS had completed the FY 2011 budget and submitted it to OMB. On that day, Umar Farouk Adbulmutallab was on a flight from Amsterdam to Detroit with explosive powder sewed into his underwear. While in flight, Abdulmutallab attempted to detonate the explosives to destroy the plane. Although his pants were set on fire, the explosives did not detonate and passengers were able to hold Abdulmutallab down while flight attendants put out the flames. Upon landing in Detroit, he was arrested by U.S. Customs and Border Patrol and turned over to the Federal Bureau of Investigation.

DHS senior leadership held multiple meetings following the attack, discussing root causes, materiel solutions, and nonmateriel solutions. One eventual decision made was to add a major new acquisition of whole-body imaging equipment for airports in the FY 2011 budget.

The acquisition program was added as an increase to the DHS budget (i.e., it was not offset from other DHS programs). The decision was made in January, just prior to the February submission of the budget to Congress. Although interviewees did not remember if the change was formally directed, the typical mechanism for making this type of change would be for OMB to issue an ad hoc passback document directing this increase in funding. The justification material was updated in a compressed manner before the new budget was submitted to Congress (note that this update to justification material required updates for OMB as well since the federal budget topline changed).

If the PB has been submitted to Congress, then any changes made at this point must be made by Congress. Figure 20 illustrates the congressional process for a new PB submission (the top portion) and includes potential reprogramming actions in the lower portion for an appropriation enacted already.[95]

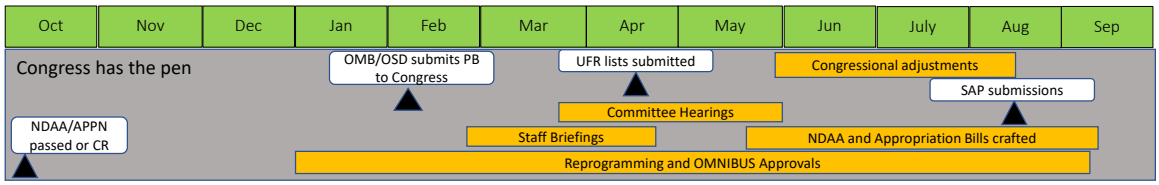

Figure 20. Congressional Process

Two formal processes for requesting to change a submission to the PB prior to its enactment are issuing a Statement of Administration Policy (SAP) and submitting a Budget

[95] DoD retains some discretion for adjusting funding even after enactment of an appropriation (e.g., BTRs).

Amendment. A SAP may be issued for each major bill (e.g., NDAA and appropriations bill) after each major phase (e.g., House passage, Senate passage, and conference). OSD Comptroller (acting on behalf of the Secretary of Defense) and OMB (acting on behalf of the President) generally negotiate the items to raise in an SAP. Although the administration is typically focused specifically on appeals to marked-up bills, it can raise any issues it chooses in the SAP.

For more expansive changes, the administration can submit a budget amendment. Although this action is considered a relatively rare event, during the war on terrorism it was actually very common. Table 7 provides the budget amendments submitted to Congress since FY 2001.

Table 7. Budget Amendments

	PB Submission		First Budget Amendment		Second Budget Amendment		Third Budget Amendment		
Fiscal Year	Date	Amount ($B)	Date	Amount ($B)	Date	Amount ($B)	Date	Amount ($B)	Total Amendments ($B)
2001	Feb-00	291.1	Jun-01	5.6					5.6
2003	Feb-02	378.6	Mar-02	14.0					14.0
2005	Feb-04	402.6	Sep-03	65.6	May-04	25.0			90.6
2006	Feb-05	421.1	Feb-05	74.9					74.9
2007	Feb-06	441.0	Feb-06	67.9					67.9
2008	Feb-07	483.2	Feb-07	141.7	Jul-07	5.3	Oct-07	42.3	189.3
2009	Feb-08	611.1	May-08	66.0	Apr-09	75.5			141.5
2010	Feb-09	667.9	Apr-09	0.0					0.0
2011	Feb-10	696.9	Mar-10	0.7					0.7
2014	Apr-13	621.6	May-13	79.4					79.4
2015	Mar-14	584.3	Jun-14	58.6	Nov-14	5.0			63.6
2017	Feb-16	590.5	Nov-16	58.8	Mar-17	64.6			123.4
2018	May-17	646.8	Nov-17	1.2					1.2

The final period for when a change may need to be made is during the year of execution. The most common formal process for making a change is a reprogramming action. A case study of a new technology program (hypersonics) that was begun with a reprogramming action is provided below.

"Start a Hypersonics Program and Field the First Battery by FY23"

In February 2018, then LTG Neil Thurgood, director of the Army Rapid Capabilities and Critical Technologies Office (RCCTO), received a phone call from the Secretary of the Army. He was given a two-sentence order: "Start a hypersonics program. Deliver the first battery in FY23." At the time, there was no requirements document, no funding, and no congressionally authorized program.

The following month saw a flurry of activity establishing a rudimentary requirement, estimating funding requirements, and developing a program plan. In March, LTG Thurgood presented his cost estimate. Army and OSD Comptroller identified two funding sources: some funding in relatively similar program lines that could be used as appropriated, and additional funding that would come through a reprogramming. The reprogramming action was initiated and approved. FY 2019 funding was handled in similar fashion, and prior budgeting through the PPBE system started in FY 2020.

For more expansive changes, the formal mechanism is a supplemental appropriation. Table 8 provides supplemental appropriations since FY 2001.

Table 8. Supplemental Appropriations

Fiscal Year	Global War on Terrorism/ Overseas Contingency Operations ($Billions)	Other ($Billions)	Total ($Billions)
2001	22.9	5.8	28.8
2002	16.9		16.9
2003	72.5		72.5
2004	90.8	0.3	91.1
2005	75.6	3.2	78.8
2006	115.8	8.2	123.9
2007	166.3	3.1	169.4
2008	186.9		186.9
2009	145.7	7.4	153.1
2010	162.4	0.7	163.0
2011	158.8		158.8
2012	115.1		115.1
2013	82.0	0.1	82.1
2014	84.9		84.9
2015	63.0	0.1	63.1
2016	58.9		58.9
2017	82.5		82.5
2018	65.2	5.8	71.0
2019	68.6	2.8	71.5
2020	71.3	18.6	89.9
2021	68.5	1.0	69.5
2022		56.4	56.4

Although these formal processes are all well established and, as illustrated above, used frequently, they are generally reserved for major decisions that are important to leadership. The second category of late changes is smaller changes in which leadership may not be involved or that can be made by informal processes without the time and energy required for a formal change. To better understand this category of late changes, the IDA team asked numerous interviewees about the processes used and the relative difficulty of making this type of change. Three key insights emerged:

- There is no single process for making budget changes because doing so depends on a wide range of variables, including who is making the request, when the request is being made, and the nature of the change requested. Since no comprehensive answer can be provided for how budget changes are made, examples are provided based on illustrative scenarios.

- Interviewees frequently highlighted that getting leadership support for making budget changes was often the longest or hardest element of the process. Interviewees stated that if leadership wanted to make changes, there were usually mechanisms available to PPBE participants to make the changes (although they tend to get progressively harder and more time consuming the later in the process the changes are requested). The "trick" was getting leadership support for the desired change.
- The biggest issue generally is finding offsets. All programs want additional funding; that is not unique or unexpected. Finding sources to provide funding for new demands is the challenge because growth in one project requires reductions to other project(s).

Consider the example of a project manager (PM) who reports to a Program Executive Office (PEO) in a Military Department. This PM has just been briefed on new technology that was not known at the time the PEO provided its input for the Component POM development. The PM would now like to provide funding for this new technology.

The first question from a resource allocation perspective is whether the PM can fund the new technology from within their available resource (i.e., can they offset it from within their portfolio)? If yes, then the primary questions are simply whether the PEO approves the realignment and whether the realignment requires any higher-level approvals (e.g., requiring a reprogramming action). Prior to execution, a neutral realignment of funds supported by leadership is generally handled as a technical correction. If OSD has the pen, the PM would go through the Component programming or budgeting organization to request the technical correction of OSD (either by including it in a PDM or PBD, or allowing a manual change in the IT systems). Interviewees stated that whether this type of change would be attempted while OMB had the pen depended upon its nature and the OMB examiners involved. If Congress has the pen and is developing the bill, the change would generally be requested in staff briefings when the PEO's portfolio is briefed.

The more complex case is when the PM is not offering an offset to cover the increased funding desired for the new technology. The first concern raised by interviewees was that this might be a "warning sign" to leadership (i.e., the PM apparently believes that the new technology is less important than everything else in the PM's portfolio but more important than what is in their sister PMs' portfolios). Interviewees stated that PEOs regularly face this situation and often use willingness to provide offsets as a criterion for establishing importance.

For PMs who would like additional funding and have convinced their PEOs that the realignment is meritorious, the next question is whether the PEO is willing to provide an offset from within their portfolio. If so, then the situation is again a technical correction to

be handled like the above situation (although it may now involve a more distant movement of the funding and thus incur greater scrutiny).

If the PEO is unwilling to fund the PM's new technology from within their portfolio but is willing to request additional funding from leadership, then the scenario progresses to a Component-wide discussion. First, the PEO must engage the leadership and convince them that the additional funding is meritorious. As occurred at the PEO level, interviewees stated that a PEO's being unwilling to fund the project from within their own portfolio may be a "warning sign" to leadership that undermines the PEO's case. If the PEO obtains leadership permission to take funding from elsewhere in the Component to fund the PM's new technology, then the task of finding a source may shift to the programmer or budgeter, depending on the timing. The situation then progresses in similar fashion to the earlier cases (e.g., if OSD has the pen, then a technical correction is requested, but if Congress has the pen, the issue can be raised in staff briefings, etc.). As a general rule, the bigger the move of resources (in dollar amount and in distance from original use), the harder it is to make the change, and the later in the process the harder it is to make the change (although OMB was identified as potentially harder than congressional staff briefings).

Interviewees were concerned that there can be a reluctance to broach the potential movement of funding because the decision authority may accept the source (offset) but deny the use (enhancement). In other words, the decision authority would transfer the funding to what it views as a more important use than the one proposed by the PM (which may not be within that PEO or Component). This is a concern for parochial reasons—that the PEO or Component is losing resources. But from a national security perspective, this is a good realignment of resources because the funding has been moved to an even higher-value use.

E. Reform Priorities and Options

As with the programming phase, interviewees generally believe the process of the Budget Review is sound (e.g., repricing, executability analyses, and fact-of-life changes are analyzed in sound ways, documented adequately in PBDs, and key decisions are provided to leadership). The primary concerns expressed generally had more to do with congressional processes than DoD processes, and interviewees provided some recommendations related to DoD's interactions with Congress.

These recommendations address the challenges of submitting the budget in February, nine months prior to the start of the fiscal year. The acquisition community is concerned about this long lead time because of the pace of change in some areas of technology. Budgeters were concerned with this timeline because of the changes that occur in fact-of-life accounts and to pricing. The recent period of high inflation is a key example.

The actions DoD takes to address these late-changing events include routine actions (e.g., staff briefings, SAPs, and reprogramming actions) and what are generally thought of as extraordinary actions (e.g., budget amendments and supplemental appropriations requests). But, as shown above in Section 5.D on the timing of decisions, budget amendments and supplemental appropriations requests are not extraordinary at all; they are a regular feature of the process used in almost every cycle. And in other government budgeting processes (e.g., the State of California process), it is a planned event to submit a budget amendment when late-breaking information is revealed.

The interviewees recommended that budget amendments and supplemental appropriation requests become preplanned events timed to key milestones when new information is revealed and updates become available. For the acquisition community, these milestones could include further refinement of investment plans in fast-changing technology portfolios. For the Comptroller community, these milestones could include when new pricing information becomes available and fact-of-life changes are revealed.

6. Execution Phase

This chapter describes the execution phase and its key documents; reviews the history of the execution phase; identifies interviewee concerns with the execution phase; provides a deep-dive analysis on reprogrammings; and recommends reform areas and options.

A. Execution Phase Overview and Key Documents

The primary purpose of the execution phase is to deliver the funded capabilities planned for in the planning, programming, and budgeting phases through the execution of appropriated dollars. Process objectives include evaluating whether funds are being expended as directed, and programs are generating their anticipated outcomes. Funding is obligated from October 1 through September 30, the government fiscal year. Preparation for the execution of funds (e.g., development of spend plans) may begin as soon as an appropriation or continuing resolution is passed, and outlays for the obligations entered into and reporting requirements can extend well past the end of the fiscal year.

DoD authority to obligate funds begins with a quarterly apportionment of the appropriated funds from OMB to USD(C). Comptroller then makes this funding available to Components through allotments. Components then obligate the funding and lastly outlay it. Regular reviews by OSD Comptroller of Components, as well as Components' own internal reviews, occur throughout the fiscal year. The largest review is the midyear review.

As needs arise, reallocation of funding across accounts can occur. For small reallocations below the congressionally directed thresholds, a BTR occurs, which DoD can execute unilaterally. For reallocations above the threshold levels, an Above-Threshold Reprogramming (ATR) is requested from Congress. Reprogrammings (of either type) that move funding across appropriation title consume transfer authority. DoD typically submits a monthly ATR to Congress and a larger, omnibus reprogramming following the midyear review.

During execution, staff in the Components and OSD assess compliance with guidance and performance measures, both fiscal (e.g., obligation rates) and programmatic (e.g., cost, schedule, and performance). Staff use these assessments to make recommendations for changes in ongoing execution for consideration by USD(C) and the Deputy Secretary.

B. History of the Execution Phase

Unlike the upstream phases that are almost entirely discretionary to DoD in how they are conducted, many of the steps in the execution phase are directed by Congress and OMB.

For example, the time periods for funding execution (obligation and outlay) are provided in statute. Similarly, the process for receiving an apportionment is established by OMB. This means there have not been as many large process changes within DoD concerning execution (e.g., the last change to the fiscal year directed in the 1974 Congressional Budget and Impoundment Control Act (moving the fiscal year from July 1 to June 30 to October 1 to September 30)).

However, important features of execution have changed over the years. Examples include:

- Although CRs and late appropriations by Congress have been a mainstay in federal budgeting for decades, DoD CRs have been longer and more frequent the last 10 years than the decade before.
- Increases in the number of BLIs has—in conjunction with low dollar thresholds and strict congressional requirements for prior notification and approval--constrained DoD's ability to realign funds in execution.
- Some interviewees stated that congressional trust in DoD's commitment to spend funds for the purposes for which they were appropriated has eroded.

There have been significant changes to appropriation practices since the introduction of the PPBE system. Lofgren (2022) provides a detailed review of the changes.[96] Prior to the 1960s, there were few formal policies on reprogramming funds across accounts during execution. For example, during World War II, Congress provided a "transferability clause" that allowed DoD to move funds (unilaterally) across appropriations by up to 10 percent.

As Lofgren reviews, the 1960s saw negotiation between Congress and DoD on what would constitute grounds for a prior approval requirement (e.g., programs for which Congress cut the original request, new start programs, and quantity changes). This negotiation led to codification of reprogramming procedures in a DoD Instruction.[97] The DoD Instruction was replaced by the Financial Management Regulation (FMR) in 1996.

Another practice reviewed by Lofgren that has changed significantly is the duration of an appropriation. During the 1950s and 1960s, RDT&E and procurement appropriations were no-year in nature. By the 1970s, these appropriations became restricted multiyear funds, but lapsed balances were merged into an "M" account that could still be used for funding things like contract modifications. These accounts were cancelled in 1995, and the current system of expiration and cancelation began to emerge.

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[96] Eric Lofgren, "Pathways to Defense Budget Reform," George Mason University Center for Government Contracting White Paper Series, Number 13, November 1, 2022.

[97] DoD Instruction 7250.10.

C. Execution Phase Commentary and Challenges

As described in Section 2.E.1, one concern already raised with the execution phase is the limited ability to move funding across accounts. This section provides a more comprehensive review of interviewee comments concerning the execution phase, beginning with a brief recap of the reprogramming concern.

Reprogramming. Interviewees noted the dollar thresholds (e.g., $10M) for reprogramming, while having modest increases and decreases in recent years, are very low compared to the level of spending and the substantial growth in DoD's topline. These low limits, in conjunction with the timelines required for congressional notification and approval, as well as for approval within DoD, substantially limit DoD's ability to reallocate funding to pursue new initiatives (e.g., take advantage of new technologies) during budget execution. Suggestions were made that these thresholds should be made percentages and increased, and the timelines for notification and approval of reprogramming requests should be shortened. Comments were also made that reprogramming requests generally include both sources for reduction and new uses. The danger that reductions can be taken without funding their uses provides a disincentive to propose reprogramming.

Realized Performance Data. Some interviewees thought there was insufficient focus on evaluating program performance in execution. As noted above, the contingency nature of DoD's frequently unexecuted mission requires the use of modeling and simulation methods for many key analyses, but there are many areas where realized performance data are available and can be used to inform decisions. Interviewees noted that acquisition program performance (i.e., schedule, cost, and performance) was tracked and used across DoD, but system and program mission performance are not routinely evaluated. In short, these interviewees stated that tracking execution meaningfully for DoD's programs, activities, and projects requires more data and analysis than tracking obligation rates and outlays.

In another report, one of the IDA authors provided two examples of when realized performance data from execution were not used to inform decisions, and the impact this had.[98] Those examples are reproduced here.

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[98] John Whitley, "Three Reforms to Improve Defense Resource Management," *IBM Center for The Business of Government*. 2022, https://www.businessofgovernment.org/sites/default/files/Three%20Reforms%20to%20Improve%20Defense%20Resource%20Management.pdf.

Basic Training During COVID Pandemic

As the full extent of the COVID pandemic began to be realized in the spring of 2020, DoD faced many significant decisions as it tried to prevent the spread of COVID while maintaining its readiness in case an adversary used the pandemic for opportunistic aggression. One key decision was whether to stop DoD accessions and shut down basic training for an extended period of time. Basic training requires taking Americans from all over the country and concentrating them for a period of intense, close personal contact. The COVID risks to basic training were significant, but stopping the pipeline of new service members would create a readiness risk that would long outlive the pandemic.

To support this key programmatic decision, CAPE was asked to assess the likely impacts of a COVID outbreak in basic training. Consistent with the public health community's analytic approach, CAPE used a science-based simulation methodology to project the impacts of an outbreak. The modeling results were dire: an outbreak would likely spread rapidly through the basic training population and result in thousands of cases, with large numbers of recruits hospitalized and some dying.

What CAPE did not do was look at what was happening on the ground at basic training locations. In fact, DoD had already had two outbreaks in basic training locations at the time of the analysis. Through aggressive containment, both outbreaks had been stopped at around forty known cases with minimal health consequences and no deaths. When presented with simulation results so at odds with actual experience on the ground, senior leaders did not have confidence in the CAPE analysis. After a short pause, DoD continued with basic training and was able to control outbreaks like it had the first two, never experiencing the dire forecasts of the simulation analysis.

The example illustrates the institutional bias to use simulation even in situations where realized performance data are readily available and more appropriate methodologically for the question at hand. CAPE provides a clear example of this challenge, but it extends across DoD to all participants in the PPBE system. The DHP provides another example.

Recapturing Care in Military Hospitals

One of the largest budget items in DoD is healthcare. The previously mentioned DHP appropriation is about $35 billion per year, and when the healthcare costs from other budget accounts are added the total annual cost exceeds $50 billion per year. Because of its size and a series of widely studied management challenges within the DHP, significant reform efforts are launched every few years. But progress has been very hard to make.

DoD operates about 50 military hospitals that provide about one-third of beneficiary healthcare (the remainder is purchased from private sector healthcare providers). One of the biggest DHP management challenges is the low productivity of these military hospitals, often experiencing half the average occupancy of civilian hospitals and as little as one-tenth the provider productivity. One recurring pattern is that a new round of reforms will be initiated, institutional resistance will intensify, and the medical community will offer as an alternative to the intended reform to "recapture" care from the (variable cost) private sector care contracts to the (fixed cost) military hospitals—saving money and increasing productivity.

The cycle repeats itself about every five to six years. After a year or two of highly contentious reform discussions, the recapture plan gets brought out as an easy compromise to cool off the heated debate and let all sides claim some victory. The analysis to support the recapture plan is simulation based on how much workload is in the private sector around each military hospital and assumptions about how much can be brought back in to the MTFs.

A few years ago, the Center for Naval Analyses (CNA) conducted an empirical analysis to see what actually happened from two recent recapture efforts (Levy (2016) and Levy et al., (2017)). CNA found that the efforts (cancelling civilian primary care managers for beneficiaries in Portsmouth, Virginia, and Jacksonville, Florida) did bring some primary care into the military hospitals but resulted in specialty care leaving the hospital with little impact on overall procedure volume or cost (in some cases cost actually increased). Not surprisingly, hospital performance is a complex issue driven by incentives and management structures that simple simulation models have little hope of capturing. Naïve simulation analyses fail to capture these complexities and produce results that fail to be realized. Empirical analysis of actual performance in the system would support better decision-making, but is not the approach generally used in the PPBE system.

Timing. Interviewees noted that handling late-arriving bills levied by OSD and OMB (e.g., fuel costs, inflation, late-breaking decisions on programs driven by DoD leadership, or the passback from OMB) are difficult, if not impossible, to handle in an integrated fashion. Insufficient time is available to consider all the implications of taking funding that had been allocated to other programs to pay such bills. Handling these late-breaking bills can result in many "broken" programs. One comment was made that lack of transparency and consistency in the interactions with the USD(C) (required to handle these bills) was a substantial problem; transparency and consistency in interactions during the Program Review with CAPE were not raised as a problem.

Notwithstanding the above, most of the comments offered by those responsible for the PPBE system indicated the system overall, as well as execution in particular, are not broken and can be made to work by those knowledgeable of the PPBE system's details.

D. Empirical Analysis of Reprogramming

As with the programming phase, a number of challenges have been raised concerning the execution phase and conflicting statements from interviewees about their root causes. This section presents preliminary empirical analysis of the programming phase. Key empirical questions include how much reprogramming activity occurs, how constrained is reprogramming activity, etc. A comprehensive review of reprogrammings was beyond the scope of the IDA project, but the preliminary analysis conducted provides an illustration of the type of work that can be done to understand reprogramming challenges better and develop analytically informed reform options.

Figure 21 provides the total dollar value of ATRs and BTRs from FY 2015 through 2022. ATRs tend to range from $8–10B per year, whereas BTRs average around $2B per year.

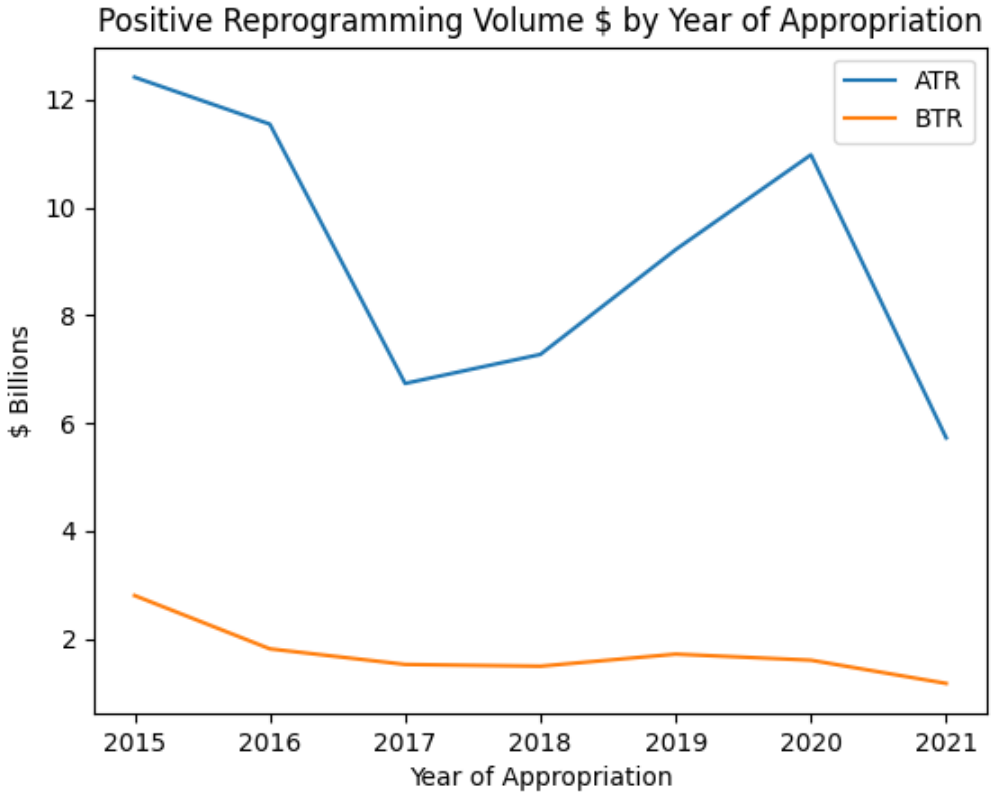

Figure 21. Value of Reprogrammings by Year, in Current Dollars

The next three figures show the rate at which BLIs hit or come close to their BTR thresholds.[99] Figure 22 shows the percentage of BLIs that hit BTR thresholds, whereas Figure 23 shows the absolute number of BLIs that hit BTR thresholds. Finally, Figure 24 shows the fraction of Budget Authority that hit its BLI threshold.

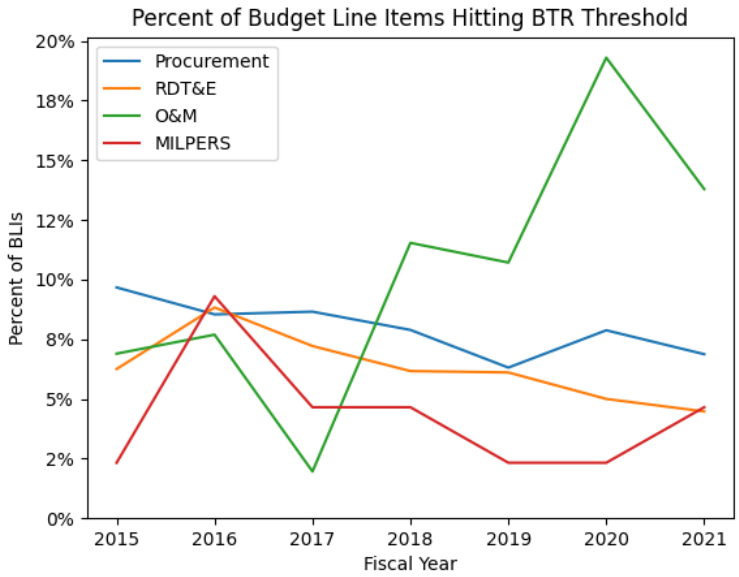

Figure 22. Percent of BLIs Hitting BTR Thresholds

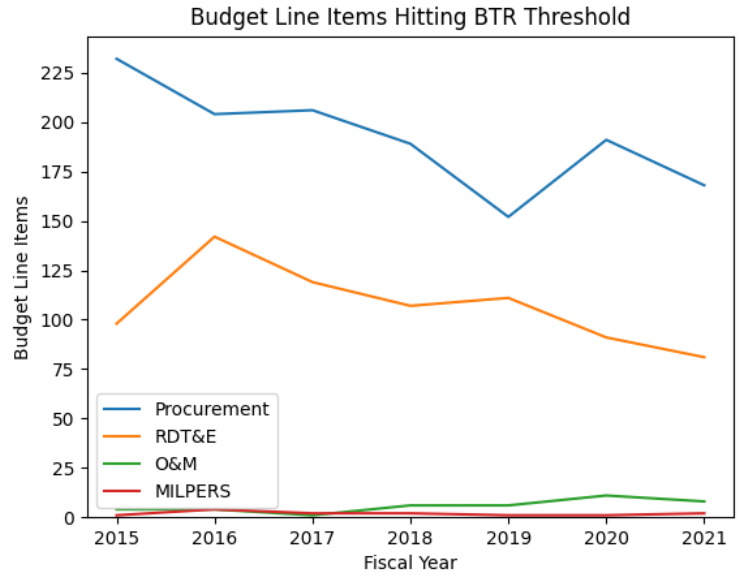

Figure 23. Number of BLIs Hitting BTR Thresholds

[99] The criterion used to establish "hitting" a threshold was to come within five percent of the threshold.

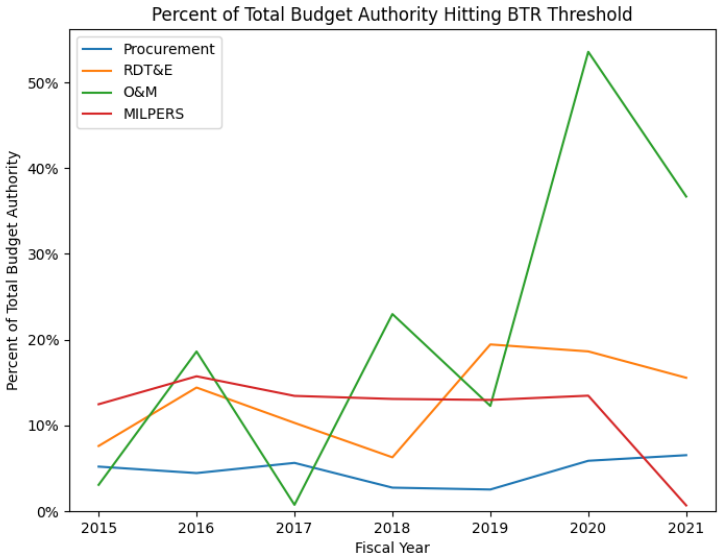

Figure 24. Percent of Budget Authority Hitting BTR Thresholds

The charts begin to show the degree to which BLIs are constrained. In general, 10 percent or less of BLIs hit or come close to their threshold limits (except for O&M). About 5 to 15 percent of account funding resides in BLIs that hit or come close to their threshold limits (again, except for O&M).

To understand how much BTR capacity is available to DoD and how much of that capacity is used in a year, Figure 25 provides:

- BTR Available: These charts show how much reallocation within appropriation accounts could be accomplished with BTRs.
- BTR Relative to Budget Authority: These charts show the percentage of total appropriated amounts that can be reallocated with BTRs.
- BTR Reprogrammed within Accounts: These charts show the percentage of BTR capacity used in a given year.

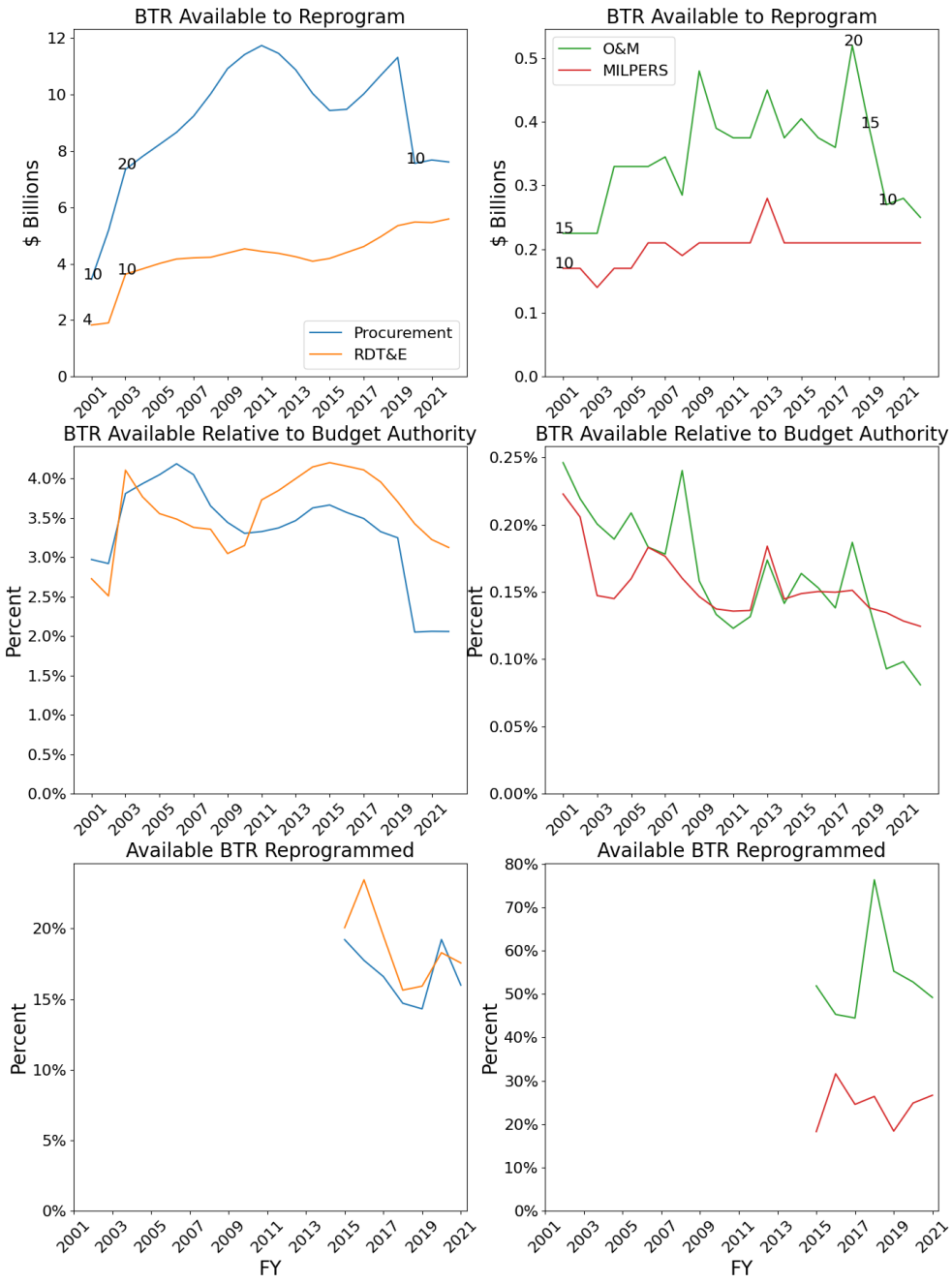

Figure 25. BTR Capacity Available and Used by DoD

As can be seen, DoD has the capacity to reallocate about $2-5B of RDT&E and about $5-12B in procurement, around 2-4 percent of the account totals. DoD has used about 15- 20 percent of its BTR capacity for each account. Some key questions that could be answered with additional empirical analysis include:

- What are the characteristics of BLIs that hit or come near their threshold reprogramming limits (e.g., are they constrained from adding funds or

subtracting funds? Are they the same BLIs over time or differing BLIs? Are they in key modernization priorities or other parts of accounts, etc.?)[100]

- What does the movement of funding look like with ATRs and BTRs considered together (e.g., expanding the analysis to consider BLIs that hit BTR caps with or without an ATR, BLIs that do not hit BTR caps with or without an ATR, etc.)

Another key question is whether there is systematic movement across appropriation categories from reprogrammings. If reprogrammings are predictable, that may be evidence they are being used to fix systematic issues that may arise in upstream phases. If reprogrammings are randomly distributed, that may be evidence that there are not systematic issues across phases and that reprogrammings are being used for natural changes that occur during a year. Figure 26 shows the net change in account from ATRs and BTRs over time for the four major appropriation categories. This preliminary evidence suggests there is a systematic trend of reprogramming into O&M. In recent years, the source of reprogrammings has been procurement funding. MILPERS is also a consistent source and shows that it moves slowly (perhaps related to recruiting cycles). Further refinement of this analysis will be required to determine if these preliminary findings hold.

[100] IDA did begin to review the first example—the direction (adding or subtracting funds) of funding movement that causes thresholds to be hit. In the preliminary analysis, procurement accounts tended to be about evenly split between additions and subtractions and RDT&E accounts tended to hit their limits from the addition of funds in about 60 percent of cases.

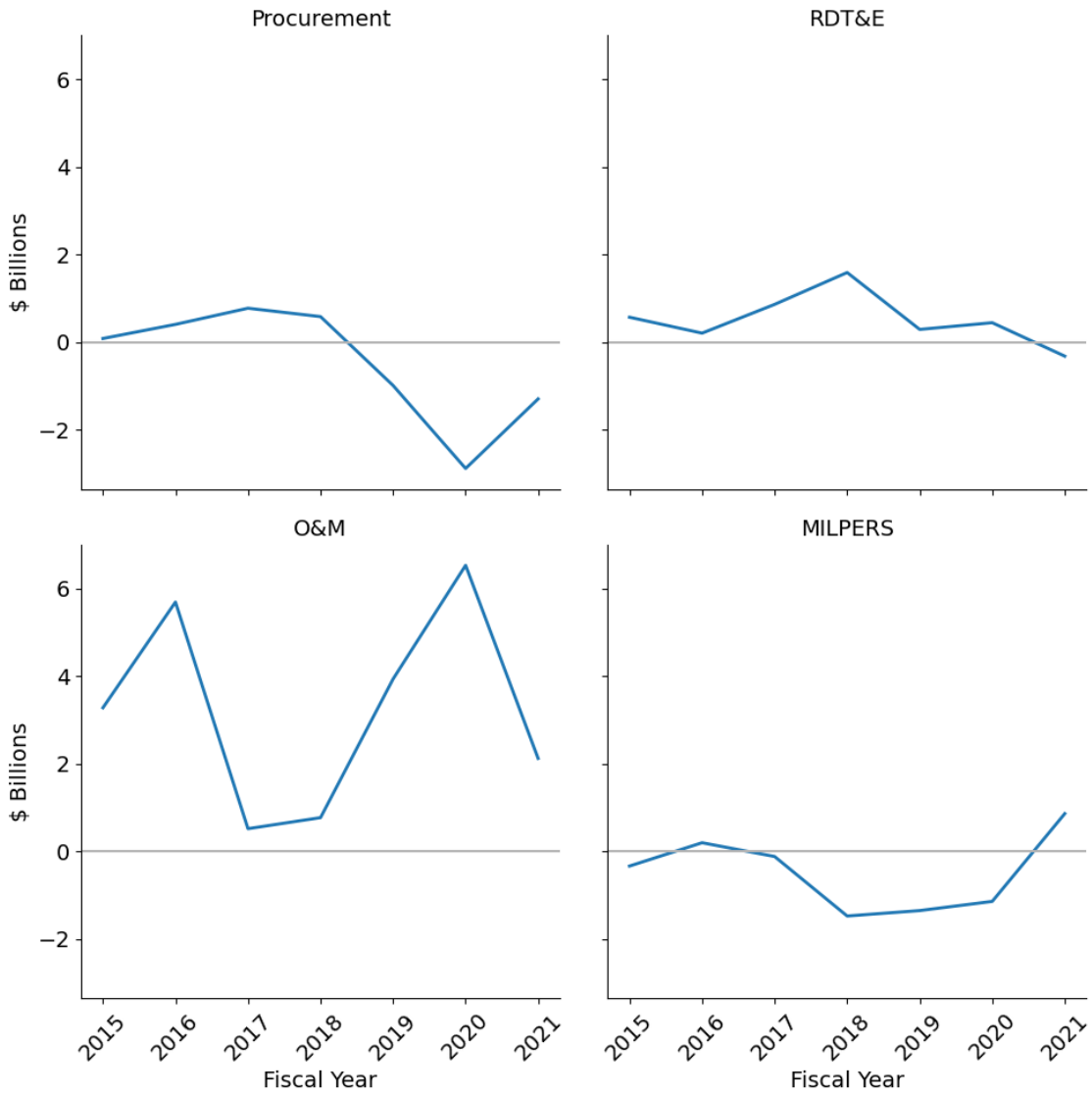

Figure 26. Net Change in Account from Reprogrammings

This net movement into the major appropriation categories can be broken down to the Military Departments and the Defense-wide accounts. Figure 27 provides this breakdown.

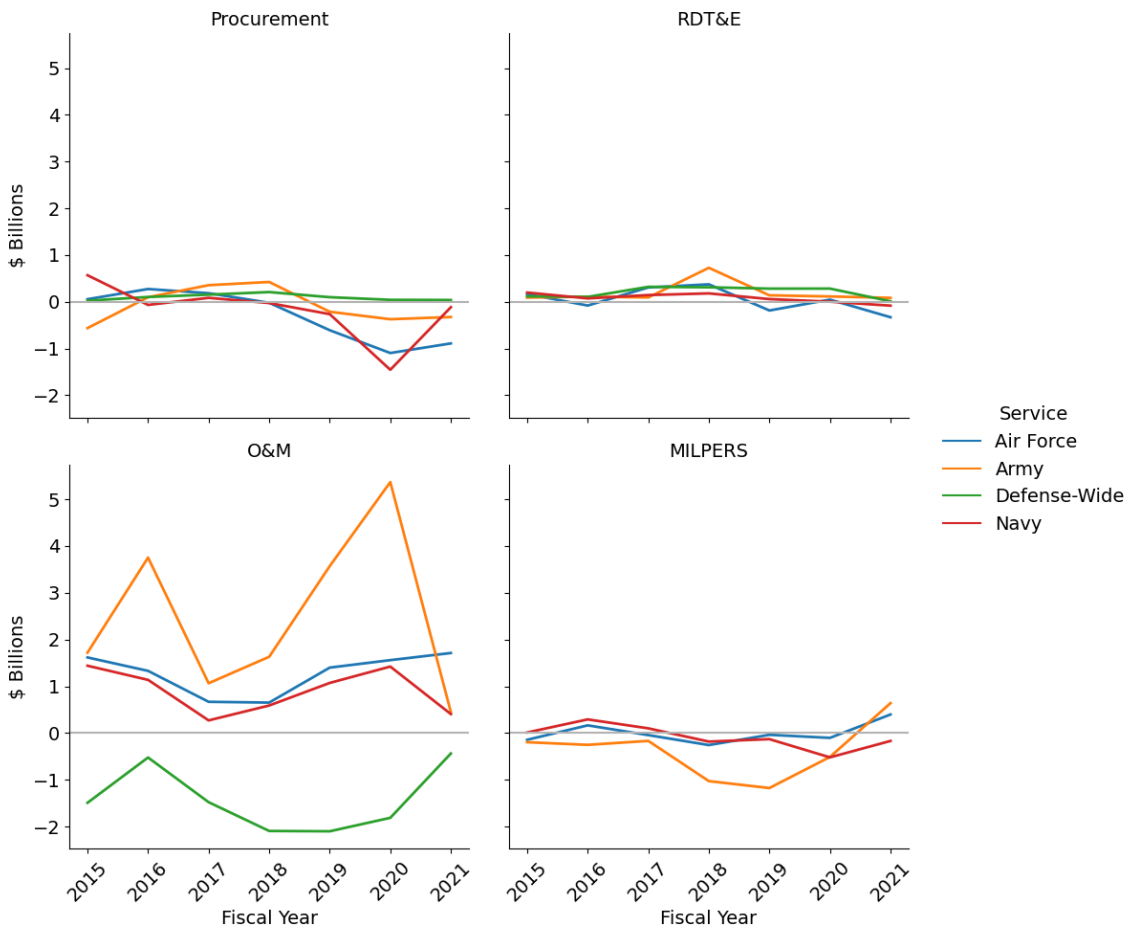

Figure 27. Net Changes from Reprogrammings by Military Department and Defense-Wide

Other analyses can be conducted to further support Commission assessment of the PPBE system. A key set of observations stated by interviewees is that, in recent years:

- Military Departments expect significant execution year O&S bills and attempt to protect O&S funding in their POM submissions.
- OSD tends to realign resources from O&S to modernization in the Program Review.
- Congress tends to further realign resources from O&S to modernization in the congressional appropriations process.
- Execution challenges emerge as must-pay O&S bills are realized.

E. Reform Priorities and Options

There were two areas of reform recommendations raised by interviewees with respect to execution: reprogramming actions (account structure and thresholds), and using performance data to inform decisions.

1. Reprogramming Actions

As reviewed in Section 6.D, IDA conducted a preliminary empirical assessment of reprogrammings, but a comprehensive review was beyond the scope of the project. There were some key findings from the preliminary review, however, that can guide reform directions and what additional analysis should be performed.

One key finding is that the direction of resource movement in reprogrammings over recent years has not been random. Reprogrammings have systematically moved about two billion dollars per year into O&M accounts, with the sources shifting over time between MILPERS and procurement. This shifting of resources relates reprogramming challenges directly to the reform recommendations in the planning, programming, and budgeting chapters. Random realignment of resources over time through reprogramming actions would be an indication that unpredictable changes to the environment are the primary drivers of reprogrammings, but systematic and repeated movement of resources indicates that reprogrammings are being used for the same challenges year after year. The reform recommendations in the earlier chapters are designed to make predictable resource allocation errors easier to prevent, thereby freeing reprogramming actions to deal with the unpredictable changes they are intended to support.

Reducing the need for reprogramming actions by reforming upstream phases does not obviate the need to examine reforms of account structure (widening accounts) and reprogramming thresholds; it simply points out that these are not the primary drivers of current reprogramming stress. In fact, many interviewees stated that widening accounts and raising thresholds should be recommended regardless of the degree to which they are root causes of other problems. To better inform potential recommendations on account structure and thresholds, the Commission asked IDA to identify what additional analyses should be conducted. IDA summarizes these analyses in two broad categories:

- Complete the reprogramming analysis IDA started: IDA examined the size of accounts over time, the direction of resource movement over reprogrammings, and the degree to which accounts are constrained by reprogramming thresholds. Next steps include combining ATR and BTR reprogrammings to examine the level of movement and constraints to resource reallocation, examining which accounts are constrained (e.g., the types of accounts, the nature of the constraint (e.g., constrained for adding funding or removing funding), etc.).
- Conduct empirical analysis across phases: IDA's preliminary work focused exclusively on reprogramming actions. Accounts experiencing reprogramming actions can be traced back to the programming and budgeting phases to identify resource movement in those phases. More broadly, the realignment of resources can be traced in aggregate and at the BLI level from programming to budgeting to execution. Conducting this analysis would identify what each phase is doing

now and whether the upstream decisions being made survive contact with reality in execution.

2. Use of Performance Data

The second major area of reform raised by interviewees is the use of realized performance data to inform PPBE decisions. As discussed above, financial performance (e.g., obligation and outlay rates) and acquisition performance (e.g., schedule, cost, and technical performance of the system) are routinely measured and used to inform decision-making. Although some positive examples in operational areas were provided (e.g., flying hours and other operations tempo rates along with mission capable rates), most interviewees believed that mission performance and key programmatic outcomes and outputs are not measured as systemically and compared to the predictions used in planning, programming, and budgeting.

Two key elements of a reform in this area were raised by interviewees. The first element is how to institutionalize the use of realized performance data in DoD, a task that many interviewees thought DoD has long struggled with. Interviewees discussed a range of options that can generally be framed by following two positions:

- Establish a new process for retrospective program evaluation:[101] The Office of the Director of National Intelligence (ODNI)'s CAPE-equivalent office conducts formal program evaluations on selected programs each cycle; the results inform future planning and programming phases. These studies are called Strategic Evaluation Reviews. To emulate this approach in DoD, a formal process would be established that identifies key priority programs to be evaluated each year, conducts a retrospective program evaluation on each program, and produces empirical analyses of the results to inform future cycles.
- Incorporate evaluation into existing processes: In this option, existing processes that should be informed by evaluation results would be directed to begin conducting such evaluations and incorporating the results in subsequent decision cycles. Key processes include the PPBE planning phase, PPBE programming phase, PPBE budgeting phase, the Performance Improvement Officer (PIO) responsibility for the Strategic Management Plan (SMP), the new Chief Evaluation Officer function being developed, and the new Chief Statistical Officer function being developed. Using the PIO's SMP as an example, the SMP process would be focused on identifying the key outcomes PSAs are trying to

[101] One longstanding challenge is the different uses of the term "program evaluation." DoD uses program evaluation to mean forward-looking simulation analysis of likely program effects. The rest of the government and academic literature use program evaluation to mean retrospective empirical assessment of what a program actually achieved. This section is focused on retrospective program evaluation.

achieve in a given year, establishing these as SMP objectives, and then evaluating the degree to which they were achieved in execution.

The optimal solution may combine elements of both approaches. Establishing a new office with new bureaucracy would provide focus on this challenge but could easily become too bureaucratic and disconnected from upstream decision-making that needs to make greater use of realized performance results. Alternatively, an entirely decentralized approach initiated by ordering process leads to begin doing more evaluation within already overstretched processes may not be likely to achieve the progress that is needed. A middle-ground solution might include investing in the core human capital required to make greater use of performance information while trying to make its use dispersed.

The second key aspect raised by interviewees is that the PIO, chief evaluation officer, and chief statistical officer roles require approximately the same skillsets but entail unique bureaucratic requirements and fixed costs. Their key functions are to identify mission and programmatic outcomes, develop measurement or estimation strategies for those outcomes, and perform empirical analyses on the resultant data—core skillsets for statisticians and econometricians. But they each contain their own bureaucratic requirements of reports (e.g., the SMP for the PIO), OMB council meetings (e.g., PIO council, evaluation council, etc.), and government processes.

There would likely be economies of scale in consolidating the analytic functions (with CAPE the most obvious location raised by interviewees), but an analytic organization encumbered with extensive bureaucratic requirements like SMP production and regular attendance at OMB council meetings would risk losing its analytic focus. CAPE has remained a highly useful analytic organization for leadership partly because it has been protected from bureaucratic requirements that distract its attention from developing analytic options for the Secretary and Deputy Secretary. Interviewees therefore suggested it might be useful to attempt to grow program evaluation capability in CAPE while leaving the PIO, chief evaluation officer, and chief statistical officer functions distributed—treating CAPE as a public good and providing the analytic services to the other offices.

7. Process and Timelines

This section provides PPBE system processes and timelines for OSD and the Military Departments. The other (smaller, by total resources) POM-submitting Components, such as the Defense Agencies, have their own timelines that are similar to those of the Military Departments. The PPBE system is executed differently every cycle, with different specific dates and activities based on decisions made by DoD's leadership regarding the needs of the cycle. This section provides representative timelines based on recent guidance documents that govern the process. Figure 28 displays the timelines for the major events in the annual PPBE system and for developing and submitting the next PB. It shows separate "swim lanes" for OSD and the Military Departments.

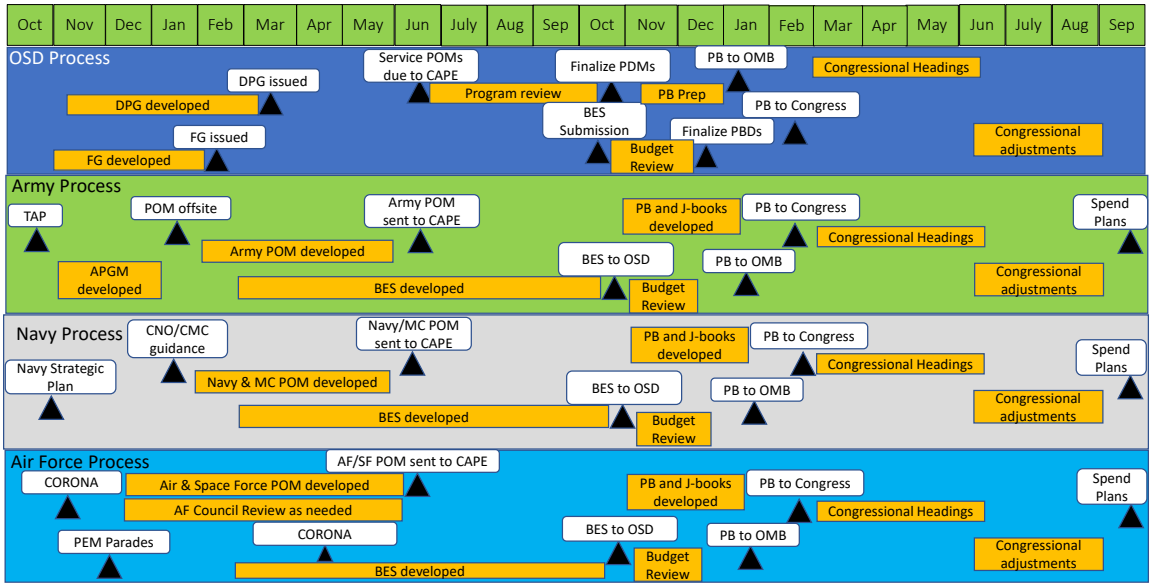

Figure 28. OSD and Military Department Events and Nominal Schedule for Conducting a PPBE Cycle

A. Office of the Secretary of Defense Process and Timeline

This "OSD Process" row from Figure 28 displays the key events and documents specifically for the OSD process leads (Policy, CAPE, and Comptroller) up to the start of execution. The issuance of the DPG, Fiscal Guidance, and the integrated Program and Budget Review instructions (not shown) transition the PPBE system into the programming phase, usually in the spring. The submission of the Component POMs, usually in the

summer, initiates the Program Review. The BES development may start as early as the spring but can be limited until the Component completes its POM and final development of the BES begins in earnest. BES development goes to the summer, when Services and Components submit the BES and supporting exhibits and database positions to the Comptroller for review.

B. Department of the Army Process and Timeline

The "Army Process" row of Figure 28 displays key events and documents associated with the Army's execution of the PPBE system. The Assistant Secretary of the Army (Financial Management and Comptroller) (ASA(FM&C)) oversees the PPBE system and develops and issues Army-wide PPBE policy. The Army Deputy Chief of Staff (DCS) Operations, Plans and Training (G-3/5/7), Army DCS for Programs (G-8), and Military Deputy to the ASA(FM&C) act as advisers. The Assistant Deputy Chief of Staff (ADCS) G-3/5/7, the Director, Program Analysis and Evaluation (DPAE), and the Director for Army Budget (DAB) also manage activities in the process and establish policies and procedures for executing their associated responsibilities.

1. Army Planning

The Army Deputy Chief of Staff (DCS) Operations, Plans and Training (G-3/5/7) manages the planning phase and, with the Military Deputy to the ASA(FM&C) and the Army DCS for Programs (G-8) co-chairs the Three-Star Budget, Requirements, and Program board. G-3/5/7's 24 (or more) responsibilities during the planning phase include but are not limited to the following:

- Serves as overall integrator of Army modernization and reform efforts
- Prepares the Army Vision (AV), Army Strategic Plan (ASP), Army Planning Guidance (APG), and Army Campaign Plan (ACP) sections of The Army Plan (TAP); coordinates the publication of the Army Program Guidance Memorandum (APGM)[102]
- Defines Army planning assumptions
- Sets requirements and priorities based on guidance from the Secretary of Defense, Secretary of the Army, and Chief of Staff of the Army and priorities of the Combatant Commanders
- Sets objectives to meet requirements and overcome shortfalls

[102] TAP consists of five sections: AV, ASP, APG, APGM, and ACP. HQDA, Army Regulation 1-1, *Planning, Programming, Budgeting, and Executive*, May 23, 2016, 19–20.

During the planning phase, the Army G-8:

- Executes approved materiel requirements
- Prepares—with the Assistant Secretary of the Army (Acquisition, Logistics, and Technology)—the research, development, and acquisition plan and enters its resource implications into the POM database
- Prepares the Army's Equipment Modernization Strategy (AEMS), the Army Equipment Program in support of the PB, and the Army Equipping Guidance
- Manages functional requirements for RDT&E and procurement appropriations.
- Co-chairs with the Military Deputy to the ASA FM&C and the G3/5/7, the Three-Star Budget, Requirements, and Program (BRP) Board.

The Army conducts a POM offsite, usually in January, where it brings in all 4-star commanders, primary Headquarters Department of the Army (HQDA) staff, and Reserve Component leads to discuss the priorities of the Army Secretary and Chief of Staff of the Army, as well as the funding levels to which the Army will have to adhere.

2. Army Integrated Programming and Budgeting

The Army DPAE and DAB manage programming and budgeting and produce a combined POM and BES that is submitted to OSD. Tasks are divided as follows:

- The DPAE takes the lead on programming, exercising overall responsibility for developing the Army program and reflecting it in the Army POM.
- The DPAE co-chairs the Planning Program Budget Committee (PPBC) and the Two-Star BRP Board.
- With the ADCS G-3/5/7 and DAB, the DPAE guides and integrates the work of the five Program Evaluation Groups (PEGs) led at the colonel level throughout the PPBE process.
- The DPAE develops the Army Program Guidance Memorandum (APGM) and Technical Guidance Memorandum (TGM), providing specific programming direction and guidance consistent with the Defense Planning Guidance and priorities of the senior Army leadership.
- The DAB takes the lead on budgeting matters, establishing associated policy and practices and guiding the work of the PEGs regarding budget matters.
- The DAB acts as the POM proponent for program 6-Research and Development and program 7-Central Supply and Maintenance.
- The DAB coordinates with OUSD(C).

- The ADCS G-3/5/7 evaluates the results of integrated programming and budgeting for compliance with all relevant Army guidance and co-chairs the PPBC and Two-Star BRP with the DAB and DPAE. The PPBC typically meets weekly.

Program Evaluation Groups

PEG Name	Co-Chair Secretariat	Co-Chair Army Staff	Designated Advisor	Appropriation Sponsor*	Program Integrator
Manning (MM)	ASA (M&RA)	DCS G-1	TRADOC CDR	ASA (FM&C)	G8 PA&E, G-3/5/7
Training (TT)	ASA (M&RA)	DCS G-3/5/7	FORSCOM CDR		
Equipping (EE)	ASA (AL&T)	DCS G-8	AFC CDR		
Sustaining (SS)	ASA (AL&T)	DCS G-4	AMC CDR		
Installations (II)	ASA (IE&E)	DCS G-9	AMC CDR		

AFC - Army Futures Command
AL&T - Acquisition, Logistics & Technology
AMC - Army Material Command
ASA - Assistant Secretary of the Army
DCS - Deputy Chief of Staff
FM&C - Financial Mgmt. and Comptroller
FORSCOM - Forces Command

G-1 (Personnel); G-4 (Logistics); G-8 (Programs)
G-3/5/7 (Operations, Plans, Training)
G-9 (Installations)
IE&E - Installations, Energy & Environment
M&RA - Manpower & Reserve Affairs
PA&E - Program, Analysis & Evaluation
TRADOC - Training & Doctrine Command

* Includes Chief, National Guard Bureau (CNGB) and Chief, Army Reserve (CAR)

Source: "How the Army Runs," A Senior Leader Handbook. https://warroom.armywarcollege.edu/wp-content/uploads/2021-2022_HTAR.pdf

Figure 29. Army PEGs

3. Army Execution

The Military Deputy to the ASA(FM&C) working through the DAB manages the execution phase. The Military Deputy:

- Oversees program performance and tracks cost and performance measures
- Establishes funding policy and processes
- Allocates funds appropriate by Congress
- Reprograms funds to meet unforeseen needs consistent with policy and law

The DPAE monitors how programmed funds are used in order to understand needs for changing resource requirements.

The ADCS G-3/5/7 evaluates execution of funds for compliance with Army priorities and guidance.

The Department of the Navy (DON) and Department of the Air Force execute their PPBE system activities similarly to the Army, naturally with certain differences related to their fundamentally different functions. The subsequent discussions of the DON and Air Force PPBE execution are briefer, citing analogies to the Army's process.

C. Department of the Navy Process and Timeline

The DON manages two parallel Service POM, BES, and PB developments, one for the Marine Corps and one for the Navy (Service). The ASN(FM&C) is integrator and coordinator for the DON. The "Navy Process" row of Figure 28 displays the key events and documents associated with the DON's execution of the PPBES. In addition to the Secretary of the Navy, the Chief of Naval Operations (CNO), and the Commandant of the Marine Corps (CMC), key DON stakeholders include:

- Navy: The Deputy Chief of Naval Operations for Warfare Systems (N9) (analog of the Army G/3/5/7)
- Navy: The Deputy Chief of Naval Operations for Integration of Capabilities and Resources (N8) (analog of the Army G8)
- USMC: Deputy Commandant for Combat Development and Integration (DC CD&I) (Marine Corps analog of Army G3/5/7)
- USMC: Deputy Commandant for Programs and Resources (DC P&R) (Marine Corps analog of Army G8)
- DON: Assistant Secretary of the Navy for Financial Management and Comptroller (ASN(FM&C)) (analog of the ASA(FM&C))

In late October or November, the Secretary of the Navy (SECNAV) develops and approves the DON strategic plan. This plan is the basis for programming guidance approved nominally in January by the Chief of Naval Operations (CNO) and the Commandant of the Marine Corps (CMC), and it provides direction for development of each Service's POMs.

During the period spanning January to May, each Service develops its own POM, with reviews by the Secretariat Review Board (SRB) to assure the Secretary that the DON's priorities are being implemented. The Navy's Service actions for the PPBE process are

specified in Navy SECNAVINST 7000.30, The PPBE Process, August 26, 2021.[103] Likewise, The U.S. Marine Corps' (USMC's) Service actions are specified in MCO 7000.1, MC PPBE&A (assessment) process, August 23, 2022.[104] The Navy Service lead for programming is the N8, whereas for the USMC it is the DC P&R. The Under Secretary of the Navy chairs various forums assessing programming issues, and ASN(FM&C) chairs forums assessing budget issues. Separate meetings are held at the three-star and four-star levels. The Navy Assistant Secretaries all participate in the PPBES according to their individual responsibilities.

A consolidated Navy and USMC POM is submitted to CAPE for the Program Review. During this time, the ASN(FM&C) initiates work with the DON's Budget Submitting Offices (BSOs) and the DC P&R to develop the DON BES.

Following the OSD's reviews, the ASN(FM&C) leads budget development, working with the BSOs and DC P&R, responding to and incorporating PDMs, PBDs, and passback into the DON submission for the PB. ASN(FM&C) leads defense of the budget with Congress, and ASN(FM&C) coordinates and releases funding to the Navy and USMC once the budget is enacted or provides limited funding if under a CR. Any reprogramming requests from either Service will be consolidated by the ASN(FM&C) for submittal to USD(C). Midyear and closeout reviews are conducted.

D. Department of the Air Force Process and Timeline

The "Air Force Process" row of Figure 28 displays the events and schedule associated with the Department of the Air Force's execution of the PPBE system. Key stakeholders within the Air Force include:

- Air Force: The Deputy Chief of Staff for Strategy, Integration, and Requirements (AF/A5) (analog of Army G3/5/7)
- Air Force: Director for Studies and Analyses, Assessments, and Lessons Learned (AF/A9)
- Air Force: Deputy Chief of Staff for Plans and Programs (AF/A8) (analog of Army G8)
- Space Force: Deputy Chief of Space Operations for Strategy, Plans, Programs, Requirements, and Analysis (S5/8) (analog of Army G3/5/7/ and G8)

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[103] https://www.secnav.navy.mil/doni/Directives/07000%20Financial%20Management%20Services/0700%20General%20Financial%20Management%20Services/7000.30.pdf, accessed February 15, 2023.

[104] https://www.marines.mil/News/Publications/MCPEL/Electronic-Library-Display/Article/3143598/mco-70001-cancels-mco-p31211-and-mco-523023/, accessed February 15, 2023.

- Department of the Air Force: Assistant Secretary of the Air Force for Financial Management and Comptroller (ASA(FM&C)) (analog of ASA(FM&C))

The Department of the Air Force is transitioning from being a single-Service Military Department (like the Department of the Army) to a two-Service Military Department (like DON). Like the Navy, the Department of the Air Force now has two sets of participants within its PPBE system: one for the Air Force (Service) and one for the Space Force. The Department of the Air Force process starts with strategy development, which is informed by the Secretary of the Air Force's goals and priorities, is led by A-5 and overseen by the Deputy Under Secretary of the Air Force.

The Air Force's PPBE system is specified in Air Force Policy Directive 90-6, Air Force Strategy, Planning, Programming, Budgeting, And Execution (SPPBE) Process, June 26, 2019.[105] The Space Force currently follows Air Force guidance and directives. The Air Force hosts two CORONAs a year to discuss upcoming AF priorities, with the first held in late summer or early fall. The other CORONA, held in early spring, provides updates to the fiscal environment. This four-star-level meeting is led by the AF A9 and A5. As the POM development phase begins, Program Element Monitor (PEM) parades are conducted at the Air Force Major Command and Air/Space staff levels, providing visibility on potential issues and confirming funding levels. Additionally, the AF/SF 8s hold force-design deep dives five times a year to define the capabilities and requirements used to inform the AF/SF SPPBE process. The AF/SF POM development lasts from December to May, with both Services submitting their POM to CAPE in June.

Department of the Air Force councils are held as needed during the POM development phase and are led by the Secretary of the Air Force, with Senior Air Force and Space Force leadership in attendance. ASAF(FM&C) leads development of the Air Force/Space Force BES and develops the final PB submission and exhibits, incorporating PBDs and changes required from the passback from OMB. Like the other Services, the Air Force adjusts its budget based on congressional appropriations and allocates funding for its major commands (MAJCOMs) once a budget is enacted. If the new fiscal year starts under a CR, ASA(FM&C) will coordinate with the MAJCOMs to determine required funding levels under the restriction of the CR. Any reprogramming requests from either Service will be consolidated by ASA(FM&C) for submittal to USD(C).

[105] https://static.e-publishing.af.mil/production/1/saf_mg/publication/afpd90-6/afpd90-6.pdf, accessed February 15, 2023.

E. Execution

The execution process in DoD is similar across all Components. Figure 30 provides key milestones and events within a fiscal year. Components adhere to the DoD FMR, which reflects the requirements codified in Title 31 USC, when executing the events displayed in the Figure.[106]

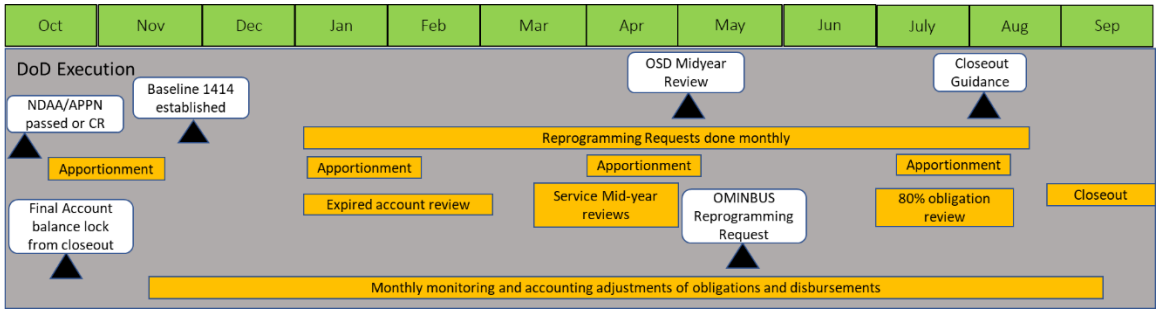


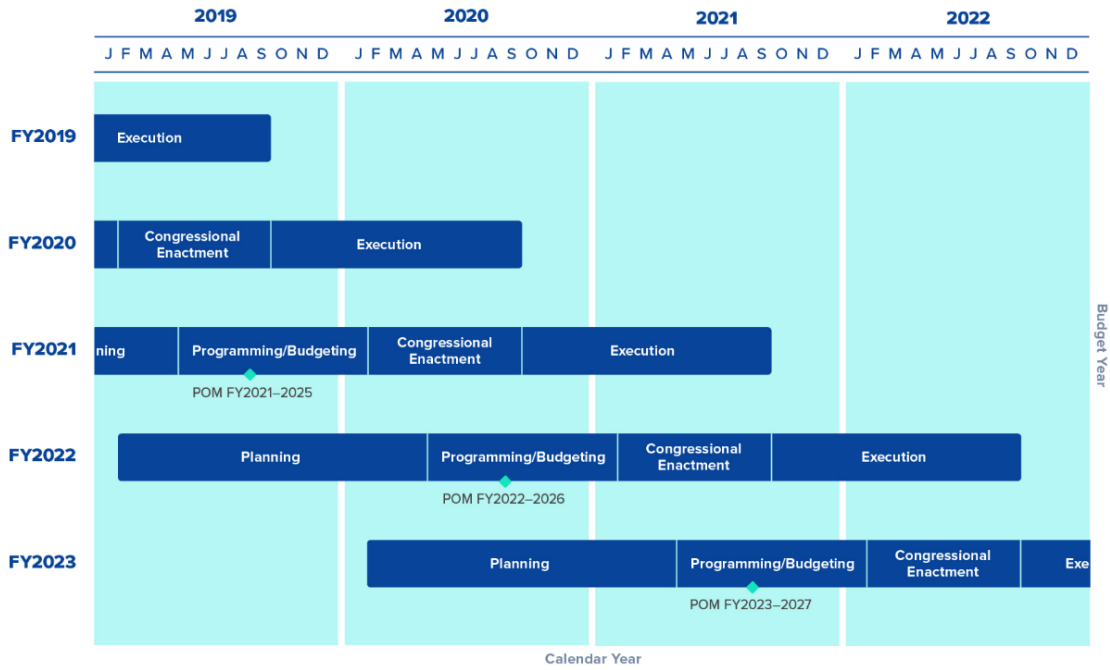
Figure 30. DoD Execution Process

OMB issues apportionments to USD(C). Regular reviews by USD(C) and Component Comptrollers occur throughout the fiscal year. The largest review is the midyear review. BTRs and ATRs are used as needed. DoD typically submits a monthly ATR to Congress and a larger, omnibus reprogramming following the midyear review.

F. Overlapping Cycles and the Timeline Faced by a New Administration

Figure 28 illustrates a single cycle from its start until the beginning of execution. Another important view of the PPBE system is what is happening at a single point in time. The length of the budget cycles means that many cycles overlap and are being executed (at different phases) concurrently. Figure 31 illustrates this overlapping nature of the cycles at a single point in time, based on how cycles are supposed to execute.

[106] https://www.law.cornell.edu/uscode/text/31, accessed February 15, 2023.



Source: https://www.decisionlens.com/blog/pom-planning TITLE: POM Budget Planning 2.0 Reducing Risk and Ensuring Readiness by Amber Larkins July 8, 2021.

Figure 31. Overlapping Cycles of the PPBE System

Recent years have seen significant deviations from this timeline based on late appropriations. For example, Figure 31 shows that at the beginning of February 2022, DoD should have been four months into executing FY 2022 and been submitting the FY 2023 PB to Congress. In reality, FY 2022 was executing on a CR. The actual FY 2022 appropriation would not be enacted until March 2022, and the FY 2023 PB submission did not occur until later that month. This overlap of phases from different budget cycles also means that the last four months of programming and budgeting shown in Figure 31 for the FY 2023 budget were conducted without knowing what the FY 2022 appropriated budget amount would be. Similarly, the FY 2023 budget was not enacted until December, 2022, and the FY 2024 submission was delivered starting in March 2023.

These overlapping cycles become even more challenging to manage during a transition from one administration to another. When administrations change, the official transition does not start until the January 20 inauguration of the new President. Although preparation begins long beforehand, it is not until January 20 that the new administration nominates senior political appointees who have to go through the Senate confirmation process. Although the Secretary of Defense may get accelerated consideration and be approved on January 20, for most other officials their being seated may take from February to summer (for the Deputy Secretary of Defense) and from February until fall for

Secretaries of the Military Departments and Under Secretaries in OSD. This delay means that the new administration has to navigate overlapping PPBE cycles with very few of their political staff.

Often the administration prioritizes early development of an NSS, which still can take considerable time. For example, the Biden administration published and provided its NSS to Congress on October 17, 2022, which was at the end of the Program Review for the FY 2024–2028 cycle. FY 2023 had already begun, so the first cycle the new NSS would fully affect is the FY 2025–2029 cycle.

To examine this matter more clearly, examine what would happen if a new administration assumes office on January 20, 2025. At that snapshot in time, when the Secretary of Defense and, perhaps, the Deputy Secretary are assuming office and there are almost no other senior political leaders in place, the following budget cycles are underway:

- DoD is four months into executing FY 2025.
- The budget proposal for FY 2026 is scheduled to be submitted in two weeks.
- DoD Components are part way through development of the FY 2027-2031 POM, and OSD will begin its review in about six months.
- The administration has a full cycle to develop the FY 2028 budget, the last budget it will fully execute (unless the leadership stays in office for a second term).

As stated above, this navigation likely has to occur without any of the new administration's strategic vision's being truly developed, let alone documented into published strategies (e.g., NSS or NDS). This reality has a major impact on the execution of the PPBE process. The new Secretary must triage a range of issues, including:

- What high-priority issues can be jump-started with a reprogramming action in FY 2025? This "jump-starting" must be identified in time for a summer omnibus reprogramming.
- What high-priority issues can be developed in time for submission with the FY 2026 budget? Such development must be done in time for the PB submission that will probably be delayed from the first Monday in February to the spring.
- What high-priority issues cannot be developed in time for the FY 2026 budget but, with quick guidance given to the DoD Components, can be developed in the FY 2027–2031 POM for review by the Secretary in the fall?
- What priority issues should be focused on in the full cycle FY 2028 build?

Creating a more workable situation for a new administration has been raised by many as a primary consideration for PPBE reform.

8. Conclusions

This report provides the findings for IDA's taskings: (1) examine the development of key PPBE documents, (2) analyze the timelines involved in developing the President's Budget (PB) request and the associated Future Years Defense Program (FYDP), (3) answer specific sponsor-provided questions related to key documents and timelines, (4) make recommendations on improving PPBE products, timelines, and processes, and (5) examine reprogramming actions and provide recommendations on how to improve the efficacy and efficiency of the reprogramming process. A list and summary of the answers to the sponsor-provided key questions are provided in Appendix B.

The interviews conducted to accomplish these taskings covered a wide range of topics related to the PPBE system and provided a variety of views on what was working well and what was not. Detailed examinations of key topics raised by interviewees were developed to:

- Provide the Commission a wide range of criticisms of the PPBE system's performance to help identify the key challenges it wants to focus on and begin to identify root causes for these challenges. The "point-counterpoint" structure used for some issues illustrates the range of (sometimes contradictory) views provided.
- Provide, where possible, preliminary analysis or suggest what analysis might be conducted to identify root causes of the problems and develop solutions that directly address these root causes, rather than address symptoms. This analysis may help the Commission target its analytic activities on the most valuable areas to the Commission.

Appendix A.
Methodology

Interviews

IDA conducted not-for-attribution interviews with current and past officials and staff responsible for and/or participating in all phases of the PPBE system. Interviewees included officials who had responsibilities within DoD for programming and budgeting, as well as for developing new technologies and developing, producing, and fielding new systems.

During the interviews, IDA solicited comments regarding what works and does not work across the participants' experience with the PPBE system. IDA also solicited ideas for changes to the PPBE system that could correct its aspects that do not work. As described below and organized according to each phase of the PPBES, the comments provided covered the issues raised in the questions IDA was directed by the Commission to consider (see Appendix B). Table A-1 provides a list of interviewees.

Table A-1. IDA Interviewees

Name	Component	Title
Dr. Ann Tipton	Air Force	Deputy Director of Air Force Budget Programs
Guy Weichenberg	CAPE	Lead Analyst for Hypersonics
JP Wilusz	CAPE	Director of Program Resources Information Systems Management (PRISM)
Edward Gardiner	USMC	Assistant Deputy Commandant for Programs and Resources
Wes Robinson	Army	Army Budget Office
Melissa Beaverson	Joint Staff	J8
Donna Sullivan	Comptroller	Director Air, Space, and Intelligence
Jim Bexfield	Former OSD	CAPE Division Director for Planning Phase analysis
Eric Lofgren	Academia	Research Fellow at the Center for Government Contracting
Tom Harker	Former Navy/Comptroller	Acting SecNav, Acting Comptroller, ASN(FM&C)
Leslie Hunter	Former OSD	Director for Force Policy (within USD(Policy))
Ken Krieg	Former OSD	DPA&E, USD(Acquisition, Technology, and Logistics)
John Roth	Former AF/Comptroller	Acting SecAF, ASAF(FM&C)
LTG(R) Thomas Horlander	Former Army	Army Comptroller
Dr. David Chu	Former OSD	DPA&E, USD(Personnel and Readiness)
Scott Pace	Former NASA and White House	NASA PA&E Director, Executive Director Space Council
Lisa Porter	Former OSD	Principal Deputy R&E
LTG(R) Paul Owstroski	Former Army	ASA(ALT) Military Deputy, Operation Warp Speed
Bob Soule	Former OSD	Director Program Analysis and Evaluation
Elaine McCusker	Former OSD	Acting Comptroller, Principal Deputy Comptroller
LTG(R) Neil Thurgood	Former Army	Director Rapid Capabilities and Critical Technologies Office
Vic Mercado	Former OSD	ASD (Strategy, Planning, and Capability)
Mary K Tompa/Barbara Karns	Navy	Director - Program/Budget Coordination
Trip Barber	Former Navy	Navy N81
Dr. Dan Chiu	Former OSD	DASD(Strategy and Force Development) (within Policy)
LTG Paul Chamberlain/MG Mark Bennett	Army	Army Comptroller/Director Army Budget
MG(R) John Ferrari	Former Army	Director Army Program Analysis and Evaluation
Dr. Yisroel Brumer	Former OSD	Principal Deputy Director CAPE
Bob Daigle	Former OSD	Director of CAPE
Joe McDade	AF	Deputy A-8
Dr. Andrew Mara	Former OSD	Deput Director CAPE
MG Karl Gingrich	Army	Director Program Analysis and Evaluation
MG Sean Swindell	Army	Deputy G-3
Alan Cohn	Former DHS	
Rudy DeLeon	Former OSD	Deputy Secretary of Defense
Mark Lewis	Former OSD	Deputy Director Research and Engineering
Mike Dominguez	Former Army and OSD	Principal Deputy Under Secretary of Defense for Personnel and Readiness
Mike Murray	Former Army	Commander, U.S. Army Futures Command
Bess Dopkeen	OUSD(R&E)	Senior Advisor to USD(R&E)
Mike Duffey	Former OMB	Program Associate Director for National Security
Al Shaffer	Former OSD	Principal Deputy Under Secretary of Defense for Acquisition and Sustainment

Literature Review

The IDA study team reviewed dozens of research reports, public articles, legislation, and policy documents. Where relevant, IDA cited those works in the report.

Empirical Analysis

In limited cases, the report provides preliminary empirical evidence on key aspects of the PPBE system. All of the reprogramming data used were generated from 1416 data compiled by Eric Lofgren, which span 2015–2021 for RDT&E and Procurement, and 2015–2021 for O&M and MILPERS. The 1416 reports present ATRs and BTRs by BLI for Procurement, RDT&E, O&M, and MILPERS. Three years of program appropriations are available for Procurement, and two years for RDT&E. So, each year, the 1416 data include three reports for Procurement and two for RDT&E, one for each year of availability. Across these reports, the reprogrammed amount is cumulative, so in 2021, if a 2019 Procurement BLI lists an ATR of +$10M, that amount could have been

reprogrammed to that BLI in 2019, 2020, or 2021, making it difficult to see at a glance how much was reprogrammed in a given year.

The IDA team used Python to disentangle current-year reprogramming values from the cumulative reprogramming values. To do so, we first generated a new column representing the number of years since the appropriation, then we merged the data back onto itself so each row would represent a (BLI, appropriation-year) pairing with the cumulative reprogramming given by each year's 1416. By taking the difference of these cumulative reprogramming values, we were given the amount reprogrammed each year for each (BLI, appropriation-year). Then we expanded the data so each row represented a (BLI, appropriation-year, reprogramming-year). We did this calculation for both ATRs and BTRs. With this dataset of yearly reprogrammings, we were able to create multiple visualizations for the total amounts reprogrammed and show directions of reprogramming.

To discover the changes in budget authority over time, we gathered and compiled P- 1, R-1, O-1, and M-1 reports from 2001 through 2023, which give the "actual" amount of budget authority for Procurement, RDT&E, O&M, and MILPERS, respectively. The "actual" value in each report is given with a two-year lag, so our final dataset ranged from 1999-2021. Because this dataset spans over 20 years, we gathered deflators from Greenbook reports for each appropriation in each year. Some of our visualizations divide the dollar value by these deflators to show real-dollar changes.

The PPBE Commission data team provided us with a table of BTR thresholds for each appropriation and each year from 1999–2022. Using these thresholds, the reprogramming dataset, and the Budget Authority Dataset, we were able to generate visualizations on BTR constraints, including the maximum BTR amounts that were possible in each year and the amounts of BTR used each year. In addition to the fixed threshold amount given in the table, Procurement and RDT&E have an additional constraint that no more than 20 percent of the program's enacted budget authority can be reprogrammed in a BTR. We used both constraints in determining the BTR threshold for each BLI, each year.

To calculate the possible BTR reprogramming available each year, we used methods that ranged from a simple rule to an algorithm designed by the authors for this purpose. One approach could be to add the thresholds for each BLI and treat the total as the possible BTR reprogramming, but this method treats each BLI as a source for reprogramming (or a destination in the mirrored case) with no destination for the reprogrammed funds (or no source in the mirrored case). The maximum that could be reprogrammed is half of the sum of all BTR thresholds—which could occur if all BLIs had an identical threshold and half of the BLIs served as sources and the other half as destinations for the reprogrammings. However, BLIs have varying amounts they can send or receive in a BTR, based on appropriation and enacted budget authority. Therefore, we developed an algorithm that provides a lower bound on the total BTRs possible by first ordering from least to greatest the amounts a BLI can reprogram to other BLIs. This list is split into sources and

destinations until the total amount sent by the sources is at least the size of the total amount received by the destinations. Then, the sum of the amount that could be received by each destination is treated as the total amount of BTR possible, because reprogrammings from the sources require a destination to be sent to.

BTRs among appropriations or Military Departments are possible but require the use of general transfer authority. So, we repeated using the algorithm for total BTR available only within accounts, and total BTR available within or across accounts. The second case yields a total amount nearly identical to the "half of the sum of all BTR thresholds" theoretical maximum.

Subject Matter Expertise

The IDA study team included experts with experience across the PPBE system, including former heads of CAPE, OT&E, and the Performance Assessments and Root Cause Analyses.

Appendix B.
Summary Answers to Key Questions Provided by Sponsor

IDA was given two specific tasks designed to help the Commission answer questions about key documents and associated timelines during the PPBE process. These questions were required by law (Section 1004, paragraphs (g)(1) and (g)(2) of the FY 2022 NDAA and are to be included in the Commission's interim report. This appendix provides summarized answers to the questions provided by the Commission. More detailed answers to many of the questions are contained in the text of the report in various sections.

Question on the Development of Documents

These questions address development of key PPBE documents, including the DPG, the POM, FYDP, BES, and the President's Budget Request. This task is intended to address Sec 1004, paragraph (g)(1) of the law.

1. What is the general nature and format of the document (size, specificity, mostly numbers or mostly text, etc.)?

DPG: 50 to 100 pages with annexes. A classified document providing guidance on force sizing, capabilities, threats, and scenarios. Mostly text.

FG: A few-page memo provided separately to each POM submitting Component.

Program and Budget Review Instructions: CAPE and Comptroller also issue integrated Program and Budget Review instructions (the name has varied over time) consisting of a cover memo followed by detailed instructions and times, usually 70 to 100 pages. It is often supplemented by follow-on guidance containing adjustments specified by OMB like pay raises, inflation adjustments, etc. Published on the SIPRNet, but usually CUI. Text and tables.

POM: The POMs are primarily a digital document and database transferred electronically from Components to OSD. A wide range of supporting displays are also submitted electronically. Like the FYDP, the POMs contain proposed resource allocations by PE for the budget year and next four years.

FYDP: The FYDP is an electronic database and is also provided in printed format to Congress five days after the PB submission (although it is frequently late). The FYDP is

structured by PE and contains both the active (budget year and next four years) and historical information. It resides on the SIPRNet.

BES: The BES is an electronic database submission that leads to the PB submission. The BES is electronically submitted to OSD along with supporting justification exhibits. Exhibits range from tens of pages to hundreds of pages. There are both unclassified and classified exhibits.

PB: The PB submission is a summary of DoD Component submissions and justification exhibits. The DoD Financial Management Regulation (DoD 7000.14-R) defines the required content and format of the PB submission and its justification material. The consolidated PB for DoD is usually several hundreds of pages. When combined with all the justification books, the number of document pages is in the thousands. A digital database is also available providing funding levels at the various appropriation, Budget Activity (BA), Budget Activity Group (BAG), and Sub-Activity Group (SAG) program levels. There are both unclassified and classified exhibits.[1]

2. What organization has lead responsibility for formulation of the document? What are the major supporting organizations and stakeholders?

DPG: Lead organization is OSD/Policy. Primary supporting organizations are CAPE and JS.

FG: Lead organization is CAPE, supported by OSD/Comptroller.

POM: Each POM-submitting Component develops and submits a POM. The lead organization is the Component programmer (the 8s in the Military Departments), with support provided by most of the organizations in the Component with responsibilities for financial management, acquisition, logistics, operations, and personnel.

FYDP: Lead organization is CAPE.

BES: The lead organization is the Component CFO (the Assistant Secretaries for Financial Management and Comptroller for each of the Military Departments).

PB: Lead organization is OSD/Comptroller, supported by each DoD Component financial manager.

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[1] "A Budget Activity (BA) is a category within each appropriation and fund account that identifies the purposes, projects, or types of activities financed by the appropriation or fund," AcqNotes, Program Management Tool for Aerospace, BAG and SAG entries provide additional detail with increasing specificity, as appropriate. https://acqnotes.com/acqnote/careerfields/budget-activity-ba#:~:text=A%20Budget%20Activity%20(BA)%20is,by%20the%20appropriation%20or%20fund, accessed February 16, 2023.

3. What are the timelines for preparation of the document in years when extraordinary events have not intervened? What have been timelines in recent years when extraordinary events occurred?

DPG: The DPG takes several months to develop. This timeframe is not typically influenced by extraordinary events.

FG: FG takes several months to develop. This timeframe is not typically influenced by extraordinary events, although it can be delayed when full-year appropriations by Congress are delayed.

POM: When considering the planning and programming processes together, the Military Departments can take a year or more to develop their POMs. The late enactment of budgets and release of the DPG can compress the final decision-making period for POM finalization.

FYDP: If defined as the period from POM submission to transmission to Congress, the FYDP development period is about seven to eight months. If submission to Congress of the PB is delayed from the first week of February, the FYDP submission is correspondingly delayed.

BES: BES development begins in earnest as the POM begins to finalize. Typical periods can range between two to four months. Late enactment of full-year appropriations, late release of the DPG, and late POM decisions all can compress BES development.

PB: If defined as the period from PDM/PBD issuance until submission to Congress, the period is about two to three months (November to first Monday in February).

3.a. Do user organizations in the PPBE process that rely on this document believe that this document is delivered in a timely fashion? If not, how much earlier does it need to be provided in their view?

The main document relevant to this question is the DPG. It typically comes out late. Some interviewees said that they use the draft DPG, and the late DPG has little impact. Other interviewees stated that the late DPG issuance further compresses the POM and BES development cycles.

4. How in general terms does the lead office formulate the document (e.g., senior-leader guidance, inputs from subordinate commands, extrapolation from past years, etc.)?

See Chapter 2.

4.a. Has the lead office instituted any changes/reforms to the way it formulates the document in the past several years? If so, what have been the results of these changes/reforms?

Each year, incremental changes are made to the formulation of the documents based on past and current environments. New IT and analytic tools are being developed at most levels as well to support generation and transmittal of the documents.

5. Does the lead organization feel it has sufficient input during the formulation of fiscal guidance (FG) to ensure that its priorities are made clear?

DoD Components have little if any formal input in development of FG. CAPE develops FG with Comptroller in support of the Secretary of Defense. In most cycles, FG closely follows the prior year FYDP totals, and there is little surprise in its values.

5.a. Does this fiscal guidance input arrive early enough to ensure trades are rigorously assessed?

FG is generally on time and there were not many concerns raised by interviewees on its timing (although the general view was that earlier was better).

5.b. For the DPG, are resource constraints factored in?

This has been a perennial issue in DoD. There have been periods of time in the past when "costing" the DPG was part of the development process. Although "costing" the DPG does not occur now, the DPG is also less specific now than it was in the past on force structure sizing and other major budgetary driving guidance areas, so some interviewees believed that it has less impact on determining budget funding levels now.

6. Does the lead organization feel that it usually has sufficient time to prepare the document effectively? If not, why not and how much more time would be needed to be effective?

From interviews, Component programmers and budgeters, as well as their counterparts in OSD, believe the schedules under which they must work are compressed, with the budgeting phase usually experiencing the most substantial schedule compression. Per the discussion in Section 2.E.1, compression would be lessened if decisions could be made as part of the planning phase that are currently being made during programming and budgeting.

7. Does the lead organization feel it has the minimum level of personnel with the needed training and experience, including training in analytic skills, needed to formulate the document effectively? If not, what are the major shortfalls?

Interviews with the Component programmers and budgeters, as well as their OSD counterparts, indicate they do not have sufficient staff to complete the required tasks, with budgeting having the most significant shortfalls. The career staff judge current demands,

particularly those associated with schedules; they outstrip their capabilities, leading to reduced product quality (e.g., technical errors in submission documents). Additional staff or reduced demand (e.g., making more decisions substantially affecting resources during the planning phase and delegating more decisions to lower levels during all phases) is needed.

8. Does the office feel that the document is adequately linked to the DPG and other planning documents (in the case of the POM) or to the relevant POM (in the case of the BES or President's Budget proposal)? If not, where and why is the linkage inadequate?

Generally, interviewees thought they did a good job of linking to the NDS and DPG. Exceptions were generally attributed to lack of specificity in the DPG or insufficient time/staff to analyze the potential resource implications of the DPG.

9. Does the lead organization feel that the review process for formulating the document is adequate to ensure that most of the important issues are raised and resolved? If not, how and why is the review process inadequate?

Many interviewees stated that the planning phase is not adequate to support programming because it does not clearly address the important issues that need to be raised and resolved. Lack of clarity was judged to be a consequence, in part, of the analytical capabilities needed to identify the potential resource implications of guidance being considered for inclusion in the DPG as (or preferably before) it is developed and made final. Programming and budgeting interviewees stated that most issues assigned to those phases get addressed, but that the quality and quantity of supporting information can be inadequate due to the schedule and staffing constraints discussed previously.

9.a. Does the lead organization feel that senior leaders involved in review of the document spend too much time on minor/low-value issues?

Some interviewees raised this concern with the programming phase. They stated that too many small-dollar issues of lesser importance are considered during programming.

10. Does the lead office believe that key inputs from stakeholders (e.g., services/subordinate commands, COCOMs, acquisition and personnel officials, etc.) are considered during formulation of the document?

Most Military Department interviewees stated that their internal PPBE processes were very collaborative across the Military Departments and that all views are considered. The OSD-led Program Review and Budget Review were generally considered to be transparent and collaborative. Programmer interviewees tended to prefer the collaborative issue-team approach they use as more transparent, whereas interviewees involved in budgeting tended to prefer the document-based approach they use as more transparent. Some interviewees

associated with the Military Departments viewed the programming phase as being more transparent and collaborative than the budgeting phase.

11. Does the lead organization engage informally (but without divulging specifics where that is prohibited by OMB guidance) with members of Congress or their staffs during the formulation of the document? If so, how often does that engagement occur (rare, occasional, often), and what kind of information is shared?

The internal phases of the PPBE system are generally considered predecisional, and engagement with Congress on specific resource allocation decisions is discouraged. However, there can be engagement with Congress during this stage on technical issues like whether a PE or BLI can be adjusted to more accurately reflect the programs it supports without causing concern with Congress. After the budget is submitted, there is extensive engagement with Congress, including staff briefings, budget hearings, written responses to questions, and other interactions with staff and members. It was also stated that technical corrections can be made with congressional staff informally, prior to markup or conference.

12. How often does the lead organization coordinate with other stakeholders in preparation of document (rare, occasional, often)?

The Services have established formal and extensive coordination processes for producing guidance promulgated by their leadership and for POM and BES development. Coordination occurs continually throughout all the phases of the PPBE system. Similarly, OSD coordinates with the Services and Components as the DPG is developed and as the Program and Budget Reviews are conducted.

13. For President's Budget proposal: Is the joint review process with OMB adequate to ensure that the President's Budget proposal reflects presidential priorities?

DoD interviewees believed that OMB was invited to be a full participant in the Program Review (e.g., examiners were invited to issue team meetings) and, similarly, was generally included in the Budget Review. DoD interviewees expressed some concern that guidance (fiscal top-line guidance, policy/programmatic guidance, and price-escalation guidance), comes late from OMB, which adds another challenge to the already compressed cycles.

IDA interviewed only one (former) OMB official. Other interviewees, however, did state that OMB has expressed concern in the past that its engagement is too limited and that OMB does not exercise the same level of scrutiny over DoD's budget as it does over other Agencies.

14. For President's Budget proposal: What problems if any occur during the OMB review process leading to the President's Budget proposal (e.g., late changes in budget guidance, new programs, etc.)?

DoD interviewees cited several recent cycles with late OMB top-line guidance and/or passback guidance.

15. Characterize the importance of sources that influence the final version of the document: extrapolation of data from past years, inputs from subordinate commands or services/departments, decisions based on tradeoff analyses, senior-leader guidance apart from decisions based on tradeoff analyses, OMB guidance, other (please specify)? Characterize each source as highly important, important, limited, little or none.

All Military Departments stressed the importance of input from across their organizations for developing guidance, the POM and the BES, implying high importance for inputs from subordinate commands or Services/Departments, as well as from the combatant commands and decisions from senior leadership. Interviewees noted that POM and FYDP projections, as well as fiscal guidance, beyond the budget year can be based on extrapolations of data from past years (or the current year), implying either important or limited use of such data. Some interviewees judged tradeoff analyses were needed to support decisions during all phases, particularly during development of the DPG, but were lacking due to inadequate analytical capabilities across DoD, particularly in OSD, implying limited to no importance for tradeoff analyses currently. Many interviewees regarded OMB guidance as potentially having substantial effects but often late, thereby causing last-minute turmoil in preparing the PB, implying that OMB guidance can be highly important depending upon circumstances.

16. Overall, what are the key strengths of the document? Key weaknesses?

DPG: Strength: when provided on time and rigorously, provides strategic-level priorities.

Weakness: Fails to resolve strategic questions, frequently late, often fails to provide priorities (lists everything as a priority without providing offsets), often ambiguous.

FG: Strength: Concrete and consistent.

Weakness: Better if provided earlier, but this was not a major concern raised.

POM: Strength: Comprehensive review of Component resources and their prioritization of funding.

Weakness: Lacks across-the-board rigor due to time constraints and being forced to do too much.

FYDP: Strength: Forces discipline on plans, when done well forces a focus on future end states.

Weakness: Granularity of PEs/BLIs, primarily focused on modernization accounts with most O&S accounts treated as afterthoughts and simply grown at the rate of inflation.

BES: Strength: Provides the basis for the PB with supporting exhibits.

Weakness: Compressed timeline for development.

PB: Strength: Comprehensive display and justification of DoD's budget priorities.

Weakness: Inefficient and staff-intensive to produce; granularity constrains flexibility during execution.

17. Are there alternative process, changes in the documents (such as change in scope), or other documents that would meet same needs but do so more effectively or more efficiently?

For DPG, interviewees generally focused on timeline and content (i.e., getting it out on time and having it based on rigorous analyses enabling unambiguous guidance). Interviewees stated that the DPG process was not run as a decision-making process, but should be.

For POM, BES, and PB, interviewees generally focused on greater automation, having more time, reducing the scope of decisions, and using broader definitions of PEs and BLIs to provide flexibility during execution.

Questions on Timelines

The focus of this task is at the OSD level. This task is intended to address Sec 1004, paragraph (g)(2) of the law.

1. What are the timelines for preparation of the President's Budget proposal and associated FYDP in years when extraordinary events have not intervened? What have been timelines in recent years when extraordinary events occurred?

PB: If defined as the period from PDM/PBD issuance until submission to Congress, the period is about two to three months in normal cycles (November to first Monday in February). With recent late releases of the PB (e.g., March), the time from the end of Program and Budget Review is longer, but this does not mean there is more time for PB development. The delays in submission have been caused by significant delays in provision of OMB guidance; so, the PB production period with final decisions is still compressed. For the FY 2024 PB submission, the OMB passback was provided in late January, and the PB submission was in early March, leaving less than two months from final decisions to PB submission.

2. Roughly how many weeks before the end of the process for preparing the President's Budget proposal (sometimes called "budget lock") can budget-year changes be made in routine programs? Different deadline for high-priority programs (that is, changes supported by senior-level officials)?

The traditional timeline is:

- PDMs and PBDs issued by the end of November. They document formal decisions, so it is the last point in the regular process when "decisions" can be made.
- Budget system lock in mid-December. Data reflecting the final budget are entered during the period from the end of November to mid-December. Technical corrections can be made and, with permission, small decisions could be made as long as leadership agrees that they are minor and viewed as technical corrections. Delays in the OMB passback will affect this nominal timing, as discussed above.

Interviewees noted that if senior leadership intervenes, just about anything can happen, but the likelihood is based on the level of importance. See discussion in Section 5.D.

2.a. What are the primary factors that limit this timeline?

Interviewees noted the primary factor is the time it takes to prepare the final budget material for submission. The Congressional submission date is set in statute (although it is not always observed), and the timing of budget lock is set to allow enough time to produce the submission material (and to comply with OMB guidelines on the lock of its system).

2.b. What improvements to processes or systems, if any, would allow changes to be made closer to budget lock?

Interviewees noted there is not a long period of time between PDM/PBD issuance and budget lock now (a few weeks). The length of time from budget lock to PB submission is longer but involves OMB (an organization not under the control of the Secretary). Better IT systems and better integration among IT systems within and external to DoD might enable some shortening of the timelines, but the timelines are not long now, and trying to shrink them by a few days or a week might be unrealistic.

3. Would you characterize the number of budget-year changes near the deadline (say, within a month) as frequent, some, or limited?

Interviewees noted that in traditional cycles, there are relatively few substantive or large changes after PDM/PBD issuance. The changes that occur during this time are relatively small technical changes (although there may be a large number of them). In the most recent years with significantly delayed budgets and OMB passback, there have been extensive,

large changes after the traditional lock dates (e.g., for FY 2024 the OMB passback was received in January and (presumably) led to many changes).

3.a. To what extent are additional changes "deterred" based on difficulty and effort involved in making those changes?

See discussion in Section 5.D. Interviewees noted that a primary issue is leadership support. For changes that have leadership support, realignments of resources can generally be accomplished (although it gets harder as the calendar progresses). Another deterrent raised by some interviewees was that leadership might accept the source but not the use (i.e., the organization that wants to make the change may not be the highest priority, and they may know that).

4. Indicate whether answers to the previous question (frequent, some, or limited) differ based on whether proposed changes come from leaders in acquisition, personnel, military construction, operations, or other (please specify) and the primary reasons driving those changes?

Interviewees did not distinguish among specific functional communities. The three key factors cited as associated with a change are the functional organization that wants to make the change, the resource organization with the pen or access to the pen (the 8 or the FM&C who can work with CAPE or Comptroller to get the change made), and leadership. A typical sequence is the functional community will raise the change with the resource organization, the resource organization will assess if explicit leadership support is required and whether making the change is feasible, and the subsequent actions will be taken.

5. Are the answers to these questions significantly different if the change applies only to FYDP years beyond the budget year and not to the budget year itself?

For changes to the outyears, interviewees generally thought that if the PDMs hadn't been issued yet or the FYDP was not yet locked, then they might try for a change, but if it was late in the process then they might just wait until next cycle to update the outyear information.

6. Are there alternative approaches to achieving flexibility during these processes that would be more effective or more efficient?

Most interviewees supported broader PE and BLI definitions and higher reprogramming thresholds. Interviewees differed on how important these changes were and/or how feasible they were. Some interviewees raised the idea of different account structure foundations (e.g., using organizational portfolios or capability portfolios instead of the current program portfolios). Other interviewees stated that these alternative structures would just raise new gap/seem issues (e.g., what should the capability portfolios be and what should they comprise) and the challenges of realigning within and across portfolios would still exist.

7. Is there utility in doing each phase of PPBE annually? There may be alternative ways of structuring PPBE within a typical 4-year window of an administration.

Some interviewees recalled early attempts (e.g., every-other-year cycles, which entailed doing a full build one cycle and then a lighter change-proposal-based review the following cycle). But most considered these attempts failures, particularly since Congress did not enact two-year appropriations. Other reasons include: there is legitimate change that has to be examined every year, oversight authorities expect "fresh" budgets, etc. Some interviewees thought a more structured approach across a four-year administration cycle (e.g., focusing on specific types of questions based on when the cycle occurs during the administration) would be worth exploring.

Appendix C.
Planning Phase History in Detail

Many interviewees stated that challenges in the planning phase and, in particular, analytic support to the planning phase were a (for some, *the*) primary root cause of PPBE system challenges and struggles to implement the NDS. Because of the prominence of this issue, this appendix provides a detailed history of key planning phase decisions, changes, and structure.

Strategic Guidance and Military Objectives

Kennedy and Johnson administrations. The earliest Planning Phase occurred in Secretary McNamara's first use of PPBS in 1961. McNamara directed "…more than one hundred studies of military requirements" be performed to support preparation of the fiscal year 1963 budget, including a general purpose forces study.[1,2] During the Kennedy and Johnson administrations, beliefs about what might constitute major wars in Europe and Asia determined general purpose force requirements. However, consideration was also given to scenarios involving "brushfires" (i.e., smaller wars). The result was a 2½-war strategic concept. Theater campaign, mobility, and other models were developed to inform the implications for force structure and resources of the strategy. Notwithstanding McNamara's efforts, force planning conducted by the military was disconnected from the PPBS, largely because force planning was resource-unconstrained.[3] During this period, the Assistant Secretary of Defense for International Security Affairs took an increasingly important role in developing and articulating defense policy and guidance within and outside DoD.[4]

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1 Robert F. Hale, "Financing the Fight: A History and Assessment of the Department of Defense Budget Formulation Processes," *Brookings Institution*, April 2021.

2 Eric V. Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning," RR-2173/1-A (Santa Monica, CA: RAND Corporation, 2019), https://www.rand.org/pubs/research_reports/RR2173z1.html, accessed February 8, 2023.

3 Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning.

4 R. Trask and A. Goldberg, *The Department of Defense 1947-1997: Organization and Leaders* (United States, Dept. of Defense, Office of the Secretary, Historical Office, Washington, DC, 1997), https://history.defense.gov/Portals/70/Documents/other/DOD1947-1997OrgLeaders.pdf?ver=MyoK-qqVHsyEMroepBidwQ%3d%3d, accessed February 8, 2023.

Nixon and Ford administrations. Taking advantage of the rift between the Soviet Union and China that made their coordinated action against U.S. allies unlikely, the 2½-war concept was downsized to 1½-wars. Strategic force planning was threat-based and centered on the Soviet Union. Military conventional force planning remained resource-unconstrained and disconnected from the PPBS. "Scenario-based studies, war games, and military judgment continued to predominate on the military side while systems analysis techniques continued to be refined and were increasingly employed within OSD. There also was increasing use of combat simulation and other models in support of strategic analysis during the period."[5]

Carter administration. Secretary Brown decided that the guidance previously issued by numerous OSD offices needed coordination and integration, both among themselves and with the planning conducted by the JCS. Brown decided to involve the President and himself in the PPBS early and continually. The JCS would also become involved early and throughout the process. A single consolidated guidance would replace the numerous guidance documents previously issued."[6] Brown, with congressional approval, established the position of Under Secretary of Defense for Policy to lead policy-making for the Secretary, including the preparation of guidance for conducting the PPBS.

The invasion of Afghanistan by the Soviet Union and the Iranian revolution, as well as deteriorating nuclear and convention force balances in Europe, made requirements for conventional forces a priority midway through the administration's term. For planning purposes, changes were made to the specific scenarios used to determine requirements (types and numbers) for conventional forces. Presidential Decision (PD) 62 "Modifications in U.S. National Strategy," released shortly before the end of the administration, indicated:

- The need for general purpose forces in Europe, Korea, and the Persian Gulf region remains.
- Soviet moves in Africa and Afghanistan, as well as the Iranian revolution, placed a priority on assuring security in the Persian Gulf Region.
- The highest priority for increasing strategic lift and conventional forces will be the Persian Gulf.

Advances in the use of systems analysis and the development of campaign models run on high-speed (at the time) computers aided determination of conventional force requirements. Analyses focused on force and mobility needs for Southwest Asia scenarios

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5 Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

6 Trask, 1997. Brown also concluded "…there were too many repetitive reviews, and that too many changes occurring late in the budgeting cycle affected the programming and budgeting phases adversely."

and simultaneous—or nearly simultaneous—Soviet actions in Europe and the Persian Gulf.[7]

Reagan administration. The Reagan administration used a 2+ 2(½)-war (two and two half-wars) construct featuring planning for a global war with the Soviet Union comprising major conflicts in Europe and Northeast Asia, a simultaneous Soviet action in Southwest Asia, and a ½ war somewhere else. Planning scenarios were threat-based, reflecting what were believed to be realistic near-term possibilities; longer-term projections were also used. Incremental refinements to PPBS, JSPS, and the use of systems analysis occurred. The report of the Packard Commission and the Goldwater-Nichols Act of 1986 (Pub. L. 99-433) in principle provided the CJCS with the authorities needed to develop integrated, joint assessments of military needs, instead of forwarding consensus-based assessments amalgamating Service inputs. However, it was not until General Colin Powell became CJCS in 1989 that practical use of these authorities occurred and integration with the PPBS was improved. Ever faster computers enabled continued improvement in combat and other simulation models.[8]

Of note: "Until the early 1980s, force requirements assessments began with strictly military, 'minimum risk' force requirements, until the focus was shifted to more fiscally responsible 'prudent risk' force requirements sometime around 1982. The 'prudent risk' force requirements continued to be so high, however, that then–Deputy Secretary Frank Carlucci stated that the JCS's midterm planning document at the time was 'not a very valuable document as far as the budget process is concerned . . .; it's a benchmark only.'"[9]

George H. W. Bush administration. With the fall of the Soviet Union, the focus on one or more simultaneous major wars involving potential use of nuclear weapons changed to consideration of one or more regional wars, analogous to the ½ war scenarios used during the Cold War; conflicts in Iraq and Korea were used. General Powell, as CJCS, made full use of Goldwater-Nichols authorities to better integrate the JCS's Joint Strategic Planning System with the PPBS. Planning shifted from being threat-based to capabilities-based.[10] In particular, the single scenario for global war with the Soviet Union used for

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[7] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[8] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[9] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[10] Paul K. Davis of RAND states: "Capabilities-based planning (CPB) is planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice. It contrasts with developing forces based on a specific threat and scenario." See P. Davis, "Analytic Architecture for Capabilities-Based Planning, Mission-System Analysis, and Transformation," MR-1523-OSD, (RAND Corporation: Santa Monica, CA, 2002).

force planning during the Cold War was replaced by multiple scenarios involving regional and global war that were included in the DPG for 1994 to 1999.

The Base Force Study conducted by General Powell developed a force claimed to be capable of employing decisive force in a major regional contingency while having sufficient forces remaining to not be vulnerable to (i.e., capable of conducting defensive action in) a second regional contingency. The Base Force provided a new strategy and force structure reflecting the end of the Cold War, while defining a floor below which force reductions should not be made in order to avoid breaking the force. The Base Force was the basis for reducing force structure by 25 percent and active manpower by 20 percent; lesser reductions were made in reserve manpower. Although DoD did not use it in the Base Force study, DoD subsequently developed Illustrative Planning Scenarios (IPSs) to be used for analyzing the capabilities of its forces. The IPSs included major contingencies in Iraq, Korea, Iraq and Korea simultaneously, a Russian-Belarus attack on the Baltics and Poland, a coup in the Philippines, a threat to the Panama Canal, and an emerging near-peer competitor.[11]

Clinton administration. The Clinton administration conducted the 1993 Bottom Up Review (BUR) and the 1997 Quadrennial Defense Review (QDR) mandated by Congress. In both cases, the primary scenarios used to assess conventional force structure needs were two major regional contingencies (MRCs): a North Korean attack on South Korea and an Iraqi attack on Kuwait and Saudi Arabia occurring nearly simultaneously. Consistent with capabilities-based planning, the 1997 QDR considered a total of 45 scenarios, including an aggression by an unidentified regional great power. Capabilities needed for homeland defense were also considered, as were those for peacetime forward presence. However, the capabilities needed for other than the two MRCs were generally lesser included forces. Debate continued throughout the Clinton administration on the adequacy of the BUR and QDR forces to conduct forward presence operations and respond to two MRCs, and funding anticipated for modernization was repeatedly moved to finance operations and sustainment.[12]

Better integration of the PPBS and JSPS processes and development of improved computer models continued. To support the annual PPBS, the Office of Program Analysis and Evaluation (PA&E) began to conduct front-end assessments (FEAs) initiated early in each calendar year, analyzing a handful of issues expected to be relevant to both planning and programming. Other analytical efforts were conducted, such as the Deep Attack Weapons Mix Study (DAWMS), which sought to use linear programming to derive the optimal mix across all the services of deep attack weaponry needed to conduct two nearly

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[11] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[12] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

simultaneous MRCs. At the direction of Deputy Secretary John Deutch, and responding to CJCS General John Shalikashivili's post-QDR concern for the need for better analytical models, PA&E initiated an effort to develop a new, comprehensive campaign model for use across DoD.[13] This effort was eventually terminated after several years of effort failed to produce a usable model.

George W. Bush administration. The administration used threat-based scenarios for near-term planning and capabilities-based assessment for long-term planning, the latter meant to guide the force transformation highlighted as needed during the 2000 Presidential campaign. Longer-term planning was essentially discontinued following the 9/11 terrorist attacks and the subsequent needs to conduct wars in Iraq and Afghanistan. Nonetheless, the administration conducted a QDR in 2001, that was largely completed prior to the attacks, and a QDR in 2006. Secretary Rumsfeld decided to issue the DPG every second year and subsequently split it into the Strategic Planning Guidance and the Joint Programming Guidance.

The 2001 QDR eventually arrived at a "1-4-2-1" construct for sizing the force, as follows:

> (1) Defend the United States
>
> (4) Deter aggression and coercion forward in critical regions
>
> (2) Swiftly defeat aggression in overlapping major conflicts while preserving for the President the option to call for a decisive victory in one of those conflicts, including the possibility of regime change or occupation
>
> (1) Conduct a limited number of SSC [Small-Scale Contingency] operations.[14]

Many details regarding the analysis used to determine the force emerging from the 2001 QDR were lacking in DoD's report on the review. Various models were subsequently used to define in greater detail the implications of the sizing construct for actual force composition and size. In addition to the force sizing construct, transforming the force to take full advantage of the critical technologies needed to maintain a clear and decisive lead against any future adversary was meant to be a determinant of resource allocation.[15]

The 2006 QDR incorporated much of its predecessor in 2001, including the force sizing construct, while also incorporating lessons learned from the ongoing conflicts in Iraq and Afghanistan. A Mobility Capabilities Study and Operational Availability Study were also conducted; neither found significant shortfalls in planned forces, investments, or

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[13] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[14] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[15] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

resources. Congress criticized the 2006 QDR as being budget-driven and questioned the adequacy of both forces and budgets.[16]

Obama administration. The 2010 QDR had winning the wars in Iraq and Afghanistan as its focus but also considered changes to the extant force needed for it to better contend with the anticipated environment when the wars ended. For the latter, changes to the force were determined by assessing the implications of ongoing operations, as well as of a broad range of potential scenarios, as directed by Secretary Gates.[17]

DoD began developing an Analytic Agenda in preparation for the 2010 QDR before the Obama administration took office. Preparations included developing and coordinating common sets of assumptions, scenarios, and models. Integrated Security Constructs (ISCs) were developed containing combinations of overlapping contingency scenarios and other operational demands to assess force capabilities. Those demands were assumed to be additive to peacetime commitments. By April 2009, DoD had developed 11 scenarios that would be used during the QDR, including stability operations in Iraq and Afghanistan, regime collapse in North Korea, a major conflict with China over Taiwan, Russian coercion of the Baltic states, a nuclear-armed Iran, loss of control of nuclear weapons in Pakistan, and homeland defense and cyberattacks on the United States. However, Secretary Gates was dissatisfied with these scenarios and used a red team led by Andrew Marshall and General James Mattis to explore scenarios other than those developed under the auspices of the Analytic Agenda. The scenarios Gates ultimately approved included the following:

- A major stabilization operation, deterring and defeating a highly capable regional aggressor, and extending support to civil authorities in response to a catastrophic event in the United States.
- Efforts to deter and defeat two regional aggressors while maintaining a heightened alert posture for U.S. forces in and around the United States.
- A major stabilization operation, a long-duration deterrence operation in a separate theater, a medium-sized counterinsurgency mission, and extended support to civil authorities in the United States.[18]

The force's ability to sustain engagement overseas through forward stationing and routine rotational deployments was also assessed. Nonetheless, the 2010 QDR, identified no unambiguous force-sizing construct, and the report identified in detail only modest changes to extant forces.

The 2014 QDR focused on emerging threats following the end of major commitments in Iraq and Afghanistan. Its priorities were to defend the homeland, build global security,

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[16] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[17] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[18] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

and be prepared to win decisively against any adversary. Needs were also cited to reduce overhead, streamline activities, and reform military compensation. The QDR envisioned a complex future with evolving and shifting threats utilizing advanced technologies widely available in the commercial marketplace. The QDR's force-sizing construct used the following set of missions described in the 2012 Defense Strategic Guidance: "…counter terrorism and irregular warfare; deter and defeat aggression; maintain a safe, secure, and effective nuclear deterrent; and defend the homeland and support civil authorities."[19] GAO reported that ISC-B was used to assess needed forces in the 2014 QDR; it consisted of the following imperatives:

> (1) Defeat / Major Combat Operations: To defeat a regional adversary in a large-scale multiphase campaign
>
> (2) Deter: To prevent acts of aggression in one or more theaters by presenting a potential adversary with a credible threat of unacceptable counteraction by U.S. forces, and/or belief that the cost of the potential adversary's action outweighs the perceived benefits
>
> (3) Defend / Homeland Defense: To defend U.S. territory from direct attack by state and nonstate actors and, in the event such defense fails or in the case of natural disasters, come to the assistance of domestic civil authorities in response to a very significant or even catastrophic event
>
> (4) Steady State / Foundational Activities: Activities the Joint Force conducts by rotating forces globally to build security globally, preserve regional stability, deter adversaries, and support allies and partners.[20]

ISC-B did not explicitly include the need to simultaneously deny a second aggressor. The 2014 QDR was criticized by Congress as being budget-driven, shortsighted, and accepting too much risk, including regarding the rise of China and its implications.

Towards its end, the Obama administration adopted a force sizing construct that would:

- Defend the homeland
- Deal with four potential contingencies, including Russia, China, North Korea, and Iran
- Conduct a sustained global campaign against violent extremism; and

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[19] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[20] GAO, *Force Structure: Army's Analyses of Aviation Alternatives*, GAO-15-430R, (Washington, DC: GAO April 27, 2015), https://www.gao.gov/products/gao-15-430r, accessed February 9, 2023.

- Respond to aggression from two different adversaries with overlapping timelines. similar to the "1-4-2-1" construct adopted in the George W. Bush administration.[21]

The Obama administration also conducted a Strategic Choices and Management Review (SCMR) during the first half of calendar year 2013 to identify means to deal with Sequestration; this set of reviews was clearly budget-driven.

Trump administration. The Trump administration announced its NSS in December 2017; its key tenets included:[22]

- Protecting the homeland, including both border security and missile defense
- Promoting American prosperity, treating the economy as a national security issue
- Preserving peace through strength, emphasizing the need for modernization, and readiness
- Advancing American influence, focusing on using the private sector to lead investments abroad

The need for updates to NATO was also stated.

Regarding threats, force sizing, and modernization, Secretary of Defense Mattis' 2018 NDS indicates:

"The central challenge to U.S. prosperity and security is the reemergence of long-term, strategic competition by what the National Security Strategy classifies as revisionist powers." The two revisionist powers explicitly cited were China and Russia.

> During normal day-to-day operations, the Joint Force will sustainably compete to: deter aggression in three key regions—the Indo-Pacific, Europe, and Middle East; degrade terrorist and WMD threats; and defend U.S. interests from challenges below the level of armed conflict. In wartime, the fully mobilized Joint Force will be capable of: defeating aggression by a major power; deterring opportunistic aggression elsewhere; and disrupting imminent terrorist and WMD threats. During peace or in war, the Joint Force will deter nuclear and non-nuclear strategic attacks and defend the homeland.

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[21] Larson, "Force Planning Scenarios 1945-2016: Their Origins and Use in Defense Strategic Planning."

[22] *National Security Strategy of the United States of America*, December 2017; available at https://partner-mco-archive.s3.amazonaws.com/client_files/1513628003.pdf, accessed February 9, 2023.

> To address the scope and pace of our competitors' and adversaries' ambitions and capabilities, we must invest in modernization of key capabilities through sustained, predictable budgets.[23]

The wartime force-sizing guidance appears to be similar to what could be characterized as a 1½ major-war sizing construct adopted at the end of the Obama administration. As to how this guidance affected forces and programs, defense budgets did increase in real terms during the Trump administration; but, changes to force structure were modest.

Biden administration. On October 27, 2022, DoD released its NDS. The strategy indicates China and Russia are the most consequential potential adversaries the United States must deal with for the foreseeable future. As to force planning, the NDS:

> …sizes and shapes the Joint Force to simultaneously defend the homeland; maintain strategic deterrence; and deter and, if necessary, prevail in conflict. To deter opportunistic aggression elsewhere, while the United States is involved in an all-domain conflict, the Department will employ a range of risk mitigation efforts rooted in integrated deterrence. These include coordination with and contributions of Allies and partners, deterrent effects of U.S. nuclear posture, and leveraging posture and capabilities not solely engaged in the primary warfight – for example, cyber and space. Additionally, the Joint Force will be shaped to ensure the ability to respond to small-scale, short-duration crises without substantially impairing high-end warfighting readiness, and to conduct campaigning activities that improve our position and reinforce deterrence while limiting or disrupting competitor activities that seriously affect U.S. interests.[24]

For major combat, this appears to be a single-war sizing construct.

Key Elements of Planning Phase

There is a significant literature on the interconnection between PPBE phases and critical factors that need to be in place for the planning phase of the process to work effectively (and relieve burden on downstream phases). These factors include guidance derived from analyses, OSD staff capacity for analysis, a dedicated future Joint-force focus, and planning processes that provide decision support for senior leadership.

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[23] *Summary of the 2018 National Defense Strategy of the United States of America*, Department of Defense, https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf, accessed February 9, 2023.

[24] *2022 National Defense Strategy of the United States of America*, Department of Defense, https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF, accessed February 9, 2023.

Guidance derived from analyses. One significant finding from this literature is the need for clear strategic guidance from senior leadership derived from analyses and assessments to set priorities for capability investments and identify areas to assume risk. Starting in the 1990s, the CORM report (1995) proposed a "comprehensive strategy and force review at the start of each new Administration" to guide the Department's activities.[25] The report further argued that such an effort:

> Requires that planning and analyses be done beforehand. Feasible alternative solutions must be developed…These options should include various mixes of forces, materiel, and support in the context of a balanced assessment that addresses threats to U.S. interests, level of risk, and cost. Carrying out this process requires the ability to quickly furnish "roughly right" answers so that decisions can be made from a range of alternatives. These assessments will be used in the planning and direction phase of the process to develop guidance to the Services and Agencies.[26]

The report also was the first to introduce the idea of "front-end assessments" to inform the planning cycles not preceded by a comprehensive review.[27] These front-end assessments were meant to support Secretary decisions during the planning phase rather than at the end of the program and budget phase.

Similarly, almost a decade later, the Aldridge report repeated the call for enhanced "top-down" senior leadership guidance and making decisions in the "front end" of the process. The Aldridge report suggested that major issues were being addressed in the Program Review phase that should be examined during the planning phase, "…when there is more time for deliberate analysis and greater solution space for the Secretary's decision making."[28] To support the development of top-down guidance, the Aldridge report recommended an "enhanced planning process" (EPP) to "…link strategy to program development by assessing current capabilities, analyzing gaps and excesses, and recommending alternatives for the SecDef's decision."[29]

Beginning in 2002, DoD launched an effort that recognized the importance of developing a joint Analytic Agenda. The effort, co-led by OUSD(P), PA&E, and J-8, was

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[25] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, by the Commission on Roles and Missions of the Armed Forces (Washington, 1995), 4-9.

[26] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 4–8.

[27] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 4–11.

[28] U.S. DoD, *Joint Defense Capabilities Study: Final Report,* Joint Defense Capabilities Study Team (Washington, December 2003), 3–4.

[29] U.S. DoD, *Joint Defense Capabilities Study: Final Report*, 2–11.

intended to create common, transparent analytic datasets that could be used by all DoD Components to explore alternative approaches to addressing challenges.[30] The Analytic Agenda eventually developed three primary products:

- Defense Planning Scenarios: A "high-level description of a plausible [future] threat, the strategic approach to address it, and assumptions that should be used to guide Concept of Operations (CONOPS) and force development, including information on adversary capabilities and the strategic objectives." This description was produced by OUSD(P).
- Concept of Operations and Forces: A "description of the operational approach to address the threat identified in the Defense Planning Scenario and the major force structure elements (e.g., ships and fighter squadrons) used in that approach." This description was produced by the J-8.
- Analytic Baseline: "This was a refined estimate of the numbers and types of units needed to support the CONOPS" and provided the base case that served as a starting point for Component analyses.[31] This estimate was produced by PA&E and then CAPE.

In 2008, the BGN IV report noted that the Analytic Agenda had "…yet to galvanize the department's top leadership."[32] The report also noted that guidance should not overemphasize an articulation of ends "…at the expense of adequately defining the requisite ways and means of achieving them."[33] When only broad ends are provided, DoD stakeholders are able to interpret them as they see fit, creating more pressure on the programming phase to sort through potentially competing and conflicting POM submissions. As a result, decisions that could have been made during the planning phase were still being pushed to the programming phase.

DoD went through a series of senior comprehensive reviews, including the 2010 QDR, the 2012 SCMR, and 2014 QDR. The Analytic Agenda (renamed Support to Strategic Analysis in 2010) reached its peak when it played a significant role in supporting the analysis for the 2010 QDR. In 2011, the effort was disestablished when CAPE stopped producing analytic baselines and disbanded the CAPE team on which OUSD(P) depended for analysis to help support its strategy and force planning responsibilities. As a result, the

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30 Kathleen H Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report."

31 GAO, *Defense Strategy: Revised Analytic Approach Needed to Support Force Structure Decision-Making* (Washington, DC: GAO, March 2019), 8.

32 Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report."

33 Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report," vii.

2012 SCMR and subsequent Defense reviews relied on a mix of sources for analyses, much of which came from the Services as well as current operational plans.

In evaluating the 2018 NDS, the Commission on the National Defense Strategy, expressed "…concern that the NDS too often rests on questionable assumptions and weak analysis, and it leaves unanswered critical questions of *how* the United States will meet the challenges of a more dangerous world."[34] In 2019, likewise, the GAO issued a report calling for a revised analytic approach to support force planning. Interviewees stated that DoD is seeking to revitalize analysis within DoD, including by establishing an Analysis Working Group (AWG), reviving the DPSs, and seeking to promote greater transparency and rigor in analyses across the Department. Interviewees generally had a favorable opinion of the AWG and its progress, but it was also stated that these efforts do not yet have the capacity to fully support a decision-based planning phase.

OSD staff capacity for analysis. OSD staff capacity for analysis is a necessary element of the planning phase to enable the development of planning guidance. A "basic idea underlying PPBS[35] was that of open and explicit analysis; that is, each analysis should be made available to all interested parties, so that they can examine the calculations, data, and assumptions and retrace the steps leading to the conclusions."[36] Even if not generating its own analysis, OSD staff must be capable of "retracing" Service analyses to generate independent assessments of them in support of the Secretary's decision-making. A recent IDA report suggested that strong analytic teams should be made of individuals who, together, have a high degree of "technical proficiency, operational experience…with the ability to synthesize–to take apart and frame an issue, understand the significance of key assumptions, and identify potential flaws or gaps in tools and data."[37] It is unsurprising then that when Secretary McNamara implemented PPBS, he also established an analytical staff, the Systems Analysis office, which "...freed him from total dependence on the military staffs. It enabled him to lead, i.e., challenge, question, propose, and resolve disputes, instead of merely serving as a referee or a helpless bystander."[38]

The Aldridge report noted that an "…analysis engine forms the heart of the EPP and performs five key functions: defining joint needs, identifying gaps and excesses in current

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34 https://www.usip.org/sites/default/files/2018-11/providing-for-the-common-defense.pdf, vi.

35 PPBS changed to PPBE in 2003 when the Department moved to a two-year budget to free up time for execution review.

36 Enthoven and Smith, "How Much is Enough: Shaping the Defense Program 1961-1969," 45.

37 Peter Levine et al., "Improving the Quality and Use of Analysts and Analytics in the Department of Defense," IDA Paper NS P-15377 (Alexandria, VA: Institute for Defense Analyses, September 2020), 28.

38 Enthoven and Smith, "How Much is Enough: Shaping the Defense Program 1961-1969," 80.

and future capabilities, conducting top-level trade analysis in capability terms, assessing alternatives that have been nominated by the Services to fill capability gaps, and prioritizing these actions to ensure the most pressing issues are resourced."[39] However, the report also noted that "the analytical capability does not exist" within OSD to support all the activities listed, and DoD could rely on FFRDCs to supplement capacity.[40]

The BGN IV report recommended that the Secretary "…direct the Analytic Agenda community to propose an investment plan for substantially increasing joint analytic capabilities…to improve analytic models, increase expertise, improve training…,"[41] among other initiatives to support the development of decision-quality analysis. The report also argued for the establishment of a new Director for Strategy, Execution and Assessment to serve as an advocate for enhancing joint analytic capabilities and strengthen the "…linkages between policy statements of ends and the implementing mechanisms needed to ensure execution through ways and means."[42]

The peak of OSD capability probably occurred in the late 2000s during the Analytic Agenda period. Interviewees stated that when CAPE leadership disbanded its Analytic Agenda staff, OSD lost not only some of this capacity but also the expertise needed to mentor new staff and sustain institutional knowledge as these individuals left DoD. Some interviewees connected this loss of staff with a broader loss of OSD capability in recent decades, attributed to OSD hiring freezes, pauses in entry-level programs due to a reduction in headquarters billets, and mid- and senior-level talent departures.[43] The analytic capacity remaining in OSD resides primarily in CAPE, and the AWG has made significant progress in recent years. However, CAPE's capacity for planning analysis is still significantly smaller than it was in the Analytic Agenda period.

Dedicated focus on future joint force. A third enabler of the planning phase is a dedicated OSD focus on the future Joint warfighter. For the employment of current forces, the Military Departments play an obvious and important role through their headquarters staff and Component commands. But current operations are ultimately executed by combatant commands, and the Joint Staff play a key role in coordinating activities across DoD.

For the development and design of future forces, the Military Departments again play a dominant role developing CONOPS to frame decisions about capability requirements to

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39 The Aldridge Report (Joint Defense Capabilities Study Team, 2004), 2–13.

40 The Aldridge Report (Joint Defense Capabilities Study Team, 2004), 2–13.

41 Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report," 33.

42 Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report," 42.

43 https://www.realcleardefense.com/articles/2019/05/16/managing_the_national_security_workforce_crisis_114430.html.

address potential threats described in Defense planning scenarios. But there is not a Combatant Command equivalent for future force development and design. There is not a dedicated Joint organization that can challenge Service priorities and adjudicate conflicting priorities among the Services. The Analytic Agenda provided a forum for JS and OSD collaboration to fill this role, but this capability was disestablished and NDS implementation has struggled.

This problem has persisted for a long time. In 1995, the CORM report argued that a "…unified vision for joint operations needs to be part of the overall vision that should guide DOD's long-term planning."[44] It recommended providing additional analytic resources to the Joint Staff. Almost a decade later, the Aldridge report stated that, "Services dominate the current requirements process. Much of the Department's focus is on Service programs and platforms rather than capabilities required to accomplish Combatant Command missions. A Service focus does not provide an accurate picture of joint needs, nor does it provide a consistent view of priorities and acceptable risks across the Department."[45] The report recommended that combatant commanders have increased input into developing joint requirements and capabilities.

However, combatant commanders are focused on near-term operational challenges and must leverage existing forces and capabilities. While the combatant commanders are focused on the near term, the planning phase of PPBE is focused on the mid term (2-7 years out) and long term (7-15 years out or even longer). Whereas combatant commanders are focused on today's threats, the PPBE planning phase is focused on how those threats may evolve in the future. To that end, the BGN IV report recommended creating a Future Joint Force Advocate to advocate for future warfighters in the force development process. It also noted that DoD's "…future force will continue to be disproportionately influenced by provider perspectives until joint warfighter input is offered (and accepted) on an equal footing."[46]

More recently, since the 2018 NDS, DoD has been wrestling with developing new ways or concepts of warfighting to overcome anticipated and current military problems stemming from the growing sophistication of near-peer competitors in all domains, and to leverage potential opportunities provided by emerging technologies. Concepts are important steps in force planning, as they help frame which capabilities are needed and, indirectly, which are not. To date, the work in this area (the Joint Warfighting Concept, the supporting operating concepts, and, ultimately new CONOPS) have been processes led

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[44] U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 2–3.

[45] The Aldridge Report (Joint Defense Capabilities Study Team, 2004), 3.

[46] Hicks, "Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase 4 Report," 51.

exclusively by the Joint Staff and have not been considered successful by most interviewees that raised this issue.

Engagement opportunities for senior leadership. The CORM report's proposal for front-end assessments was, in part, intended to provide a mechanism for the Secretary of Defense to resolve issues in the planning phase of PPBE rather than in the program and Budget Review.[47] Similarly, the Aldridge report's proposed EPP provided a mechanism for the Secretary to make decisions. The Aldridge report also described a new senior leader decision forum to support the Secretary's decision-making. The proposed Strategic Planning Council (SPC) was intended "to provide senior leaders with a venue to offer formal inputs to shape defense strategy, and to provide oversight throughout the end-to-end process of strategy development, capabilities planning, resourcing, and execution."[48] The proposal was similar to how the Defense Resources Board operated in the Secretary Weinberger era.

The proposed organization would be chaired by the Secretary of Defense and include the Deputy Secretary of Defense, the Under Secretaries, the CJCS, the Service Secretaries and Service Chiefs, and the Combatant Commanders. It would meet three times per year, or more frequently at the discretion of the Secretary of Defense. Secretary Rumsfeld adopted this recommendation and convened an SPC in January 2004 to discuss the draft Strategic Planning Guidance (SPG).[49] Since then, subsequent Secretaries' level of engagement in planning decisions has been personality-dependent. Unlike the programming phase, which has a robust process in place to enable senior leader involvement through the three-star programmers and the DMAG, the processes for senior leader review of the planning phase is more ad hoc and determined by senior leadership interest.

A new FEA process was introduced in 2010. The goal was analyses that provided the Secretary with the background needed to issue program guidance to the Services well before the PR. CAPE was the Executive Secretary. FEAs were performed in February-April on the issues selected by the Secretary. Recently, FEAs have been replaced by the Strategic Portfolio Reviews (SPRs). Interviewees pointed out that the analyses performed in these FEAs and SPRs have generally been good, but these finite analyses focused on specific—often programmatic—questions (e.g., about specific tradeoff opportunities across programmatic options) and have not provided the strategic-level analysis that many interviewees stated is lacking and creating challenges in the downstream phases. The AWG

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47 U.S. DoD, *Directions for Defense: Report of the Commission on Roles and Missions of the Armed Forces*, 4–11.

48 The Aldridge Report (Joint Defense Capabilities Study Team, 2004), 2–9.

49 Clark A. Murdock et al., "Beyond Goldwater-Nichols: U.S. Government and Defense Reform for a New Strategic Era, Phase 1 Report," (Washington, DC, March 2004), 41.

has made progress promoting more systematic strategic-level analysis, but it remains primarily a coordinating body and not a producer of analyses.

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Abbreviations

5G	Fifth Generation Mobile Networks
A2AD	Anti-Access Area-Denial
A5	Deputy Chief of Staff for Strategy, Integration, and Requirements
A8	Deputy Chief of Staff for Plans and Programs
A9	Director for Studies and Analyses, Assessments, and Lessons Learned
ACP	Army Campaign Plan
ADCS	Assistant Deputy Chief of Staff
AEMS	Army's Equipment Modernization Strategy
AF	Air Force
AI	Artificial Intelligence
AWG	Analysis Working Group
APG	Army Planning Guidance
APGM	Army Program Guidance Memorandum
ASA(ALT)	Assistant Secretary of the Army for Acquisition, Logistics, and Technology
ASA(FM&C)	Assistant Secretary of the Army for Financial Management and Comptroller
ASAF(FM&C)	Assistant Secretary of the Air Force for Financial Management and Comptroller
ASN(FM&C)	Assistant Secretary of the Navy for Financial Management and Comptroller
ATR	Above Threshold Reprogramming
AV	Army Vision
BA	Budget Activity
BES	Budget Estimate Submission
BLI	Budget Line Item
BRP	Budget, Requirements, and Program
BTR	Below Threshold Reprogramming
BUR	Bottom Up Review
CAA	Center for Army Analysis
CAPE	Cost Assessment and Program Evaluation

CBP	Capabilities-Based Planning
CD&I	Combat Development and Integration
CIS	Comptroller Information System
CIVPERS	Civilian Personnel
CJCS	Chairman of the Joint Chiefs of Staff
CMC	Commandant of the Marine Corps
CNO	Chief of Naval Operations
COCOM	Combatant Command
CONOPS	Concept of Operations
CORM	Commission on Roles and Missions of the Armed Forces
CPR	Chairman's Program Recommendation
CR	Continuing Resolution
DAB	Director for Army Budget
DAS	Defense Acquisition System
DAWMS	Deep Attack Weapons Mix Study
DC	Deputy Commandant
DCS	Deputy Chief of Staff
DHP	Defense Health Program
DIB	Defense Innovation Board
DJ7	Director, Joint Staff J7
DJ8	Director, Joint Staff J8
DMAG	Deputy's Management Action Group
DoD	Department of Defense
DON	Department of the Navy
DPAE	Director, Program Analysis and Evaluation
DPG	Defense Planning Guidance
DPS	Defense Planning Scenario
EOP	Executive Office of the President
EPP	Enhanced Planning Process
FEA	Front End Assessment
FG	Fiscal Guidance
FMR	Financial Management Regulation
FY	Fiscal Year
FYDP	Future Years Defense Program
G-3/5/7	Army DCS for Operations, Plans, and Training
G-8	Army DCS for Programs

GAO	Government Accountability Office
GTAS	Government-wide Treasury Account Symbol Adjusted Trail Balance System
HQDA	Headquarters Department of the Army
IDA	Institute for Defense Analyses
IPR	Illustrative Planning Scenarios
ISC	Integrated Security Constructs
ISR	Intelligence, Surveillance, and Reconnaissance
IT	Information Technology
JCIDS	The Joint Capabilities Integration and Development System
JPR	Joint Performance Requirement
JROC	Joint Requirements Oversight Council
JS	Joint Staff
MAJCOM	Major Command
MCA	Major Capability Acquisition
MFP	Major Force Program
MILPERS	Military Personnel
MRC	Major Regional Contingencies
MTA	Middle Tier of Acquisition
N8	Deputy Chief of Naval Operations for Integration of Capabilities and Resources
NDAA	National Defense Authorization Act
NDS	National Defense Strategy
NMS	National Military Strategy
NSC	National Security Council
NSS	National Security Strategy
ODNI	Office of the Director of National Intelligence
O&M	Operations and Maintenance
O&S	Operations and Sustainment
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
P&R	Programs and Resources
PA&E	Program Analysis and Evaluation
PB	President's Budget
PBD	Program Budget Decision
PD	Presidential Decision

PDM	Program Decision Memorandum
PE	Program Element
PEG	Program Evaluation Group
PEM	Program Element Monitor
PEO	Program Executive Office
PIO	Performance Improvement Officer
PM	Project Manager
POM	Program Objective Memorandum
PPBC	Planning Programming Budget Committee
PPBE	Planning, Programming, Budgeting, and Execution
PPBS	Planning, Programming, and Budgeting System
PRCP	Program Resources Collection Process
PRMG	Program-Resource Management Group
PROC	Procurement
QDR	Quadrennial Defense Review
RCO	Rapid Capabilities Office
RDT&E	Research, Development, Test, and Evaluation
RMS	Resource Structure Management
S5/8	Deputy Chief of Space Operations for Strategy, Plans, Programs, Requirements, and Analysis
S&T	Science and Technology
SAG	Sub-Activity Group
SAG	Surface Action Group
SAP	Statement of Administration Policy
SCMR	Strategic Choices and Management Review
SDCS	Standard Data Collection System
SIPRNet	Secure Internet Protocol Router Network
SMP	Strategic Management Plan
SNaP	Select and Native Programming Data Input System
SOCOM	Special Operations Command
SPC	Strategic Planning Council
SPG	Strategic Planning Guidance
SPR	Strategic Portfolio Review
SPPBE	Strategy, Planning, Programming, Budgeting, and Execution
SRB	Secretariat Review Board
SSC	Small Scale Contingency

SWAP	Software Acquisition and Practices
TAP	The Army Plan
TGM	Technical Guidance Memorandum
TTA	Technology Transfer Agreement
UCA	Urgent Capability Acquisition
USD	Under Secretary of Defense
USD(A&S)	Under Secretary of Defense for Acquisition and Sustainment
USD(C)	Under Secretary of Defense for Comptroller
USD(I&S)	Under Secretary of Defense for Intelligence and Security
USD(P)	Under Secretary of Defense for Policy
USD(P&R)	Under Secretary of Defense for Personnel and Readiness
USD(R&E)	Under Secretary of Defense for Research and Engineering
USINDOPACOM	U.S. Indo-Pacific Command
USMC	United States Marine Corps
VA	Veterans Affairs

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14. ABSTRACT

The Planning, Programming, Budgeting, and Execution (PPBE) system has been used by the Department of Defense for over 60 years. The Institute for Defense Analyses (IDA) is supporting the congressionally directed PPBE Reform Commission to assess the efficacy and efficiency of the PBBE system. This report reviews the PPBE phases, examines the development of key PPBE documents, analyzes the timelines involved in developing the President's Budget Request and associated Future Years Defense Program, and recommends priorities and option for improving PPBE products, timelines, and processes.

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