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CBO

PAPER

Long-Term Implications of the Fiscal Year 2009 Future Years Defense Program

January 2009

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 2009 dollars of total obligational authority.

The methodology used by the Congressional Budget Office for this update is based on that of the January 2003 study, *The Long-Term Implications of Current Defense Plans.* Readers may refer to that publication for a 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 defense activities (subfunction 050).

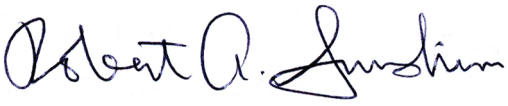
On the cover, clockwise from the top left: A U.S. Air Force F-16 Fighting Falcon aircraft is refueled by a KC-135 Stratotanker en route from Kunsan Air Base, Korea, to Eielson Air Force Base, Alaska, January 2008, photo by Staff Sergeant Eric T. Sheler; U.S. Navy personnel aboard the USS *Harry S Truman* in the Persian Gulf, January 2008, photo by Petty Officer 3rd Class Ricardo J. Reyes; a member of the U.S. Marine Corps during live-fire training at the Udairi Range Complex, Kuwait, January 2008, photo by Sergeant Bryson K. Jones; flight operations aboard the *Harry S Truman,* January 2008, photo by Petty Officer 2nd Class Felecito Rustique; soldiers board a U.S. Army CH-47 Chinook helicopter in Bamyan Province, Afghanistan, November 2008, photo by Specialist Mary L. Gonzalez.

Preface

What amount of budgetary resources might be needed in the long term to carry out the Bush Administration's current plans for defense? This Congressional Budget Office (CBO) paper—prepared at the request of the Chairman and the Ranking Member of the Senate Budget Committee—addresses that question. The paper updates the resource projections contained in CBO's December 2007 paper *Long-Term Implications of Current Defense Plans: Summary Update for Fiscal Year 2008,* reflecting changes that the Administration made to its defense plans in preparing the President's budget request for fiscal year 2009. 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, Elizabeth Bass, Michael Bennett, Kevin Eveker, Daniel Frisk, Eric J. Labs, Frances Lussier, and Allison Percy of the National Security Division contributed to the analysis. Raymond Hall, David Newman, Dawn Sauter Regan, Matthew Schmit, 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.

Kate Kelly edited the paper. Cindy Cleveland produced drafts of the manuscript. Maureen Costantino designed the cover and prepared the report for publication with assistance from Allan Keaton and Leah Mazade. Christine Bogusz proofread the paper. Lenny Skutnik printed the initial copies, Linda Schimmel handled the print distribution, and Simone Thomas prepared the electronic versions for CBO's Web site.



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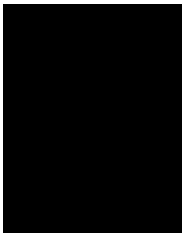

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Long-Term Implications of the Fiscal Year 2009 Future Years Defense Program

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 the nation's armed forces and the budgetary resources needed to support them. Over the past six years, the Congressional Budget Office (CBO) has published a series of reports about its projections of the resources that might be needed over the long term to carry out the Bush Administration's plans as expressed in the Future Years Defense Program (FYDP). The FYDP is prepared by the Department of Defense (DoD) for each fiscal year and submitted to the Congress as part of the President's budget request.

This paper, like CBO's previous reports, provides long-term projections (in this case, through 2026) of the costs of DoD's current plans—that is, the plans contained in the 2009 FYDP, which specifically addresses fiscal years 2009 through 2013.[1] The 2009 FYDP was transmitted in April 2008, and it reflects changes to the department's programs and priorities since February 2007. The 2009 FYDP and CBO's projections of its long-term implications exclude potential future supplemental or emergency appropriations; CBO's projections include additional appropriations that have already been enacted.[2]

Overall, the 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 occurred at the peak of the buildup in the mid-1980s. Four factors in particular account for the projected high level of defense spending under the FYDP:

- Plans to purchase more new military equipment over the next several years and then to sustain that rate 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;
- Plans to increase the size of military forces and the growing costs of pay and benefits for DoD's military and civilian personnel; and

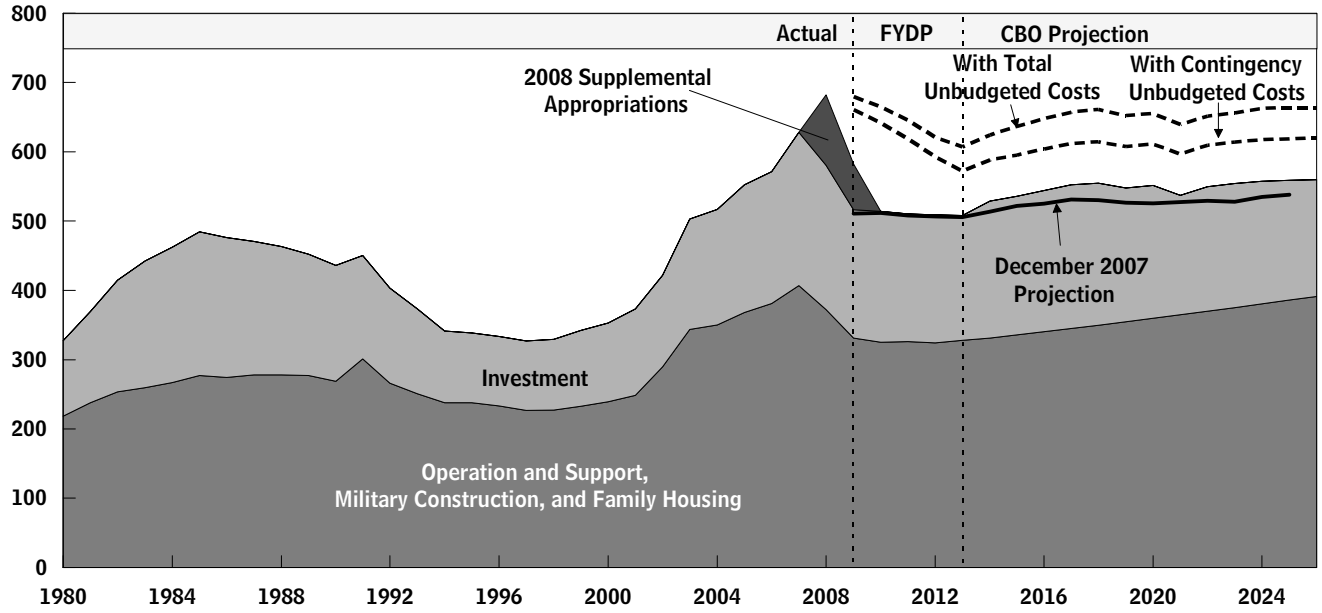
1. The first of those Congressional Budget Office reports, *The Long-Term Implications of Current Defense Plans,* appeared in January 2003. Each year since then, CBO has published summary and detailed updates (in briefing format); all are available online at www.cbo.gov. The FYDP is a database that comprises 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 needed for the next five or six years, based on the department's current plans for all of its programs).

2. For 2008, four separate laws provided supplemental or emergency funding, most but not all for purposes related to the wars in Iraq and Afghanistan. The first three, Public Laws 110-92, 110-116, and 110-161, added $87 billion in 2008 dollars ($88 billion in constant 2009 dollars) to DoD's budget and were passed in time to be included in the 2009 FYDP. The fourth, P.L. 110-252, added $100 billion in 2008 dollars ($102 billion in constant 2009 dollars) to DoD's budget in 2008 and $66 billion to DoD's budget in 2009. P.L. 110-252 was enacted after publication of the FYDP. Of the total of $187 billion in 2008 dollars ($190 billion in constant 2009 dollars) in additional funds for DoD in 2008, $180 billion in 2008 dollars ($183 billion in constant 2009 dollars) was for military operations in Iraq and Afghanistan and other war-related activities, and $7 billion (in both 2008 and constant 2009 dollars) was for non-war-related activities.

Figure 1.

Past and Projected Resources for Defense

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

- Plans to meet the rising costs of operation and maintenance (O&M) for aging equipment as well as for newer, more complex equipment.

In CBO's projection of DoD's current plans, defense resources average about $549 billion annually (in 2009 dollars) from 2014 to 2026, or about 6 percent more than the $517 billion in total obligational authority (TOA) requested by the Administration and the $515 billion in TOA provided by the Congress for 2009 (see Figure 1 and Table 1).[3,4] Consideration of potential unbudgeted costs has the effect of increasing the projection of long-term demand for defense funding to an annual average of about $652 billion through 2026, or 26 percent more than the funding provided for 2009 (and the Bush Administration's 2009 request).

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 military operations overseas as part of the war on terrorism (also called contingency operations), albeit

3. All FYDP funding is calculated as total obligational authority, and 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.

4. A regular appropriations act for DoD for fiscal year 2009 has already become law (P.L. 110-329); it provides $515 billion in TOA. This report is based on the fiscal year 2009 FYDP, which incorporates the President's budget request for DoD for $517 billion, and not on those appropriations. Although DoD will update its plans to reflect Congressional actions, those changes will not be visible in its plans until submission of the 2010 FYDP. P.L. 110-329 includes $102 billion for procurement; $80 billion for research, development, testing, and evaluation; $125 billion for military personnel; $179 billion for operation and maintenance; and $28 billion in other funding. Those amounts do not add to $515 billion because of rounding.

Table 1.

Past and Projected Resources for Defense in Selected Years

(Billions of 2009 dollars)

	Actual	FYDP		Projected		Average	
	2008	2009	2013	2020	2026	2009–2013	2014–2026
Procurement	130	106	117	133	113	114	129
Research, Development, Testing, and Evaluation	79	80	63	59	55	71	59
Military Personnel	120	125	133	148	162	129	148
Operation and Maintenance	231	182	183	202	218	181	202
Other	21	24	11	10	11	17	10
Additional Supplemental and Emergency Funding	102 [a]	66	n.a.	n.a.	n.a.	n.a.	n.a.
Total	**683**	**582**	**508**	**552**	**560**	**512**	**549**
Including Total Unbudgeted Costs	**n.a.**	**680**	**607**	**655**	**664**	**631**	**652**

Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; n.a. = not applicable.

a. This figure excludes $88 billion in other supplemental and emergency funding allocated among the appropriation titles listed above.

at reduced levels relative to current operations in Iraq and Afghanistan.[5]

Costs for operations in Iraq, Afghanistan, and for other purposes related to the war on terrorism have been rising. In 2007, appropriations for those activities totaled $170 billion in 2007 dollars ($176 billion in constant 2009 dollars), or 28 percent of total funding for the Department of Defense. In 2008, the appropriations rose to $187 billion in 2008 dollars ($190 billion in constant 2009 dollars), or 28 percent of defense funding that year. (In both years, some of the supplemental and emergency funding was for purposes unrelated to military operations overseas: in 2007, $5 billion; in 2008, $7 billion.)

Under DoD's current plans and CBO's projections of them, defense resources would steadily decline in relation to the size of the economy. The share of the U.S. gross domestic product (GDP) allocated to defense spending declined from an annual average of 5.6 percent in the 1980s to 3.8 percent in the 1990s.[6] If DoD's current plans were carried out, defense spending would drop to 3.1 percent of GDP by 2013 and to 2.5 percent of GDP by 2026, excluding unbudgeted costs (see Figure 2).[7]

CBO has prepared two alternatives to its projections for DoD's plans: an "evolutionary" scenario (in which DoD would forgo or scale back acquisition of the new, advanced capabilities that the department associates with military transformation and instead pursue evolutionary upgrades to its current capabilities) and a "transformational" scenario (in which DoD would increase its emphasis on acquiring the advanced capabilities it associates with military transformation). Both are described in the appendix to this report.

5. CBO's estimates of future unbudgeted costs for contingencies are based on the funding provided by the Congress for operations in Iraq and Afghanistan in 2008, and the alternative path presented in *The Budget and Economic Outlook: An Update* (September 2008), pp. 17–21. Although CBO assumes that the size of U.S. forces in Iraq and Afghanistan will be reduced to 75,000 by 2013 in this alternative path, estimates of the associated reduction in future contingency costs could be optimistic (that is, the unbudgeted contingency costs displayed might be too low) because DoD's requests for funding for operations in Iraq and Afghanistan have been growing and because significant needs might arise in other places. Similarly, it is possible that CBO's estimates of future contingency costs are pessimistic, and policy changes might reduce the demand for contingency funding.CBO's projections of unbudgeted costs indicate the magnitude of the changes that would need to be made to DoD's plans in order to accommodate historical trends in cost growth, and to pay for ongoing military operations. Those changes could include a combination of several actions, such as requesting additional appropriations or restructuring acquisition programs.

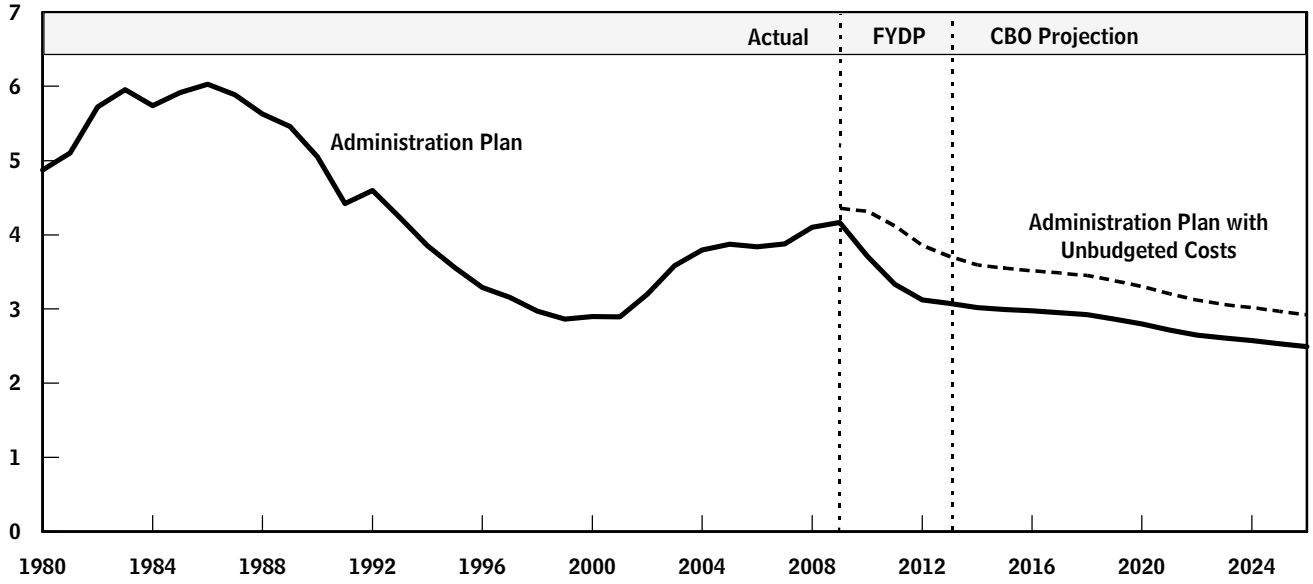
6. Defense spending here is measured by the actual disbursements (outlays) from the Treasury that arise from funding for defense programs.

7. CBO's estimate of future GDP growth is based on continuing the trend series of GDP growth presented in *The Budget and Economic Outlook: An Update* (September 2008).

Figure 2.

Defense Resources as a Percentage of Gross Domestic Product

(Percent)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

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

The 2009 FYDP envisions that funding for operation and support (O&S)—running units, maintaining equipment, and providing pay and benefits—will grow from $307 billion in 2009 (excluding supplemental and emergency funding) to $317 billion in 2013 (see Figure 3). (Those estimates translate into an average annual rate of real growth of less than one percent during the five-year period.) CBO projects that, over the longer term, carrying out current plans would push O&S funding to $380 billion in 2026 (again, starting from 2009, a 1.3 percent pace of annual real growth); if unbudgeted costs are included, that figure would rise by about 16 percent to $443 billion.

The FYDP envisions that total funding for military construction and family housing will decrease from $24 billion in 2009 to $11 billion in 2013. That decline reflects a gradual reduction in funding to implement the 2005 round of the Base Realignment and Closure (or BRAC) process and a decline in DoD's budget for family housing resulting from privatization of DoD's housing facilities. Under CBO's projections, funding for military construction and family housing would remain roughly constant from 2014 to 2026 at $10 billion to $11 billion a year.

Projections for Operation and Support

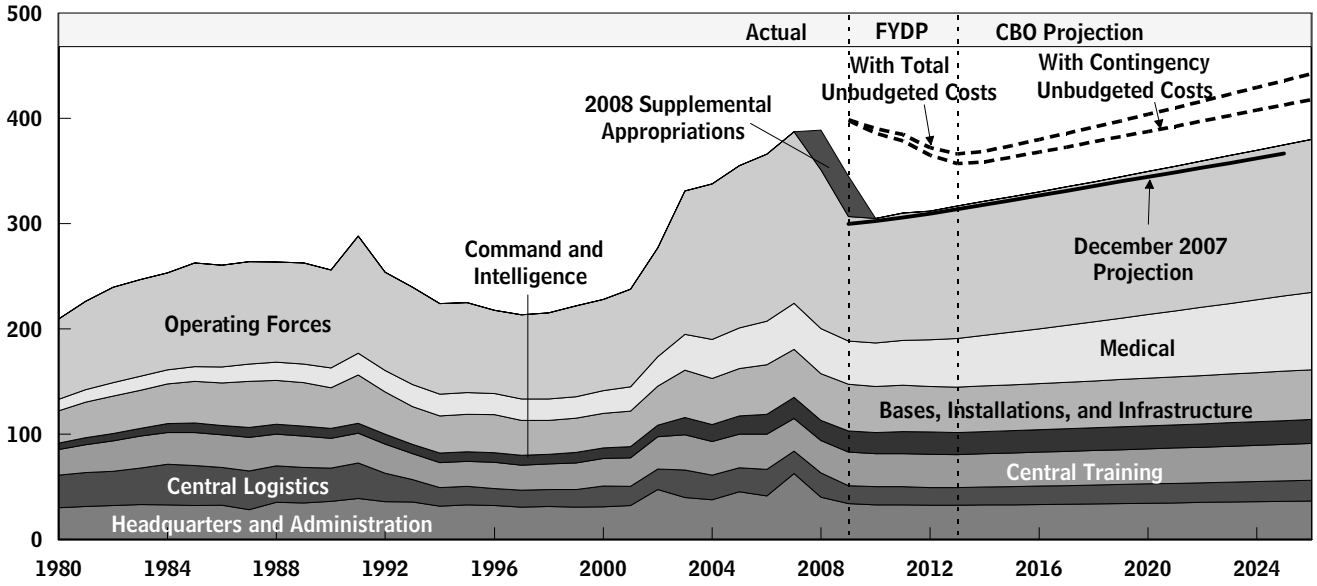
Appropriations for O&S, defined as the sum of appropriations for military personnel, operation and maintenance, and various revolving funds, account for about 60 percent of defense funding (see Figure 4).[8] The share of overall defense funding devoted to personnel costs declined during the early 1980s, when more emphasis was placed on investment (for developing, testing, and purchasing weapon systems and other equipment); it declined again during the 1990s, when the size of U.S. forces was reduced. CBO projects that beyond the period

8. The revolving funds generate revenues from fees charged to the military services and defense agencies and also receive direct appropriations. Currently, the list includes the National Defense Sealift Fund, the Defense-Wide Working Capital Fund, the Defense Commissary Agency, and each military department's fund for working capital.

Figure 3.

Past and Projected Resources for Operation and Support

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

covered by the current FYDP, funding for military personnel as a share of all defense funding would increase, for reasons that are discussed later.

As a share of defense funding, O&M appropriations also declined in the early 1980s; however, CBO projects that O&M appropriations, too, would rise after 2013. From 1980 to 2001, O&M costs grew by about $2,100 per active-duty service member per year (see Figure 5). Beginning in 2013, CBO projects that O&M (excluding war costs) would resume growing at about that historical rate, but starting approximately $9,700 above the trend line.

In CBO's estimation, most of the growth projected for O&S funding, if unbudgeted costs are excluded, would stem from personnel-related increases, such as rising real wages and costs for medical benefits. For its projections, CBO has broken down O&S funding by functional category (see Figure 3). Funding for each category derives from the O&M, military personnel, and, in some cases, revolving-fund appropriations; those resources also can be associated with the three military departments—the Army, the Navy (including the Marine Corps), and the Air Force. CBO has adopted seven functional categories that are based on the force and infrastructure codes used by DoD's program analysts:[9]

- *Medical*—medical personnel, military medical treatment facilities (MTFs), purchased care, pharmaceuticals, and medical accrual charges;[10]
- *Operating forces*—military and support units assigned to combatant commands;

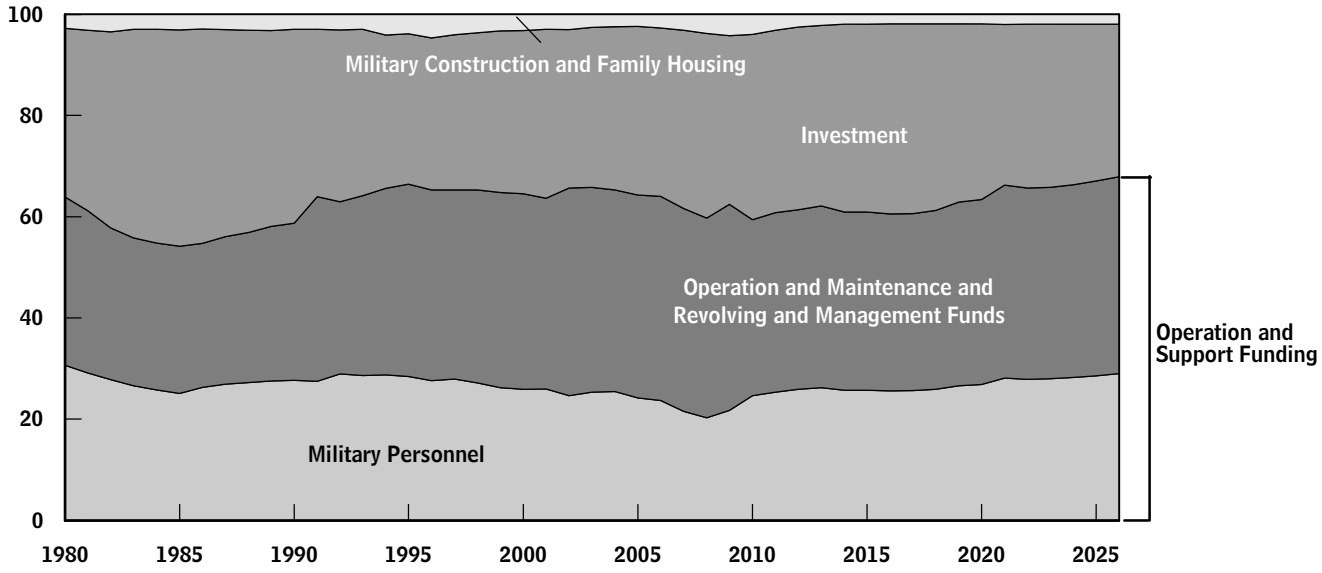
9. CBO adopted the category definitions used by the Institute for Defense Analyses, *DoD Force Infrastructure Categories: A FYDP-Based Conceptual Model of Department of Defense Programs and Resources* (Alexandria, Va.: Institute for Defense Analyses, 2002).

10. Medical accrual charges are intragovernmental payments—payments from one governmental account to another—representing future medical costs that current service members (and their eligible family members) will incur to pay for care from civilian providers under the military's TRICARE For Life program and at MTFs once they retire from the military and 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.

Figure 4.

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

(Percent)



Source: Congressional Budget Office.

- *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.

Increases in military and civilian pay would account for the entire growth of funding (excluding unbudgeted costs) in CBO's projections for all O&S categories except medical and operating forces. DoD planned to raise pay for military personnel at a nominal rate of 3.4 percent each year from 2009 to 2013.[11] For civilian employees DoD planned to increase pay at a nominal rate of 2.9 percent in 2009 and 2.3 percent annually from 2010 to 2013. After that, CBO's projections incorporate the assumption that military and civilian pay would rise at the same rate and match the employment cost index (ECI) for wages and salaries. (The ECI is a standard measure of compensation in the civilian economy. In 27 of the past 33 years, civilian and military personnel have received the same percentage pay increases.[12]) If all of those increases occurred, military and civilian pay would grow in real terms by 27 percent and 22 percent, respectively, between 2009 and 2026—because wages (as measured by the ECI) are projected to grow more rapidly than prices (as measured by the GDP deflator).[13]

11. Department of Defense, *Inflation Guidance—FY 2009 President's Budget* (January 23, 2008), www.ncca.navy.mil/services/OSD_FY09_inflation_guidance.pdf. P.L. 110-417 set the military pay raise at 3.9 percent in 2009. Section 142 of P.L. 110-329 set the federal civilian pay raise at the same percentage.

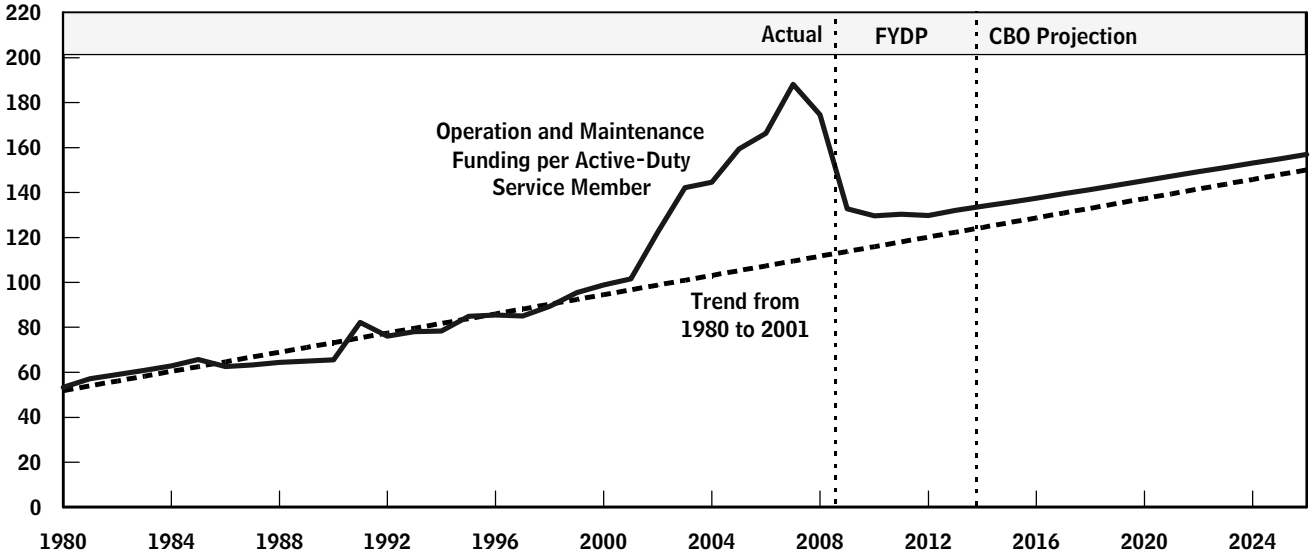
12. In its calculation of unbudgeted O&S costs, CBO assumed that civilian pay raises will achieve parity with military pay raises during the FYDP period (2009 to 2013).

13. The ECI grew more rapidly than the GDP deflator (an index of overall prices) each year from 1981 to 2008; CBO projects that pattern will continue between 2009 and 2026 and that growth of the ECI will exceed growth of the GDP deflator by an average of 1.4 percentage points per year.

Figure 5.

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

(Thousands of 2009 dollars)



Source: Congressional Budget Office.

Notes: FYDP = Future Years Defense Program.

Funding for the period spanning 2002 to 2008 includes operations in Iraq and Afghanistan.

Funding for Medical Services. CBO estimates that DoD's projections in the FYDP would translate into $5.0 billion in real growth for medical funding between 2009 and 2013, from $41.1 billion to $46.1 billion. Under current plans, DoD's medical funding will grow by $73.5 billion by 2026, CBO estimates, for a real increase of $32.4 billion, or 79 percent, compared with the 2009 amount. Medical funding accounts for more than one-third of the growth projected for O&S funding between 2009 and 2026.

Pay increases for uniformed medical personnel account for only 3 percent of the overall medical O&S growth that CBO projects between 2009 and 2026. Various other expenses—most notably accrual charges for TRICARE For Life (TFL) and the costs of pharmaceuticals and purchased care and contracts—will be more important (see Figure 6).[14] Accrual payments make up about 44 percent of the projected increase in medical funding, growing at a long-run nominal rate of 6.25 percent a year after 2013.[15] CBO estimates that accrual charges will increase by 137 percent in real terms between 2009 and 2026.

DoD anticipates that pharmaceutical funding per capita will rise by about 18 percent in real terms during the period encompassed by the FYDP. CBO projects nominal

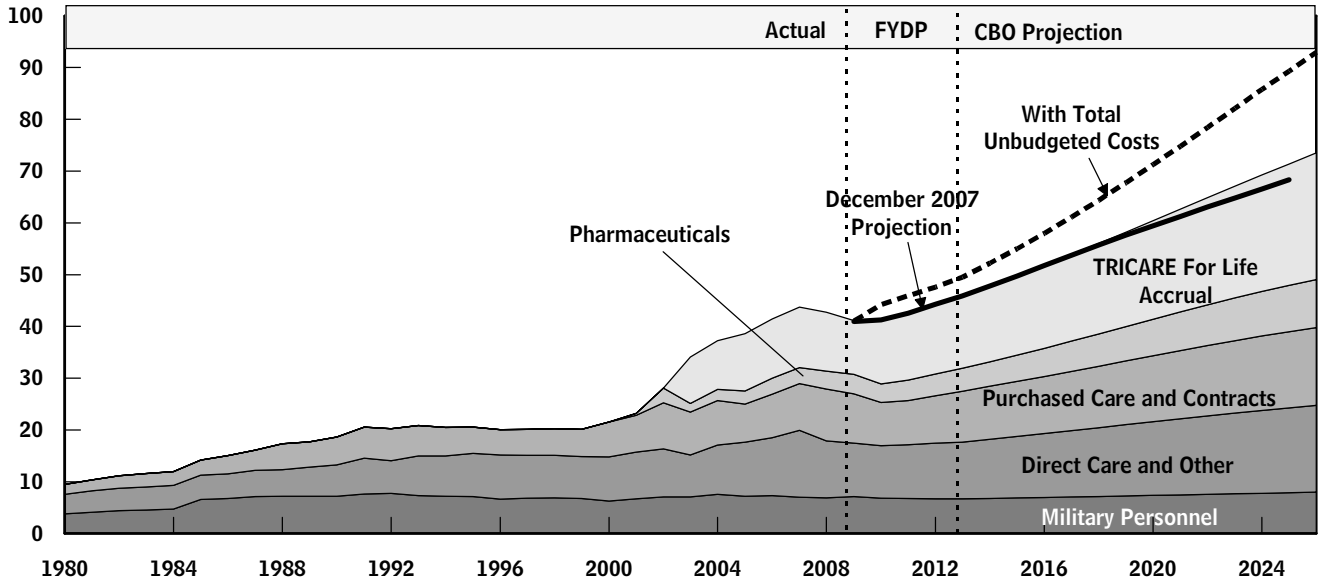
14. Pharmaceuticals include those dispensed by military MTFs, the military's retail pharmacy network, nonnetwork retail pharmacies, DoD's mail-order pharmacies, and private-sector contractors under TRICARE. Purchased care and contracts include managed care support contracts, various other types of purchased care, and supplemental care for active-duty personnel. In the past, that category included pharmaceuticals, but after 2001, DoD began accounting for pharmaceuticals separately in the FYDP. TRICARE is the general term for the military health care system. TRICARE Prime is the health maintenance organization that DoD operates on behalf of its beneficiaries and that encompasses care delivered at military MTFs 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 unenrolled beneficiaries who receive care from civilian providers.

15. 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 TFL, discussed later in more detail.

Figure 6.

Past and Projected Resources for the Military Medical System

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

growth of 9 percent in 2014 in per capita pharmaceutical costs, a pace that, by 2026, slows to about 6 percent per year.[16]

For a variety of reasons, including proposed increases for cost sharing among beneficiaries, DoD anticipates funding for purchased care to change at nominal annual rates that vary widely, from a decrease of 11 percent to an increase of 11 percent per capita each year. Similarly, DoD projects that funding for direct care in MTFs will change at rates that vary from a decrease of 1 percent to an increase of 6 percent per capita each year. Overall, DoD anticipates a real increase of 6 percent in funding for direct care and a real increase of 3 percent in funding for purchased care from 2009 through 2013. CBO projects that, beginning in 2013, per capita resources for those two categories would grow at the same rate as hospital care and physicians' and clinical services in the rest of the economy. As a result, CBO estimates, per capita funding for direct care and purchased care would grow at a nominal rate of slightly more than 6 percent, beginning in 2014, and taper off to less than 5 percent per year by 2026. Pay for uniformed medical personnel is projected to follow the same trend as other military personnel costs in DoD's budget. Excluding unbudgeted costs, those projections suggest that between 2009 and 2026, DoD's total funding for military medical personnel would rise by 12 percent, that funding for pharmaceuticals would increase by 147 percent, that funding for direct care would rise by 62 percent, and that funds allocated to purchased care and contracts would rise by 57 percent in real terms.

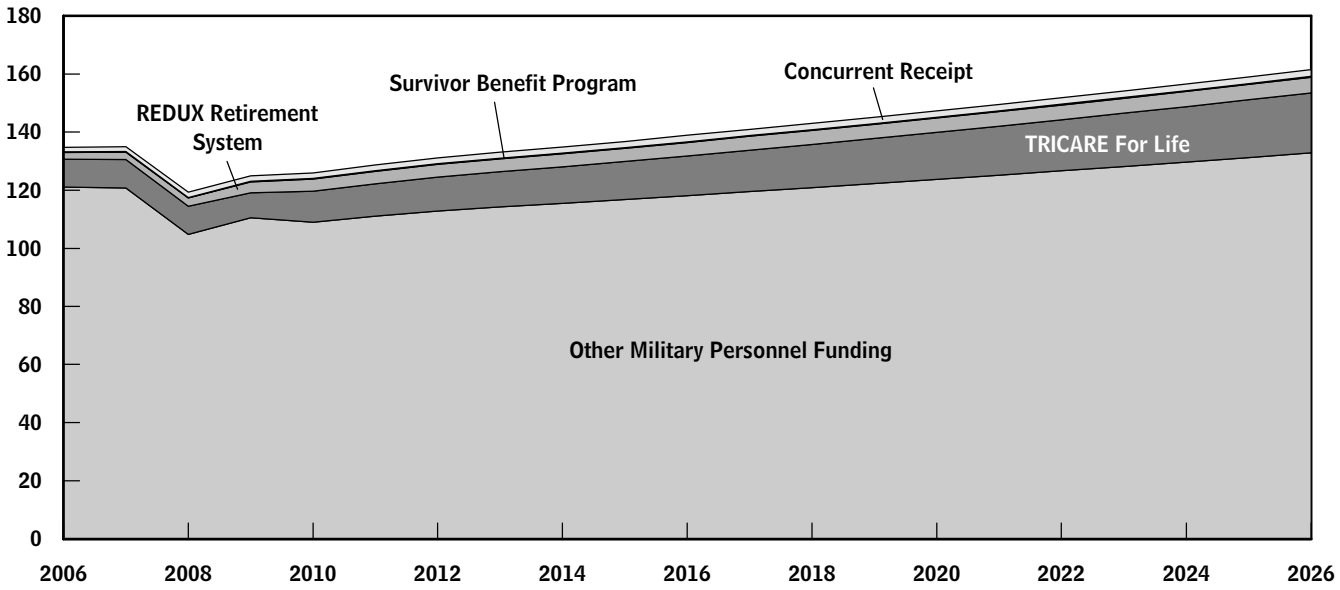
Funding for Operating Forces. The largest category of O&S funding is for operating forces. CBO projects that, excluding unbudgeted costs, annual costs in that category would rise from $126 billion in 2013 to $145 billion in 2026. About $13 billion of that growth would be in pay increases; the other $6 billion in growth has three causes. First, per capita O&M costs for active-duty members of the ground forces in the Army and the Marine Corps (along with the costs of the Army's aviation programs)

16. CBO derived its estimates for the growth of funding for pharmaceuticals from "National Health Expenditure Projections," www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2007.pdf, published by the Centers for Medicare and Medicaid Services. Those projections extend only to 2017, and CBO assumed that growth would slow after that date, eventually reaching a rate in 2032 that is 1 percentage point higher than the growth of per capita GDP.

Figure 7.

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

(Billions of 2009 dollars)



Source: Congressional Budget Office.

have been rising; CBO expects that trend to continue over the long term. (That cost growth is also reflected in total O&M costs per active-duty service member.) Second, as weapon systems age, the cost of operating and maintaining them will increase.[17] 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 incorporate the latter two effects.

New or Enhanced Benefits That Contribute to Growth in Military Personnel Funding. Since 1999, policymakers have provided new or improved retirement and health care benefits for military retirees and their families that are funded largely on an accrual basis.[18] Those benefits have added several billion dollars to military personnel costs each year, and those expenses are expected to continue to grow (see Figure 7). The costliest new benefits arise from a variety of sources: the repeal of the REDUX retirement system, the establishment of TFL, the elimination of the Social Security offset for the military's Survivor Benefit Plan, changes in the rules regarding concurrent receipt of military retirement pay and veterans' disability compensation, and provisions for earlier receipt of retirement pay by some reservists. As a share of total military personnel funding, the benefits' accrual charges and direct costs are projected to account for 12 percent in 2009 and to grow to 18 percent by 2026. CBO estimates that during the period from 2009 to 2026, the growth of accrual and direct costs for those new benefits will account for 38 percent of the total growth of military personnel funding. Without those costs, the military's personnel budget would be $133 billion in 2026, in CBO's estimation, or $29 billion (or 18 percent) less than the projected budget that includes those costs.

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

18. 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).

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.[19] (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 created the REDUX retirement system, which applied to all personnel who entered military service on or after August 1, 1986. 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 provided partial insulation from inflation rather than the full protection offered by the high-three system. 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 at age 62 so that the retiree would receive the same payment in that year that would have been made under the more generous high-three system. After the retiree passed age 62 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 (NDAA, P.L. 106-65) gave military personnel a choice between the high-three retirement system and an enhanced REDUX retirement system. 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 the Career Status Bonus, a lump-sum $30,000 payment made to the service member in the 15th year of service. Either choice would increase DoD's retirement liability—the former as a result of the higher multiplier and COLA, the latter as a result of the 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 $1.9 billion to military personnel funding in 2009; in 2026, those costs will rise to $2.4 billion.

TRICARE For Life. The introduction of this benefit with the enactment of the NDAA in 2000 expanded health care coverage of Medicare-eligible military retirees and their families. Before TFL, retirees and their families lost access to the civilian portion of their TRICARE benefits once they became eligible for Medicare, although they retained the right to obtain care at MTFs (so long as there was space available) and access to free prescription drugs dispensed at MTF pharmacies. After 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 Medicare and TRICARE, Medicare pays the portion of the service's cost allowed under its rules, and TRICARE then pays most, or in some cases all, of the remaining Medicare deductibles and copayments. When 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. Those beneficiaries also may pay modest copayments to use TRICARE benefits 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.[20] The independent Board of Actuaries for the fund, which oversees its

19. 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.

20. Elsewhere in this report, CBO groups the TFL accrual charges paid from the military personnel appropriation and consolidates them in the medical category to show the full costs of current and future medical benefits. For this portion of the analysis, however, CBO considers 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.

finances, has estimated that beyond the FYDP those charges will grow at a nominal rate of 6.25 percent. CBO has adopted that estimate. However, in estimating the costs that have been added since 2002, 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 $8.5 billion in 2009 to $20.6 billion in 2026.

Elimination of the Social Security Offset for the Survivor Benefit Plan. Military retirees can elect to pay a premium so a surviving spouse continues to receive a portion of the service member's retirement pay. In the past, once a 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 was phased out by April 1, 2008, as enacted in the NDAA for fiscal year 2005 (P.L. 108-375, section 644). According to projections from DoD's Office of the Actuary, the accrual charges needed to cover the enhanced benefit from eliminating the offset will add about $200 million to military personnel funding in 2009 and about $300 million in 2026.

Changes in the Rules Regarding Concurrent Receipt. Until recently, military retirement pay had to be reduced dollar for dollar by the amount of disability compensation 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 NDAA for fiscal year 2003 (P.L. 107-314, section 636, as amended by section 642 of the 2004 NDAA, P.L. 108-136) created a new benefit, called combat-related special compensation, which in effect exempted certain seriously disabled retirees from the offset requirement. That benefit was expanded in the NDAA for fiscal year 2008 (P.L. 110-181, section 641) to compensate some service members who retired from the military before they completed 20 years of service. The 2004 NDAA (P.L. 108-136, section 641) introduced concurrent receipt for retirees who were at least 50 percent disabled, including those whose disabilities were not related to combat. For all but the most severely disabled retirees, however, the amount of concurrent receipt is being phased in from 2004 to 2013. DoD's Office of the Actuary projects that those new benefits will add $3.7 billion to defense accrual charges in 2009; in 2026, those benefits will add $5.4 billion.

Early Receipt of Retirement Pay by Certain Reservists. The NDAA for 2008 contains a modification to the retirement benefit that applies to some reservists who have served in Iraq, Afghanistan, and elsewhere. Regular active-duty military personnel qualify for full retirement benefits after 20 years of service, regardless of age. Members of the reserve components also meet the criteria for retirement after 20 years of qualifying service but until recently have not been entitled to begin receiving retirement pay or health care benefits until age 60. Section 647 of the NDAA for 2008 lowered the age at which certain reservists can draw retirement pay. For every 90 days within a fiscal year a reservist is on active duty or performs active service, the traditional eligibility age is reduced by three months. The period of service need not be continuous, but credit is given only in 90-day increments. So a reservist who serves a six-month tour (180 days) may draw retirement pay at age 59½ instead of waiting until age 60. Likewise, if the tour lasts 200 days, the reservist would still draw retirement pay at 59½. That provision applies only to reservists who are activated under the statutory authorities specified in the NDAA and to service that occurred after its enactment on January 28, 2008. No reservist may receive retirement payments before age 50; the earliest age of eligibility for medical benefits remains at 60. CBO estimates that this change will add about $300 million to the department's retirement accrual costs in 2009; by 2026, those costs will have risen to approximately $500 million.

Projections for Military Construction and Family Housing

Appropriations for military construction pay for the planning, design, construction, and major restoration of military facilities and for the costs associated with the BRAC process (for example, performing environmental assessments of sites designated for closure and for construction projects needed to facilitate the consolidation of personnel and units). Excluding the BRAC funding, since 1980 those appropriations have ranged between $3 billion and $10 billion annually. 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.) CBO estimates that goal will require average funding of between $8 billion and $9 billion per year.

The Administration's plans for 2009 to 2013 include a total of $19 billion of military construction funding for the 2005 BRAC round. Another $1 billion will be needed after 2013, CBO estimates. DoD projects that six years into the implementation of the 2005 BRAC round, recurring annual savings will reach more than $5 billion.[21] In CBO's projections, however, those savings do not reduce DoD's total demand for resources. Instead, the projections incorporate the assumption that DoD will retain the budget authority for that money and use it to fund maintenance and upkeep at the bases it retains.

Appropriations for family housing pay for the construction, operation, maintenance, and leasing of military family housing. Since 1980, those appropriations have ranged from $3 billion to $6 billion per year. The 2009 FYDP and CBO projections envision that such funding will drop from $3.2 billion in 2009 to $1.7 billion by 2013, because some funding for military housing will come from third-party financing that is not recorded in the federal budget. Such plans, however, while reducing DoD's funding for building and operating family housing, also could increase expenditures for the basic allowance for housing that military personnel receive to rent private housing units.[22]

Potential Unbudgeted Costs for Operation and Support

In its projections for unbudgeted costs, CBO analyzed the potential effects of changes in several assumptions in the 2009 FYDP. If all of those changes were made, funding for O&S would total $443 billion in 2026, 16 percent more than the amount in CBO's estimate that excludes unbudgeted costs.

Unbudgeted Costs for Contingency Operations. Much of the potential unbudgeted cost of O&S funding is associated with ongoing operations in Iraq and Afghanistan and other military efforts in the war on terrorism. The 2009 FYDP does not include future funding for those contingency operations. The Congress provided $180 billion in 2008 dollars ($183 billion in constant 2009 dollars) to fund those operations in 2008 ($88 billion of which has been recorded in the 2009 FYDP) and $66 billion to fund those operations for part of 2009 (P.L. 110-252). O&S accounted for about $112 billion in 2008 dollars ($114 billion in constant 2009 dollars) and $57 billion of that funding in 2008 and 2009, respectively.

In the projection that includes unbudgeted costs, CBO includes an additional $79 billion in 2009 (in addition to the $66 billion already appropriated) and $128 billion in 2010 for military operations in Iraq, Afghanistan, and elsewhere (of that two-year total, about $115 billion would be for O&S funding and $92 billion would be for investment funding). CBO projects that, over the long term, unbudgeted costs associated with such operations could decline to about $60 billion annually ($38 billion would be O&S funding and $22 billion would be investment funding). That estimate is based on the assumption that between 2009 and 2013, the number of U.S. military personnel deployed in contingency operations, not necessarily in Iraq and Afghanistan, will fall from about 180,000 to about 75,000 and then stay constant through 2026.

Of course, that kind of specific assumption represents one of many possible scenarios; it is not a prediction from which future war funding or budget requests could be derived. In particular, such an assumption is unlikely to hold true for the entire projection period (2009 through 2026). CBO's estimate of average annual funding of $60 billion is 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 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 for pharmaceuticals in 2010, in per capita funding for purchased care and direct care in several years over the FYDP period. Although such declines in costs are possible, they would not be

21. Department of Defense, *Base Realignment and Closure Report*, vol. 1 (May 2005), p. 4.

22. Housing allowances are not included in the family housing budget, but they 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 that reflect changes in the 2009 FYDP.

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 2009 projected funding as a base and then applied those nominal growth rates to per capita funding in each category for 2010 through 2013.

For the years beyond the FYDP period, CBO's projection with unbudgeted costs incorporates nominal growth that is 30 percent more than in the projection without those costs. For direct care and purchased care, those rates start at 8.0 percent per year in 2014 and slow to 6.4 percent per year by 2026 (rather than 6.2 percent and 5.0 percent, respectively). For pharmaceuticals, CBO assumed 11.4 percent growth in 2014, falling to 8.3 percent in 2026 (rather than the 8.8 percent and 6.4 percent, respectively, used in the base case). Under those assumptions, DoD's total medical spending would increase by 126 percent (rather than by 79 percent) in real terms from 2009 to 2026.

CBO did not project 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 long-term growth rate for health care spending for that group.

Other Unbudgeted Costs. CBO's estimates of other unbudgeted costs include the possibility that military pay raises will be higher than anticipated in DoD's current plans. Section 601 of the 2009 NDAA (P.L. 110-417) includes language that sets military pay raises at 3.9 percent in 2009 (the Administration's plan called for a 3.4 percent raise). CBO included the extra half-point pay raise as an unbudgeted cost relative to the Administration's plan. CBO's estimates also reflect the possibility that the Congress would continue to enact pay raises 0.5 percentage points higher than assumed in the FYDP for each year through 2013. Setting military pay raises by that method would add about $2 billion of unbudgeted costs by 2013 and close to $3 billion by 2026.

CBO's estimates of other unbudgeted costs also account for 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 2009 to 2013, including the extra 0.5 percentage point, would add between $3 billion and $4 billion in unbudgeted costs by 2013 and between $4 billion and $5 billion annually by 2026. (Although CBO projects that after 2013, military and civilian pay will rise by equal annual percentages, 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.)

Projections of Funding for Investment

The Administration's current FYDP envisions that investment funding will remain relatively constant from 2009 to 2013, averaging about $185 billion annually (see Figure 8). Carrying out current plans over the long term would cause investment funding—excluding unbudgeted costs—to peak at $207 billion in 2017, CBO projects, and to average about $187 billion annually from 2014 through 2026.

CBO projects that unbudgeted costs—including costs for repairing, replacing, and upgrading equipment used in contingency operations—could cause investment funding to peak in 2017 at $262 billion. (Box 1 on page 16 discusses CBO's methods for projecting investment.) In that case, funding for investment would average $239 billion annually, about 28 percent more than in the case excluding unbudgeted costs.[23]

Army Investment

In 2008, the Army's investment funding included about $40 billion provided through emergency appropriations (of which $22 billion was not included in the FYDP) for repairing and replacing equipment that had been worn out or destroyed in operations in Iraq and Afghanistan; for upgrading equipment; and for buying new equipment, including equipment for the Army National Guard. Funding provided through emergency appropriations constituted 50 percent of total Army investment in 2008 (see Figure 9).

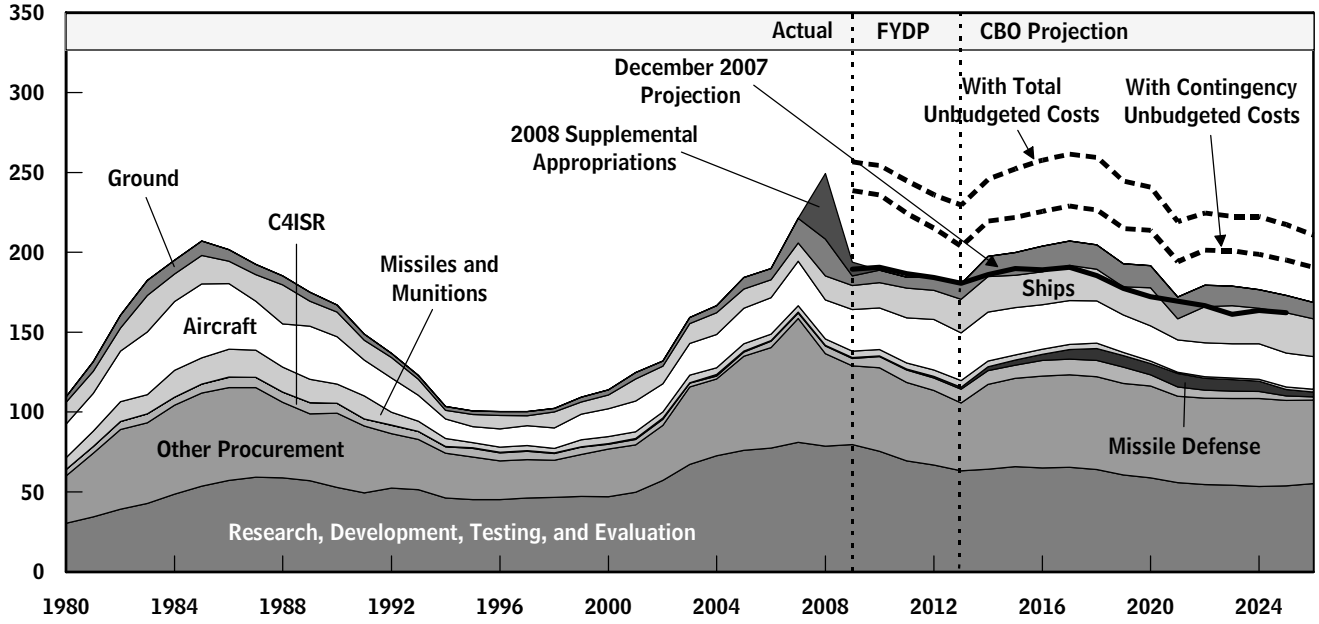
Excluding emergency appropriations, total investment resources allocated to the Department of the Army in the

23. Analysis of historical cost growth in DoD acquisition programs indicates substantial cost growth relative to initial estimates (see Box 1).

Figure 8.

Past and Projected Resources for Defense Investment

(Billions of 2009 dollars)



Source: Congressional Budget Office.

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

2009 FYDP remain unchanged relative to the 2008 FYDP for the 2009–2013 period common to both plans. Annual investment funding would average $34 billion over that period. A total of $125 billion would be devoted to procurement. Funds devoted to research, development, testing, and evaluation (RDT&E) over the same period also would remain unchanged at $43 billion (see Figure 9).

CBO's updated projection of the investment resources needed beyond 2013 to carry out the Army's programs averages $36 billion per year, excluding unbudgeted costs, and as much as $58 billion annually when adjusted for past rates of cost growth and equipment-related costs for future contingencies (see Figure 9).[24] In part because of an increase in this year's FYDP in the number of trucks, Stryker vehicles, and upgrades to Abrams tanks and Bradley vehicles purchased, investment in the updated projection is about $4 billion more per year than in the previous projection.

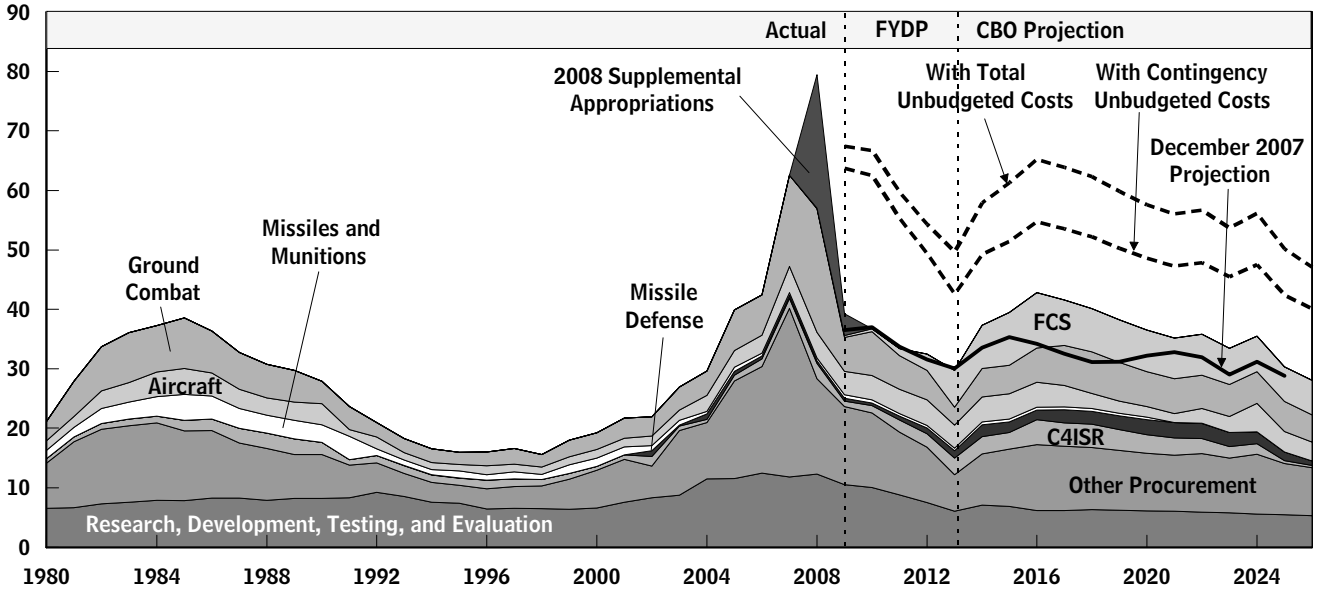
Future Combat Systems. As described in the President's budget for fiscal year 2009, the schedule for the Army's Future Combat Systems (FCS) program is unchanged from the previous budget. Beginning in 2015, the Army's plans call for purchasing one full brigade's worth of equipment each year at an annual cost of $6 billion to $8 billion. CBO's projection indicates that all funding associated with FCS, including that used to insert FCS technology into existing systems and units (a process called a spin-out), could compose more than 50 percent of the Army's investments in ground combat vehicles in the period from 2014 to 2026. According to plans included in the President's budget for 2009, total procurement funds for FCS could exceed $100 billion through 2026. Those funds would be used to equip 13 combat brigades with the full suite of FCS components

24. CBO's projection of the Army's investment beyond 2013 includes funds to procure missile defense systems such as 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.

Figure 9.

Past and Projected Resources for Army Investment

(Billions of 2009 dollars)



Source: Congressional Budget Office.

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

and to field spin-outs for a portion of the remaining 63 combat brigades.

Programs to Purchase and Upgrade Other Ground Combat Vehicles. CBO's current projection includes a significant amount of funding for the purchase of Stryker vehicles and upgrades to the Army's tanks, Bradley vehicles, and self-propelled howitzers not included in its 2008 projection. That increase is based, in part, on public statements by Army officials. In the case of the Stryker program, the Army's *Modernization Strategy 2008* and various press reports indicate the intention to replace the aging fleet of M113-based vehicles with Stryker vehicles.[25] CBO's projection includes the annual cost of roughly $1.2 billion for purchasing 300 Stryker vehicles each year from 2015 to 2026. (Even at that rate, it would be 2030 before all of the M113-based vehicles are replaced.) The Army has initiated several programs to upgrade other combat vehicles: It plans to upgrade its 155 millimeter howitzers at an annual cost of about $200 million from 2009 through 2021, and it has programs that will continue to upgrade Abrams tanks and Bradley vehicles at a combined cost of roughly $2 billion annually. Although those modernization programs are mentioned in various places, including *Army Modernization Strategy 2008,* only the howitzer program was described in official documents submitted with the 2009 budget.[26] Future budgetary constraints could result in some of those programs receiving amounts less than those currently projected by CBO.

Truck Programs. CBO's latest projection for truck programs includes $24 billion more than last year's estimates for the Army to purchase trucks between 2014 and 2026. All but $2 billion of that amount would be used to purchase a new vehicle the Army and Marines are

25. U.S. Army, *Army Modernization Strategy 2008,* July 25, 2008, p. 30; Stephen Speakes and Gregory Martin, "Army Modernization in an Era of Persistent Conflict," *Army,* vol. 58, no. 1 (January 2008), pp. 31–36; and Jason Sherman, "Army Eyes Major Boost to Stryker Fleet Size to Replace Aging M113s," *Inside the Army,* April 7, 2008.

26. Upgrade programs for Abrams tanks and Bradley vehicles have been discussed in briefings, including one by Army officials at the National Defense Industry Association's Combat Vehicle Conference in October 2007 at Dearborn, Michigan.

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 programs in the Department of Defense (DoD).

Major Investment Programs

CBO projects long-term resources for major weapon systems individually, using, as appropriate, the Administration's long-range plans for various programs (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 a five-year period—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). Those reports provide additional detail for each appropriation and account, and, for some programs, the reports summarize 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 a program's development schedules, rates and quantities of purchases, and costs.

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 that used aircraft weight and other technical characteristics as inputs for its parametric cost-estimating models.

Other Investment

In CBO's "other procurement" category, procurement funding pays for purchases of such items as artillery rounds, radios, passenger vehicles, and spare parts. About one-third of the cost of RDT&E is 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 in use. Because DoD provides no detailed plans for those items and activities, CBO projects long-term demands for resources on the basis of trends in their funding since 1980 and on the relationship between that funding and funding for major programs. Through those relationships, CBO implicitly projects funding for some highly classified programs.

Potential Unbudgeted Costs

In the past, DoD has often underestimated the cost of developing and purchasing 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 compiled in the RAND Corporation's 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] 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. A more detailed discussion of CBO's development of cost risk projections for investment is available in *The Long-Term Implications of Current Defense Plans,* January 2003, pp. 44–46.

developing, the joint tactical light vehicle, as a replacement for the Army's more than 100,000 high-mobility multipurpose wheeled vehicles. The newer vehicle is expected to be safer and more fuel-efficient than the vehicle it replaces, but the large quantities required would result in average expenditures from 2015 to 2026 of $1.7 billion per year. Additional purchases planned for 2014 to 2026 include trucks from the family of medium tactical vehicles and life-extension upgrades to the Army's heavy trucks. All told, CBO's projection includes average expenditures for trucks that approach $3 billion per year from 2009 to 2026.

Aviation Programs. Plans for the Army's aviation programs have changed little since last year. CBO estimates that those programs could require a total of $61 billion in procurement funding between 2009 and 2026. That funding would pay for the purchase of more than 500 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.[27] In addition, there are tentative plans to begin a new joint heavy-lift rotorcraft program. CBO's updated projection incorporates those changes along with programs to upgrade and extend past 2026 the service life of the Army's Apache, Blackhawk, and Chinook helicopters.

Missile Defense. CBO's projection assumes the Army will invest an average of $2 billion per year from 2014 to 2026 to purchase equipment to defend against ballistic missiles. The Army's purchases would include the Terminal High-Altitude Area Defense system, the Patriot Advanced Capability-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 later in this paper.)

Navy and Marine Corps Investment

Under the 2009 FYDP, investment resources for the Department of the Navy (which includes the Marine Corps) would start at $60 billion in 2009, rise to about $70 billion in 2017, and then decline to $47 billion by 2026, CBO projects. Between 2014 and 2026, Navy investment would average $58 billion a year. If program costs grow as they have in the past, however, the department's investment funding could peak at $82 billion in 2017 and then fall back to about $54 billion by 2026—averaging $67 billion a year from 2014 to 2026. The decline in funding through 2013 from that shown in the 2008 FYDP to that in the 2009 FYDP is driven by several relatively small changes to the Navy's ship, aircraft, and ground procurement programs (see Figure 10).

Ships. A substantial portion of the Navy's resources under current plans would be taken up by the procurement of battle force ships. CBO based its assumptions about ship procurement on the Navy's new shipbuilding plan for expanding its fleet from the current 278 to 313 ships.[28] On the basis of information provided in the Navy's plan, CBO estimates that the Navy's ship purchases would average $20 billion per year between 2009 and 2026 to expand the fleet; that figure would rise to $26 billion per year through 2026 if historical trends in cost growth continued.

Surface Combatants. The planned increase in the Navy's fleet is primarily in the surface combatant force, which currently consists of 105 cruisers, destroyers, and frigates. By 2026, under CBO's projection of current plans, the fleet would consist of 146 ships—including 55 littoral combat ships (LCSs), which are smaller and faster than any of the Navy's current surface combatants.

The Navy's plans for the surface combatant force changed little from the 2008 to the 2009 FYDP. According to the latter document, between 2009 and 2026, the Navy is planning to acquire 5 DDG-1000 guided missile destroyers, 19 CG(X) future cruisers, and 52 LCSs. In the summer of 2008, however, the Navy announced its plans to truncate the DDG-1000 program—first at two ships, then at three—and to resume production of the DDG-51 Arleigh Burke class of destroyers at a rate of one or two ships per year through 2017. The effect would be to save the Navy about $2.5 billion between 2010 and 2013, CBO estimates. In addition, although the 2009 FYDP calls for purchasing the first CG(X) in 2011, the Navy now expects to delay that acquisition until 2017.

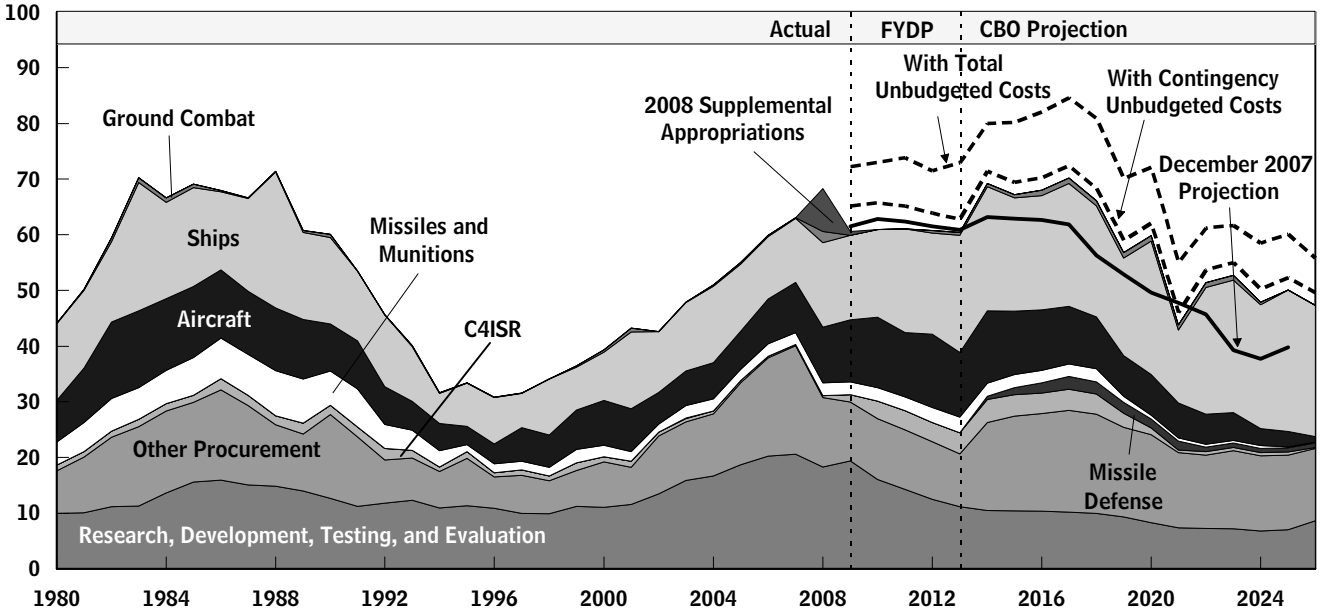
27. In 2008, the Bush Administration announced plans to cancel the armed reconnaissance helicopter program and instead pursue an as-yet-to-be-determined, less costly replacement helicopter. CBO's projection, which is based on the 2009 FYDP, does not incorporate that action, which will be reflected in the 2010 FYDP if sustained by the new Administration.

28. Department of the Navy, *A Report to Congress on Annual Long-Range Plans for the Construction of Naval Vessels, Fiscal Year 2009* (February 2008).

Figure 10.

Past and Projected Resources for Navy and Marine Corps Investment

(Billions of 2009 dollars)



Source: Congressional Budget Office.

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

(Neither of those changes is reflected in CBO's projection, which is based on the 2009 FYDP.)

The Navy has plans to begin a new destroyer program in 2022, providing for replacement of the DDG-51. Between 2022 and 2026, the Navy would purchase nine ships, designated as the DDG(X), and continue to acquire them at a rate of three per year at least through 2038. In total, the Navy's current procurement plan for surface combatants would cost an average of $6.4 billion a year between 2009 and 2026; $10.2 billion annually, CBO estimates, if historical cost growth is considered.

Submarines. The fiscal year 2009 shipbuilding plan envisions the Navy maintaining its force of 48 attack submarines. That plan also indicates that the Navy would continue through 2026 to deploy 14 ballistic missile submarines and 4 guided-missile submarines. The shipbuilding plan does not anticipate replacing the guided-missile submarines when they are retired in the mid-2020s but would call for the purchase of 12 new ballistic missile submarines. Meeting that goal would require the Navy to order the first new ballistic missile submarine in 2019.

The Navy's short-term goal is to reduce the price of the new Virginia class attack submarine to $2.2 billion (in 2009 dollars) and to increase procurement to two per year starting in 2011. CBO projects that the Navy's current plans for sustaining the attack, guided-missile, and ballistic missile submarine forces would cost, on average, more than $7.2 billion per year over the next two decades, or as much as $8.4 billion annually, including historical cost growth.

Amphibious and Maritime Prepositioning Ships. The Navy's amphibious lift ships are organized into expeditionary strike groups, each consisting of one amphibious assault ship or helicopter carrier (LHA or LHD), one amphibious transport dock, and one dock landing ship (LSD), together with three surface combatants and an attack submarine. The Navy's fiscal year 2009 shipbuilding plan envisions reducing the number of expeditionary strike groups from the 11 existing today to 9 by 2020. To support that goal, a second new America class LHA-6 amphibious assault ship would be purchased (the first one was acquired in 2007). The plan also anticipates seven replacements for Wasp class LHD-1

amphibious assault ships, three of which would be purchased by 2026. It calls for 12 replacements for existing LSD-41 and LSD-49 ships, 6 of which would be purchased by 2026.

In addition to the expeditionary strike groups, the Navy's 2009 shipbuilding plan calls for 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. Three existing ships transferred from the amphibious and existing maritime prepositioning forces would operate with the squadron.

CBO projects that resources needed for new amphibious and maritime prepositioning ships would be $2.7 billion per year, on average, through 2026. If historical cost growth was included, required resources would average $2.8 billion per year.

Aircraft Carriers. The Navy's fiscal year 2009 shipbuilding plan projected a future carrier force of at least 11 large-deck ships, all of which eventually would be nuclear powered. The Navy ordered 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 $3.3 billion annually, on average, through 2026, or $3.7 billion with historical cost growth.

Aircraft. The Department of the Navy's aviation programs include Navy and Marine Corps aircraft and aircraft-related weapon systems. As envisioned in the 2009 FYDP, carrying out the Navy's current procurement plans for modernizing both services' forces would cost about $9 billion per year between 2009 and 2026, or $10 billion per year with potential unbudgeted costs, according to CBO's projections. Average annual funding for 2009 through 2017 would be considerably higher, about $12 billion per year, 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 more than 230 aircraft, including 62 fixed-wing fighters, 103 rotary-wing and tilt-rotor aircraft, and 43 trainers. The completion of production for several of those aircraft would result in lower average funding, about $5 billion per year, from 2018 through the end of the projection period.

Fighter Aircraft. The Navy's plans for fighter aircraft include the purchase of 80 more F/A-18E/F aircraft, 54 more EA-18G electronic warfare aircraft (for a total of 85 to replace the EA-6B), and 680 F-35 joint strike fighters in two variants: the F-35B short takeoff/vertical landing aircraft for the Marine Corps and the F-35C carrier aircraft for the Navy.[29] In addition, the Navy is developing an unmanned combat air vehicle for carrier-based strike or defense-suppression operations; CBO assumed that 94 of those vehicles would be purchased by 2026.

Other Fixed-Wing Aircraft. In addition to fighters, the Navy plans to procure 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 P-8A Poseidon, which is based on a Boeing 737 airframe and will replace the P-3C Orion; and
- An unmanned broad-area maritime surveillance aircraft that will be a modified version of the Air Force's Global Hawk high-altitude unmanned aerial vehicle.

Marine Corps Rotary-Wing and Tilt-Rotor Aircraft. The 2009 FYDP anticipates the continued replacement or upgrading of nearly every component of the Marine Corps's tilt-rotor and rotary-wing forces. The MV-22 Osprey tilt-rotor aircraft is replacing the current fleet of CH-46E medium-lift helicopters. The Marine Corps plans to replace its fleet of heavy-lift CH-53E helicopters with an upgraded version (currently called the CH-53K). It also plans to modernize the fleets of UH-1N light utility helicopters and AH-1W attack helicopters with a mix of new and remanufactured aircraft.

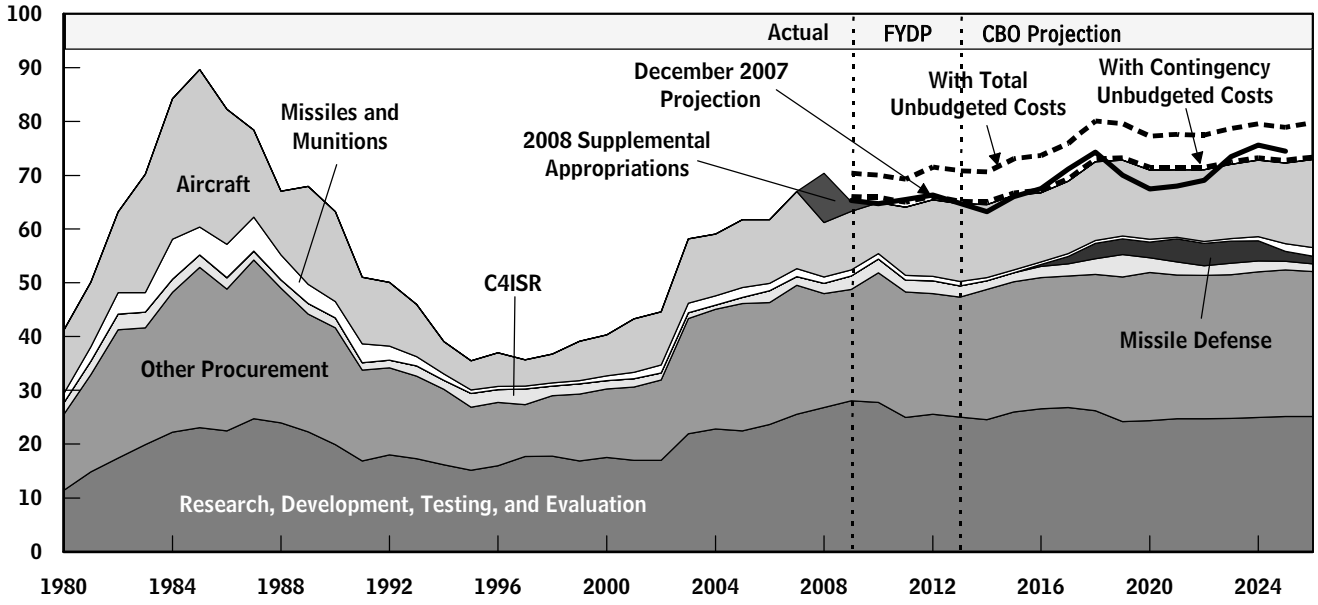
Ground Combat. The Marine Corps changed its plans from the 2008 FYDP and the 2009 FYDP for equipment bought through its procurement account, and several programs are now delayed. Planned purchases of the new

29. The totals do not include the additional 13 F/A-18E/Fs and 3 EA-18Gs funded in 2008 in P.L. 110-252.

Figure 11.

Past and Projected Resources for Air Force Investment

(Billions of 2009 dollars)



Source: Congressional Budget Office.

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

expeditionary fighting vehicle, which replaces the amphibious assault vehicle, were reduced by nearly half in the 2008 FYDP, and procurement has been delayed from 2010 to 2012 under the 2009 FYDP. The 2008 FYDP anticipated that the Marines would begin buying the joint light tactical vehicle in 2009; that purchase now is expected to begin in 2013. The Marine Corps also has used emergency supplemental appropriations in the past two years to purchase many tactical vehicles, including high-mobility multipurpose wheeled vehicles and mine-resistant ambush-protected vehicles. It expects to purchase about 1,500 heavy-duty trucks between 2009 and 2011. Those commitments would require average spending of about $560 million per year through 2026, without cost growth; that amount is more than twice the average this category has received for the past two decades.

Air Force Investment

Under the Bush Administration's plans, funding for RDT&E and for procurement of Air Force systems would total roughly $63 billion in 2009 and then increase to about $65 billion per year from 2010 through 2013. CBO projects that continuing those plans beyond the FYDP period would require about $70 billion per year through 2026. Year-to-year funding would climb steadily from about $65 billion in 2014 to more than $73 billion in 2018 and then remain stable through 2026 (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 plans for that period would require an additional $6 billion per year between 2014 and 2026.

The Administration's 2009 budget request for Air Force investment is about $2 billion below the previous year's FYDP. That decrease was, for the most part, broadly spread across Air Force programs and split about evenly between RDT&E and procurement. Average investment funding for 2009–2013, a period that was covered in the 2008 FYDP and again in 2009, increased by about $1 billion, or less than 1 percent.

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 and 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 tanker, and a new long-range strike aircraft. (A delay of at least one year relative to the 2009 FYDP in purchasing the KC-X is likely because of the successful protest of the February 2008 contract award to Northrop-Grumman/EADS for its KC-45.) In light of DoD's current plans, CBO added two new programs to the aircraft category in this projection period: special operations aircraft based on the C-130J transport aircraft (MC/HC-130Js) and the CSAR-X combat search-and-rescue rotorcraft.[30] Major modifications to existing aircraft include modernization programs for the C-5 and C-130 transport aircraft and continuing upgrades for the C-17 transport aircraft and the F-22 fighter.

C4ISR Systems. C4ISR systems consist of satellites and terrestrial systems, including surveillance aircraft. More than 70 percent of projected procurement funding is dedicated to three satellite systems: the new Global Positioning System satellites, new infrared missile warning satellites (Space-Based Infrared System High and a follow-on system), and the Transformational Satellite Communications System. (DoD announced earlier this year that it plans to delay the competition for the next phase of developing this system; that change is not reflected in CBO's projection.) DoD's decision to cancel the space radar program was the primary reason for the nearly 30 percent decrease in total funding for the C4ISR category relative to CBO's previous projection.

Missiles and Munitions. This category includes systems that range from air-to-air weapons to intercontinental ballistic missiles. CBO's projection includes the cost of upgrades to existing Minuteman III intercontinental ballistic missiles and RDT&E for a new intercontinental ballistic missile that would be fielded sometime after 2026. Air-to-surface weapons in this category include 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 that would help the United States track ballistic missiles and discriminate between warheads and 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 consists mainly of space-launch systems used to put satellites into orbit. (The satellites themselves are included in the categories that best match their intended function.) About two-thirds of the funding in this category supports the purchase over the next two decades of the Evolved Expendable Launch Vehicle. CBO's projection assumes that the Air Force will purchase 76 of those vehicles through 2026. The remainder of the funding is for boosters, satellites, and related services to support what is known as the "operationally responsive launch concept" for access to space.

Defense Agency Investment, Including Missile Defense

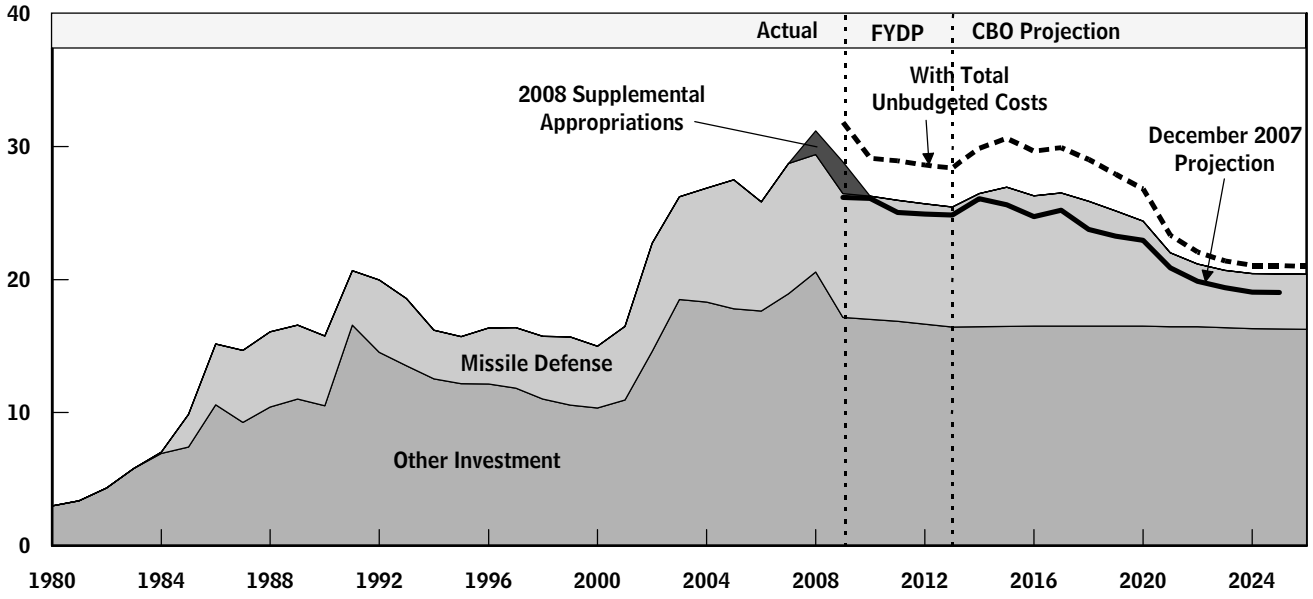
In addition to resources for the Departments of the Army, Navy, and Air Force, DoD's budget provides money for specialized agencies that perform advanced research, develop missile defenses, oversee special operations, and manage information systems. Excluding development of missile defenses (discussed below), CBO's projection of DoD's current plans places investment funding for those agencies at about $17 billion per year in the 2009 FYDP and at about $16 billion per year over the 2014–2026 period (see Figure 12).

30. The Boeing HH-47 won the initial CSAR-X competition in November 2006. However, the Government Accountability Office upheld protests of the contract award. Results of the follow-on competition are expected soon.

Figure 12.

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

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

Missile Defense. The President's 2009 budget request and the 2009 FYDP propose average annual funding of about $9.6 billion for RDT&E for missile defense systems and about $800 million for procurement of terminal-phase defense programs (see Figure 13).[31] CBO based its projection on the Bush Administration's policy statements, on detailed plans developed by the Missile Defense Agency (MDA), and on plans developed by the armed 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 research and development of a broad range of technologies and systems. Decisions about which systems should proceed to procurement and operational deployment eventually will be informed by the results of those efforts. As with existing programs, CBO has included projected procurement costs in the investment budgets of the branches of the military that would operate them; in cases in which the end service has not been designated, CBO has assigned programs on the basis of the nature of the program. Thus, Figure 13 displays a combination of MDA and service funding for missile defense programs.

Carrying out current plans would cause total investment on missile defenses to peak in 2018 at about $17 billion (excluding unbudgeted costs), CBO projects, and then to decrease as the procurement phase was concluded and systems became operational. That peak is about $1 billion higher than projected by CBO in December 2007 because of increases in the estimated costs for several programs. If historical cost growth is considered, DoD's needs for missile defenses might be about $4 billion more each year.

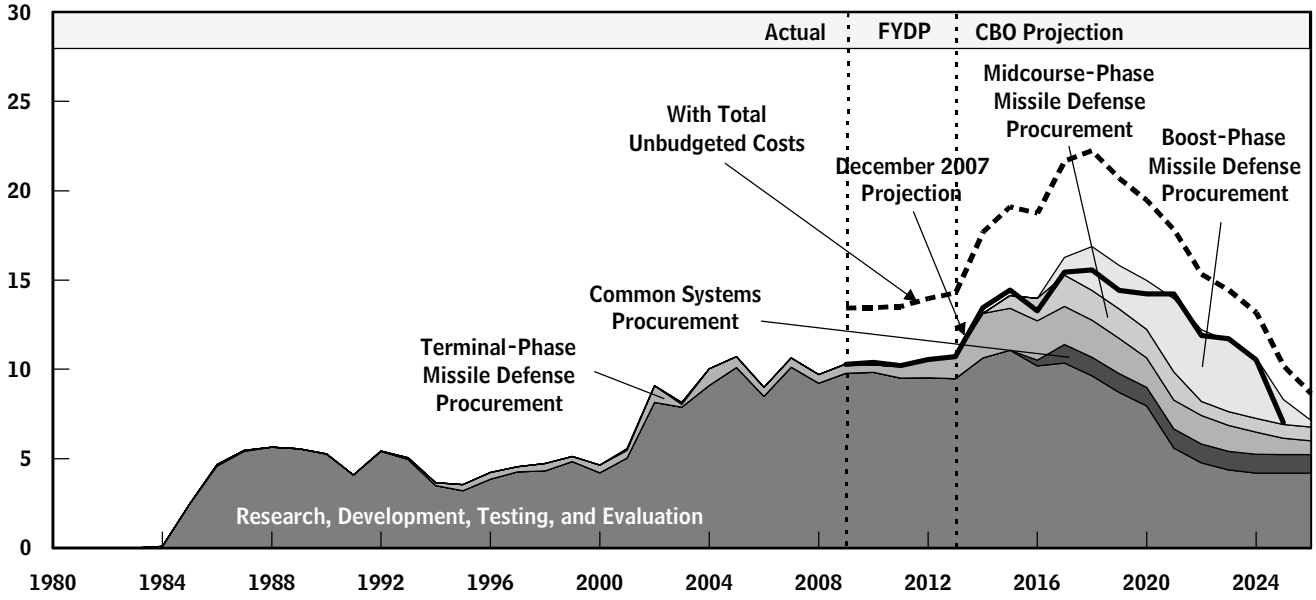
Midcourse-Phase Defenses. The Ground-Based Midcourse Defense (GMD) system comprises ground-based interceptors, sensors, and fire-control systems to intercept and

31. 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.

Figure 13.

Past and Projected Resources for Missile Defense Investment

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

destroy ballistic missiles during their midcourse phase of flight. Starting with the 2009 budget, MDA has grouped the overall Ballistic Missile Defense System into five blocks on the basis of operational capability. GMD contributes to three of those blocks. The Block 1.0 system, intended to defend the United States against limited attack from North Korea, has 30 interceptors in Fort Greely, Alaska, and Vandenberg Air Force Base, California; support from several radar stations in the United States and at sea; and an overarching command-and-control system. The Block 3.0 system, intended to defend against limited attack from Iran, adds 14 interceptors and radar support stations in England and Greenland.

MDA's plans for GMD Block 4.0 call for extending coverage to protect U.S. allies and deployed forces against attacks from Iran by deploying additional interceptors in Poland, a high-resolution tracking radar in the Czech Republic, and a forward-based radar at a European location that has not been specified. As part of that 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 the Block 4.0 GMD system would be completed around 2013, according to current MDA plans.

MDA also is developing a kinetic energy interceptor (KEI), which initially was conceived as a mobile, boost-phase interceptor. The most recent plans adjust the near-term development focus to a silo-based interceptor and defer the mobile capability until later. MDA officials have said the KEI will be a high-acceleration booster, "the booster of choice for the midcourse program."[32] CBO has assumed that MDA will begin in 2014 to use the KEI to replace existing interceptors in the GMD system (except for the two-stage interceptors in Europe).

The Bush Administration's plans call for MDA to pay for deployment of the GMD system with RDT&E funds. In keeping with those plans, CBO has included the costs of the GMD system in the RDT&E portion of Figure 13.

Procurement by the Navy of missiles for the Aegis sea-based ballistic missile defense is included in the mid-

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

course-phase missile defense category in Figure 13. The Aegis 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 to engage missiles from short through intermediate range in their midcourse phase of flight. DoD's plans include the development of a new, larger version, the SM-3 Block IIA, to increase the effectiveness of the system against long-range ballistic missiles, among other threats. Japan and MDA have entered into a cooperative agreement to support the development of the SM-3 Block IIA with MDA's RDT&E funds. CBO has assumed that the Navy will procure enough of the new SM-3s to equip 25 percent of the available vertical launch system tubes on Aegis-equipped ships. CBO projects that procurement would begin in 2015 at an annual average cost of $1.4 billion over the period from 2015 to 2026.

DoD's current plans call for the department to develop and deploy a constellation of space-based infrared sensor satellites that can detect and track missiles and their warheads from shortly after launch until atmospheric reentry. The sensors would then relay tracking data to interceptors in flight, enabling the interceptors to identify and hit the warheads. MDA calls that constellation the Space Tracking and Surveillance System, and it plans to launch two demonstration satellites in 2009. DoD's plans originally envisioned an operational constellation with as many as 27 satellites; the 2008 budget documentation called for a constellation of 6 to 9 satellites. MDA is now planning a reassessment that focuses on affordability and a shorter development cycle and incorporates information from the demonstration launches. No operational launches are planned before 2014. CBO has assumed that MDA will develop an operational constellation with six satellites (the low end of the 2008 plan), launching one satellite per year beginning in 2018.

Boost-Phase Defenses. In 2004, MDA procured one aircraft that is now in use for integration tests with the ABL and targeting system in preparation for a "shoot-down" test scheduled for 2009. MDA has deferred plans for procurement of a second ABL aircraft until results of the 2009 test are available for analysis. Nevertheless, the 2009 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 plans formulated by MDA and the Air Force, starting in 2018, the Air Force would begin to procure an additional seven operational aircraft.

According to Congressional testimony by the director of MDA, a recommendation by the Defense Science Board led to the initiation of the KEI program as an alternative to the ABL for boost-phase missile defense.[33] MDA officials have indicated that eventually, depending on the progress in development, the agency might choose to pursue just one of two possible boost-phase programs, the ABL or KEI.[34] For this projection, CBO has assumed that both the ABL and a boost-phase version of KEI will be fully developed and fielded; actual costs could be lower if MDA decided 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 set of programs that it calls a space test bed to conduct research to support potential deployment of boost-phase intercept defenses in space. The 2009 FYDP includes MDA's plan to spend about $300 million for that research. CBO's projection of DoD's plans incorporates the assumption that an operational space-based interceptor system will be developed and would be available for use in 2023.[35]

Terminal-Phase Defenses. CBO's projection of the cost of missile defenses also includes funding for systems that are designed to hit incoming warheads during the terminal phase of their flight. That group of missile defense systems includes the Patriot Advanced Capability-3 short-range system, the Medium Extended Air Defense System, and the Terminal High-Altitude Area Defense system, all of which are mobile ground-based systems. MDA also has begun development of a sea-based terminal system. According to CBO's projection of DoD's current plans, average annual funding for terminal-phase defense systems would amount to $1.7 billion through 2026.

The Patriot missile system is already in operation for the Army, but it will be replaced eventually by the Medium Extended Air Defense System, the product of a venture

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

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

35. 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).

involving the U.S. government and the governments of Italy and Germany. The Terminal High-Altitude Area Defense system is still being developed by MDA; however, CBO's projections incorporate the assumption that when the system's operational deployment proceeds beyond 2013, its funding will move from MDA to the Army. The Army activated the first high-altitude unit at Fort Bliss, Texas, in May 2008.

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

Appendix: Projections of Alternative Defense Programs

The Congressional Budget Office (CBO) has developed projections for two sets of alternatives to the Bush Administration's Future Years Defense Program (FYDP), which outlines plans of the Department of Defense (DoD). CBO's "evolutionary" scenario illustrates the implications of having DoD forgo or scale back acquisition of the new, advanced capabilities that the agency associates with military transformation and instead pursue evolutionary upgrades to its current capabilities. CBO's "transformational" scenario illustrates the implications of having DoD increase its emphasis on acquiring the advanced capabilities it associates with military transformation and change its plans for compensating military personnel in a manner that some would characterize as a sufficient break with past practices as to also be called "transformational."

DoD's current plans encompass a mixture of evolutionary and transformational programs. Neither set of alternatives developed by CBO is intended to provide a specific spending path, nor is either a recommendation for a particular approach. Instead, the alternatives illuminate the kinds of choices available to DoD. The particular programmatic choices incorporated in each set of alternatives—including both the types and the numbers of weapon systems—are examples of the possibilities for changing current plans in light of the emphasis ascribed to each alternative. Many other choices are possible.

In developing the content of the two alternatives, CBO does not consider whether adopting either approach would provide the military capabilities that may be needed to meet future threats, which are uncertain and subject to continual debate. Nor does it consider the changes in military tactics and operational plans that may be needed if current plans for acquiring new capabilities are changed.

Evolutionary Approach

The evolutionary alternative developed by CBO explores whether it might be possible to reduce long-term demands for defense resources by adopting a different approach to modernizing U.S. military forces. Under the evolutionary alternative, the average annual demand for defense resources between 2010 and 2026 would be about $500 billion, or about 7 percent less than the $540 billion, excluding unbudgeted costs, that CBO projects would be needed to carry out DoD's plans for the same period (see Figure A-1 and Table A-1).[1]

The resource demands for investment during the period spanning 2010 to 2026 would average about $148 billion per year, excluding unbudgeted costs, CBO projects—$161 billion with unbudgeted costs associated with historical trends in cost growth of major weapon systems included—for a reduction of about 21 percent relative to CBO's projection of funding under the 2009 FYDP. Unbudgeted investment costs associated with historical cost growth under the evolutionary alternative would be 53 percent of the analogous unbudgeted costs associated with CBO's projections of the 2009 FYDP, in part because the alternative incorporates the assumption that DoD will purchase upgraded versions of systems that are currently being produced and for which costs can be more accurately estimated.

Army

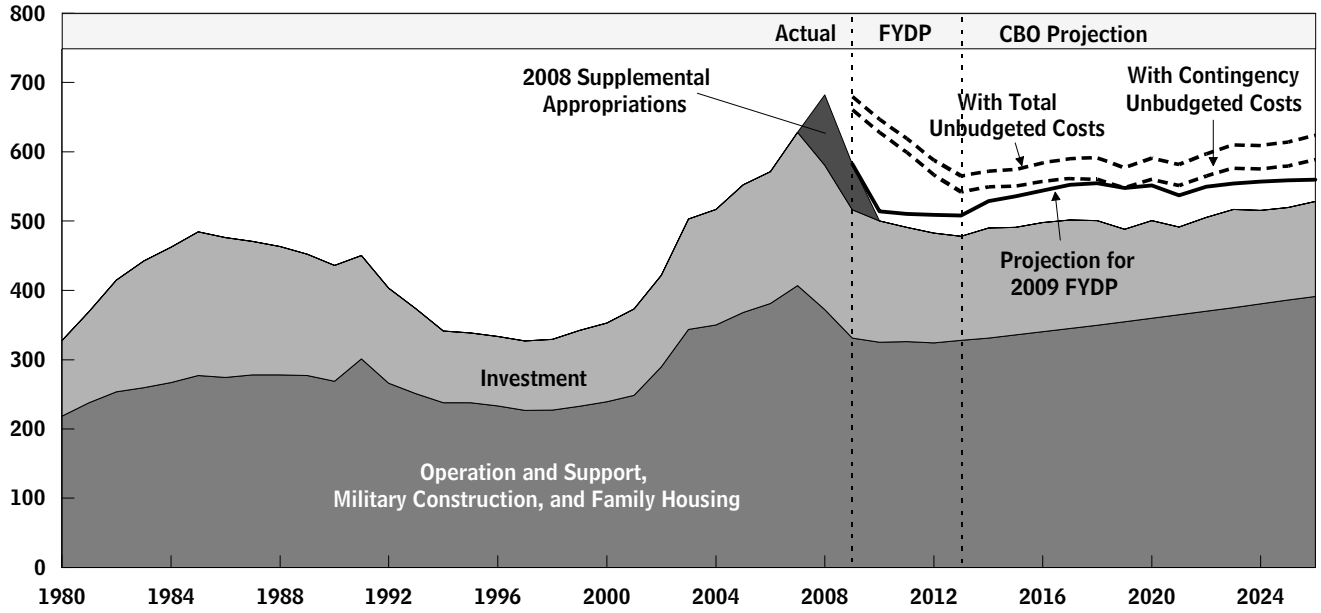
Under the evolutionary alternative, the Army would retain and upgrade many of its current systems to keep pace with evolving technology. For example, the Army

1. In this appendix, CBO displays funding and savings for the period spanning 2010 to 2026 because CBO's projections for alternative defense programs assume no changes to the Administration's plans for fiscal year 2009.

Figure A-1.

Past and Projected Resources for Defense (Evolutionary Alternative)

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

would upgrade its existing tanks and fighting vehicles with enhanced capabilities being developed as part of the Future Combat Systems (FCS) program (those upgrades, called "spin-outs," would primarily improve communication on and off the battlefield). The FCS program would, however, be canceled, as would be the joint program with the Air Force to develop heavy-lift aircraft (the primary purpose of which is to provide air transport for FCS-equipped units). Upgrades to existing attack helicopters would be pursued and the armed reconnaissance helicopter (ARH) program would be canceled. (DoD announced recently that it plans to cancel the ARH and pursue instead an as-yet-unidentified alternative helicopter that will be less expensive. CBO's projection and estimate of savings for canceling the ARH are based on the 2009 FYDP, which did not foresee the cancellation of that program.) The Army would continue to use the more than 250,000 new radios it has purchased for its forces since 2004 but would cancel the Joint Tactical Radio System, which has experienced substantial cost growth even as it has fallen behind schedule. With those changes, the evolutionary alternative would require the Army to seek $26 billion for investment, compared with $36 billion in average annual funding under the more transformational approach of the Administration's 2009 FYDP (all figures exclude unbudgeted costs).

Navy and Marine Corps

Under the evolutionary alternative, the Navy and Marine Corps would make several changes to current plans:

- Cancel the DDG-1000 destroyer program after the first two ships and delay acquisition of the new CG(X) cruiser for 10 years. (In 2008, after submission of the President's 2009 budget request, the Navy proposed terminating the DDG-1000 program after two ships are built. The Navy subsequently revised that proposal to terminate the program after building three DDG-1000s. CBO's projection and estimate of savings for building only two DDG-1000s are based on the 2009 FYDP, which envisions building seven DDG-1000s.) To sustain its fleet, the Navy would purchase upgraded versions of its existing DDG-51 Arleigh Burke destroyers and forgo designing a new destroyer (the DDG-(X)) to replace its existing DDG-51s.

Table A-1.

CBO's Projection of Resources for an Evolutionary Alternative for Defense Compared with CBO's Projection of the Implications of the 2009 FYDP

(Billions of 2009 dollars)

	Annual Average		
	2010–2013	2014–2026	2010–2026
Total, DoD Resources (Excluding unbudgeted costs)	510.4	548.6	539.6
Army			
Upgrade existing combat vehicles; restructure Future Combat Systems to pursue "spin-outs" only	-3.3	-5.5	-5.0
Continue to buy HMMWVs; cancel the joint light tactical vehicle program	+0.1	-0.8	-0.6
Cancel joint heavy lift aircraft program	0	-1.5	-1.1
Upgrade existing Kiowa warrior attack helicopters; cancel the armed reconnaissance helicopter	-0.4	-0.1	-0.2
Cancel the Joint Tactical Radio System	-0.4	-1.2	-1.0
Reduce other programs	0	-2.9	-2.2
Subtotal, Army	-4.0	-12.0	-10.1
Department of the Navy			
Reduce planned purchases of joint strike fighters	+2.4	-1.6	-0.6
Reduce planned purchases of multimission maritime aircraft	-1.0	-0.5	-0.6
Continue to buy DDG-51 destroyers; delay the new CG(X) cruiser by 10 years	+0.5	-0.8	-0.5
Reduce the carrier force to 10 by canceling overhauls	0	-0.6	-0.4
Build only two DDG-1000 destroyers	-2.8	*	-0.7
Do not build the DDG(X) destroyer	0	-1.3	-1.0
Build one version of the littoral combat ship	*	*	*
Reduce the strategic submarine force to 10 boats	-0.4	-0.8	-0.7
Retain existing command ships; cancel the new command ship	-0.6	-0.2	-0.2
Cancel the future maritime prepositioning program	-1.8	-0.3	-0.7
Continue to buy HMMWVs; cancel the joint light tactical vehicle program	-0.2	-0.2	-0.2
Reduce other programs	-0.1	-2.7	-2.1
Subtotal, Department of the Navy	-3.9	-8.9	-7.7

Continued

- Continue to develop and purchase the new littoral combat ship, but procure just one version, instead of two.
- Cancel the future maritime prepositioning ship and rely on the current prepositioning fleet.
- Reduce the number of aircraft carriers in the fleet from 11 to 10 by deferring refueling overhauls of existing carriers.
- Retain existing command ships rather than purchase new ships.
- Cut the number of strategic submarines from 14 to 10.

The Navy and Marine Corps also would make the following changes:

- Scale back purchases of the short take-off/vertical landing version of the joint strike fighter (JSF) to the number needed to replace the Marines' existing fleet of AV-8B Harriers.
- Increase the number of F/A-18E/Fs purchased, maintaining the Navy's overall current capacity to deliver 2,000-pound bombs.

Table A-1. Continued

CBO's Projection of Resources for an Evolutionary Alternative for Defense Compared with CBO's Projection of the Implications of the 2009 FYDP

(Billions of 2009 dollars)

	Annual Average		
	2010–2013	2014–2026	2010–2026
Air Force			
Reduce planned purchases of joint strike fighters	-0.3	-2.2	-1.8
Upgrade existing aerial tankers; cancel the new tanker	-1.6	-1.4	-1.4
Delay new bomber by five years	-1.6	-0.8	-1.0
Continue to buy existing communications satellites; cancel the Transformational Satellite Communications program	-1.3	-1.1	-1.1
Continue to build existing infrared detection satellites; cancel the Third Generation Infrared Satellite System	-0.2	-0.3	-0.2
Reduce other programs, including intelligence activities	-4.1	-13.5	-11.3
Subtotal, Air Force	-9.1	-19.2	-16.8
DoD-wide and Cross-Service[a]			
Focus missile defense programs on supporting existing ground-based missile defense system; defer work on future deployments	-4.6	-4.2	-4.3
Reduce advisory and assistance services by 20 percent	-0.8	-1.0	-0.9
Subtotal, DoD-wide and Cross-Service	-5.3	-5.2	-5.2
Total	**-22.4**	**-45.2**	**-39.8**
Revised Funding for DoD	488.0	503.4	499.8

Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; DoD = Department of Defense; HMMWV = high-mobility multipurpose wheeled vehicle; * = between zero and $500 million. Numbers may not add up to totals because of rounding.

a. Cross-service savings would accrue to the individual military departments in addition to those specifically identified above.

- Reduce the Navy's planned purchases of the new multimission maritime aircraft.
- Proceed with the purchase of the high-mobility multipurpose wheeled veh icle but forgo development of a new light tactical vehicle.

All of those changes to Navy and Marine Corps programs would reduce the Department of the Navy's demands for investment funding to $51 billion annually between 2010 and 2026, as opposed to $58 billion under CBO's projection of the Bush Administration's plans under the 2009 FYDP (excluding unbudgeted costs).

Air Force

Under the evolutionary alternative, the Air Force would make several changes to current plans:

- Upgrade the remainder of the aerial tankers in the service's existing aerial tanker fleet and forgo the purchase of new tankers.
- Reduce by about half the planned purchase of the JSF, which, because of that aircraft's larger payload, would nonetheless result in a tactical aircraft fleet with the same capacity to deliver 2,000-pound bombs as the service's current fleet;
- Delay by five years the development of a new bomber.
- Continue to purchase existing communications satellites but cancel the Transformational Satellite (TSAT) Communications program. (In 2008, after submission of the President's 2009 budget request, DoD decided to delay the next phase of TSAT development so it could

revise the requirements for the program's capabilities. DoD expects that, under the revised program, it might not launch one of the satellites until 2019. CBO's projection and estimate of savings for canceling the program are based on the 2009 FYDP, which assumes the first TSAT would be launched in 2015.)

- Continue to purchase infrared satellites used to detect missile launches but cancel the Third-Generation Infrared Satellite System.
- Reduce funding for some defense intelligence programs.

Overall, those changes would reduce the Air Force's investment funding to $52 billion annually between 2010 and 2026. CBO's projection of costs associated with the 2009 FYDP (excluding unbudgeted costs) is $69 billion per year.

Other Changes

The evolutionary alternative would refocus DoD's missile defense programs to test, support, and upgrade existing ground-based defenses at two sites in Alaska and California but defer plans to deploy a third missile defense site in Europe. Deployment of future missile defense systems, such as the airborne laser and a constellation of the infrared Space Tracking and Surveillance System satellites, also would be deferred indefinitely.[2]

Funding for contract advisory and assistance services (which pays for analyses and various other support activities performed by contractors to assist DoD officials in making decisions and managing programs) would be reduced by 20 percent. Overall, the changes to those other programs would reduce DoD's associated demands for funding by $5 billion annually from 2010 to 2026 (excluding unbudgeted costs) relative to CBO's projections of the implications of the 2009 FYDP. Most of the savings (about $4 billion annually) are associated with changes to missile defense programs.

2. Because CBO assumes, consistent with statements by the Bush Administration and the Missile Defense Agency, that many missile defense programs would be procured by the military departments, some of the savings from the changes to missile defense programs are recorded as savings in those departments.

Transformational Approach

As with the evolutionary alternative, the transformational approach explores whether it might be possible to reduce the long-term demands for defense resources by adopting a different path to modernizing and compensating U.S. military forces. The average annual demand for defense resources between 2010 and 2026 would be about $510 billion, about 5 percent less than CBO's projection of the resources necessary to carry out DoD's current plans for the same period (see Figure A-2 and Table A-2).

Under the transformational alternative, resource demands for investment during the period between 2010 and 2026 would average about $176 billion per year, excluding unbudgeted costs, CBO projects, and $200 billion including unbudgeted costs associated with historical trends in cost growth of weapon systems. The unbudgeted costs associated with cost growth in weapon systems in the transformational alternative are about 91 percent of the analogous unbudgeted costs in CBO's projection of the implications of the 2009 FYDP.

This alternative assumes that, in a break with long-standing practice, DoD would substitute reenlistment bonuses for a portion of future pay raises, and it would increase premiums, deductibles, and copayments for active-duty dependents and military retirees who participate in TRICARE, DoD's medical care program. If adopted, those options and the reductions in force structure contained in the transformational alternative would reduce operation and support costs by an average of about $18 billion annually over the period, a reduction of about 6 percent relative to CBO's projection of the operation and support resources necessary to carry out DoD's plans under the 2009 FYDP (excluding unbudgeted costs).

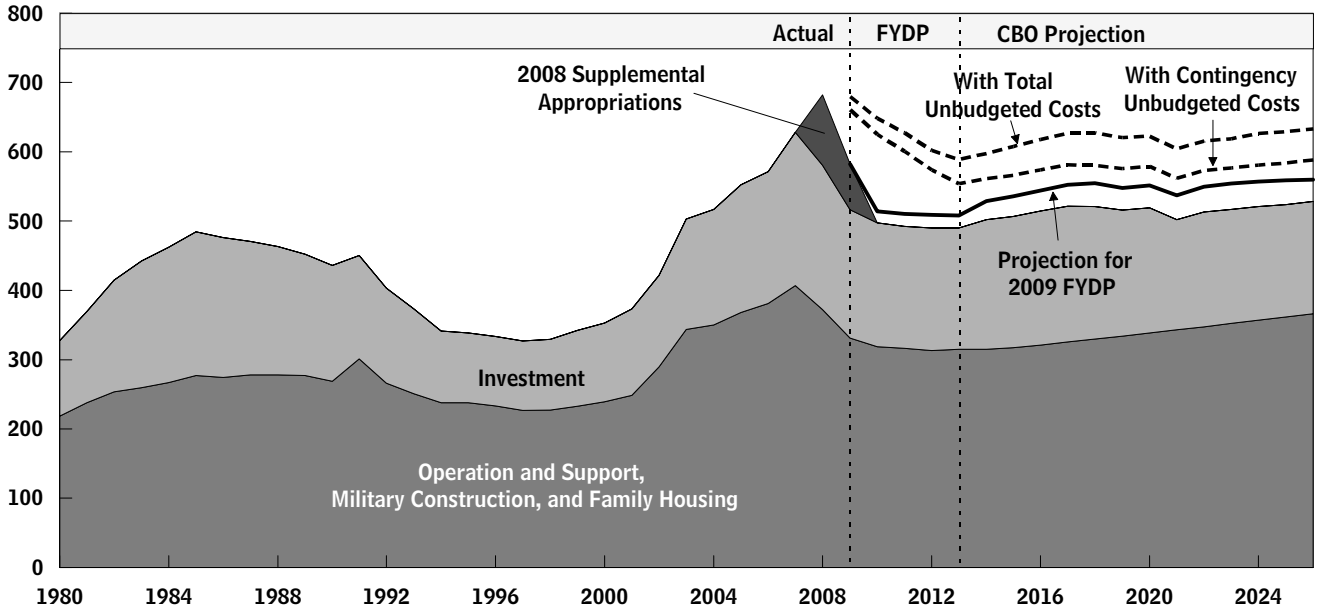
Army

Under CBO's transformational alternative, the Army would rely more than its current plans envision on the capabilities to be provided by FCS. For example, it would end upgrades to its existing Abrams tanks and Bradley fighting vehicles, abandon its plan to replace its older M113-series infantry carrier vehicles, and rely instead on FCS vehicles. The Army also would rely on the FCS program's unmanned aerial vehicles and cancel its plans for a new ARH. With those changes, the transformational alternative would require less funding for procurement and research and development than would be the case under the 2009 FYDP. CBO's projection indicates

Figure A-2.

Past and Projected Resources for Defense (Transformational Alternative)

(Billions of 2009 dollars)



Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program.

that the transformational alternative would require $31 billion in average annual funding (excluding unbudgeted costs) between 2010 and 2026.

The transformational alternative also would reduce the number of the Army's active-component combat brigades from 48 to 42, thereby reversing the increase in the size of the Army announced in December 2006. Some observers would argue that this reversal would be feasible because the advanced capabilities provided by the transformational programs would enable a force smaller than the one currently planned to meet future needs for military operations. Moreover, the likelihood that U.S. forces deployed to Iraq will be reduced would allow the Army to sustain continued (or somewhat increased) deployments in Afghanistan or elsewhere while still providing an active force of 42 brigades sufficient rest time (at least two years) at home station. Others would argue that, notwithstanding reductions in U.S. forces in Iraq, a larger Army will be needed to support operations in Afghanistan and for other deployments that will become necessary as part of the war on terrorism. The advanced capabilities DoD is pursuing might not be realized to the extent that the department currently expects. Reversing the increases in Army forces that have been made would save an average of $9 billion over the period from 2010 to 2026, primarily in funding for operation and support.[3]

Navy and Marine Corps

Under the transformational alternative, the Navy's plans for building ships outlined in the 2009 FYDP, including the DDG-1000 and a fleet of littoral combat ships, would be unchanged. The Navy and Marines would, however, increase purchases of armed, unmanned aerial vehicles and reduce planned purchases of the JSF, replacing only the existing fleet of AV-8B Harriers. The Navy would develop a new, large unmanned reconnaissance aircraft and cancel the multimission maritime aircraft and its broad-area maritime surveillance aircraft. Overall, the changes to programs contained in the transformational alternative would reduce the Department of the Navy's demands for investment funding to $57 billion annually between 2010 and 2026 (CBO's projection for the 2009 FYDP is $58 billion per year, excluding unbudgeted costs).

3. Some of the savings would occur in reduced payments by the Department of the Army to various government funds. Because they are intragovernmental transfers, reducing those payments would yield no near-term savings to the government as a whole, although savings would accrue over the longer term.

Table A-2.

CBO's Projection of Resources for a Transformational Alternative for Defense Compared with CBO's Projection of the Implications of the 2009 FYDP

(Billions of 2009 dollars)

	Annual Average		
	2010–2013	2014–2026	2010–2026
Total, DoD Resources (Excluding unbudgeted costs)	510.4	548.6	539.6
Army			
Rely on unmanned aerial vehicles fielded as part of the Future Combat Systems program; cancel the armed reconnaissance helicopter	-0.6	-0.2	-0.3
Discontinue upgrades to existing combat vehicles	-1.3	-2.1	-1.9
Rely on Future Combat Systems; forgo replacing M113 series infantry carrier vehicles	-0.1	-1.1	-0.9
Reduce combat brigades	-7.7	-9.8	-9.3
Reduce other programs	0	-0.9	-0.7
Subtotal, Army	-9.7	-14.1	-13.0
Department of the Navy			
Reduce planned purchases of joint strike fighters; increase purchases of armed unmanned aerial vehicles	+0.2	-1.3	-0.9
Develop new unmanned reconnaissance vehicles; cancel multimission maritime aircraft and broad area maritime surveillance programs	-2.0	+0.1	-0.4
Reduce Marine Corps end strength	-2.3	-3.7	-3.3
Reduce other programs	0	-0.5	-0.3
Subtotal, Department of the Navy	-4.1	-5.3	-5.0
Air Force			
Reduce planned purchases of joint strike fighters; increase purchases of armed unmanned aerial vehicles	-0.3	-1.5	-1.2
Plan for the next long-range strike aircraft to be an unmanned, large payload, long range supersonic/hypersonic aircraft; restructure the current bomber replacement program	-1.1	-2.2	-2.0
Reduce other programs	0	-2.1	-1.6
Subtotal, Air Force	-1.4	-5.8	-4.7
DoD-wide and Cross-Service[a]			
Plan for pay increases through 2015 to match the employment cost index minus 0.5 percentage point; expand special pay and bonuses to partially compensate	-0.6	-2.1	-1.8
Increase enrollment fees and copayments for defense medical care	-2.1	-5.5	-4.7
Subtotal, DoD-wide and Cross-Service	-2.8	-7.7	-6.5
Total	**-17.9**	**-32.8**	**-29.3**
Revised Funding for DoD	492.5	515.8	510.3

Source: Congressional Budget Office.

Note: FYDP = Future Years Defense Program; DoD = Department of Defense. Numbers may not add up to totals because of rounding.

a. Cross-service savings would accrue to the individual military departments in addition to those specifically identified above.

The transformational alternative would reduce the end strength of the Marine Corps so as to reverse the increases in that service's size announced by DoD in December 2006. The result would save an average of $3 billion each year from 2010 to 2026, primarily for operation and support.[4]

Air Force

Under the transformational alternative, the Air Force would increase its purchases of armed unmanned aerial vehicles and reduce its planned JSF purchases, but retain the current tactical aircraft fleet's ability to deliver 2,000-pound bombs. Instead of acquiring an interim replacement bomber with a medium payload that can fly at subsonic speeds, the Air Force would develop a large-payload, long-range, supersonic or hypersonic aircraft that would be built later than the interim replacement bomber. Overall, the changes to Air Force programs contained in the transformational alternative would reduce the service's funding demands for investment to $64 billion annually from 2010 to 2026, as opposed to the $69 billion (excluding unbudgeted costs) CBO projects for the 2009 FYDP.

4. As for the Army, some savings would come from smaller contributions made by the Department of the Navy to various government funds, with no near-term savings to the government as a whole.

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