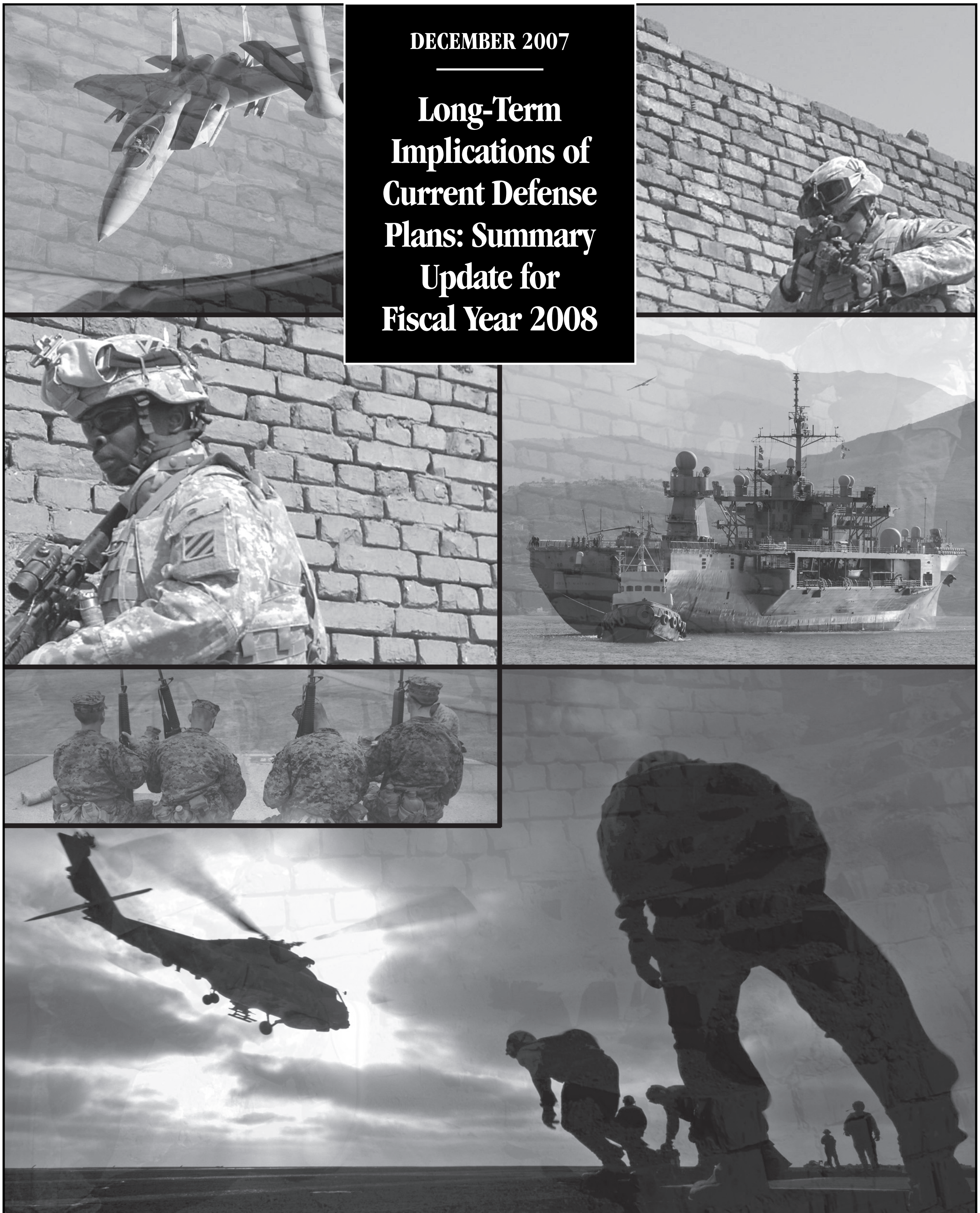
CONGRESS OF THE UNITED STATES
CONGRESSIONAL BUDGET OFFICE

A
CBO
PAPER

DECEMBER 2007

Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2008



Pub. No. 2966

A CBO PAPER

Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2008

December 2007

The Congress of the United States ■ Congressional Budget Office

Notes

Unless otherwise indicated, all years referred to in this paper are fiscal years, and all dollar amounts are expressed in 2008 dollars of total obligational authority.

The methodology used for this update is based on that used by the Congressional Budget Office for its January 2003 study *The Long-Term Implications of Current Defense Plans.* Readers may refer to that study for a more detailed description of the analysis.

The projections in this paper deal with resources for the Department of Defense (subfunction 051 of the federal budget) rather than for all national defense activities (function 050).

The cover photographs were provided courtesy of the following service branches: U.S. Army (photograph of soldiers searching a brick factory taken by Sgt. Timothy Kingston); U.S. Navy (photograph of the USS *Mount Whitney* taken by Paul Farley); U.S. Navy (photograph of a SH-60F Seahawk helicopter taken by Petty Officer 3rd Class Patrick M. Bonafede); U.S. Marine Corps (photograph of recruits from Company L taken by Lance Cpl. Charlie Chavez); and U.S. Air Force (photograph of an F-15 Eagle aircraft taken by Senior Airman John Hughel Jr.).

Preface

What level of budgetary resources might be needed in the long term to carry out the Administration's current plans for defense? This Congressional Budget Office (CBO) paper—prepared at the request of the Chairman of the Senate Budget Committee—addresses that question. The paper updates the resource projections contained in CBO's October 2006 paper *Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2007,* reflecting changes that the Administration made to its defense plans in preparing the President's budget request for fiscal year 2008. CBO will also publish supplementary data on its Web site (www.cbo.gov) that provide more details about specific programs. In keeping with CBO's mandate to provide impartial analysis, the paper and supplementary materials make no recommendations.

Adam Talaber of CBO's National Security Division coordinated the preparation of this paper under the supervision of J. Michael Gilmore and Matthew S. Goldberg. David Arthur, Michael Bennett, Kevin Eveker, Daniel Frisk, Eric J. Labs, Victoria Liu, Frances Lussier, and Allison Percy of the National Security Division contributed to the analysis. Raymond Hall, David Newman, and Jason Wheelock of CBO's Defense, International Affairs, and Veterans' Affairs Cost Estimates Unit also contributed to the report, under the supervision of Sarah Jennings.

Christine Bogusz edited the paper. Cindy Cleveland produced drafts of the manuscript, and Maureen Costantino designed the cover and prepared the report for publication. Lenny Skutnik printed the initial copies, Linda Schimmel handled the print distribution, and Simone Thomas prepared the electronic version for CBO's Web site.

Peter R. Orszag
Director

December 2007

Contents

Table

Figures

Box

Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2008

Summary and Introduction

Decisions about national defense that are made today—whether they involve weapon systems, military compensation, or numbers of personnel—can have long-lasting effects on the composition of U.S. armed forces and the budgetary resources needed to support them. In the past five years, the Congressional Budget Office (CBO) has published a series of reports projecting the resources that might be needed over the long term to carry out the plans in the Administration's then-current Future Years Defense Program (FYDP).[1] Prepared by the Department of Defense (DoD), the FYDP is submitted to the Congress each fiscal year as part of the President's budget request.

This paper, like CBO's previous reports, provides long-term projections (in this case, through 2025) of the potential costs of DoD's current plans—that is, those plans contained in the 2008 FYDP, which covers fiscal years 2008 through 2013.[2] The 2008 FYDP reflects changes to the department's programs and priorities between February 2006 and February 2007. The 2008 FYDP and CBO's projections of its long-term implications both exclude potential future supplemental or emergency appropriations, although the President has indicated that at least $189 billion in such appropriations will be needed to pay for military operations in Iraq, Afghanistan, and other purposes related to the war on terrorism in fiscal year 2008.[3]

The overall budgetary implications of DoD's current plans remain similar to those described in CBO's previous projections: Carrying out plans proposed in the FYDP would require sustaining annual defense funding over the long term at higher real (inflation-adjusted) levels than those that have occurred since the mid-1980s. Four factors continue to account for the growth in planned defense resources that CBO projects:

- Plans to increase the purchase of new or costlier military equipment over the next several years and then to sustain that level of procurement over the longer term;

- Plans, as part of military transformation, to develop and eventually produce weapon systems that provide new capabilities—systems whose estimated costs are also increasing;

---

1. Those reports are *The Long-Term Implications of Current Defense Plans* (January 2003), *The Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2004* (July 2003), *The Long-Term Implications of Current Defense Plans: Detailed Update for Fiscal Year 2004* (February 2004), *The Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2005* (September 2004), *The Long-Term Implications of Current Defense Plans: Detailed Update for Fiscal Year 2005* (September 2004), *The Long-Term Implications of Current Defense Plans and Alternatives: Summary Update for Fiscal Year 2006* (October 2005), *The Long-Term Implications of Current Defense Plans and Alternatives: Detailed Update for Fiscal Year 2006* (January 2006), *Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2007* (October 2006), and *The Long-Term Implications of Current Defense Plans: Detailed Update for Fiscal Year 2007* (April 2007). The detailed updates are presented in briefing format and are available only on CBO's Web site (www.cbo.gov).

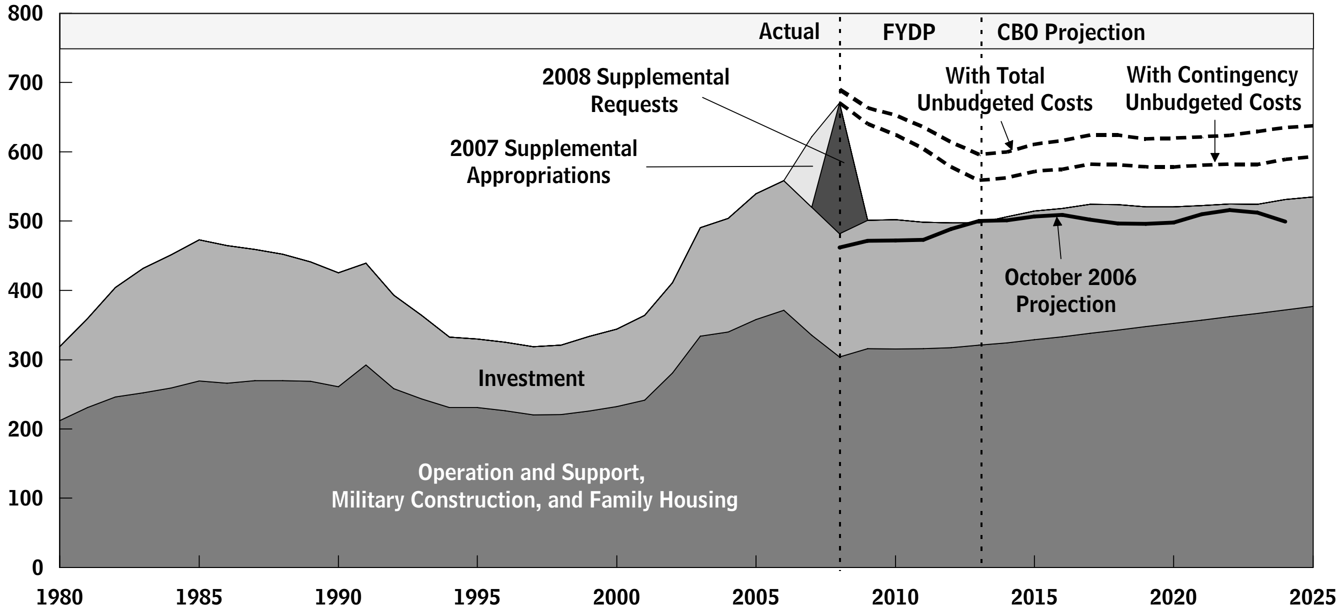
2. The FYDP is a database comprising a historical record of defense forces and funding as well as DoD's plans for future programs. The historical portion of the FYDP shows costs, forces, and personnel levels since 1962. The plan portion presents DoD's program budgets (estimates of funding needs for the next five or six years based on the department's current plans for all of its programs).

3. See *Budget of the U.S. Government, Fiscal Year 2008* and *FY 2008 Emergency Budget Amendments*, available at www.whitehouse.gov/bomb/budget/fy2008/budget.html and www.whitehouse.gov/omb/budget/amendments/amendment_7_31_07.pdf, respectively.

Figure 1.

Past and Projected Resources for Defense

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

- The growing costs of pay and benefits for DoD's military and civilian personnel; and
- The increasing costs of operation and maintenance (O&M) for both aging equipment and newer, more complex equipment.

In CBO's projection of DoD's current plans, defense resources total about $521 billion annually (in 2008 dollars) from 2014 to 2025, or about 8 percent more than the total obligational authority for defense requested by the Administration for 2008 (see Figure 1 and Table 1).[4] Considering potential unbudgeted costs increases the projected long-term demand for defense funding to an annual average of about $621 billion through 2025, or 29 percent more than the Administration's 2008 request of about $482 billion. CBO's analysis of unbudgeted costs included several possibilities: that the costs of weapon systems now under development would exceed early estimates, as they have in the past; that medical costs might rise more rapidly than DoD has assumed; and that DoD would continue to conduct contingency military operations overseas as part of the war on terrorism, albeit at reduced levels relative to current operations in Iraq and Afghanistan.

Costs for operations in Iraq, Afghanistan, and other purposes related to the war on terrorism have been growing. In 2007, the Congress provided $173 billion ($169 billion in 2007 dollars), or 28 percent of total Defense Department funding. In 2008, the $189 billion in funding requested by the Administration to pay for war-related operations would total 28 percent of the defense

4. All FYDP funding is calculated as total obligational authority (TOA). The bulk of that funding is annual appropriations sought by the department. Another common measure of defense resources is budget authority, which is the authority provided by the Congress to incur financial obligations. Both budget authority and TOA reflect annual appropriations; however, unlike TOA, budget authority also includes the effects of certain receipts, permanent spending in certain trust funds and other accounts, and certain payments to the military retirement fund. In most years covered by the FYDP's plans for the future, the difference between total obligational authority and budget authority in subfunction 051 of the federal budget (which funds the Department of Defense) is about $2 billion or less.

Table 1.

Past and Projected Resources for Defense in Selected Years

(Billions of 2008 dollars)

	2007	2008	2013	2020	2025	Average, 2008–2013	Average, 2014–2025
Procurement	84	102	115	112	107	111	116
Research, Development, Testing, and Evaluation	77	75	61	56	50	70	56
Military Personnel	113	116	130	145	158	124	144
Operation and Maintenance	161	167	180	197	209	174	196
Other	12	21	11	9	9	17	9
Additional Supplemental and Emergency Funding	173	189	n.a.	n.a.	n.a.	n.a.	n.a.
Total	**622**	**671**	**497**	**519**	**533**	**528**	**521**
Including Total Unbudgeted Costs	**n.a.**	**690**	**597**	**619**	**637**	**642**	**621**

Source: Congressional Budget Office.

Note: n.a. = not applicable.

budget.[5] (That request includes $1.2 billion for DoD's fuel cost increases and actions related to base realignment and closure, or BRAC.)

Under DoD's current plans and CBO's projection, defense resources in the future would remain lower than in the past in relation to the size of the economy. The share of U.S. gross domestic product (GDP) allocated to defense spending declined from an average of 5.5 percent in the 1980s to 3.8 percent in the 1990s. If DoD's current plans were carried out, defense spending would drop to 3.0 percent of GDP by 2013 and 2.3 percent by 2025 (see Figure 2).

Projections of Funding for Operation and Support, Military Construction, and Family Housing

The 2008 FYDP envisions that funding for operation and support (O&S) activities—running units, maintaining equipment, and providing pay and benefits—will grow from $283 billion in 2008 to $310 billion in 2013 (see Figure 3). (Those estimates translate into an average annual rate of real growth of 1.8 percent during the five-year period.) CBO projects that, over the longer term, carrying out current plans would push O&S funding to $366 billion in 2025 (again, starting from 2008, a 1.5 percent pace of annual real growth); if unbudgeted costs are included, that figure would rise to $426 billion.

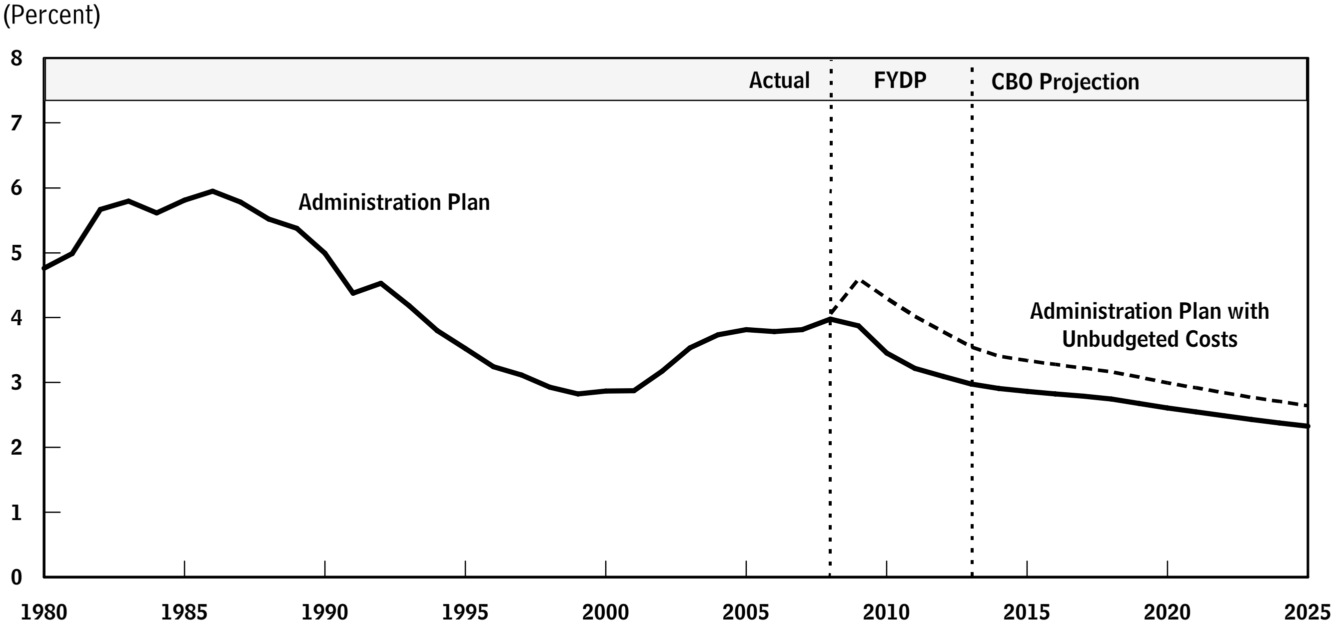
In comparison with last year's FYDP, DoD's current plans show an average increase in total O&S funding of 6 percent. That increase is largely the result of planned growth in the number of Army and Marine Corps personnel. For the 2007–2013 period, the 2008 FYDP shows a cumulative end-strength increase of 65,000 active-duty Army personnel and nearly 28,000 active-duty Marine Corps personnel. (The Army and Marine Corps will have end strengths of 547,400 and 207,500, respectively, by 2011 and 2012.) Last year's FYDP did not indicate any significant changes in Army or Marine Corps end strengths. CBO's projections reflect DoD's updated O&S funding plan.

For military construction and family housing, the FYDP envisions that total funding will decrease from $21 billion in 2008 to $11 billion in 2013. The decrease in that budget reflects a gradual reduction in funding to implement the 2005 round of base realignments and closures, as well as a decline in the family housing budget resulting from privatization of DoD's housing facilities. Funding for military construction and family housing under CBO's projections of current plans would remain

5. CBO's estimates of future unbudgeted costs for contingencies are based on the funding requested by the President for operations in Iraq and Afghanistan in 2008. Although CBO assumes that U.S. force levels in Iraq in 2009 and subsequent years will be lower than in 2008, CBO's estimates of the associated reduction in future contingency costs may be optimistic (that is, the unbudgeted contingency costs displayed may be too low) because actual costs incurred for operations in Iraq and Afghanistan have been growing.

Figure 2.

Defense Resources as a Percentage of Gross Domestic Product



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

roughly constant between 2014 and 2025 at $9 billion to $10 billion a year excluding unbudgeted costs, or $12 billion to $13 billion a year including unbudgeted costs.

Projections for Operation and Support

The O&S budget, which now accounts for about 60 percent of defense funding, is defined as the sum of appropriations for operation and maintenance, military personnel, and various revolving funds (see Figure 4).[6] The share of military personnel dollars in the overall defense budget declined during the early 1980s, when a greater emphasis was placed on investment; it declined again during the 1990s, when the force structure was reduced. CBO projects that beyond the period covered by the current FYDP, military personnel dollars as a share of all defense funding will increase, for reasons that will be discussed later. As a share of the defense budget, O&M spending also declined during the early 1980s; however, CBO projects that it, too, will rise after 2013. From 1980 to 2001, O&M costs grew by about $2,000 per service member per year. Excluding war costs, CBO projects a similar rate of O&M cost growth in the future (see Figure 5 on page 7).

In CBO's estimation, most of the growth projected for O&S funding, if unbudgeted costs are excluded, will stem from personnel-related increases, such as rising real wages and increasing costs for medical benefits. For the purposes of its projections, CBO has broken down the O&S budget by functional category (see Figure 3). Funding for each such category derives from the O&M, military personnel, and, in some cases, revolving-fund appropriations; those resources may also be associated with the three military departments—the Army, the Navy (including the Marine Corps), and the Air Force. The functional categories that CBO has adopted are based on force and infrastructure codes used by DoD's program analysts.[7] There are seven such categories:

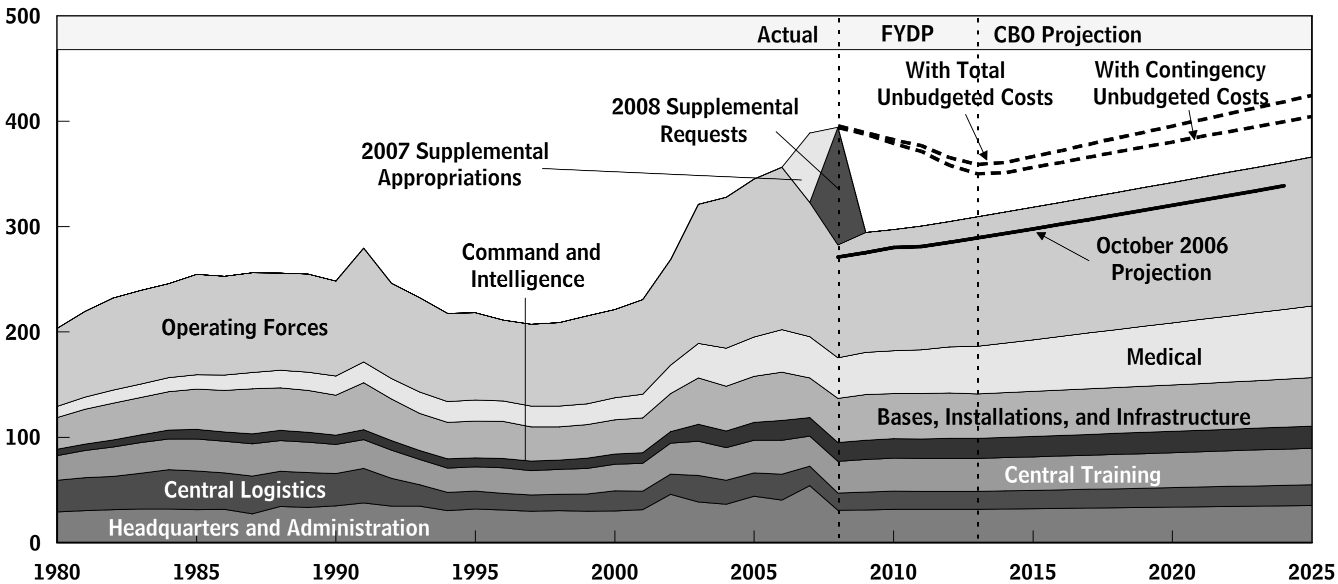
6. The revolving funds generate revenues from fees charged to users within DoD but may also receive appropriations as part of the defense budget. Currently, such funds include the National Defense Sealift Fund, the Defense-Wide Working Capital Fund, the Defense Commissary Agency, and each military department's working capital fund.

7. The definitions that follow come from Institute for Defense Analyses, *DoD Force Infrastructure Categories: A FYDP-Based Conceptual Model of Department of Defense Programs and Resources* (Alexandria, Va.: Institute for Defense Analyses, 2002).

Figure 3.

Past and Projected Resources for Operation and Support

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

- *Medical*—medical personnel, military medical treatment facilities (MTFs), purchased care, pharmaceuticals, and medical accrual charges;[8]

- *Operating forces*—military and support units assigned to combatant commands;

- *Bases, installations, and infrastructure*—installations for military forces, communications and information infrastructure, central benefit programs for DoD personnel, and miscellaneous activities;

- *Central training*—training at central locations away from service members' duty stations;

- *Command and intelligence*—operational headquarters, command-and-control systems, and intelligence collection;

- *Central logistics*—depot-level maintenance, supplies, and transportation of materials; and

- *Headquarters and administration*—acquisition infrastructure, science and technology programs, central personnel administration, and departmental management.

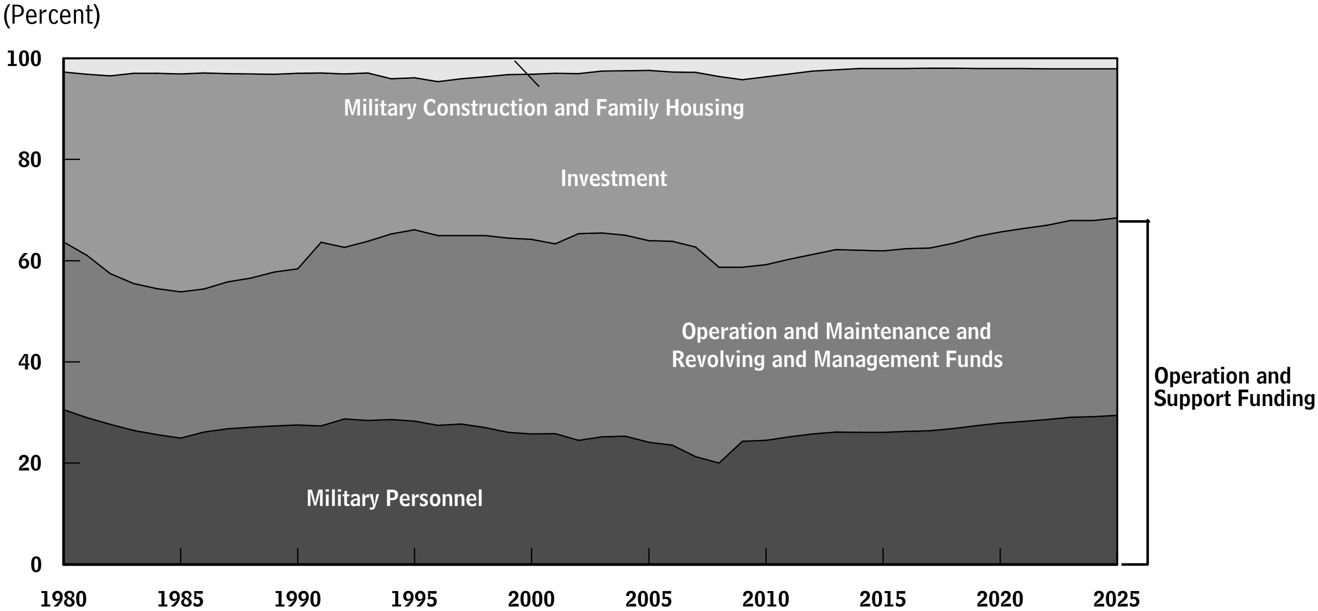
If the medical and operating forces categories were excluded, increases in military and civilian pay would account for the entire growth of costs in CBO's projections (excluding unbudgeted costs). DoD planned to raise pay for military personnel at a nominal rate of 3.0 percent in 2008 and 3.4 percent each year from 2009 to 2013.[9] After that, CBO's projections incorporate the assumption that pay for military personnel will rise at the

8. Medical accrual charges are intragovernmental payments—payments from one governmental account to another—representing future medical costs that current service members (as well as their eligible family members) will incur under the military's TRICARE For Life program once they retire from the military and further become eligible for Medicare. Within the FYDP, medical accrual charges are distributed among all of the O&S functional categories. To provide a comprehensive estimate of DoD's medical costs, CBO consolidated all such charges in the medical category.

9. Memorandum from John P. Roth, Deputy Comptroller, Department of Defense, to the secretaries of the military departments and others, "Inflation Guidance—Fiscal Year (FY) 2008/2009 President's Budget," January 18, 2007.

Figure 4.

Operation and Support and Other Funding as a Share of the Defense Budget



Source: Congressional Budget Office.

same rate as the employment cost index (ECI) for wages and salaries (a measure of compensation in the civilian economy). For civilian employees, DoD planned to increase pay at a nominal rate of 3.0 percent in 2008 and 2.3 percent each year from 2009 to 2013. In recent decades, civilian and military personnel have usually received equivalent percentage pay increases.[10] Consequently, CBO projects that civilian pay will also rise after 2013 at the same rate as the ECI.[11] If all of those increases occurred, military and civilian pay would grow in real terms by 33 percent and 26 percent, respectively, between 2007 and 2025—because wages (as measured by the ECI) are projected to grow more rapidly than prices (as measured by the GDP deflator).[12]

Medical Funding. CBO estimates that DoD's projections in the FYDP would translate into $6.7 billion in real growth for medical funding between 2008 and 2013, from $38.6 billion to $45.3 billion. Under current plans, DoD's medical funding will grow to $68.3 billion by 2025, CBO estimates, for a real increase of $29.7 billion, or 77 percent, compared with the 2008 amount. In CBO's estimation, medical funding will account for more than one-third of the growth projected for O&S funding between 2008 and 2025.

Pay increases for uniformed medical personnel account for only 3 percent of the overall medical O&S growth that CBO projects between 2008 and 2025. Various other expenses—most notably, accrual charges, pharmaceuticals, and purchased care and contracts—play a much

10. Civilian personnel received the same percentage pay raise as military personnel in 26 of the past 32 years (1975 to 2007).

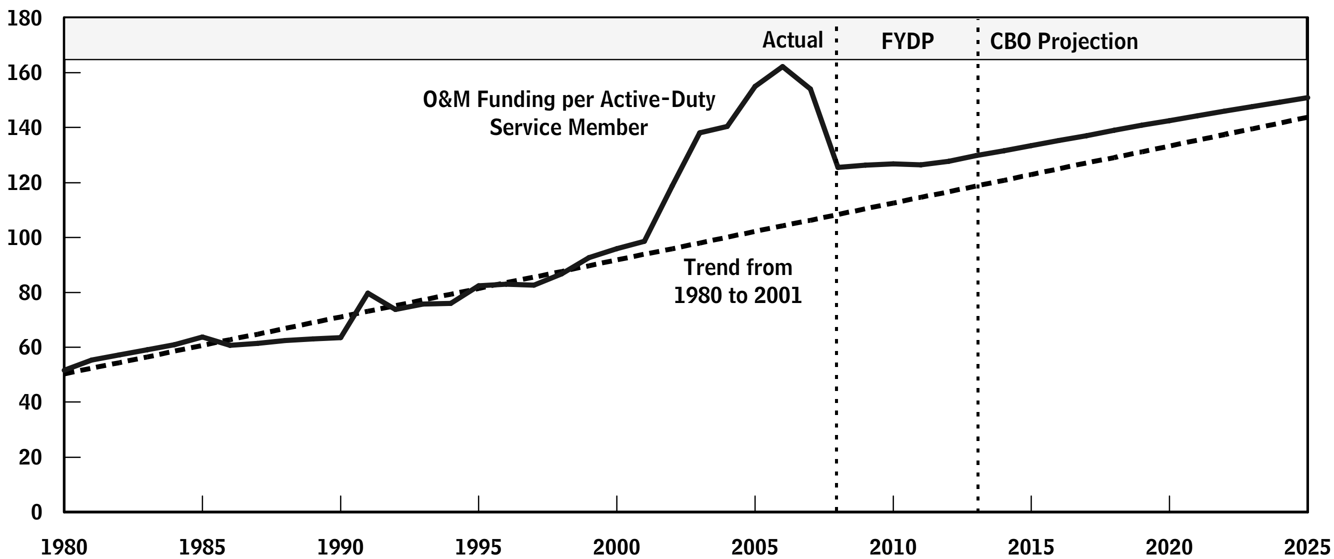
11. In calculating unbudgeted O&S costs, CBO increased civilian pay raises to achieve parity with military pay raises during the FYDP period (2008 to 2013).

12. The ECI grew more rapidly than the GDP deflator (an index of overall prices) in each year of the 1981–2007 period, and CBO projects that the pattern will continue between 2008 and 2025. Over the latter period, growth of the ECI will exceed growth of the GDP deflator by an average of 1.5 percentage points per year, CBO projects.

Figure 5.

Trends in Operation and Maintenance Funding per Active-Duty Service Member

(Thousands of 2008 dollars)



Source: Congressional Budget Office.

Notes: FYDP = Future Years Defense Program.

Funding for the period spanning 2002 to 2007 includes operations in Iraq and Afghanistan.

larger role (see Figure 6).[13] Accrual payments make up about 41 percent of the projected increase in medical funding, growing at a nominal rate of 6.25 percent a year after 2008.[14] In CBO's estimation, accrual charges will double in real terms between 2008 and 2025.

DoD anticipates that pharmaceutical funding per capita will rise by about 43 percent in real terms during the period encompassed by the FYDP.[15] Beyond the FYDP, CBO projects nominal growth of 9 percent in 2014 in per capita pharmaceutical funding, a pace that slows to about 6 percent a year by 2025.[16] The FYDP indicates that DoD anticipates per capita funding for purchased

13. Pharmaceuticals include those dispensed by military medical treatment facilities, the military's retail pharmacy network, non-network retail pharmacies, DoD's mail-order pharmacies, and private-sector contractors under TRICARE. Purchased care and contracts include managed care support contracts, various other types of purchased care, and supplemental care for active-duty personnel. In the past, that category also included pharmaceuticals; but after 2001, DoD began accounting for pharmaceuticals separately in the FYDP. TRICARE is the general term for military health care. TRICARE Prime is the health maintenance organization that DoD operates on behalf of non-active-duty beneficiaries and encompasses care delivered both at military medical treatment facilities and through a network of contract providers. TRICARE Prime requires that a beneficiary enroll either for individual or family coverage. Beneficiaries who do not enroll in TRICARE Prime may still receive care at MTFs but only to the extent that space is available. They may also use TRICARE Standard or TRICARE Extra, programs that reimburse a portion of medical expenses incurred by nonenrolled beneficiaries who receive care from civilian providers.

14. The independent Board of Actuaries for DoD's Medicare-Eligible Retiree Health Care Fund annually updates its estimate of the accrual charges necessary to fund the TRICARE For Life program, which is discussed in greater detail later.

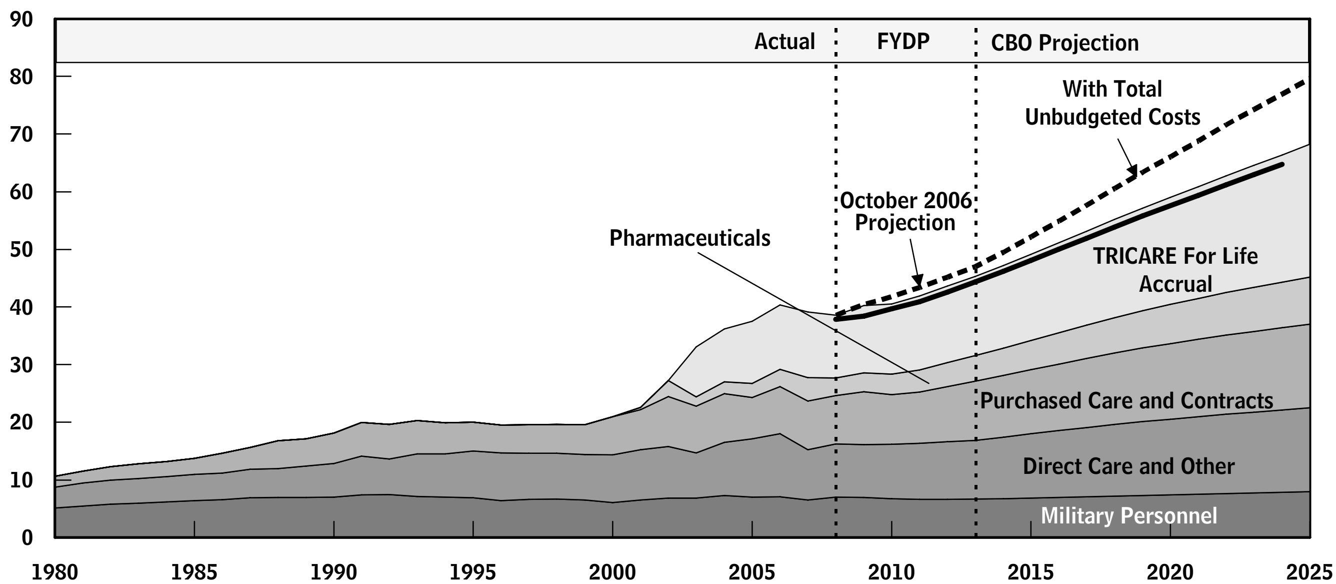
15. Although the 2008 FYDP anticipates a nominal *decrease* of 22 percent in per capita pharmaceutical funding from 2007 to 2008 due in part to removal of certain high-cost pharmaceuticals from the market, DoD projects that per capita funding growth in other years within the FYDP will range from 8 percent to 11 percent.

16. CBO derived its estimates for the growth of funding for pharmaceuticals from the pharmaceutical expenditure projections published by the Centers for Medicare and Medicaid Services (CMS), available at www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2006.pdf. Because those projections extend only to 2016, CBO assumed that growth would slow after that date, eventually reaching a rate that is 1 percentage point higher than growth of per capita GDP in 2031.

Figure 6.

Past and Projected Resources for the Military Medical System

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

care to change at nominal annual rates that vary widely, from a decrease of 4 percent to an increase of 12 percent per capita each year, while DoD projects that funding on direct care in MTFs will increase by between 1 percent and 9 percent per capita each year. Overall, DoD anticipates a real increase of 10 percent in funding on direct care and a real increase of 23 percent in funding on purchased care for the period from 2008 through 2013. CBO projects that, beginning in 2013, resources for those two categories will grow at the same rate as hospital care and physicians' and clinical services in the rest of the economy. As a result, CBO estimates that per capita funding for direct care and purchased care will grow at a nominal rate of just over 6 percent beginning in 2014 and taper to less than 5 percent per year by 2025.[17] Pay for uniformed medical personnel is projected to follow the same trend as other military personnel costs in DoD's budget. Those projections suggest that between 2008 and 2025, DoD's total funding on military medical personnel will rise by 14 percent, that funding for pharmaceuticals will increase by 164 percent, that funding for direct care will rise by 57 percent, and that funds allocated to purchased care and contracts will rise by 75 percent in real terms.

Funding for Operating Forces. The largest category of O&S funding comprises resources for operating forces. CBO projects that, excluding unbudgeted costs, annual costs for that category will rise from $123 billion in 2013 to $141 billion in 2025. About $12 billion of that growth reflects pay increases; the other $6 billion is attributable to three factors. First, operation and maintenance costs for each active-duty member of the Army's and Marine Corps's ground forces (as well as the costs of the Army's aviation programs) have been rising; CBO expects that trend to continue over the long term. (That cost growth is also reflected in rising total O&M costs per active-duty service member.) Second, as weapon systems age, the cost of operating and maintaining them will increase.[18]

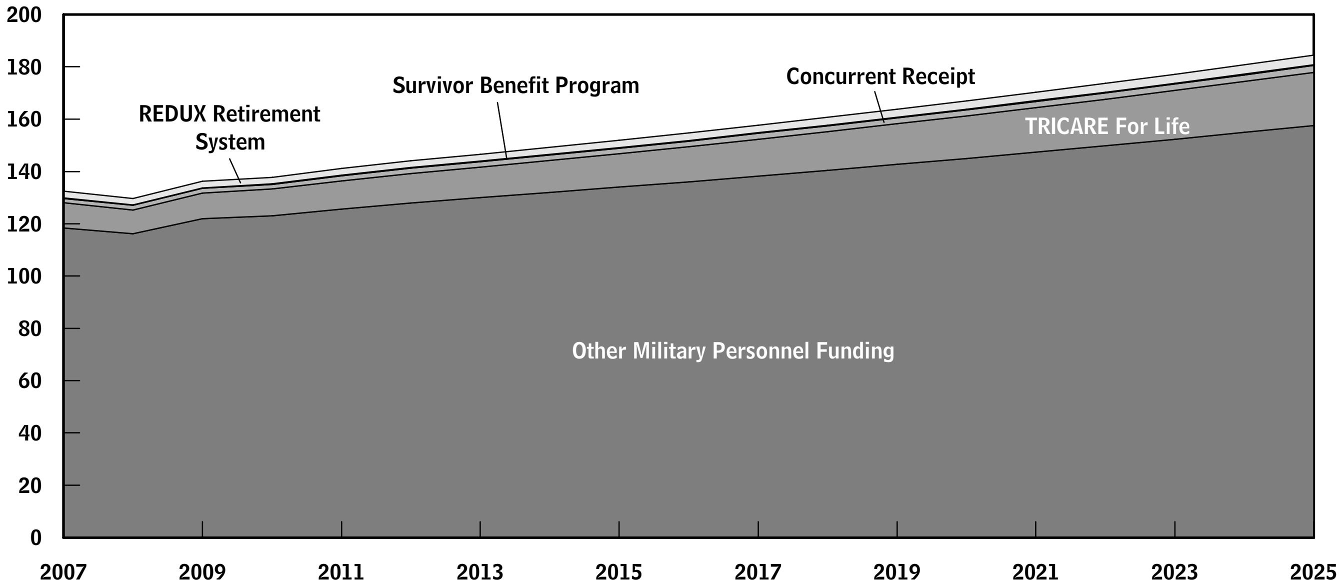
17. To estimate funding for medical care provided at military medical treatment facilities and purchased from the private sector, CBO extended CMS's projections of funding for hospital care and physicians' and clinical services after 2016, again reaching a growth rate 1 percentage point higher than that of per capita GDP by 2031.

18. See Congressional Budget Office, *The Effects of Aging on the Costs of Operating and Maintaining Military Equipment* (August 2001). That study found that O&M funding for aircraft, after an adjustment for inflation, increases by 1 percent to 3 percent for every additional year of age.

Figure 7.

Cost of New Benefits for Military Retirees and Their Families and Other Military Personnel Funding

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Third, new generations of weapon systems will be more complex and therefore more expensive to operate and maintain than the systems they replace. CBO's estimates of the costs to operate Air Force, Navy, and Marine Corps fighters, bombers, and transport and tanker aircraft take the latter two effects into account.

New or Enhanced Benefits That Contribute to Growth in Military Personnel Funding. Since 1999, policymakers have provided a number of new or improved retirement and health care benefits for military retirees and their families that are funded largely on an accrual basis.[19] The increased costs of those benefits have added several billion dollars to military personnel funding each year, and such costs are expected to continue to grow in the future (see Figure 7). The four costliest such benefits are changes to the REDUX retirement system, the establishment of TRICARE For Life, the elimination of the Social Security offset for the military's Survivor Benefit Plan, and changes in the rules regarding concurrent receipt of both military retired pay and veterans' disability compensation. As a share of total military personnel funding, the benefits' accrual charges and direct costs are projected to account for 12 percent in 2008, growing to 17 percent by 2025. CBO estimates that during the 2008–2025 period, the growth of accrual and direct costs for those new benefits will account for 33 percent of the total growth of military personnel funding. Without those costs, the military's personnel budget would be $131 billion in 2025, in CBO's estimation—or $27 billion less than the projected budget that includes those costs.

Changes to the REDUX Retirement System. Before 1986, military personnel who retired after 20 years of service received an immediate annuity equal to 50 percent of their "high-three" basic pay.[20] (That 50 percent factor is called the multiplier.) The annuity increased with additional years of service but was capped at 75 percent of basic pay for members who retired after 30 or more years of service. The Military Retirement Reform Act of 1986

19. Those accrual funds are managed similarly to the Medicare and Social Security trust funds. The Social Security funds are described in Congressional Budget Office, *Social Security: A Primer* (September 2001).

20. The basic pay that determines a service member's retirement annuity is computed as the average of the 36 highest months of basic pay in the service member's career—the "high-three" (-year) average.

created the REDUX retirement system, which applied to all personnel who entered military service on or after August 1, 1986.[21] Under REDUX, the multiplier would equal only 40 percent of a member's high-three basic pay after 20 years of service but would again increase to 75 percent of basic pay after 30 or more years of service.

Another change that REDUX implemented was partial insulation from inflation rather than the full protection that the older high-three system provided. Specifically, through age 62, a retiree's annual cost-of-living adjustment (COLA) under REDUX would equal the annual percentage increase in the consumer price index minus 1 percentage point. The annuity payment would be recomputed when the retiree reached age 62 so that he or she would receive the same payment in that year that he or she would have received under the older (more generous) high-three system. Once the retiree passed age 62, and for the remainder of his or her life, the retirement annuity would again be subject to a COLA equal to the increase in the consumer price index minus 1 percentage point.

The first cohort of service members to be affected by REDUX would have begun to retire in 2006. However, the National Defense Authorization Act of 2000 gave military personnel a choice between the high-three retirement system and an enhanced REDUX retirement system.[22] Service members who were anticipating retirement could select during their 15th year of service either the high-three retirement plan or the (less generous) REDUX formula, now supplemented by a lump-sum $30,000 payment (to be received during their 15th year of service) called the Career Status Bonus. Either choice would increase DoD's retirement liability—in the former instance, as a result of the higher multiplier and COLA; in the latter instance, as a result of the $30,000 bonus. However, the higher multiplier and COLA would add to the amount that must be covered by the accrual charges, whereas the $30,000 bonus would be paid immediately out of the military personnel appropriation for the fiscal year in which the service member made his or her decision.

As a result, the total estimated cost of the modification to REDUX enacted in 2000 includes both projected funding for the Career Status Bonus and the increase in DoD's accrual charges resulting from the higher multiplier and COLA, weighted by the respective proportions of retirees who elect either the REDUX or the high-three retirement plan. Using data from DoD's Office of the Actuary, CBO estimates that those two costs combined will add $1.8 billion to the military's personnel budget in 2008; in 2025, those costs will rise to $2.6 billion.[23]

TRICARE For Life. The introduction of this second new benefit expanded the health care coverage of Medicare-eligible military retirees and their families.[24] Before the implementation of TRICARE For Life (TFL), retirees and their families lost access to the civilian portion of their TRICARE benefit once they became eligible for Medicare. However, they retained the right to obtain care at MTFs (on a space-available basis), including free prescription drugs dispensed at MTF pharmacies. Following the introduction of TFL, TRICARE became the second payer to Medicare. Thus, when Medicare-eligible military retirees or family members receive medical services that are covered by both Medicare and TRICARE, Medicare pays whatever portion of the service's cost is allowed under its rules, and TRICARE then pays most and in some cases all of the remaining Medicare deductibles and copayments. In addition, when those beneficiaries receive services that are covered by TRICARE but excluded by Medicare, TRICARE covers most of the costs (although beneficiaries may still be responsible for some copayments). In addition, for a modest copayment, those beneficiaries can now use TRICARE to purchase pharmaceuticals at retail pharmacies.

TFL is funded on an accrual basis, with payments into the Medicare-Eligible Retiree Health Care Fund charged against the military personnel accounts.[25] The independent Board of Actuaries for the fund, which oversees its

21. 99th Congress, H.R. 4420, Public Law 99-348.

22. 106th Congress, S. 1059, P.L. 106-65, enacted October 1, 1999.

23. Personal communication to the Congressional Budget Office from DoD's Office of the Actuary, August 13, 2007.

24. 106th Congress, H.R. 4205, P.L. 106-398, enacted October 30, 2000.

25. Elsewhere in this report, CBO grouped the TFL accrual charges paid from the military personnel appropriation and consolidated them in the medical category to show the full costs of both current and future medical benefits. For the current analysis, however, CBO considered accrual charges for TFL as a component of the overall military personnel appropriation, with the objective of estimating how much the TFL program has added to the future funding requirements for that appropriation.

financial health, has estimated that those charges will grow in the foreseeable future at a nominal rate of 6.25 percent, and CBO has adopted that estimate. However, CBO subtracted from the annual accrual charges the portion of outlays from the fund that is projected to cover care that retirees receive at MTFs—because those outlays cover a benefit that was already in place before TFL's introduction in 2002. CBO projects that the accrual charges for the TFL benefit (excluding anticipated outlays for MTF care) will grow from $9.0 billion in 2008 to $20.3 billion in 2025.

Elimination of the Social Security Offset for the Survivor Benefit Plan. Military retirees can elect to pay a premium so that when they die, their surviving spouse will continue to receive a portion of their retirement pay. In the past, once that survivor reached the age of 62 and became eligible for Social Security benefits, payments under the Survivor Benefit Plan were reduced from 55 percent of the retirement pay that the service member would have received to 35 percent—a reduction intended to partially offset the survivor's income from Social Security. However, that offset is scheduled to be eliminated by April 1, 2008, as enacted in the National Defense Authorization Act for Fiscal Year 2005.[26] According to projections provided to CBO by DoD's Office of the Actuary, the accrual charges needed to cover the enhanced benefit from eliminating the offset will add $198 million to military personnel funding in 2008, an amount that is projected to increase to $294 million in 2025.[27]

Changes in the Rules Regarding Concurrent Receipt. Until recently, the law required that military retirement pay be reduced dollar for dollar by the amount of disability compensation that a retiree received from the Department of Veterans Affairs. (Nevertheless, many eligible retirees chose to receive their disability compensation despite that offset because such compensation is not subject to federal income taxes.) The National Defense Authorization Act for Fiscal Year 2003 created a new benefit called combat-related special compensation, which in effect exempted certain seriously disabled retirees from the offset requirement.[28] Moreover, the 2004 National Defense Authorization Act introduced concurrent receipt for retirees who were at least 50 percent disabled, including those whose disability was not related to combat.[29] For all but the most severely disabled retirees, however, the amount of concurrent receipt is being phased in over a 10-year period from 2004 to 2013. DoD's Office of the Actuary projects that those new benefits will add $2.4 billion to defense accrual charges in 2008; in 2025, those benefits will add $3.6 billion.[30]

Projections for Military Construction and Family Housing

The military construction budget pays for the planning, design, construction, and major restoration of military facilities and for the up-front costs associated with BRAC rounds (for example, performing environmental assessments of sites designated for closure and construction projects needed to facilitate the consolidation of personnel and units). Excluding the BRAC funding, that budget has ranged between $3 billion and $9 billion annually since 1980. DoD plans to dedicate enough funding to its facilities to achieve a recapitalization rate of 67 years. (The recapitalization rate is calculated by dividing the replacement value of all military facilities by the average funding used to restore or replace a portion of them annually.) In CBO's estimation, achieving that goal will require average annual funding of about $7 billion to $8 billion.

The Administration's plans for the 2008–2013 period include a total of $24 billion of military construction funding for a 2005 BRAC round. An additional $1 billion in such funding will be needed for BRAC purposes after 2013, CBO estimates. DoD projects that six years into the implementation of the 2005 BRAC round,

26. 108th Congress, H.R. 4200, P.L. 108-375, sec. 644, enacted October 28, 2004.

27. Personal communication to the Congressional Budget Office from DoD's Office of the Actuary, August 13, 2007.

28. 107th Congress, H.R. 4546, P.L. 107-314, sec. 636, enacted December 2, 2002, as amended by sec. 642 of the National Defense Authorization Act for Fiscal Year 2004, H.R. 1588, P.L. 108-136, enacted November 24, 2003.

29. 108th Congress, H.R. 1588, P.L. 108-136, sec. 641, enacted November 24, 2003.

30. Personal communication to the Congressional Budget Office from DoD's Office of the Actuary, August 13, 2007. The Office of the Actuary has since revised those figures; CBO's projections use the older figures because they correspond more closely with the assumptions DoD used in building the 2008 FYDP.

recurring annual savings will reach more than $5 billion.[31] In CBO's projections, however, those savings do not reduce DoD's total budget. Instead, the projections incorporate the assumption that DoD will retain the budget authority for that money and use it for other purposes. (CBO could not determine specific uses on the basis of the information in the FYDP.)

The budget for family housing pays for the construction, operation, maintenance, and leasing of military family housing. Since 1980, that budget has ranged between $3.5 billion and $5.5 billion per year. The 2008 FYDP envisions that such funding will drop from $3.1 billion in 2008 to $1.8 billion by 2013, because some military housing will be funded through third-party financing methods that are not recorded on the federal budget. Such financing plans, however, while reducing DoD's funding for building and operating family housing, may also increase expenditures for the basic allowance for housing that military personnel receive to pay for the rental of private housing units.[32]

Potential Unbudgeted Costs for Operation and Support, Military Construction, and Family Housing

In its projections for unbudgeted costs, CBO analyzed the potential effects of changes in a number of the assumptions incorporated in the 2008 FYDP. If all of those changes were made, funding for O&S would total $422 billion in 2025, or 15 percent higher than in CBO's estimate excluding unbudgeted costs. Funding for military construction and family housing in 2025 would reach about $12 billion per year, an increase of 32 percent over CBO's estimate excluding unbudgeted costs.

Unbudgeted Costs for Contingency Operations. Much of the potential unbudgeted cost for O&S funding is associated with funding for ongoing operations in Iraq and Afghanistan, as well as for other military efforts in the war on terrorism. The 2008 FYDP does not include future funding for contingency operations. However, the President has requested an additional $189 billion to fund operations in Iraq, Afghanistan, and elsewhere in the war on terrorism in 2008.[33] About $111 billion of that request is for O&S.

In its projection including unbudgeted costs, CBO includes $139 billion in 2009 for military operations in Iraq, Afghanistan, and elsewhere (of which about $93 billion would be O&S funding and $46 billion would be investment funding). CBO projects that over the long term, unbudgeted costs associated with those (or similar) operations could decline to about $58 billion annually (of which $38 billion would be O&S funding and $20 billion would be investment funding). That estimate is based on the assumption that between 2008 and 2013, the number of U.S. military personnel deployed in contingency operations will fall from about 200,000 to about 75,000 and remain at that level through 2025. Of course, that kind of specific assumption represents one of many possible scenarios and is not a prediction from which future war funding or budget requests could be derived. In particular, that kind of specific assumption is unlikely to hold true for the entire projection period (2008 through 2025). CBO's estimate of average annual funding of $58 billion is simply a proxy for the budgetary impact of the U.S. military's continued engagement in such operations, wherever they might occur. If U.S. foreign policy shifted in a way that increased or decreased the nation's military presence overseas, costs would also change accordingly.

Unbudgeted Medical Costs. Aside from contingency operations, the next-largest possible source of additional growth in O&S costs is the military medical system. DoD's FYDP projections for medical funding include declines in per capita funding on pharmaceuticals in 2008 and in per capita funding on purchased care and contracts in 2010. Although such declines in funding are possible, they would not be consistent with recent trends. Moreover, DoD's own inflation guidance stipulates growth rates of 6.7 percent per year for direct care, 7.0 percent for purchased care and contracts, and 10.1 percent for pharmaceuticals. In the case including unbudgeted costs, CBO began with DoD's 2008 projected funding levels as a base and then applied those

---

31. Department of Defense, *Base Realignment and Closure Report*, vol. 1 (May 2005), p. 4. The BRAC Commission, however, estimates that recurring annual savings from implementing its recommendations will be about $4.2 billion.

32. Housing allowance costs are not included in the family housing budget but appear among military personnel costs in the O&S budget. CBO's projection of overall military personnel costs beyond 2013 implicitly incorporates changes in the basic allowance for housing to reflect changes in the 2008 FYDP.

33. That estimate includes funding for operation and maintenance, military personnel, investment, and coalition support as well as some (relatively small) miscellaneous contingency costs.

nominal growth rates to per capita funding in each category for 2009 through 2013.

For the years beyond the FYDP period, CBO's projection with unbudgeted costs incorporates nominal growth that is 30 percent higher than in the projection without those costs. For direct care and purchased care, those rates are 8.3 percent per year in 2014, slowing to 6.0 percent per year by 2025 (rather than 6.4 percent and 4.6 percent, respectively). For pharmaceuticals, CBO assumed 11.9 percent growth in 2014, falling to 7.7 percent in 2025 (rather than the 9.1 percent and 5.9 percent, respectively, used in the base case). Under those assumptions, DoD's total medical spending would increase by 107 percent (rather than 77 percent) in real terms from 2008 to 2025.

CBO did not project any unbudgeted costs for accrual payments to fund the medical benefits of military retirees over the age of 65. Those payments are currently projected to grow at a nominal rate of 6.25 percent a year, which reflects the best estimate by DoD's independent Board of Actuaries of the ultimate growth rate for health care spending on that group.

Other Unbudgeted Costs. CBO's estimates of other unbudgeted costs include the possibility that military pay raises will be higher than DoD's current plans anticipate. The 2008 defense authorization bill could include language that sets military pay raises at 3.5 percent in 2008 and at the ECI plus 0.5 percentage points each year from 2009 through 2012.[34] Setting military pay raises at those levels would add about $300 million of unbudgeted costs in 2008, growing to over $2 billion by 2025.

CBO's estimates of other unbudgeted costs also include the possibility that civilian pay raises will equal military pay raises, as has historically been the case. Under DoD's current plans, the annual pay raise for civilians would be about 1 percentage point less than the pay raise for uniformed service members. Making the raises equivalent in percentage terms from 2008 to 2013 would add over $200 million in unbudgeted costs in 2008, growing to $4.5 billion annually by 2025. (Although CBO projects that after 2013, military and civilian pay will rise by equal annual percentage increases, the difference in cumulative increases through that year compounds in later years, and CBO thus includes it as part of its projection of unbudgeted costs.)

Another potential source of unbudgeted costs is the possibility that fuel prices will climb higher than DoD expects. Under its current plans, DoD assumes that fuel prices will fall by 5.7 percent in 2008 and cumulatively decline by an additional 2 percent in nominal terms between 2008 and 2013.[35] Between 1974 and 2006, however, crude oil prices grew at an average annual rate of approximately ¾ of a percent above general inflation. (Petroleum products constitute the vast majority of DoD's fuel sources.) If fuel prices grow at that average historical rate rather than at rates anticipated by DoD, unbudgeted fuel costs will total over $1 billion in 2008, growing to nearly $3 billion in 2025 (assuming DoD does not change its planned fuel use).

Finally, CBO's projections of unbudgeted costs incorporate the possibility that the expected decrease in the military family housing budget resulting from military housing privatization will not occur. Rather, in the projection including unbudgeted costs, DoD would use the anticipated savings from the military housing privatization initiative to increase the stock of housing controlled by DoD.[36] Should the family housing budget remain close to its 1980–2006 average level, CBO projects that an additional $2 billion to $3 billion per year in annual resources would be allocated for family housing beginning in 2008.

Projections of Funding for Investment

The Administration's current FYDP envisions that over the 2008–2013 period, investment funding—which pays for developing, testing, and buying weapon systems and other equipment—will remain relatively constant,

34. 110th Congress, Report of the Committee on Armed Services, House of Representatives, on H.R. 1585, National Defense Authorization Act for Fiscal Year 2008, pp. 337–338.

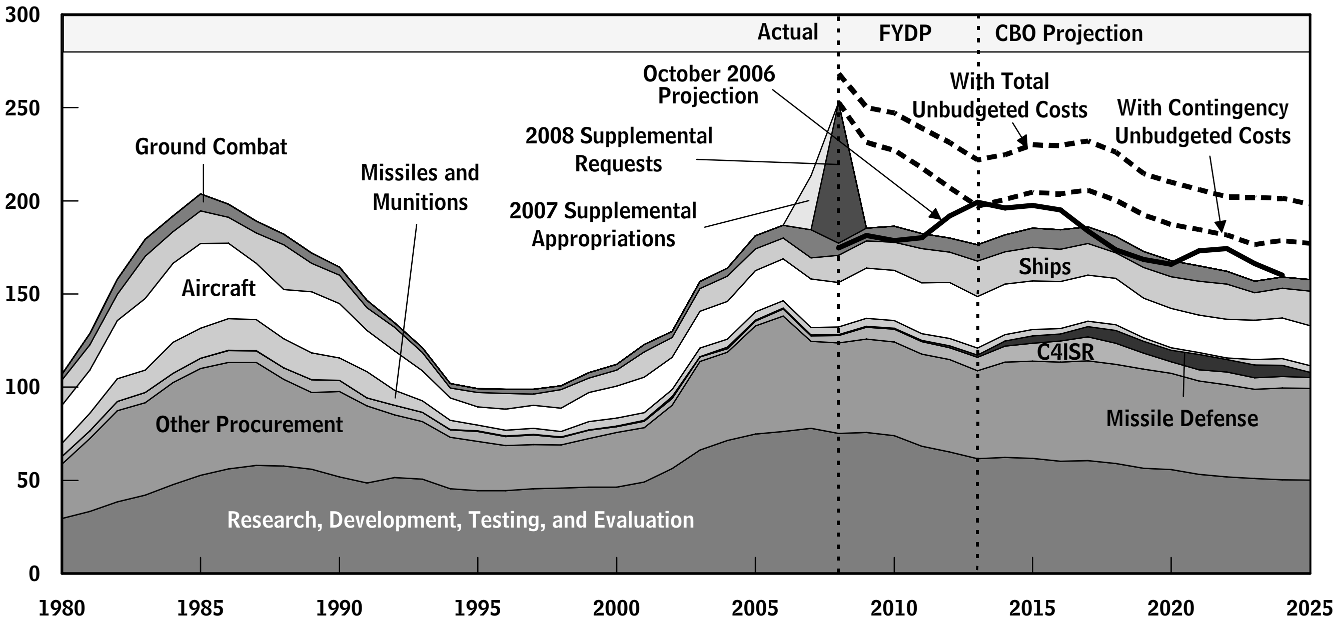
35. Memorandum from John P. Roth, "Inflation Guidance—Fiscal Year (FY) 2008/2009 President's Budget."

36. Housing controlled by DoD includes that owned directly by the military as well as that considered part of the privatization initiative. The government exercises significant control over privatized housing by controlling business operations, occupancy, access, construction, and management through various means. For additional information on military family housing and the privatization initiative, see Congressional Budget Office, *H.R. 4879, the Military Housing Improvement Act of 2004*, CBO Cost Estimate (July 30, 2004).

Figure 8.

Past and Projected Resources for Investment

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

averaging about $181 billion annually (see Figure 8). Carrying out current plans over the long term would cause investment funding—excluding unbudgeted costs—to peak at $186 billion in 2017, CBO projects, and average about $175 billion annually.

Unlike its previous projections for DoD's investment funding, CBO's current projection indicates that a substantial rise in funding will not be needed to execute DoD's current investment plans over the long term.

CBO projects that unbudgeted costs—including costs to repair, replace, and upgrade equipment used in contingency operations—could cause defense funding to peak in 2017 at $232 billion.[37] (Box 1 discusses CBO's methods for projecting investment.) In that case, funding for investment over the 2014–2025 period would average $224 billion annually, about 28 percent more than in the case excluding unbudgeted costs.

Army Investment

In 2007, the Army's investment budget included about $26 billion provided through emergency appropriations to pay for the costs of repairing and replacing equipment worn out and lost in operations in Iraq and Afghanistan, upgrading equipment, and buying new equipment, including equipment for the Army National Guard. In 2008, the President's requests for emergency appropriations anticipate about $46 billion in funding for Army investment. If lawmakers enact those requests, funding provided through emergency appropriations will constitute 57 percent of total Army investment in 2008; it constituted 46 percent of such investment in 2007 (see Figure 9).[38]

37. Supplemental funding displayed in Figure 8 for 2007 excludes amounts provided under Title IX of the regular defense appropriation, P.L. 109-289; it includes amounts appropriated under P.L. 110-28.

38. Supplemental funding displayed in Figure 9 for 2007 excludes amounts provided under Title IX of the regular defense appropriation, P.L. 109-289; it includes amounts appropriated under P.L. 110-28.

Box 1.

Methods Used by CBO to Project Defense Investment on the Basis of Current Plans

The Congressional Budget Office (CBO) uses several methods to project investment resources for the Department of Defense's (DoD's) programs.

Major Investment Programs

CBO projects long-term resources for major weapon systems on an individual basis, using, as appropriate, the Administration's long-range program plans (which may include development schedules, quantities to be purchased, and rates of annual purchases). That information is drawn from several documents. The Future Years Defense Program (FYDP) provides details about a broad spectrum of programs over the next five years—through 2013 in the current FYDP. In addition, DoD prepares backup books for staff members of Congressional committees for each of the accounts in the procurement title of the defense appropriation act and descriptive summaries for accounts in the title covering research, development, testing, and evaluation (RDT&E) activities. Those reports provide additional detail at the appropriation and account levels and, for some programs, include summaries of plans for periods beyond that covered by the FYDP. For major programs (including, for example, the Army's Future Combat Systems), DoD provides Selected Acquisition Reports (SARs), which contain the department's projections of development schedules, rates and quantities of purchases, and costs throughout a program's duration.

In preparing its projections, CBO developed its own estimates for cases in which data for a major investment program were lacking. For example, it developed estimates for the potential costs of a new long-range strike aircraft using parametric cost-estimating models with aircraft weight and other technical characteristics as inputs.

Other Investment

Procurement funding in CBO's "other procurement" category pays for purchases of such items as artillery rounds, radios, passenger vehicles, and spare parts. About one-third of RDT&E funding pays for basic and applied research, development of advanced technologies, management activities in support of development, and some lower-cost programs to develop modifications to systems already being used in the field. Because DoD provides no detailed plans for those items and activities, CBO projects their long-term resource demands on the basis of trends in their funding since 1980 and the relationship between that funding and spending for major programs. Through those relationships, CBO implicitly projects funding for some highly classified (or "black") programs.

Potential Unbudgeted Costs

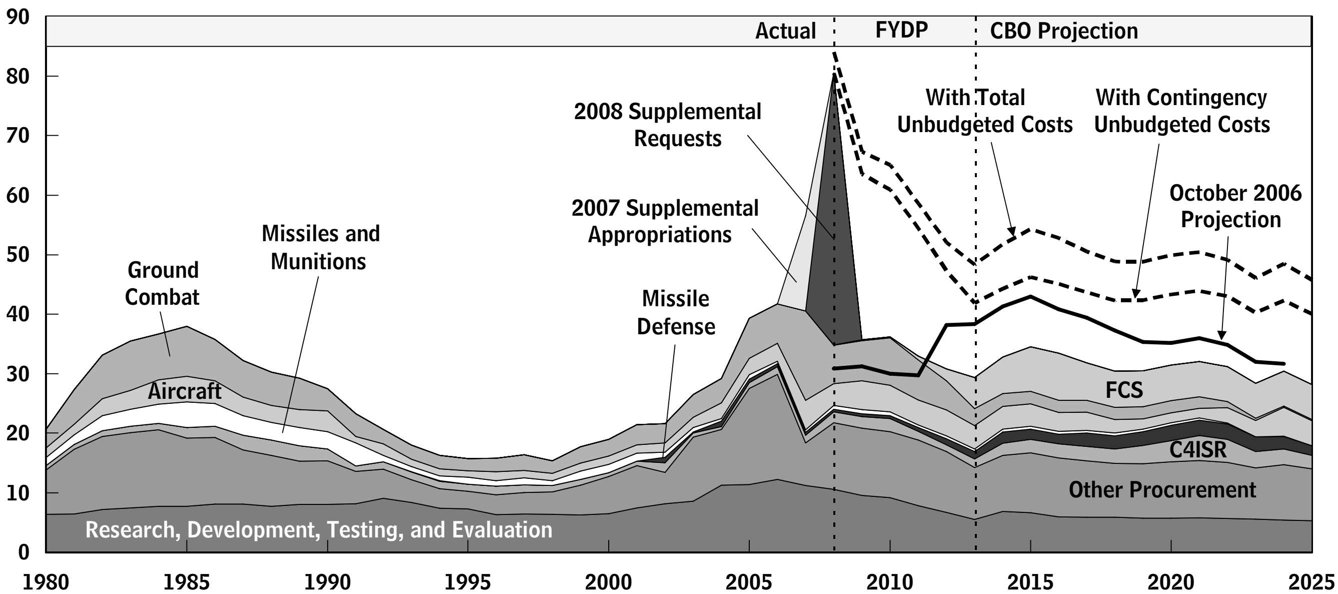
In the past, DoD has often underestimated the cost to develop and purchase new weapon systems. Consequently, CBO also projects the demand for defense investment resources under the assumption that future costs will exceed early estimates to the degree that they have in the past. Those projections are based largely on information from RAND analyses of the cost growth that has occurred since 1969 for all major programs for which, through 2002, DoD had submitted SARs to the Congress.[1] However, in some cases—for example, the Navy's DDG-1000 destroyer—CBO uses the difference between its independently prepared estimate of the costs of a military system and DoD's estimate to project unbudgeted costs.

1. For a more detailed discussion of how CBO develops cost-risk projections for investment, see Congressional Budget Office, *The Long-Term Implications of Current Defense Plans* (January 2003), pp. 44–46.

Figure 9.

Past and Projected Resources for Army Investment

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance; FCS = Future Combat Systems.

Excluding emergency appropriations, total investment resources allocated to the Department of the Army in the 2008 FYDP (relative to the 2007 FYDP) increased for the 2008–2011 period common to both plans. Average annual investment funding would increase from $30 billion to $35 billion, and more funds would be devoted to procurement between 2008 and 2011—$103 billion in the 2008 FYDP as compared with $85 billion in the 2007 FYDP for the same period. Funds devoted to research, development, testing, and evaluation (RDT&E) over the same period would remain unchanged at $37 billion (see Figure 9).

Compared with CBO's projection from October 2006, investment funding under the 2008 President's budget would be lower in the last two years of the six-year period covered by the 2008–2013 FYDP that are now subject to fiscal controls within DoD. That decline results in part from the Army's decision to delay the start of procurement of the Future Combat Systems (FCS), which will replace current ground combat equipment, and from cuts in funding on minor programs and missile defenses. Increases in the early years, however, are attributable primarily to additional funds provided to purchase equipment—mostly trucks—for the units that the Army intends to add to its forces. Those funds, totaling $15 billion from 2008 to 2013, are included in the Army's "Grow the Force Initiative." Although the funding has been distributed among four of the Army's procurement categories—Weapons and Tracked Combat Vehicles, Missiles, Tactical Vehicles, and Communications and Electronics—documents accompanying the President's 2008 budget submission do not specify what equipment will be purchased with the funds. More than half of the funds ($8 billion) would be used to purchase tactical vehicles, with lesser amounts allotted to other accounts ($4 billion for communications and electronics, and slightly more than $1 billion for weapons and tracked combat vehicles).

CBO's updated projection of the investment resources needed beyond 2013 to carry out the Army's programs averages $31 billion a year excluding unbudgeted costs and as much as $50 billion a year when adjusted for past rates of cost growth and equipment-related costs for future contingencies (see Figure 9).[39] Due in part to the reduction in annual quantities of FCS components purchased between the two FYDPs, investment levels decline by about $5 billion per year in the updated projection compared with those in the previous projection. The Army's receipt of more than $50 billion in procurement funding in emergency appropriations from 2005 to 2007 may have reduced the need for some of the investment that had been previously planned for the out-years.

The Future Combat Systems Program. As described in the President's budget for fiscal year 2008, the schedule for the Army's FCS program is less ambitious than that included in the previous budget. It includes a one-year delay in the initial procurement of FCS components, and a lower annual rate of procurement. Beginning in 2015, the Army's plans call for purchasing a full brigade's worth of equipment per year at a cost of $6 billion to $8 billion annually, accounting for more than 80 percent of funds devoted to ground combat vehicles included in CBO's projection after 2013. Previous plans had called for the purchase of 1.5 brigade's worth of equipment at an annual cost of $9 billion. On the basis of plans included in the 2008 President's budget, total resources associated with the FCS through 2025 could exceed $100 billion. In its updated projection, CBO estimates that the Army will have purchased only 11 combat brigades' worth of FCS components by 2025—6 fewer than in CBO's October 2006 projection.[40]

Aviation Programs. Plans for the Army's aviation programs have changed in the past year. Those programs—which CBO estimates could require a total of $61 billion in funding between 2008 and 2025—include the purchase of over 500 (increased from almost 370) new armed reconnaissance helicopters to replace the Army's OH-58D Kiowa Warriors and more than 300 new light-utility helicopters to replace the soon to be retired UH-1H Hueys and OH-58C Kiowas. In addition, tentative plans include initiating a new joint heavy-lift rotorcraft program. CBO's updated projection incorporates those changes, as well as the Apache Block III, UH-60M, and CH-47F programs that upgrade and extend the service life of Apaches, Blackhawks, and Chinooks, enabling them to continue operating past 2025.

Missile Defenses. Finally, CBO's projection assumes the Army will make a significant investment after 2013 to purchase equipment to defend against ballistic missiles. Those funds—averaging about $1.5 billion per year from 2008 to 2025—would be used to purchase various systems including the Terminal High-Altitude Area Defense system, the Patriot Advanced Capability-3 (PAC-3) system, and the Medium Extended Air Defense System to defend against tactical ballistic missiles. (Details of CBO's projection for missile defenses are provided in a separate section of this paper.)

Navy and Marine Corps Investment

Under DoD's current plans, investment resources for the Department of the Navy (which includes the Marine Corps) would rise from $56 billion in 2008 to a peak of about $62 billion in 2014 and then decline to $39 billion by 2025, CBO projects. Between 2014 and 2025, Navy investment would average $50 billion a year. If program costs grew as they have in the past, however, the department's investment funding could peak at $70 billion in 2017 and then fall back to about $47 billion by 2025—averaging $59 billion a year over the 2014–2025 period (see Figure 10).

Ships. Projections of the Navy's resources under current plans are driven largely by the procurement of battle force ships. CBO based its assumptions about ship procurement on the Navy's new plan for building a fleet of 313 ships, compared with 278 today.[41] Based on the profile provided in the Navy's shipbuilding plan, CBO estimates that the Navy's ship purchases would cost $17 billion a year between 2007 and 2025 to increase the fleet to about 313 ships, or $22 billion a year through 2025 if historical trends in cost growth continued.

39. CBO's projection of the Army's investment beyond 2013 includes funds to procure missile defense systems such as the Patriot Advanced Capability-3, the Medium Extended Air Defense System, the Terminal High-Altitude Area Defense, and interceptors for a boost-phase missile defense. Most of the research for three of those programs is currently funded by the Missile Defense Agency, but DoD plans to transfer procurement funding for those systems to the services when the systems enter production.

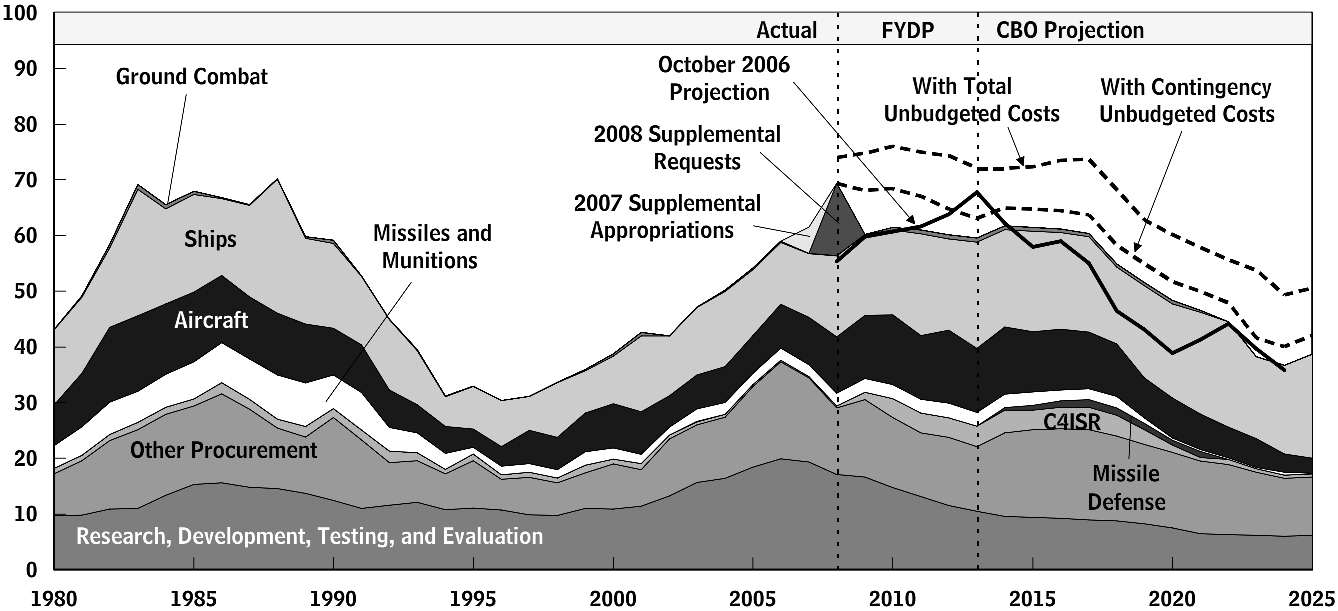
40. The Army's official plans currently include the purchase of 15 brigade-sets of FCS equipment. Because that amount would be insufficient to equip all of the Army's planned heavy brigades and would not allow the Army to purchase equipment for its prepositioned equipment sets, CBO's October 2006 projection assumed that purchases of FCS equipment would continue after the first 15 brigade-sets were procured.

41. Department of the Navy, *A Report to Congress on Annual Long-Range Plans for the Construction of Naval Vessels, Fiscal Year 2008* (February 2007).

Figure 10.

Past and Projected Resources for Navy and Marine Corps Investment

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

Surface Combatants. The planned increase in the Navy's fleet is reflected primarily in the surface combatant force. Today, that force comprises 103 cruisers, destroyers, and frigates. By 2025, under CBO's projection of current plans, it would consist of 148 ships—including a higher number of littoral combat ships (LCSs), 55—with a steady-state size of 143.[42]

The Navy's plans for the surface combatant force have changed marginally since the spring of 2006, when the Navy's shipbuilding plan envisioned the same surface combatant force. The only major change has been the cost growth in the LCS program, which resulted in a restructuring of the Navy's plans to acquire those ships in the short term. The Navy originally planned to buy two LCSs in 2007, three in 2008, and six per year in 2009 to 2011. In order to pay for a doubling in the cost of the first two ships, the Navy canceled the 2007 ships and reduced the purchases to two in 2008 and to three in 2009.[43] In total, the Navy's current procurement plan for surface combatants would cost an average of $6.1 billion a year between 2008 and 2025—or $8.7 billion annually, CBO estimates, if historical cost growth is considered.

Submarines. The fiscal year 2008 shipbuilding plan envisioned maintaining the attack submarine force at 48 boats. The Navy's current plan also indicates that the fleet would continue through 2025 to deploy 14 ballistic missile submarines and four guided missile submarines. Beyond 2025, the Navy's 2006 shipbuilding plan does not anticipate replacing the guided missile submarines when they are retired in the mid-2020s but would continue to maintain a force of 14 ballistic missile submarines. Meeting that plan requires ordering the first new ballistic missile submarine in 2019.

42. The size of the steady-state fleet equals the sum of the average annual purchases of all types of ships in that fleet multiplied by their expected lifetimes.

43. The Navy also planned to buy one LCS in 2005 and three in 2006, designated LCS 1-4. However, LCS-3 and LCS-4 were canceled in the spring and fall of 2007, respectively, as a result of cost overruns. The Congress has also reduced LCS funding, and the program's future remains uncertain.

In the short term, the Navy's goal is to reduce the price of new Virginia class submarines to $2.2 billion (in 2008 dollars) and increase the procurement rate to two boats per year starting in 2012. CBO projects that the Navy's current plans for sustaining the attack, guided missile, and ballistic missile submarine forces will cost, on average, more than $5.2 billion per year over the next two decades, or as much as $6.9 billion annually, including historical cost growth.

Amphibious and Maritime Prepositioning Ships. The Navy's amphibious lift ships are organized into expeditionary strike groups, each comprising one amphibious assault ship or helicopter carrier (LHA or LHD), one amphibious transport dock (LPD), and one dock landing ship (LSD), together with three surface combatants and an attack submarine. The Navy's fiscal year 2008 shipbuilding plan envisions reducing the number of expeditionary strike groups from the 11 existing today to 9 by 2020. To support that force goal, two new LHA-6 class amphibious assault ships would be purchased under the current plan. The plan also includes the purchase of one LPD-17 and 12 replacements for the existing LSD-41 and LSD-49, six of which would be purchased by 2025.

In addition to the expeditionary strike groups, the Navy's 2006 shipbuilding plan would include the purchase of 11 new maritime prepositioning ships—part of the Maritime Prepositioning Force (Future)—to forward deploy the equipment of one Marine expeditionary brigade. The Navy plans to buy a mix of different ship types to populate the Maritime Prepositioning Force (Future) squadron. In addition, three existing ships transferred from the amphibious and existing maritime prepositioning forces would also operate with the squadron.

CBO projects that resources for new amphibious and maritime prepositioning ships would be $1.9 billion per year, on average, through 2025. If historical cost growth was included, required resources would average $2.4 billion per year.

Aircraft Carriers. The Navy's fiscal year 2008 shipbuilding plan projected a future carrier force of 11 large-deck ships, all of which would eventually be nuclear-powered. According to the 2008 FYDP, the Navy expects to order the first of its new class of aircraft carriers, the CVN-21, in 2008. Under the plan to maintain 11 carriers, the Navy would order a new ship every four or five years thereafter in addition to refueling an existing nuclear-powered Nimitz class carrier about every three years. CBO projects that those efforts would require $3 billion annually, on average, through 2025, or $3.4 billion with historical cost growth.

Aircraft. The Department of the Navy's investment in aviation programs includes funding for Navy and Marine Corps aircraft and for aircraft-related weapon systems. As envisioned in the 2008 FYDP, carrying out the Navy's current procurement plans for modernizing the Navy's and Marine Corps's aircraft forces would cost, on average, about $9 billion per year between 2008 and 2025, or about $11 billion per year with historical cost growth factored in, according to CBO's projections. Average annual funding is higher, about $12 billion per year, for 2008 through 2014 because of simultaneous purchases of several types of fixed- and rotary-wing aircraft. In 2012, the year of highest expected funding, the Navy would purchase over 200 aircraft, including 63 fixed-wing fighters, 101 rotary-wing and tilt-rotor aircraft, and 43 trainers. The completion of production for several of those aircraft results in lower average expenditures, slightly more than $6 billion per year from 2017 through the end of CBO's projection period (2025). CBO's current projection of aircraft procurement by the Department of the Navy is about 6 percent higher than its 2006 projection. Most of that increase results from cost growth in the programs for the F-35 Joint Strike Fighter and the MV-22 tilt-rotor aircraft.

Fighter Aircraft. The Navy's plans for fighter aircraft include the purchase of 108 more F/A-18E/F aircraft, 68 more EA-18G electronic warfare aircraft (for a total of 80 to replace the EA-6B), and 680 F-35 Joint Strike Fighters in two variants: the F-35B short takeoff vertical landing variant for the Marine Corps and the F-35C carrier variant for the Navy. In addition, the Navy is pursuing an unmanned combat air vehicle for carrier-based strike or defense-suppression operations, and CBO assumed that 70 of those aircraft would be purchased by 2025.

Other Fixed-Wing Aircraft. In addition to fighters, the Navy plans to procure several other types of carrier- and land-based fixed-wing aircraft:

- A new version of the carrier-based E-2 Hawkeye airborne early-warning aircraft;

- A new land-based patrol aircraft, the Multi-Mission Maritime Aircraft, which is based on a Boeing 737 airframe and will replace the P-3C Orion; and
- An unmanned Broad-Area Maritime Surveillance aircraft that is currently envisioned to fill a role similar to the Air Force's Global Hawk.

Marine Corps Rotary-Wing and Tilt-Rotor Aircraft. The 2008 FYDP calls for replacing or upgrading nearly every component of the Marine Corps's rotary-wing forces. The MV-22 Osprey tilt-rotor aircraft is slated to replace the current fleet of CH-46E medium-lift helicopters. For its heavy-lift transport missions, the Marine Corps is finalizing plans to replace its fleet of CH-53E helicopters with an upgraded version currently called the CH-53K. Current plans also include the continued modernization of the fleets of UH-1N light-utility helicopters and AH-1W attack helicopters with remanufactured aircraft.

Ground Combat. The Marine Corps's plans for equipment bought through its procurement account also changed substantially between the 2007 FYDP and the 2008 FYDP. Planned purchases of the new expeditionary fighting vehicle, which replaces the amphibious assault vehicle, were reduced by nearly half, and procurement would begin in 2010 rather than in 2007. In addition, by canceling its plans to buy additional High-Mobility Multi-Purpose Wheeled Vehicles, the Marine Corps has reduced the number of those vehicles it plans to purchase by more than 4,000 between 2008 and 2011. Instead, the service plans to begin buying the joint light tactical vehicle and the light armored vehicle in 2009. Between 2009 and 2013, over 3,700 would be purchased, mostly joint light tactical vehicles. Carrying out those commitments through 2025 would require substantial resources: an average of about $540 million a year, without cost growth—or twice the average amount that this category of procurement has received for the past two decades.

Air Force Investment

Under the Administration's current plans, funding for research, development, testing, and evaluation and for procurement of Air Force systems would total roughly $61 billion in 2008 and then rise to a fairly steady level of about $64 billion per year from 2009 through 2013. CBO projects that continuing those plans beyond the FYDP period would require similar average investment funding—about $68 billion per year—from 2014 through 2025. Year-to-year funding would remain stable over the projection period, from a low of about $62 billion in 2014 to a high of just over $72 billion in 2018 (see Figure 11). If the costs of developing and purchasing Air Force systems grew beyond the service's current estimates to the same extent that they have in the past, carrying out the Administration's current plans for that time period would require an additional $6 billion per year between 2014 and 2025.

The Administration's 2008 budget request for Air Force investment is about $1.5 billion lower than the level anticipated in the previous year's FYDP. Much of that decrease results from cancellation of the E-10 surveillance aircraft and delays in procurement of the KC-X replacement for the KC-135 airborne tanker. Nonetheless, average investment funding for the 2009–2011 period, which was covered in both the 2007 and 2008 FYDPs, increased by about $1 billion per year.

Categories of Procurement Funding. For its projection of Air Force procurement funding, CBO tracked five categories of major systems: aircraft; command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems; missiles and munitions; missile defense systems; and unclassified space systems.

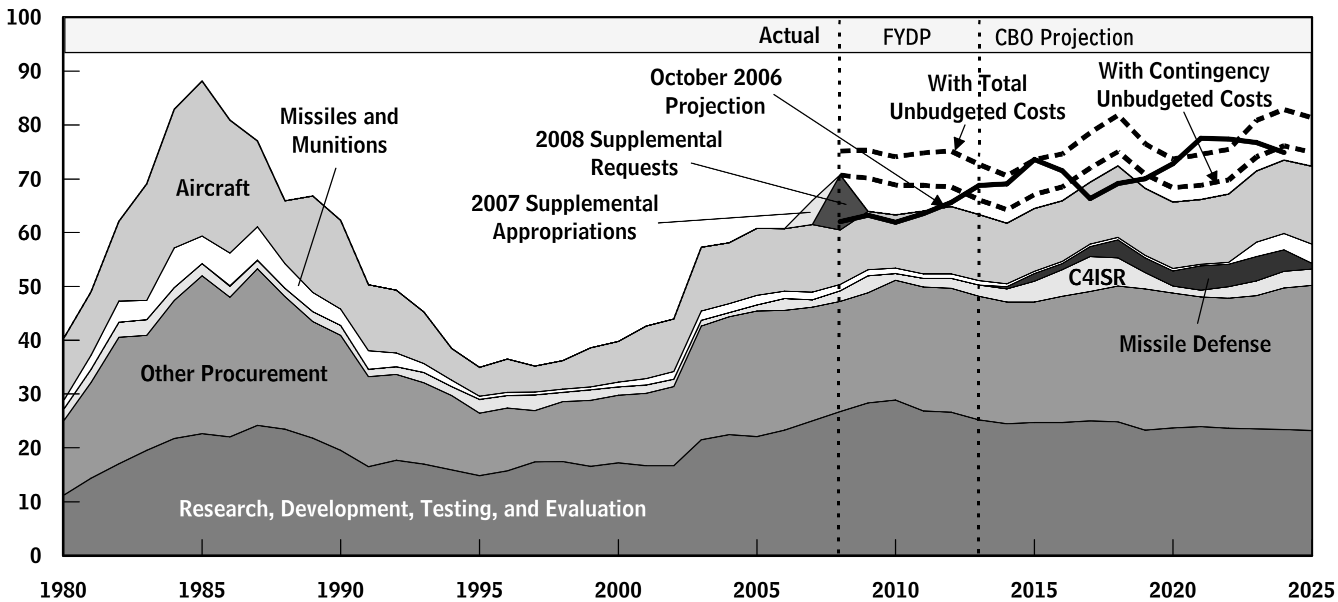
Aircraft. Procurement for aircraft systems includes purchases of new aircraft as well as major modifications to existing aircraft. Over the projection period, funding for new aircraft systems is dominated by the F-35A Joint Strike Fighter, the KC-X replacement for the KC-135 airborne tankers, and a new long-range strike aircraft. A new aircraft program added for the Air Force in this projection period is a vertical takeoff and landing Joint Heavy Lift aircraft that would be developed with the Army.[44] Major aircraft modification expenditures include the C-5 and C-130 transport aircraft modernization programs as well as continuing upgrades for the C-17 transport aircraft and the F-22 fighter.

44. Although recently proposed performance characteristics of the Joint Heavy Lift aircraft would make it a candidate to replace the C-130, it is unclear whether the Air Force would opt to sacrifice payload and possibly range in exchange for the flexibility of a vertical takeoff and landing aircraft. Other conceptual aircraft the Air Force has explored for that role (such as the AMC-X) have a more conventional design.

Figure 11.

Past and Projected Resources for Air Force Investment

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; C4ISR = command, control, communications, computers, intelligence, surveillance, and reconnaissance.

C4ISR Systems. Procurement for C4ISR systems includes terrestrial systems such as surveillance aircraft as well as satellite systems. About 80 percent of projected procurement funding for C4ISR systems is dedicated to four satellite systems: space radar, the new Global Positioning System satellites, new infrared missile warning satellites (Space-Based Infrared System in low- and high-Earth orbits), and the Transformational Satellite Communications System. The Administration's 2008 budget request had moved responsibility for space radar from the Air Force to classified intelligence accounts. Consistent with the House Appropriations Committee's action on the defense budget, CBO's projection assumes the Air Force will retain responsibility for space radar.

Missiles and Munitions. This category includes systems ranging from air-to-air weapons to intercontinental ballistic missiles. In the case of intercontinental ballistic missiles, CBO's projection includes the procurement of upgrades to existing Minuteman III ballistic missiles as well as a new missile that would be fielded after 2020. Air-to-surface weapons in this category include continued procurement of the Joint Air-to-Surface Standoff Missile, the Joint Direct Attack Munition, and the new Small Diameter Bomb.

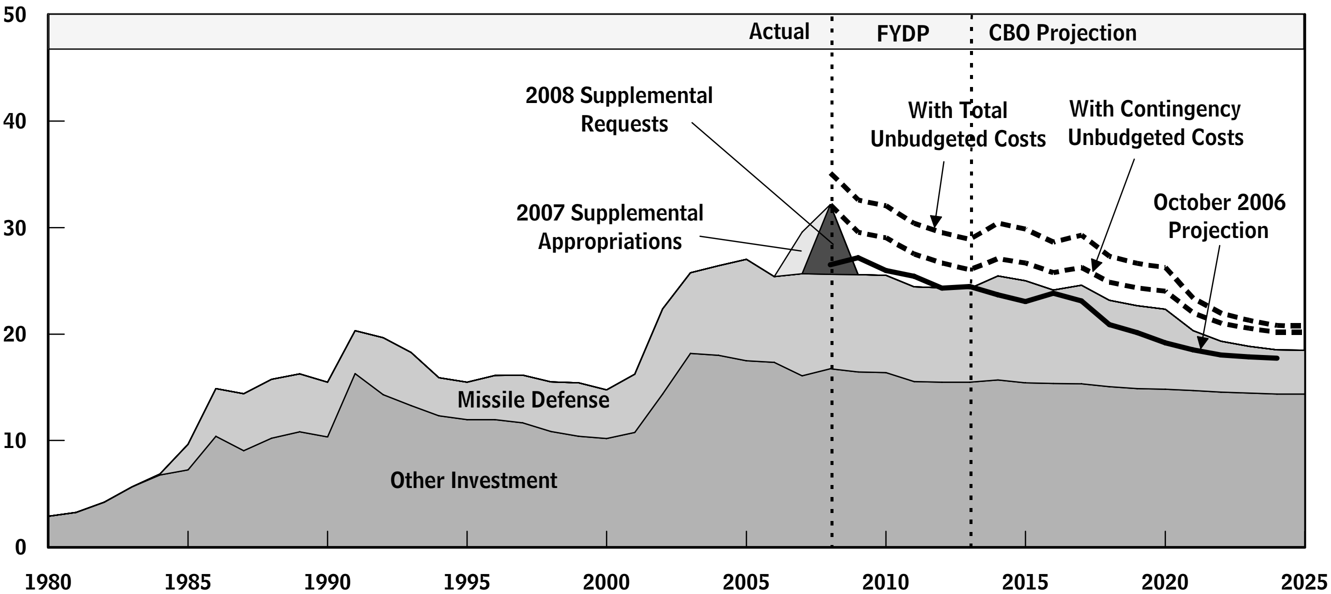
Missile Defense Systems. This category consists primarily of two systems. The Space Tracking and Surveillance System is a constellation of satellites in low-Earth orbit that would assist in tracking ballistic missiles and in discriminating between warheads from decoys and other debris associated with a ballistic missile's trajectory. The Airborne Laser (ABL) is designed to destroy ballistic missiles in their boost phase, the time after launch when the missile's boosters are still burning. The system consists of a high-power chemical laser and advanced beam steering optics installed aboard a Boeing 747 aircraft.

Space Systems. This category is predominantly made up of space-launch systems used to put satellites into orbit. (The satellites themselves are included in the categories that best match their intended function.) Nearly the entire funding in this category is for purchases of Evolved Expendable Launch Vehicle missions over the next two decades. CBO's projection assumes that the Air Force will purchase 73 launches over the projection period.

Figure 12.

Past and Projected Resources for Defense Agency Investment, Including Missile Defense

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

Changes Relative to CBO's Previous Projections. For 2014 through 2025, CBO's current projections of funding for Air Force investment are significantly lower than its previous projections for every year except 2018. Average investment funding over that period would be about $4.5 billion per year below CBO's previous estimate. Much of that decrease was due to changes in three major programs.

The F-35A Fighter. Peak production rates for the F-35A fighter would decrease from 110 per year to 80 per year. The final F-35A would be purchased in 2034, seven years later than in the previous plan. That change reduces procurement expenditures within the projection period by about $18 billion relative to CBO's previous projection, but increases procurement costs over the entire program by about $4 billion.

The E-10 Surveillance and Tracking Aircraft. Cancellation of the E-10 surveillance and tracking aircraft decreased projected funding for C4ISR by about $12 billion over the projection period. That net savings included the addition of funding to upgrade and extend the service lives of the existing fleets of E-8 joint surveillance and target attack radar system aircraft and E-3 airborne warning and control system aircraft that the E-10 would have replaced.

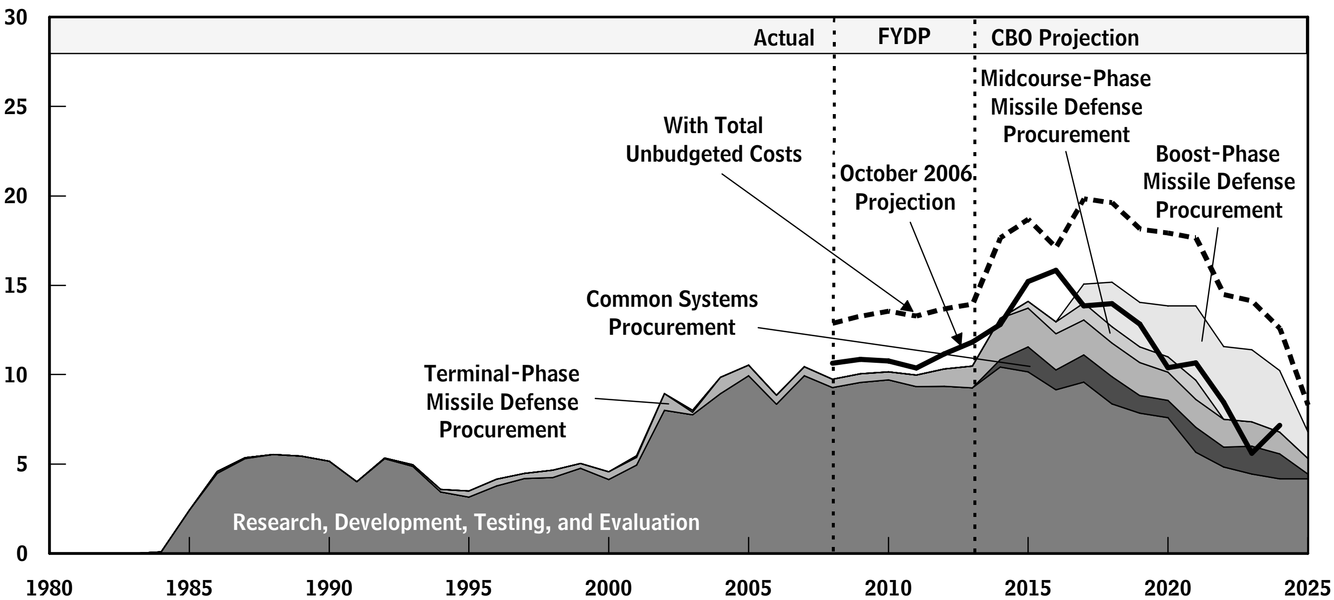
The Long-Range Strike Aircraft. The Air Force has decreased the capability of the long-range strike aircraft that it hopes to field around 2018. Consistent with language in the 2006 Quadrennial Defense Review, CBO had assumed in its 2006 projection that the new aircraft would have capabilities similar to the long-range B-2. Over the past year, however, the Air Force has developed plans for a medium bomber with a shorter range and smaller weapons load than the B-2. Developing and fielding that less capable aircraft would cost about $33 billion less over the projection period, CBO estimates.[45] To replace the intercontinental capability offered by today's bombers, the Air Force would need to develop another aircraft sometime in the future.

45. See Congressional Budget Office, *Alternatives for Long-Range Ground Attack Systems* (March 2006).

Figure 13.

Past and Projected Resources for Missile Defense Investment

(Billions of 2008 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

Defense Agency Investment, Including Missile Defenses

In addition to resources for the Departments of the Army, Navy, and Air Force, DoD's budget provides money for a variety of specialized agencies that perform advanced research, develop missile defenses, oversee special operations, and manage information systems. Excluding development of missile defenses—which is discussed in detail below—investment funding for those agencies averages about $16 billion per year in the 2008 FYDP and about $15 billion per year over the 2014–2025 period under CBO's projection of DoD's current plans (see Figure 12).

Missile Defenses. The President's 2008 budget request and the 2008 FYDP propose funding averaging $9.4 billion annually for the RTD&E of missile defense systems and about $700 million annually for procurement of terminal-phase defense programs (see Figure 13).[46] CBO based its projection of DoD's current plans for missile defenses on the Administration's policy statements as well as on the more-detailed plans developed by the Missile Defense Agency (MDA) and the services for executing the individual programs for which they are responsible.

The Administration has indicated that throughout the period of the FYDP, MDA will focus on researching and developing a broad range of technologies and potential systems. Decisions about which systems should proceed to procurement and operational deployment by one of the services will eventually be made on the basis of the results of those efforts. As with existing programs, CBO has included projected procurement costs in the investment budgets of the services that would operate them; in cases in which the end service has yet to be designated, CBO has assigned programs to services on the basis of the nature of the program. Thus, Figure 13 displays a combination of MDA and service funding for missile defense programs.

46. Ballistic missile defense programs are categorized by the portion of the incoming missile's trajectory that they target. Boost-phase defenses attempt to destroy hostile missiles before their warheads separate from their booster rockets. Midcourse-phase defenses attempt to destroy warheads after they separate from their boosters but before they reenter the Earth's atmosphere. Terminal-phase defenses attempt to destroy warheads after they have reentered the Earth's atmosphere and are relatively close to their intended targets.

Carrying out current plans would cause total investment costs for missile defenses to peak in 2018 at about $15 billion (excluding unbudgeted costs), CBO projects, and then decrease as systems finished the procurement phase and became operational. That peak occurs about two years later than that projected by CBO in October 2006 because of revised schedules in several major programs, as discussed below. If historical cost growth is taken into account, DoD's projected investment needs for missile defenses might be about $4 billion higher each year.

Midcourse-Phase Defenses. The Ground-Based Midcourse Defense (GMD) system comprises ground-based interceptors, sensors, and fire-control systems designed to intercept and destroy ballistic missiles during their midcourse phase of flight. In December 2005, MDA fielded the GMD Initial Defense Capability with eight interceptors at Fort Greely, Alaska, and two at Vandenberg Air Force Base in California.[47] That capability has since been expanded by adding more interceptors in a configuration referred to as the Limited Defensive Capability. As of May 2007, MDA had put into position a total of 18 interceptors, with a total of 24 emplacements planned by the end of 2007. In addition, the expanded capability includes land-based radar, radar on Navy Aegis cruisers and destroyers, and a large, sea-based radar. (The sea-based radar was delivered from its shipyard in Texas to Hawaii in January 2006 and has since undergone winter shakedown testing at its intended home base off the coast of Alaska.)

Current MDA plans call for deployment of additional midcourse missile defenses at a third site in Europe; negotiations are ongoing with Poland to place interceptors there and with the Czech Republic for placing a radar facility in that country. As part of this plan, MDA is developing a new, two-stage version of the current interceptor (the existing interceptor has three stages), with 10 of those new interceptors to be placed at the European site. Deployment of that expanded GMD system would be completed around 2013, according to current MDA plans.

In addition to the new two-stage interceptor, MDA is also developing the Kinetic Energy Interceptor (KEI). KEI was initially conceived as a mobile, boost-phase interceptor, but the most recent plans adjust the near-term development focus to a silo-based interceptor and defer the mobile capability until later. According to statements by MDA officials, "KEI will be a high-acceleration booster which would be the booster of choice for the midcourse program."[48] CBO has assumed that after 2013, MDA will replace the existing interceptors in the GMD system (except for the two-stage interceptors in Europe) with KEI interceptors, with purchase of the replacement KEI interceptors beginning in 2014.

Current Administration plans call for MDA to pay for deployment of the GMD system with RDT&E funds; CBO has followed that categorization, so GMD costs are included in the RDT&E portion of Figure 13.

Procurement by the Navy of missiles for the Aegis Sea-Based Ballistic Missile Defense (BMD) is included in the Midcourse Missile Defense category in Figure 13. Aegis BMD combines the ability of the SPY-1 radar and associated fire-control system to detect and track ballistic missiles of all ranges with the ability of the Standard Missile (SM) to engage missiles from short range through intermediate range in their midcourse phase of flight. Current DoD plans include the development of a new, larger version of the SM, designated as SM-3 Block II, to increase the effectiveness of the system against more difficult threats, including long-range ballistic missiles. MDA, in cooperation with Japan, is supporting the development of the SM-3 Block II with MDA RDT&E funds. CBO has assumed the Navy will procure this new version of the SM-3 missile at a level sufficient to perform BMD from 25 percent of the available vertical launch system tubes on Aegis-equipped ships. CBO projects that procurement of those missiles by the Navy would begin in 2015 and that costs would average about $900 million per year over the 2016–2021 period.

Under CBO's projection of DoD's current plans, the Defense Department would also develop and deploy in low-Earth orbit a constellation of space-based infrared

47. The Initial Defense Capability originally called for 16 interceptors at Fort Greely. On the recommendation of the Mission Readiness Task Force, commissioned in light of GMD test failures, four of those interceptors will be used for ground testing purposes. According to the Selected Acquisition Report for the Ballistic Missile Defense System (from December 31, 2005), delivery of four interceptors was delayed because of problems with production quality.

48. "KEI Rocket Motor Developers Pin Funding Hopes on FY-08 Flight Test," *Inside Missile Defense* (June 20, 2007), p. 1.

sensor satellites. According to DoD, those satellites would have the capability to detect and track missiles and their warheads from shortly after their launch to their reentry into the atmosphere and to relay those tracking data to interceptors in flight, thereby enabling the interceptors to identify and hit the warheads. MDA calls that constellation the Space Tracking and Surveillance System and currently plans to launch two so-called test-bed satellites in 2008. Although DoD's earlier plans envisioned a constellation comprising 24 to 27 satellites, its current plans call for launching four satellites as the initial capability, with at least two and potentially more satellites being added subsequently. MDA's current plans call for first launch of the initial four-satellite constellation in 2016, a two-year delay from last year's plans. In CBO's projection of those plans, a second set of satellites launched beginning in 2019 would increase the constellation to a total of nine satellites. CBO estimates a total procurement cost (including launch costs) of about $7.5 billion for the two sets of satellites. Assuming a six-year lifetime, replacement of the original satellites would start in 2022 and cost about $3.5 billion over the 2022–2025 period, CBO estimates. Some additional costs would occur beyond 2025.

Boost-Phase Defenses. To defend against ballistic missiles during their boost phase, MDA is developing the Airborne Laser, which will consist of a high-energy chemical laser carried on a modified Boeing 747-400 aircraft. In 2004, MDA procured one aircraft that is currently being used for integration tests with the laser and targeting system in preparation for a "shoot-down" test scheduled for 2009. In a "knowledge-based" strategy, MDA has deferred plans for procurement of a second ABL aircraft, contingent on the outcome of the 2009 test. (The 2008 FYDP includes a portion of the funding needed to purchase a second aircraft and laser.) CBO assumed that the second aircraft would be procured in 2013 and, consistent with previous plans formulated by both MDA and the Air Force, the Air Force would begin to procure an additional seven operational aircraft starting in 2018.

As mentioned earlier, MDA is pursuing development of the KEI. According to Congressional testimony by the director of MDA, the KEI program began as an alternative to the ABL for boost-phase defense based on a recommendation by the Defense Science Board.[49] In the current budget submission documentation, MDA has stated that the near-term focus for KEI is as a silo-based, midcourse interceptor. However, the plan also calls for retaining a path to the originally conceived mobile boost-phase capability. In some public statements, MDA officials have indicated that, depending on the progress in development, eventually only one of the boost-phase programs, ABL or KEI, may be pursued.[50] For the purposes of this projection, CBO has assumed that both ABL and a boost-phase version of KEI will be fully developed and fielded; actual costs could be reduced if MDA should decide to terminate one of the programs. CBO has assumed that development of mobile capability for KEI would begin in 2014 and that procurement of mobile interceptors would begin in 2017.

MDA has established a Space Test Bed to conduct research to support potential deployment of boost-phase intercept defenses in space. In the 2008 FYDP, MDA has planned to spend a total of around $300 million for this research, about 40 percent less than was planned in the 2007 FYDP. CBO's projection of DoD's current plans incorporates the assumption that an operational space-based interceptor system will be developed and would be available for initial fielding in about 2023.[51] That fielding date is several years later than CBO projected in October 2006 because of the slower ramp-up of funding during the FYDP period.

Terminal-Phase Defenses. CBO's projection of investment in missile defenses also includes funding for systems that are designed to hit incoming warheads during the terminal phase of their flight. Such systems include the PAC-3 short-range missile defense system, the Medium Extended Air Defense System, and the Terminal High-Altitude Area Defense system, which are all mobile ground-based systems. In addition, MDA has also begun development of a sea-based terminal system.

The PAC-3, already in operation by the Army, will eventually be replaced by the Medium Extended Air Defense System, which is an international joint venture with Italy and Germany. The Terminal High-Altitude Area Defense

49. Statement of Lt. Gen. Henry Obering, Director, Missile Defense Agency, before the Strategic Forces Subcommittee of the House Armed Services Committee, March 9, 2006.

50. See, for example, Jeremy Singer, "MDA Officials Map Out Test Milestones for Airborne Laser," *Space News* (March 13, 2006), p. 12.

51. CBO's estimates of costs for a space-based boost-phase intercept system are based on the analysis in Congressional Budget Office, *Alternatives for Boost-Phase Missile Defense* (July 2004).

system is still being developed by MDA; however, CBO's projections incorporate the assumption that as the system's operational deployment proceeds beyond 2013, its funding will move from MDA to the Army. According to CBO's projection of DoD's current plans, funding for terminal defense systems averages about $2 billion a year through 2025.

The sea-based terminal program would add a terminal-phase capability to the existing Aegis BMD system and is divided into a near-term and far-term capability. The near-term capability uses software upgrades to the existing BMD software and a modified version of the SM-2 Block IV interceptor. For the far-term capability, MDA is currently analyzing missile requirements, which may result in the development of a new interceptor. For its projection, CBO has assumed that a new interceptor would be developed and that the Navy would begin procuring those missiles in 2014.