

050

National Defense

Budget function 050 comprises spending for national defense. Although 95 percent of that spending is for the Department of Defense, function 050 also includes the atomic energy activities of the Department of Energy and smaller amounts in the budgets of other federal departments and agencies. For 2003, lawmakers have provided discretionary budget authority of \$382 billion for function 050. CBO estimates that discretionary outlays for the function will total about \$377 billion in 2003, the fifth consecutive year of growth in defense spending following several years of decline. Mandatory spending in function 050 usually shows negative balances because of payments made to federal agencies.

Federal Spending, Fiscal Years 1990-2003 (In billions of dollars)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Estimate 2003
Budget Authority (Discretionary)	303.9	332.2	299.1	276.1	262.2	262.9	265.0	266.2	272.4	288.3	300.8	331.7	360.8	381.6
Outlays														
Discretionary	300.1	319.7	302.6	292.4	282.3	273.6	266.0	271.7	270.2	275.5	295.0	306.1	348.9	376.6
Mandatory	<u>-0.8</u>	<u>-46.4</u>	<u>-4.3</u>	<u>-1.3</u>	<u>-0.6</u>	<u>-1.5</u>	<u>-0.2</u>	<u>-1.2</u>	<u>-1.8</u>	<u>-0.6</u>	<u>-0.5</u>	<u>-0.6</u>	<u>-0.4</u>	<u>-0.2</u>
Total	299.3	273.3	298.4	291.1	281.6	272.1	265.8	270.5	268.5	274.9	294.5	305.5	348.6	376.5
Memorandum:														
Annual Percentage Change in Discretionary Outlays	n.a.	6.5	-5.3	-3.4	-3.5	-3.1	-2.8	2.1	-0.5	1.9	7.1	3.8	14.0	7.9

Note: n.a. = not applicable.

Introduction to the Defense Options

The investment options that the Congressional Budget Office (CBO) has included in this volume are meant to do two things: be cost-effective and illustrate choices that the Department of Defense (DoD) might make, consistent with the Bush Administration's efforts to transform the military. Options emphasizing cost-effectiveness would provide a given capability at lower cost or cut programs that are particularly expensive for the capability they provide. In addition, many of the investment options represent ideas similar to ones that the Administration is considering to transform the military. CBO's options are designed to provide net savings.

DoD's noninvestment activities—which include providing compensation to military and civilian personnel, paying contractors for purchases of services, and paying for the fuel and other supplies routinely consumed during DoD's day-to-day operations—will account for \$250 billion (or two-thirds) of DoD's budget authority in 2003. Several of the national security options that address those operating costs focus on the benefits provided to military personnel. The costs of those benefits are growing: under current policies, annual spending for military medical care would rise from \$28 billion today to \$38 billion by 2013 (in 2002 dollars). Other options would

seek to improve DoD's use of military personnel. Those options might be viewed either as ways to reduce the number of service members and achieve budgetary savings or as ways to free up personnel for counterterrorism defense or other new missions without increasing the size of the force.

As readers examine the options, they will find that although the table in each option reports savings with respect to budget authority and outlays, the text refers to either one or the other. Some options that deal with weapon systems refer to budget authority because spending rates for those weapons programs tend to be quite slow. Other options, especially ones that deal with operation and support costs, report outlays since those funds are usually spent relatively quickly.

Readers of these options may also want to consult a recent CBO study, *The Long-Term Implications of Current Defense Plans* (January 2003). That report takes a comprehensive look at the long-term implications of the Bush Administration's plans for defense. It projects what level of resources might be needed to execute those plans and what the plans would imply about the size, composition, and age of future U.S. forces if they were carried out.

050-01—Discretionary

Cancel Remaining Purchases of the Javelin Missile

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	174	142	9	116	1	441	441
Outlays	50	107	92	78	60	387	439

The Javelin missile was originally designed to counter the Soviet Union’s heavily armored tanks. About 20,000 were produced from 1997 through 2003, at an average cost of about \$160,000 apiece. Close to 4,000 more are due to be bought between 2004 and 2007, at an average cost of \$125,000 apiece. The Congress, the General Accounting Office, and the Defense Department’s Inspector General have all expressed skepticism about the continued, essentially unchanged investment in antitank munitions despite the significant changes in the threat since the end of the Cold War. Whereas potential targets numbered about 25,000 at the height of the Cold War, they now number fewer than 4,000.

The Army’s current stated requirement for Javelin missiles stands at almost 35,000, including the amount needed for the new medium-weight Stryker brigades (also termed the interim brigade combat teams). However, the actual planned purchase is 23,850, partly reflecting the Army’s acknowledgment of the limited number of Javelins that simulations have indicated would be fired at enemy tanks and other vehicles during a war—both because of the number of potential targets and the many other weapons with longer ranges that would be employed to fight a war. Despite the reduction, the Army’s planned purchase of Javelin missiles would provide a number sufficient to fight 75 major theater wars. For other munitions, the Army buys enough for about 10 major theater wars, accounting for wartime usage, training, and other needs.

The Javelin overcomes several significant problems that its predecessor, the Dragon, had. That missile presented dangers at its launch and had to be manually guided to its intended target and therefore exposed the soldier using it to enemy counterfire. In contrast, the Javelin uses a “soft launch” (its motor igniting after the missile is ejected from the launch unit) and then guides itself to the intended target. Perhaps because of the Dragon’s

problems, the Army intends to use more than a third of the Javelin missiles, about 9,000, as “confidence rounds” fired by trainers to demonstrate to trainees that the missiles actually work. But that approach is unique to Javelin—for no other U.S. munition are confidence rounds used as a basis for the required inventory.

Eliminating the requirement for those confidence rounds and paring the extra missiles required for the maintenance pipeline would reduce the required number of Javelins to about 14,000, well below the 2003 inventory of about 20,000. Therefore, this option would cancel the remaining purchases but would leave the Army with an inventory sufficient for all of its needs, including equipping the Stryker brigades. The option would save \$50 million in outlays in 2004 and \$387 million over the 2004-2008 period.

Several arguments have been raised in support of continuing to purchase Javelin missiles. First, the Army’s greater emphasis on light and medium-weight forces, including the Stryker brigades, makes Javelin more important now as both an offensive and defensive weapon because it provides such units with tank-destroying capability that they otherwise might not have. Second, because one cannot predict which units may actually expend their Javelins even if overall use is expected to be low, keeping a robust maintenance pipeline is a prudent hedge. Third, although having confidence rounds is a unique requirement for munitions, they are necessary to counteract the negative legacy of the Dragon. Finally, the Defense Security Cooperation Agency has notified the Congress that sales of the Javelin have been negotiated with Taiwan, and sales to the United Kingdom, Australia, Jordan, and Lithuania are being discussed. Canceling the remainder of the U.S. Army’s purchases of Javelins could negatively affect those sales.

RELATED OPTIONS: 050-03 and 050-04

050-02—Discretionary**Reverse Organizational Changes that Have Increased the Army's Support Tail Without Increasing Its Combat Tooth**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	231	478	493	507	522	2,231	5,076
Outlays	196	433	480	501	517	2,126	4,949

Over the past decade, the Army has pursued a number of reorganizations of its combat forces, several of which have increased the ratio of support staff positions (the Army's "tail") to direct combat positions (its "tooth"). In 1996, the Army implemented two reorganizations of field artillery units almost simultaneously. Batteries of 155-millimeter cannons in the artillery battalions were reduced from eight howitzers per battery to six. Batteries of multiple-launch rocket systems were reduced from nine launchers to six. At the division level, the reduction in firepower was approximately 30 percent. At the same time, the number of artillery brigades in the corps supporting each heavy division was increased from one to two. The effect was to distribute essentially the same amount of combat power among a larger number of units, substantially expanding headquarters units and staff and increasing fixed costs.

This option would reverse those reorganizations to what existed during Operation Desert Storm. Doing so would decentralize the command structure, thereby lessening the distance between fire control centers and the intelligence, surveillance, and reconnaissance functions and perhaps allowing quicker decisions on the battlefield. Those changes would save \$196 million in outlays in 2004 and \$2.1 billion over the 2004-2008 period.

Reversing the reorganizations would result in an overall reduction of approximately 12,000 personnel within the Army. Of those, 5,000 are active-duty personnel and 7,000 are reservists. In both pools, the proportion of personnel who are midranking officers is heavy, and noted shortages of midranking officers and unusually high promotion rates that have followed those shortages could be addressed by adopting this option. Because the earlier reorganizations occurred over a two-year period, this option would adopt the same amount of time for reversing them. Importantly, the option would cut administrative overhead without cutting "tooth." After two years and the reduction in personnel, savings would be approximately half a billion dollars annually.

But several arguments support the current organizational structure. For example, the artillery battalions that resulted from the reorganizations are lighter than the previous ones by about 25 percent and therefore are in accord with the widely agreed-upon goal of lightening the Army and making its operational units more deployable. Moreover, thanks partly to improvements in command, control, and intelligence, the higher number of headquarters personnel may be able to help commanders apply their firepower effectively across a wider area.

RELATED CBO PUBLICATIONS: *Making Peace While Staying Ready for War: The Challenges of U.S. Military Participation in Peace Operations*, December 1999, and *Structuring the Active and Reserve Army for the 21st Century*, December 1997

050-03—Discretionary**Reduce the Number of Army Stryker Brigade Conversions**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	542	623	880	754	220	3,019	3,321
Outlays	157	380	592	714	597	2,438	3,180

The Army Transformation Plan envisions bridging a gap between today's heavy armored forces, which are slow to deploy but very powerful, and today's light infantry forces, which can be deployed rapidly but lack substantial combat power. The first element of that plan, called the objective force, is a long-term research effort to develop weapon systems with substantial combat power that can be deployed rapidly. The second element of the plan, called the interim force, is a near-term effort to convert six Army brigades into a medium-weight configuration. The two efforts are complementary, since the Army's experience with the interim force is intended to let the Army experiment with new ways of warfighting and new ways of organizing units that may prove useful for the objective force. Ultimately, the Army envisions converting all of its divisions to objective force units.

The Army's plans for the interim force are centered on the Stryker program, which intends to rapidly field a family of light armored vehicles capable of filling most of the combat roles in a brigade. The Army's goal is for the interim brigades equipped with Stryker vehicles to be light enough to deploy by air anywhere in the world within 96 hours and robust enough to handle the full range of combat missions. Converting each brigade to that configuration will cost about \$1.5 billion, the Congressional Budget Office estimates. About two-thirds of that cost will be for procuring slightly more than 300 Strykers per brigade.

The Stryker vehicle has, however, attracted criticism. With less armor than some current fighting vehicles, it may not be as survivable on the battlefield as today's heavy forces. Moreover, the vehicle is too large and too

heavy to be easily transported in the Air Force's C-130 transport planes and thus will not be as easy to deploy as the Army had initially hoped that it would be.

This option would reduce the number of interim brigades from six to three and reduce the procurement of Stryker vehicles accordingly, saving \$2.4 billion in outlays over the next five years.

Proponents of this option note that the interim force is intended to be only a stepping-stone to the Army's future objective force. They argue that the three brigades that would be converted for the interim force would be sufficient to allow the Army to experiment with new ways of fighting, and the lower number of conversions would reduce the resources expended on what some people would characterize as a short-term expedient.

Opponents of this option contend that the Army's plan for the objective force is risky and may not be affordable and that conversions to the objective force are not scheduled to begin until 2008. In contrast, they say, the Stryker program has been executed rapidly, with little risk, and at a relatively low cost. Thus, the interim brigades could provide useful capabilities much sooner than the objective force will. Further, opponents argue, because most of the units that the Army plans to convert are light units, the Army will, in fact, increase its net combat power through the conversions, even though the Stryker may be less survivable than the fighting vehicles in heavy units. Finally, critics of this option note, although the Stryker vehicle cannot be easily transported by C-130s, it can be easily carried in C-5s or C-17s, the transport aircraft used for strategic deployments.

050-04—Discretionary**Delay the Fielding Date of the Future Combat System from 2008 to 2010**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	0	1,255	1,054	2,614	1,161	6,084	6,675
Outlays	0	569	781	1,474	1,170	3,995	6,493

As described in the previous option (050-03), the first element of the Army Transformation Plan is the objective force, a long-term research program to develop weapon systems with substantial combat power that can be deployed rapidly. The centerpiece of the objective force is the Future Combat System (FCS) program, which has the goal of developing a combination of ground and air platforms, linked together with advanced communications networks into an integrated combat system. Because the FCS program is still evolving, its full costs are not yet known; they are, however, likely to be more than \$22 billion through 2009, according to the Army's most recent budget plan.

Such an effort carries with it substantial risks, including the need to develop many advanced new technologies. Furthermore, despite the lack of a firm cost estimate, the Army currently plans to field the FCS in 2008. Many external observers and technical experts believe that such a schedule is too aggressive, given the program's ambitious goals.

This option would delay the planned fielding date of the FCS by two years and reduce funding accordingly. That delay would reduce outlays by about \$4 billion over the next five years.

Proponents of this option argue that the current program, with its many unknowns and technological risks, is likely to slip anyway within the next few years and that its overly aggressive schedule could diminish its chances for success. Since it is unlikely that many of the technologies that the Army is considering using in the FCS will be

mature by the time production begins, an aggressive schedule may result in otherwise achievable capabilities being sacrificed to meet the fielding date.

The funding that would be diverted from the FCS under this option could be used to convert additional Stryker brigades, but that would reduce the option's savings. Those brigades, serving as stepping stones to the objective force, are intended to help the Army develop the new doctrine and methods of warfighting that are described as crucial to the objective force's success. Since those interim brigades will share many organizational features with objective force units, they also could serve as an embryonic objective force, providing a test environment for its new equipment and integrated approach to combat. The Army's transformation could thus be a more gradual and evolutionary process, with fewer risks.

Opponents of this option argue that transforming the Army into the objective force is the most important effort under way in the service's modernization and should be pursued as quickly as possible. Although defenders of the FCS program are likely to concede that it faces technical challenges, they see the aggressive schedule as motivation that inspires the FCS team to search for ways to overcome those challenges. They believe that delaying the FCS program will send a signal that the rapid transformation of the Army is not vital, threatening the bureaucratic and institutional momentum needed to sustain such a major set of changes. They also note that the longer the FCS is delayed, the more funding the Army will have to expend to recapitalize and sustain its existing fleet of aging platforms.

RELATED OPTIONS: 050-01, 050-03, and 050-05

050-05—Discretionary**Cancel the Army's Comanche Helicopter Program**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	1,100	1,198	1,531	2,274	1,584	7,687	14,109
Outlays	589	1,040	1,140	1,426	1,752	5,946	12,736

Many of the Army's helicopters are beyond the end of their useful service life. In 1982, the Army had planned to replace some of those older scout, attack, and utility helicopters with more than 5,000 new Comanche (RAH-66) helicopters. However, the Comanche has had a troubled development program. The utility version of the helicopter was dropped in 1988 because the program had become too costly. In 1990, the size of the already-reduced planned purchase was cut from more than 2,000 aircraft to just under 1,300. Later, the Army delayed the projected start of production from 1996 to 2005. In 2002, the Army sought to extend the engineering and manufacturing development phase of the program by another two years. Subsequent restructuring of the program delayed the planned start of an initial operational capability by a year to 2009. It also eliminated the attack mission from the Comanche's primary requirements. As a consequence, the planned purchase has been halved to 650 aircraft, and reconnaissance remains the only primary mission.

Those changes have caused the average procurement cost per helicopter to more than double since the program began—from \$11.5 million in 1985 to \$25.1 million in 2002 (in 2003 dollars). With that cost growth, the Comanche is now more expensive than the Army's Apache (AH-64) attack helicopter, even though it was developed to be less costly to buy, operate, and maintain. Moreover, prior to the reduction to 650 aircraft, the General Accounting Office and the Department of Defense's Inspector General stated that costs could grow by as much as another 30 percent.

This option would cancel the Comanche program and instead buy 850 Predator B unmanned aerial vehicles (UAVs) for the Army's scout and reconnaissance missions, beginning in 2007. The additional 200 vehicles

would provide reserves for attrition. If the Army configured its UAVs like the Air Force's, with the same distribution of ground control stations, sensors, and communications, the average cost per vehicle would be \$7 million in 2003 dollars. If the Army selected a leaner configuration than the Air Force, relying more on line-of-sight communications or procuring fewer sensors, the unit cost would be less. To field the scouting capability rapidly, this option would buy the UAVs at the contractor's maximum rate of 100 per year, about 60 percent faster than the rate of production for the Comanche. At a procurement rate of 100 per year, more than 550 would be produced by 2013. Net savings would total \$589 million in outlays in 2004 and almost \$6 billion over the 2004-2008 period.

The primary advantage of the Comanche over existing rotary aircraft is its sophisticated stealth, avionics, and aeronautics technologies. In the interim, canceling it might require the Army to increase its reliance on older rotary airframes originally designed in the 1960s and 1970s. However, some analysts argue that the Comanche, which was conceived at the height of the Cold War, will no longer face threats of the same scale or sophistication as those for which it was designed. Whether it really does have a unique role to play in Army aviation is unclear. With or without Comanche, the Army is planning to use Apaches in both scouting and attack roles for the next 15 to 20 years, as it did successfully during the Persian Gulf War. The Army also used Kiowa Warriors in the Persian Gulf both as scouts for Apaches and as light attack aircraft. Many of the Kiowa Warriors have undergone substantial upgrades since then. Moreover, the Army has already used less capable UAVs than the Predator B for some scouting functions. In Kosovo and Afghanistan, U.S. forces used UAVs effectively as scouts, without the risk of losing aircrews. In addition, the evolution of capa-

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bilities for the Predator B platform is expected to be very rapid, including the development of an attack system, which remains a secondary requirement for the Coman-

che. Finally, if the Comanche program were canceled, some of the savings could be used to fund a program to continue developing advanced helicopter technologies.

RELATED OPTIONS: 050-03 and 050-04

RELATED CBO PUBLICATIONS: *An Analysis of U.S. Army Helicopter Programs*, December 1995, and *Options for Enhancing the Department of Defense's Unmanned Aerial Vehicle Programs*, September 1998

050-06—Discretionary**Reduce the Procurement of Virginia Class Submarines and Transfer Six More Subs to Guam**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Costs (-) or Savings							
Budget authority	-240	-40	750	1,190	4,200	5,860	21,340
Outlays	-130	-250	-60	240	720	520	12,380

In 1999, the Chairman of the Joint Chiefs of Staff released a study calling for a force of 55 to 68 attack submarines (SSNs), of which 18 should be the new Virginia class, by 2015. Subsequently, the Department of Defense decided that 55 submarines would be the goal, meeting both the minimum peacetime and wartime force levels identified in the study. To modernize its submarine force, the Navy plans to buy one Virginia class sub per year from 2003 to 2007 and two or three per year between 2008 and 2013. At the same time, it plans to retire early two Los Angeles class submarines in 2004 and 2005. Those subs would still have years of useful life remaining, however, if their nuclear reactors were refueled.

This option would refuel the reactors to keep those Los Angeles class submarines in service. Under the option, the Navy would procure 10 Virginia class submarines, 11 fewer than planned. In addition, the option would make permanent the Navy's plan to temporarily base three submarines in Guam and would also transfer six additional submarines there by 2012 to take advantage of being 3,300 nautical miles closer to their operating areas. Those changes would cost \$240 million in budget authority in 2004 but would save about \$5.9 billion in budget authority over five years.

To help bridge the gap between force levels and requirements, the Navy announced in 2001 that it would begin basing three attack submarines in Guam by early 2004. By moving those ships 3,300 nautical miles west of Pearl Harbor and employing an operating concept different from the one used for subs based in Hawaii or the continental United States, the Navy can get about three times the number of mission days from Guam-based SSNs as

from other SSNs. However, the attack submarines being transferred to Guam will reach the end of their service life around 2015, and the Navy has not said whether they will then be replaced by other submarines. Basing nine attack submarines in Guam indefinitely, as this option describes, would require the construction of additional infrastructure on Guam to make the submarine facilities there equivalent to a submarine base. The Congressional Budget Office estimates the cost for that infrastructure to be around \$200 million to \$300 million.

This option would maintain a force of at least 55 SSNs through 2015, equivalent in the number of mission days they could perform to a force of 74 attack submarines (including 19 Virginia class) based only in the United States. Under the Navy's plan, the force would have 59 attack submarines by 2015, including 15 Virginia class, but would provide mission days equivalent to only 61 SSNs because two of the Guam-based submarines would have retired. (If the Navy replaced those two with new Virginia class subs, the force would provide mission days equivalent to 65 SSNs, including 19 Virginias.)

Proponents would argue that in addition to saving money, this option would be highly cost-effective. Attack submarines are expensive capital assets that perform a variety of missions, many of them covert. Although SSNs cost around \$2.0 billion dollars apiece (in 2002 dollars), they spend an average of 36 days per year—or 10 percent of their service life—on-station performing missions. Like other Navy ships, SSNs spend the rest of their service life in training missions, port calls, transit, and maintenance. Consequently, the cost per additional mission day per year provided by building a new attack submarine is \$2.7

million (in 2002 dollars). But the cost per additional mission day of transferring an SSN to Guam is only \$0.2 million.

This option would have several disadvantages, however. First, with fewer submarines based in San Diego and Pearl Harbor, having SSNs to train with carrier battle groups and thus support them during their deployments may be more difficult. Attack submarines would also be less available to assist other Navy units, such as ones practicing antisubmarine warfare.

Second, because existing submarines are less capable than new Virginia class submarines, an attack submarine force with fewer Virginias might be somewhat less capable of prosecuting a war. However, that difference would probably matter only if the United States fought a sophisticated opponent with potent antisubmarine warfare capabilities.

Third, a potential difficulty with this option—as with the Navy’s decision to base three submarines in Guam—is the quality of life for sailors and their families on that island. Guam does not offer the same homesteading opportunities as submarine bases in San Diego and Pearl Harbor do. At those large bases, it is relatively easy for members of a submarine crew to find other jobs in the Navy when they finish their sea tours. Thus, they and their families can put down roots and stay in one place longer than a few years. Such opportunities are few in Guam. In addition, the spouses of sailors have fewer opportunities to find jobs there. Still, if the Navy found that Guam-based duty led to much lower levels of retention for submariners, monetary bonuses might help. Even large annual incentives for each member of a submarine’s crew would not significantly change this option’s cost-effectiveness.

RELATED CBO PUBLICATION: *Increasing the Mission Capability of the Attack Submarine Force*, March 2002

050-07—Discretionary**Cancel the DDX Program and Buy New Frigates Instead**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	870	1,270	3,060	2,580	2,900	10,680	19,670
Outlays	510	1,040	1,100	1,070	1,300	5,020	17,170

The Navy is developing a new generation of destroyer, the DDX, as well as a new surface combatant for inshore operations called the littoral combat ship (LCS). The destroyer, which is expected to carry about 130 missiles and one or two advanced gun systems, is being designed principally to attack targets on land, although it will be able to perform other missions. A small ship, the LCS is expected to counter either diesel-electric submarines; mines; or small fast attack craft in coastal regions—missions for which the Navy would prefer to not use a large ship like the new destroyer. Although the Navy has not formally announced how many of each type of ship it will purchase, some Department of Defense (DoD) officials have indicated that the service intends to buy 16 of the new destroyers and about 60 littoral combat ships. The total cost of purchasing 16 DDXs would be about \$35 billion, the Congressional Budget Office (CBO) estimates. Buying up to 60 LCSs would add to those costs substantially.

This option would scrap the plans to build a new destroyer and littoral combat ship in favor of building a new frigate, a ship that would be considerably smaller than the DDX but larger and more capable than the LCS. Relative to the plans outlined in DoD's 2003 Future Years Defense Program, this option would save about \$11 billion in budget authority between 2004 and 2008. Those savings do not include money from canceling the LCS, because that program was not included in the 2003 Future Years Defense Program, so the actual savings from this option would be substantially higher. (CBO did not include savings from research and development funding as a result of canceling the DDX because, according to the Navy, many of the new technologies being developed for that ship would eventually be used in other ship programs, including the future carrier, the Virginia class

submarine, and the future cruiser. CBO assumed that the new frigate would incorporate them as well.)

Under this option, the Navy would initially purchase 17 multimission frigates through 2013 and eventually buy a total of 40. Over the long term, buying 40 frigates would completely offset the savings from not buying the 16 DDXs. If the Navy chose, it could use the savings from canceling the littoral combat ship to buy even more frigates.

The DDX is a ship that appears to be designed for major wars. With a reported displacement of 13,000 to 16,000 tons, it would be larger than any other surface combatant in the Navy. In addition to the missiles, its other major weapon system would be one or two 155-millimeter advanced guns to provide fire support to the Marine Corps up to 100 nautical miles away.

Supporters of this option would argue, however, that the most likely maritime challenges that the United States and its allies will face include terrorism, drug smuggling, violations of economic sanctions, illegal immigration, and arms trafficking. The DDX would be an exceptionally large and expensive ship to fulfill those missions.

Ironically, although a smaller warship would seem to make more sense to perform those missions, the littoral combat ship that Navy officials describe does not appear to be well suited for them. The LCS would be a single-mission ship with a modular combat system, which would be tailored to the mission that the ship was expected to take on. If it was being sent to counter mines, it would have a mine countermeasures payload. If it was being sent to counter diesel-electric submarines, it would have an antisubmarine warfare suite. However, countering mines might be better performed by ships dedicated

to the task, and countering submarines might be better done with submarines, as the Navy has thought since the Cold War. Similarly, the LCS does not seem particularly well suited to counter small, fast attack boats. Although the most effective weapon against such boats has been the helicopter, the LCS would at most be able to carry, operate, and sustain one medium-sized helicopter (rather than the two that today's frigates and destroyers can accommodate), nor would the LCS be fast enough in its own right to hunt down high-speed enemy boats. That deficiency might prove to be especially important since such boats are the most likely weapons for terrorists to use to attack U.S. Navy ships.

A new frigate would cost about twice as much as a littoral combat ship, CBO estimates. But in return for that money, the ship would be capable of performing multiple missions at the same time—including countering mines, submarines, and small boats—and would have a robust capability to defend itself.

Canceling the DDX program would have a number of disadvantages, however. First, the program is perhaps the most innovative in the Navy. The destroyer is intended to have a completely new design; to use a new, efficient

power system; and to operate with a relatively small crew. Other development programs in the Navy are expected to benefit from the research and innovation being pursued in the DDX program. Restructuring that program could disrupt and slow the process of innovation in ship design for the Navy for several years, although many of the technologies being developed for the DDX could be used effectively in the new frigate.

Second, fire support for the Marine Corps would suffer in the absence of the DDX destroyer. The largest gun in the Navy today has a caliber of five inches. The 155 mm gun on the DDX (slightly larger than a six-inch gun) would provide better fire support for amphibious landings and Marine operations ashore. The 155-millimeter guns would have a much longer range and be three times as powerful as the current five-inch guns. However, it has been more than 10 years since a Navy ship carried a larger gun. During the Gulf War, the war against Serbia, and the operation to overthrow the Taliban in Afghanistan, as well as in numerous smaller military operations, any need for a larger naval gun was not plain. Furthermore, improvements in missile technology as well as the larger payloads that new Navy and Marine strike aircraft, such as the Joint Strike Fighter, will carry could make a larger gun unnecessary.

RELATED CBO PUBLICATION: *Transforming the Surface Combatant Force*, forthcoming

050-08—Discretionary**Eliminate Research and Development Funding for the Second Future Carrier**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	10	11	12	17	7	57	995
Outlays	6	10	11	15	11	53	880

First designed in the 1950s and 1960s, the Nimitz class aircraft carrier lies at the center of the U.S. Navy. The Navy has bought 10 of the ships, each one being technologically a little better than its predecessor. Now, however, the Navy argues that the Nimitz's design, its propulsion system, and its power systems have nearly reached the limits of their usefulness for the future. Under the 2003 Future Years Defense Program (FYDP), the Navy planned to make a series of evolutionary upgrades to the Nimitz design so that, after three or four more ships, essentially a new class of carrier would exist. Under the 2004 FYDP, however, the Navy plans to incorporate all of the elements of the new design into the first new carrier (the CVN-21), to be authorized in 2007. The Navy's intent behind that change is to accelerate the arrival of new capabilities in the carrier fleet, although it will also make that first new ship much more expensive.

Under the previous plan, the development of a new class of aircraft carrier began with the CVN-77, ordered in 2001, with some relatively minor improvements and reductions in crew size. That ship is still considered part of the Nimitz class. The first of the new carriers, to be ordered in 2007, was designated as the CVNX-1 to indicate that it was the start of a new class of aircraft carrier and represented the most dramatic change from the Nimitz. The CVNX-1 would have received a new, more efficient, less manpower-intensive nuclear reactor; a new electrical power grid; and an electromagnetic catapult for launching aircraft. The Navy had hoped that those changes would dramatically increase the power available on the ship; free up weight that could be available for

other things; and, especially, lead to a smaller crew and a reduction in the total ownership cost of the ship class. The CVNX-2, the carrier that the Navy had hoped to order in 2011, would then have had additional improvements, such as further reductions in crew size as well as improvements to the flight deck and hull in order to increase the number of sorties flown off the carrier in a 24-hour period.

Rather than pursue all of those new technologies for the CVN-21, this option would eliminate the research and development funding that was designated for the CVNX-2 and thereby force the Navy to build a second CVNX-1. Doing so would save almost \$900 million in outlays between 2004 and 2013, although most of those savings would come in the latter half of the period.

The Navy argues that it needs a new class of aircraft carrier because the reactor for the Nimitz class does not generate much excess power, making it difficult to incorporate new weapons or combat systems. Thus, pursuing the CVNX-1, which this option does, would solve that problem and improve reliability, survivability, and maintainability. But building a CVNX-1 (or CVN-21) would not clearly yield a substantial advance in capabilities over a second CVNX-1. Navy carriers today are already far more capable in terms of the number of strike sorties they can launch and the number of targets they can hit in a 24-hour period than they were 10 years ago. Furthermore, although additional savings from more reductions in crew size might be possible, they would not be realized for many decades.

050-09—Discretionary**Cancel Production of the V-22 Aircraft**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	1,451	1,870	1,791	1,722	801	7,636	9,716
Outlays	388	980	1,501	1,723	1,551	6,142	8,889

The V-22 aircraft, which entered production in 1997, is designed to help the Marine Corps perform its amphibious assault mission (seizing a beachhead in hostile territory) and its subsequent operations ashore. The Marine Corps plans to buy a total of 360 of the planes. (The Air Force may eventually buy 50 V-22s for its special-operations forces, and the Navy plans to buy 48 V-22s for combat search-and-rescue missions and for logistics support of its fleet.) The V-22 can transport more than 20 Marines or about 10,000 pounds of their equipment from ship to shore. The plane's tilt-rotor technology enables it to take off and land vertically as a helicopter does and, by tilting its rotor assemblies into a horizontal position, to become a propeller-driven airplane when in forward flight. As a result, the V-22 can fly faster than conventional helicopters. The Marine Corps argues that the plane's increased speed and other design features make it less vulnerable than other aircraft when flying over enemy terrain and enable it to provide over-the-horizon amphibious assault capability—which minimizes the exposure of amphibious ships to coastal fire and increases tactical surprise by obscuring the destination of the attack. In addition, the V-22 is designed to fly longer distances without refueling than conventional helicopters do. Thus, it can fly directly to distant theaters, whereas many helicopters must be transported there on planes or ships.

Despite those advantages, critics of the V-22 have questioned whether the new aircraft will demonstrate enough improved capabilities to justify its higher cost. Each V-22 is expected to cost about \$72 million (in 2003 dollars), or significantly more than the Marine Corps's conventional helicopters. A November 2000 report by the Director of Operational Testing and Evaluation in the Office of the Secretary of Defense (OSD) expressed concern about whether the V-22 would actually be able to take

off and land quickly enough to have a higher survival rate than that of current helicopters. That report also raised concern about the V-22's low rate of availability (which results when planes break down frequently or take a long time to fix). According to the report, the V-22s that were tested were ready to perform their missions (that is, were mission capable) only 36 percent to 57 percent of the time, in contrast to the Marine Corps's desired rate of 82 percent. By comparison, the Army's Blackhawk had a mission-capable rate of about 80 percent, on average, in the past, and even the aging CH-46 helicopter, which the V-22 is intended to replace, had a rate of 79 percent. The Marine Corps argues that many of the problems leading to the low availability cited in that study have been solved. Nonetheless, if availability proved low, the V-22's cost-effectiveness would be significantly reduced. Despite the concerns raised in the report, the study endorsed continued flight-testing for the V-22, although it recommended that testing be completed before the V-22 was deployed.

The greatest concerns about the V-22 program relate to the plane's safety. Of the 17 V-22s that were bought for developmental flight-testing or allocated to operational flight-testing, three (or 18 percent) have been lost. A fourth V-22 was lost on a routine training flight, not as part of flight-testing. (A tilt-rotor predecessor of the plane also crashed.) The percentage of V-22s lost during testing is much lower than the 50 percent loss rate experienced by the Marine Corps's CH-53 helicopter during its testing and almost equal to the 17 percent loss rate during testing of the Blackhawk and the Army's early-model Apache attack helicopter. However, none of the prototypes of the S-92 (a commercial transport helicopter developed by the Sikorsky Aircraft Corporation) or the SH-60 (a seagoing variant of the Blackhawk) have crashed.

If the Department of Defense (DoD) canceled the program altogether, DoD might instead buy conventional helicopters for the Marine Corps. Several helicopters have been proposed as alternatives to the V-22:

- The CH-53E, which the Marines already use for heavy amphibious lift missions;
- The CH-60, a variant of the Army's Blackhawk helicopter, which the Navy chose instead of the V-22 to replace the aging CH-46s that it uses in transport missions; or
- A military version of the medium-lift S-92, which has a capacity to carry troops and equipment between that of the CH-60 and the CH-53E.

This option assumes that DoD would buy a total of 360 S-92s for the Marine Corps and 48 S-92s for the Navy in place of an equal number of V-22s. (Only 215 of those S-92s would be purchased through 2013, however—163 fewer than the number of V-22s that would have been bought by then under DoD's 2003 plan. The slower acquisition occurs because modifying the S-92 for maritime missions and testing the plane are assumed to take several years.) The S-92 can transport roughly the same number of troops and carry about the same amount of weight externally as the V-22 can. Purchasing S-92s for the Navy's search-and-rescue mission would provide commonality with the Marine Corps's aircraft and could also provide commonality with the Air Force's since the S-92 is a candidate to perform that service's search-and-rescue mission as well. (OSD may also be considering purchasing an improved version of the UH-1, a utility helicopter already in the Marine Corps's helicopter fleet. That plane might be used to augment the capabilities of the V-22 if replacing all of the CH-46s became too expensive. Or OSD might substitute a combination of CH-53Es and UH-1s for the V-22s if the latter continued to experience safety problems.)

Some analyses of alternatives to the V-22 have suggested that more than one helicopter would need to be purchased to replace the lift capability lost from cutting the number of V-22s that DoD had planned to buy. Con-

sequently, under this option, DoD would buy additional helicopters, specifically 80 CH-53s from 2008 through 2013. The Marine Corps would buy CH-53s that incorporated a number of improvements over the CH-53Es in the fleet today. Buying just 10 of the improved CH-53s would add the capacity to transport another 360,000 pounds of equipment or 550 troops. Together with the S-92s, those CH-53s would provide almost as much capability as the planned fleet of V-22s. The option would save nearly \$400 million in 2004 and \$6.1 billion over five years, the Congressional Budget Office estimates.

Opponents of the V-22 cancellation might point out that conventional helicopters cannot perform amphibious operations as quickly or as safely as the V-22 can. Because the aircraft can fly faster and carry more equipment (or carry it longer distances) than helicopters can, Marine forces with V-22s could build up combat power ashore—especially from long distances—more quickly than forces with helicopters could. As a result, amphibious assaults relying on V-22s could prove less risky. Similarly, slower helicopters could present a target for ground-to-air missiles over longer periods, and some types, including perhaps the S-92s, might have areas vulnerable to small-arms fire that were larger than those of the V-22s.

In addition, unlike the V-22s, the helicopters purchased under this option might not be able to self-deploy (fly from their base directly to a theater of operations rather than be partially disassembled and carried on transport aircraft). They also lack other improvements the Marine Corps hopes to gain with the V-22s, including systems that give pilots better information about potential threats.

This option also assumes that no V-22s are bought for the Air Force, since that service probably would not pursue the V-22 program alone. (Indeed, procurement of V-22s for the Air Force has been delayed while awaiting the outcome of the current test program.) Although the option assumes that the Navy would substitute S-92s for the V-22s it intended to buy, the option does not include a replacement for those Air Force planes. The savings from this option would be lower if such replacements were procured.

050-10—Discretionary**Reduce Purchases of the Air Force's F/A-22 Fighter**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	0	8	1,044	3,190	3,974	8,217	18,724
Outlays	0	2	264	1,275	2,673	4,214	18,355

The F/A-22, under development as the Air Force's next premier fighter aircraft, is scheduled to begin replacing the older F-15 fighter soon. But the program has experienced repeated delays and increases in cost during the more than 20 years that the Department of Defense (DoD) has discussed a replacement for the F-15. This option would decrease the planned purchase of F/A-22s by 156 planes, thereby saving a total of \$8.2 billion in budget authority through 2008.

The Air Force originally planned to buy more than 800 F/A-22s. After a series of cuts, the 2003 plan would have bought only 295 aircraft—almost enough for three air wings. Press reports indicate that the Administration will buy fewer planes—perhaps 276 through the end of the program. If the Air Force cuts its purchases to that number, it will have to pay \$146 million apiece for the F/A-22, the Congressional Budget Office estimates. Although the F/A-22 has a number of improvements in capability over other fighters, its cost makes it the most expensive fighter ever built.

The F/A-22 is the only new tactical fighter program to survive from the Cold War period. (The other two fighters that DoD is planning—the joint service F-35 and the Navy's F/A-18E/F—entered development after 1990. They are likely to be both less capable and less expensive than the F/A-22, although they may face many of the same threats.) The F/A-22's sophistication and cost, plus concerns about whether it will actually realize promised improvements in capability, have led some analysts to suggest that the F/A-22 is a legacy of the Cold War—a plane designed to fight many sophisticated Soviet fighters

rather than the modest regional fighter forces that it is more likely to encounter today. Such critics recommend canceling the program, or at least cutting planned procurement further.

In its report on its fiscal year 2000 defense appropriation bill, the defense subcommittee of the House Committee on Appropriations expressed concerns about the plane's cost and capability. The Senate concurred and the Congress directed DoD to complete testing of the F/A-22 before spending funds on production. The Air Force indicates that it has successfully completed all of the testing ordered by the Congress, and it seems likely to move the program into the next phase of production.

Some proponents of this option might argue that the Air Force could reduce production quantities to a total of 120 F/A-22s, enough to let the service field one air wing of the sophisticated fighters. Such a "silver-bullet" purchase would allow the Air Force to learn lessons about producing aircraft of the F/A-22's technological complexity but might still leave enough planes to perform the missions for which the service needs the F/A-22's degree of stealth and other performance advantages.

One possible disadvantage of this option is that it would make the Air Force's fighter fleet, which is already aging under current plans, even older. However, buying F-15s to make up for the cut in F/A-22s would remedy that problem (although it would reduce the savings from this option). The F-15 is much less capable than the F/A-22, but it is far more capable than the fighters of almost any of the United States' regional adversaries.

RELATED OPTION: 050-11

RELATED CBO PUBLICATION: *A Look at Tomorrow's Tactical Air Forces*, January 1997

050-11—Discretionary**Slow the Schedule of the F-35 Joint Strike Fighter Program**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	0	134	1,759	2,328	2,552	6,773	18,420
Outlays	0	29	388	1,080	1,531	3,028	17,006

The F-35 Joint Strike Fighter program is one of the military's most ambitious aircraft development programs. A team of several manufacturers led by the Lockheed Martin Aeronautics Company was awarded a contract in 2002 to develop three versions of the aircraft: an inexpensive multirole fighter for the Air Force; a longer-range, stealthy ground-attack plane for the Navy; and a short-takeoff/vertical-landing fighter for the Marine Corps. Together, those planes account for two-thirds of the fighter aircraft that the military expects to buy through 2020 and roughly two-thirds of the spending on new tactical fighters, the Congressional Budget Office estimates. Their procurement costs are expected to total \$147 billion in budget authority (in 2003 dollars) through the end of the F-35 program, according to the Administration's estimates.

This option would defer purchase of the first F-35s until 2008—two years later than the Department of Defense (DoD) now plans. A slowdown in development and production would give the program more time to clear development hurdles and would decrease outlays by \$3 billion over the next five years. The slowdown would save \$17 billion through 2013 because DoD would purchase 412 fewer planes through that year.

The F-35's development could prove very challenging. Variants of the aircraft are intended to perform significantly different missions, although the planes themselves are expected to have much in common. F-35s are also supposed to be more capable than the aircraft they replace but only slightly more expensive, if at all. Addressing those seemingly inconsistent goals at the same time could take longer than the program manager and contractors now envision.

In addition, the program's schedule is tight compared with that of the only other full-fledged development program for a fighter in recent years, the Air Force's F/A-22 air-superiority aircraft. The F-35 became a major defense acquisition program in May 1996; the first formal review took place in 2001, when the program entered the systems development and demonstration phase. The F-35 is scheduled to enter production in 2006, just five years after significant development began and 10 years after the beginning of the program. The F/A-22 program, by contrast, has already been running for about 15 years and may take more time before it jumps its last developmental hurdles. Although the schedule for the F-35 is about 80 percent longer than that for another fighter, the Navy's F/A-18E/F, that program needed only to modify an existing aircraft.

The F-35 program has already experienced delays. The demonstration phase and selection of a contractor team took about a year longer than the program had originally projected. Even longer delays might be associated with the next stage of development since it is much more challenging than the demonstration phase.

Slowing the schedule of the F-35 program would mean that DoD would have to adapt its future plans for tactical fighter fleets. For example, if DoD had to wait longer for F-35s, it might keep the production lines of current-generation aircraft open longer than it now plans. Also, anticipating delays in the F-35 program might result in DoD's modifying current aircraft to make them last longer.

Opponents of slowing the schedule for F-35s could cite a number of concerns. Any up-front savings from length-

ening the program, they might argue, would be offset by higher total costs. In addition, delays would make DoD's fighters (on average already much older than in the past) grow even older before they were replaced. As a result, DoD could have to pay modification costs that it would otherwise avoid and would have fewer fighters available as they underwent age-related repairs.

Conversely, pursuing development at a more measured pace might result in savings. A delay might permit DoD to avoid producing aircraft before the design was complete and to avoid costly retrofits. It also might allow DoD and the services to develop production schedules that were more realistic. Costs can be much higher if contractors build facilities with production capacity in excess of what is needed for the maximum production rate—a risk that can exist with aggressive production schedules.

RELATED OPTIONS: 050-10 and 050-12

RELATED CBO PUBLICATIONS: *A Look at Tomorrow's Tactical Air Forces*, January 1997, and *The Effects of Aging on the Costs of Operating and Maintaining Military Equipment*, August 2001

050-12—Discretionary**Substitute Unmanned Combat Air Vehicles for Manned Aircraft**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	0	0	0	0	14	14	3,587
Outlays	0	0	0	0	4	4	2,481

Unmanned aircraft have performed surveillance and reconnaissance missions during U.S. military operations in Afghanistan. For instance, unmanned Predators, armed with Hellfire missiles, have directed manned fighters to enemy targets and even attacked Taliban targets themselves. The Department of Defense (DoD) has several programs that are slated to develop unmanned combat air vehicles (UCAVs)—armed unmanned aircraft—from scratch. A prototype of the Air Force’s UCAV, the X-45, flew earlier this year. Production versions of that aircraft are supposed to become operational around the end of this decade.

This option would cut a manned F-35 (formerly known as the Joint Strike Fighter) for every 1.1 UCAVs deployed, to reflect the ratio of the currently projected payloads of the two aircraft. That substitution would leave the Air Force’s total capacity to deliver munitions unchanged. The Air Force is currently scheduled to increase annual production of F-35s from six planes in 2006 to 110 by 2012. For this option, the Congressional Budget Office (CBO) assumed that purchases would be slowed and that peak production of F-35s would equal only 72 planes per year. Thus, this option would replace 114 F-35s with 126 UCAVs over the 2004-2013 period, saving \$2.5 billion in outlays through 2013 (although almost no savings would appear during the next five years).

Last year, DoD submitted detailed plans for UCAVs only through 2007, the end point of the 2003 Future Years Defense Program, although the services or program offices that oversee such weapons development possessed tentative schedules beyond that period. Under those plans, the first six procurement-funded UCAVs for the Air Force would be bought in 2006, with eight more to follow in 2007. For the purposes of this option, CBO

assumed that 20 UCAVs would be purchased per year beginning in 2008 and continuing beyond 2013 and that DoD would meet its expressed cost goals for UCAVs.¹

In addition to replacing Air Force F-35s with UCAVs, Navy and Marine Corps F-35s could also be cut to offset purchases of the Navy’s UCAV. CBO has not estimated the savings of such an option because the Navy’s unmanned aircraft (designated the X-47) is not as far along as the X-45. It will probably not be procured until the early 2010s or later—and thus falls outside the budgetary window of this option. The X-47 will face the additional challenge of operating from aircraft carriers; the Navy may also expect it to perform patrol missions that could require it to have longer ranges or more loiter time than the Air Force version.

UCAVs may have several advantages over manned aircraft. First, they can perform dangerous missions without risking the lives of their pilots. Second, UCAVs are expected to cost less to acquire and operate than their manned counterparts. The X-45 is supposed to cost less than half as much as the Air Force’s version of the F-35. Its operating costs might represent an even greater percentage reduction if the UCAVs are kept in storage when they are not needed, which is the current operational concept. (CBO did not estimate operating savings for this option.) Third, improvements in technology to detect,

1. The Office of the Secretary of Defense seems likely to propose changes in the structure of DoD’s UCAV programs. If, as press reports indicate may happen, DoD combines the UCAV programs of several of the services into one joint effort (as it did in the restructuring that brought about the F-35 program), both production quantities and development and procurement costs would change, as would the savings and costs of this option.

recognize, and attack targets may have lessened the benefits brought by having a pilot in the cockpit. Indeed, fighter aircraft must fly at such speeds and heights that they depend on the same target information that will be supplied to UCAVs. (However, even the most autonomous UCAVs being designed today will not decide whether to bomb targets but will have human operators who make that decision.) Fourth, UCAVs might be able to loiter in the vicinity of a suspected enemy target until more data about the site becomes available, potentially reducing collateral damage.

UCAVs may also have some disadvantages. Predators operating in Afghanistan did eliminate some of their targets, according to press reports, but those reports also

suggest that the unmanned aircraft experienced some failures. Moreover, the success of the more sophisticated UCAV depends on technological advances that are far from certain. One such technology—automatic target recognition—will determine whether the UCAV can find the targets that it is supposed to attack. However, automatic recognition is an objective that has proved elusive. Unmanned aircraft have also experienced more mishaps than expected. If more UCAVs had to be bought to offset higher attrition, the savings from this option would be lower. They would also be lower if UCAVs grew significantly in cost—which could be a greater concern for UCAVs than for manned attack aircraft since the former may incorporate more unproven technologies.

RELATED OPTION: 050-11

RELATED CBO PUBLICATION: *A Look at Tomorrow's Tactical Air Forces*, January 1997

050-13—Discretionary**Accelerate Replacement of the C-5s' Engines**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Costs (-) or Savings							
Budget authority	-556	3,376	3,176	1,211	-1,070	6,137	5,709
Outlays	-188	635	2,332	2,446	1,106	6,332	4,802

The Department of Defense (DoD) relies on its fleets of C-5 Galaxy and C-17 aircraft for the majority of its strategic airlift (long-range transport) capability. For example, those planes have carried approximately 80 percent of DoD's air cargo during the conflict in Afghanistan. To help remedy a perceived shortfall in airlift capacity, the department recently ordered an extra 60 C-17 aircraft beyond the previous goal of 120. Additionally, the Air Force intends to modernize the C-5 fleet through the Reliability Enhancement and Re-enginering Program (RERP), a key component of which is the replacement of chronically faulty engines with a commercial variant. According to an Air Force study, the RERP could improve the reliability rate of that fleet by as much as 20 percentage points—in effect, increasing the number of C-5s available for missions by up to 20 aircraft.

This option would accelerate the replacement of the C-5s' engines with new, more reliable ones, helping to increase strategic airlift capacity while providing savings by delaying or reducing purchases of C-17s. Depending on how the strategic airlift force was ultimately structured, this option could reduce the need for C-17s by 20 to 40 aircraft, which would translate into savings of \$6.3 billion in outlays over the next five years.

DoD has placed a higher priority on purchasing additional C-17s than on modernizing the C-5s. Current plans call for purchasing the additional C-17s by 2007, while full-rate modernization of the C-5s would not begin until 2009 and then proceed at a rate of 12 aircraft per year through 2016. This option would shift the emphasis to the C-5s by speeding up the modernization program, which could be completed in 2012—eight years ahead of the current schedule. Full-scale replacement of the C-5s' engines would begin in 2006, at a rate of 24 per year, double the currently planned pace.

The savings possible under this option depend on the structure that the strategic airlift force takes over the coming decades. In the near term, modernized C-5s and an additional 22 C-17s could provide about the same airlift capacity as the planned addition of 60 C-17s, yielding a savings of 38 C-17s. From a longer-term perspective, those C-5s plus 39 additional C-17s would meet DoD's recently established requirement for the ability to airlift an average of 54.5 million ton-miles of cargo per day and provide a savings of 21 C-17s, although the budgetary savings would be smaller than those shown above.

Proponents of this option would argue that maintaining a diversified fleet of different types of airlift aircraft is preferable to relying disproportionately on a single type: if one suffers from unforeseen design or maintenance problems, the availability of an alternative ensures that airlift operations can continue. Modernizing the C-5s helps maintain that balance with the C-17s. Proponents also would argue that the entire airlift fleet would benefit from the C-5s' improved reliability because the effects of their breaking down at unexpected points in the airlift cycle could ripple through the airlift system, adversely affecting the general flow of air traffic. Additionally, some analysts predict that the cost of the C-5 modernization program will be more than recouped by reduced operation and support costs.

Opponents would argue that an emphasis on modernizing C-5s is a risky proposition, with possibly hidden costs. As of yet, no C-5 aircraft have been modified with new engines, so the modernization costs are still uncertain, and the predicted increase in reliability remains unproved. Additionally, some opponents would warn that unforeseen structural problems, especially for older A-model aircraft, might render the service life of the C-5s too short to be worth the expense of modernization. In

contrast to those risks, opponents would cite the current record of C-17s, with their 85 percent mission-capable rate, as proof of their value. Furthermore, opponents would argue, an accelerated program to modernize the C-5s could be more costly than currently thought if depot facilities needed to be expanded to meet a higher modernization rate. Similarly, that faster pace might require a greater number of aircraft in depots at any given time, temporarily reducing the number available for airlift operations.

Finally, critics of this option would argue that the trade-off between the C-5 and C-17 aircraft is not simply about cargo capacity. The C-17 has capabilities that the C-5 lacks. For example, the C-17 can land and take off on short, austere runways, and it has defensive countermeasures that allow it to operate in hostile situations. However, supporters of this option would counter, an airlift fleet that includes more than 100 C-17s should be sufficient for the relatively unusual occasions when such capabilities are needed.

RELATED CBO PUBLICATION: *Moving U.S. Forces: Options for Strategic Mobility*, February 1997

050-14—Discretionary**Reduce Nuclear Delivery Platforms to Achieve the Moscow Treaty's Limits on Operational Nuclear Warheads**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	100	360	820	830	470	2,580	5,500
Outlays	50	270	640	850	630	2,440	5,070

For most of the past 40 years, the Department of Defense (DoD) has maintained a triad of strategic offensive nuclear forces consisting of missiles, submarines, and bombers. Those forces have been subject to the Strategic Arms Reduction Treaty (START) since it took effect in December 1994. That treaty limits the United States and the countries of the former Soviet Union (Russia, Belarus, Kazakhstan, and Ukraine) to 6,000 warheads at the end of a seven-year reduction period that ended in December 2001. The United States' strategic nuclear force currently consists of 1,200 nuclear warheads on 500 Minuteman III missiles, 500 warheads on 50 Peacekeeper missiles, 3,200 warheads on C4 and D5 missiles carried on 18 Trident submarines, and roughly 1,000 warheads (nuclear bombs and cruise missiles) deployed on nearly 200 strategic bombers, for a total of 5,900 warheads.

At the Moscow Summit on May 24, 2002, Presidents Bush and Putin signed the Treaty Between the United States of America and the Russian Federation on Strategic Offensive Reductions (informally known as the Moscow Treaty). Under that treaty, the United States and Russia would reduce their number of operational strategic nuclear warheads to between 1,700 and 2,200, about one-third of the current levels, by 2012. The treaty does not require the actual destruction of a single warhead; nor does it require retirement of delivery platforms—the missiles, submarines, and bombers that carry nuclear warheads. Rather, each country may achieve the reductions mandated in the treaty by storing nuclear weapons in a manner that makes them unavailable for immediate operational use. The Moscow Treaty was submitted to the U.S. Senate for ratification on June 20, 2002, but the Senate has not acted on it.

Before signing the treaty, the Administration had announced its intent to eventually reduce the number of operational nuclear warheads that the United States maintains to levels essentially identical to those later specified in the Treaty. That intent was announced at the conclusion of the Nuclear Posture Review (NPR) in January 2002. That review concluded that strategic forces equipped with between 1,700 and 2,200 operational nuclear warheads would be sufficient to maintain the security of the United States and set an interim goal of reducing the number of operational warheads to 3,800 by 2007. The Administration's 2003-2007 defense plan submitted in early 2002 partially anticipated the results of the NPR. That plan would reduce U.S. nuclear forces by retiring all 50 Peacekeeper missiles, converting four of the oldest Trident submarines to a conventional (non-nuclear) role, and permanently converting all 81 B-1 bombers to a conventional role. The nuclear warheads previously carried on those forces would be stored, resulting in a reduction to about 4,800 operational warheads by 2007.

This option would lower the United States' operational nuclear arsenal by another 1,000 warheads by 2007 to fully attain the NPR's interim goal. Also, the option would remove and store a total of 2,600 nuclear warheads by 2012 to achieve the Moscow Treaty's goal of having no more than 2,200 operational warheads. If those reductions were achieved without retiring any of the missiles, submarines, and bombers that carry the warheads, no budgetary savings would result. In addition to removing nuclear warheads from operational use and storing them, this option would retire 200 Minuteman missiles and two Trident submarines, although those steps would not be required by the treaty.

Compared with the Administration's 2003-2007 plan, this option would save about \$100 million in budget authority in 2004, \$2.6 billion over the 2004-2008 period, and \$5.5 billion through 2013. Overall, the 10-year savings would come from canceling upgrades to the Minuteman missiles and Trident submarines that would be retired under this option (saving \$3.2 billion) and from reduced operations costs (saving \$2.9 billion). Those savings would be partially offset by the nearly \$0.6 billion in costs to retire the delivery platforms and remove the warheads. The Congressional Budget Office's (CBO's) estimates do not include any costs to build additional facilities to store the warheads removed from operational use because, according to DoD, available storage capacity would be sufficient to accommodate all of those warheads.

CBO assumes that, under this option, 550 nuclear warheads would be removed by retiring a wing of 150 single-warhead Minuteman missiles by 2007 and converting 200 Minuteman missiles that currently carry three warheads to a single-warhead configuration. The costs to retire the missiles and remove the 550 warheads would total about \$250 million over the 2004-2013 period. However, those costs would be more than offset by the \$3.1 billion in savings over 10 years—\$1 billion from canceling planned upgrades and \$2.1 billion from reduced operations costs. Also, under this option, about 1,200 nuclear warheads would be removed by retiring two Trident submarines by 2007 and deploying fewer warheads on each of the remaining submarines. CBO estimates that the costs to retire the submarines and remove and store the associated nuclear warheads would total another \$250 million over the 2004-2013 period. However, those costs would be more than offset by the \$3 billion in savings over 10 years—\$2.2 billion from not

buying the missiles (\$1.4 billion) and not overhauling the submarines (\$0.8 billion); and \$0.8 billion from reduced operations costs. Finally, under this option, 892 nuclear bombs and cruise missiles carrying nuclear warheads would be removed from service by converting the B-2 bombers to a conventional role and deploying fewer cruise missiles on the B-52 bombers. CBO estimates that the costs to remove those nuclear weapons would amount to about \$50 million through 2013.

Proponents of this option might argue that with the reduced threat from a major nuclear power, the United States might now decide that it could safely deploy fewer nuclear warheads on fewer weapon systems. Moreover, despite the reductions in delivery platforms, this option would still retain three types of nuclear systems—the nuclear triad of missiles, submarines, and bombers—and thus provide a margin of security in case an adversary developed a new technology that would render a leg of the triad more vulnerable to attack. In addition, some supporters of this option might argue that current U.S. force requirements are driven by an outdated and unnecessarily large target list. Deterrence, they believe, would still be robust with a much smaller arsenal of warheads and fewer delivery platforms.

Critics of the option might argue that the Administration's plans, which to date have involved limited reductions in the number of nuclear delivery platforms, are a prudent hedge against the emergence of unforeseen threats. Moreover, the submarines that this option would retire could be converted for conventional use. Thus, retiring those submarines might eliminate capabilities to conduct conventional warfare that could prove useful in the future.

RELATED OPTION: 050-15

RELATED CBO PUBLICATION: *Letter to the Honorable Joseph R. Biden Jr. regarding estimated costs and savings from implementing the Moscow Treaty*, September 24, 2002

050-15—Discretionary**Reduce the Trident Submarine Force to 12 and Buy 48 Fewer D5 Missiles**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	110	170	330	220	200	1,030	2,840
Outlays	60	160	270	270	180	940	2,440

Until recently, the Navy deployed a fleet of 18 Trident submarines. Eight of those submarines were based in Bangor, Washington, and the other 10 were stationed in Kings Bay, Georgia. All of the submarines at Kings Bay and two of the submarines at Bangor deployed 24 newer, more-capable D5 missiles that, under the Strategic Arms Reduction Treaty, each carried eight nuclear warheads. The six remaining submarines stationed at Bangor deployed 24 older C4 missiles that carried six nuclear warheads apiece. In all, about 3,200 warheads were deployed on those 18 submarines.

The Navy has begun converting four of the Trident submarines that carried C4 missiles to a conventional (non-nuclear) role. Two of the conversions began in 2003, and the remaining two will start in 2004. The C4 missiles that will be removed from the submarines will be transported to a Department of Defense (DoD) facility for disposal. The warheads removed from those missiles will either be reloaded onto the newer D5 missiles or stored at a DoD facility. The Navy's plan to pursue those conversions was announced in January 2002 after the Nuclear Posture Review (NPR), which concluded that a force of 14 Trident submarines would be sufficient. Under that plan, each of the remaining 14 Trident submarines will be equipped to carry 24 D5 missiles by 2007. According to the Navy, an average of two submarines a year will undergo a major overhaul, during which they will not carry any missiles. The 12 other operationally deployed submarines will carry a total of 288 D5 missiles and about 2,300 warheads (about 192 warheads on each submarine).

The Administration plans on buying a total of 540 D5 missiles—288 for the Trident submarines, 86 that have already been purchased for flight tests (through 2002), and 166 for future flight tests and spares. By the end of

2002, the Navy had purchased 396 missiles; it plans to buy the remaining 144 missiles over the 2003-2013 period. In all, the Congressional Budget Office assumes that the 12 operationally deployed submarines would carry 1,152 warheads, or about 96 warheads on each submarine.

This option would retire two Trident submarines carrying the older C4 missiles when they would otherwise be upgraded to carry the newer D5 missiles (one in 2005 and another one the following year). The option would also cancel the planned purchase of 48 D5 missiles because fewer missiles would be needed to support a 12-submarine force. To keep a similar number of warheads overall, the smaller Trident force would carry 111 warheads on each submarine instead of 96. Compared with the Administration's plan, this option would save about \$1 billion in budget authority over the 2004-2008 period and \$2.8 billion over 10 years. Specifically, by retiring the two submarines early, the Navy would save about \$0.6 billion from reduced operations during the 2004-2013 period, net of the costs to retire the submarines. In addition, retiring the submarines by 2007 would save \$2.2 billion in planned upgrades and purchases over that 10-year period. (That figure results because not overhauling the two submarines to accommodate the newer D5 missiles would save about \$0.8 billion and not buying the D5 missiles that would be deployed on the overhauled submarines would save about \$1.4 billion.)

Purchasing 48 fewer D5s would have several drawbacks, however. The Navy recently extended the service life of Trident submarines from the original 30 years to 44 years. That extension created a mismatch between the life span of the submarines and the life span of their missiles, so the Administration has begun to extend the service life of D5 missiles. That program involves redesigning the

guidance sets and retrofitting every missile with them, requiring additional flight tests to judge the guidance sets' performance. Those flight tests are scheduled to take place over the 2008-2013 period. If production of D5 missiles had ceased by then (as it would under this option) and those flight tests ended up requiring more D5s, reopening production lines could be costly.

Opponents of this option might also argue that loading more warheads on existing missiles would reduce their range and lessen the flexibility of the force, since missiles with fewer warheads can cover more widely dispersed targets. In addition, cutting the number of operationally deployed submarines from 12 to 10 could increase their vulnerability to attack by Russian antisubmarine forces.

Nevertheless, some people would consider the capability retained under this option sufficient to deter nuclear war. Although the missiles' range and the submarines' patrol areas would be smaller, they would still exceed the levels planned during the Cold War—when Russia had more antisubmarine forces and the United States intended to deploy the D5 with eight large warheads (W-88s). Moreover, less targeting flexibility might not reduce the force's nuclear deterrent: 1,152 warheads deployed on 288 missiles might not deter an adversary any more than the 1,110 warheads on 240 missiles called for in this option. The end of the Cold War and Russia's atrophying nuclear forces may have weakened the rationale for the United States to be able to increase its forces by adding warheads to the D5 missile.

RELATED OPTION: 050-14

RELATED CBO PUBLICATIONS: *Letter to the Honorable Joseph R. Biden Jr. regarding estimated costs and savings from implementing the Moscow Treaty*, September 24, 2002, and *Rethinking the Trident Force*, July 1993

050-16—Discretionary**Consolidate Military Personnel Costs in a Single Appropriation**

More than 20 percent of the federal government's costs to recruit and retain military personnel fall outside the Department of Defense's (DoD's) military personnel appropriation. DoD pays for many personnel benefits—for example, commissaries, some medical care, DoD schools, and on-base family housing—from other appropriations. The Department of Veterans Affairs (VA) pays some additional benefits, such as ones under the Montgomery GI bill and veterans' disability payments.

Under this option, the DoD-funded personnel-support costs mentioned above would become part of the military personnel appropriation. Some VA programs might also be funded in the defense budget as well. That realignment of funding would have two related goals: to provide more-accurate information about how much money is being allocated to support military personnel and to give DoD managers a greater incentive to use resources wisely. The amount that this option might save is unknown (so no table is shown). But with the total cost of supporting military personnel at about \$115 billion per year, the potential savings from better management are substantial. Savings of just 1 percent, for example, would equal about \$1 billion annually.

The current distribution of personnel costs among different appropriations makes it difficult for DoD, the Congress, and taxpayers to track the total level of resources devoted to supporting military personnel. Changes in the level of the appropriation for military personnel can be either offset or enhanced by changes in the resources

devoted to health care, housing, or education benefits that are funded from other appropriations. The total picture is rarely, if ever, seen—making it hard to analyze total compensation or to make comparisons with civilian compensation.

DoD has some recent experience in consolidating costs into the military personnel appropriation. When DoD adopted accrual funding for the cost of Medicare-eligible retirees' health care in 2003, those funds shifted out of the operation and maintenance accounts and into the military personnel account. This option would expand that concept by incorporating additional personnel support costs.

Advocates of this option would argue that further consolidation would improve the incentives for DoD managers to use military personnel effectively, encouraging them to substitute less costly civilian employees of the department, contractors, or labor-saving technology for military personnel where possible.

Critics of this option would argue that implementation could be difficult. For example, new financial management systems and a new structure for appropriations would be required. Moreover, the responsibilities and the structure of various Congressional subcommittees might need to change. Finally, in order to realize savings, DoD leaders would have to respond to the new incentives by reducing their reliance on military personnel or by increasing efficiency.

RELATED CBO PUBLICATION: *Accrual Budgeting for Military Retirees' Health Care*, March 2002

050-17—Discretionary**Target Pay to Meet Military Requirements**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	751	1,651	2,735	3,091	3,296	11,525	30,230
Outlays	714	1,606	2,681	3,073	3,286	11,360	30,028

The cash pay that military members receive includes basic pay, which depends on rank and years of service, as well as bonuses, allowances, and the tax advantage that arises because some allowances are not subject to federal income tax. Basic pay is the most important element of cash pay, averaging 55 percent or more of total cash compensation. The 2001 defense authorization act included provisions to increase basic pay at a greater rate than recent pay growth in the private sector. Those provisions set the annual military pay raise between 2001 and 2006 at 0.5 percentage points above the increase in the employment cost index (ECI) for wages and salaries of private-sector workers. In addition to those general pay increases, the Department of Defense (DoD) requested in the 2002 and 2003 defense authorization acts, and the Congress authorized, changes in the pay table to improve retention of both officers and enlisted personnel in certain pay grades. Those legislative changes have raised the pay for average enlisted personnel by 16 percent between 1999 and 2003, for example, and the pay for senior enlisted personnel by 31 percent (in real terms). Real pay for officers has risen by 13 percent over the same period. Those changes appear to have improved retention, as all of the military services reported strong overall retention in 2002.

In addition to pay raises, another tool that the services have used is selected reenlistment bonuses (SRBs), which are cash incentives that encourage the reenlistment of qualified service members in occupational specialties with high training costs or demonstrated shortfalls in retention. Eligible personnel generally receive half of their bonus when they reenlist and the remainder in annual payments over the course of their additional obligation. Each service regularly adjusts its SRBs to address current retention problems, adding or dropping eligible specialties and raising or lowering bonus levels.

Yet shortages remain among specific occupations. On average, between 1999 and 2002, about 30 percent of occupations for enlisted personnel had shortages, while about 40 percent were overstaffed. To address current occupational shortages of experienced personnel, this option would substitute reenlistment bonuses for part of the planned future pay raises. It would limit annual pay raises to 2 percent in 2004 through 2006 and offer SRBs to service members in those occupations where shortages remained. This option would approximately double the services' spending on initial bonus payments over four years, by adding about \$108 million in bonuses annually from 2004 through 2007, and remove current restrictions on the maximum bonus amount that an individual can receive. After 2006, pay raises for all personnel would be in step with the employment cost index. Those changes would save \$714 million in outlays in 2004 and more than \$11 billion between 2004 and 2008. Service members receiving the bonuses would have higher overall pay than under the current plan between 2004 and 2006. But because bonuses do not compound in the same way as general pay raises, they would have lower overall compensation in 2007 and beyond, unless the bonus program was extended.

Advocates of this option would argue that increasing selected reenlistment bonuses would be more efficient than increasing pay in general because bonuses allow DoD to target military pay to specific occupational skills where there are shortages. General pay increases would lessen shortages in some occupations but would also worsen surpluses in other occupations. In addition, compared with pay increases, bonuses would be easier to adjust from year to year as recruiting and retention goals changed. Furthermore, bonuses would not incur the heavy cost of "tag-alongs," the elements of compensation, such as retirement benefits, that are tied to basic pay.

Supporters of this option would also argue that bonuses could be focused on the years of service in which personnel make career decisions. In addition, they might argue that the current bonus levels are too small to provide meaningful differences in pay among occupations and that larger differences would be a cost-effective tool for improving military readiness.

Some critics of expanding reenlistment bonuses would argue that large pay differences among occupations could

violate a long-standing principle of military compensation: that personnel with similar levels of responsibility should receive similar pay. Turning the argument about tag-alongs on its head, critics would also say that increasing bonuses would unfairly deprive service members of the retirement and other benefits that they would receive if that money was part of basic pay throughout their career.

RELATED OPTION: 050-20

050-18—Discretionary**Reduce Military Personnel in Overseas Headquarters Positions**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	115	237	371	384	397	1,503	3,711
Outlays	114	236	371	383	396	1,501	3,705

The last fundamental reorganization of military headquarters occurred under the Goldwater-Nichols Act of 1986. That law gave the unified theater commands—such as the European and Pacific Commands—the lead role in planning operations and executing policy and had them report directly to the President. When a crisis develops requiring additional military forces and support, a unified commander calls on the four military services to provide that support. The services' role is to recruit, train, equip, and support unified commanders' forces, while unified commanders exercise geographic command and control.

In practice, however, unified commanders are another management layer over existing overseas service “component” commands such as U.S. Army Europe and the Pacific Fleet. The unified commanders' requests for forces and support are relayed through those component commands to the services' U.S. headquarters. With each service maintaining a separate headquarters component in a region, redundancies exist in many management functions. And in some regions, the only personnel in a particular service branch are those at the component command headquarters. The overseas component command headquarters currently comprise some 6,000 personnel, or 10 percent of all headquarters staff.

This option would reorganize the military's command structure by eliminating the overseas component headquarters. Savings could then come from reducing the number of management personnel by 4,000, which would save \$1.5 billion over five years if the personnel reductions produced cuts in end strength. Alternatively, the reorganization might allow for 4,000 additional troops for more critical missions. However, no savings would result from that approach.

According to proponents of this option, eliminating overseas component commands would improve command and control as well as provide personnel savings. It would streamline command, control, and communications by eliminating an entire layer of headquarters between the services and the unified commanders. Yet, assuming that some of the overseas component commands' responsibilities could not be eliminated, it would retain some of those personnel.

The services assert that continued commitments overseas, combined with new requirements at home, have stretched the active-duty military to its limits. Also, the newly created Northern Command and the Department of Defense's emphasis on creating standing joint forces—multiservice units that can deploy anywhere with little notice—may require additional personnel. Instead of simply eliminating the positions for budgetary savings, this option could provide the Secretary of Defense with available personnel without increasing personnel costs.

Some military analysts, however, argue that the overseas component commands provide essential support to the unified commanders: dedicated and responsive support for staging operations and integrating personnel and equipment deployed to a region, freeing the unified commanders to concentrate on the responsibilities of war-fighting. Additionally, overseas component commands bolster theater “enablers” such as medical support, engineering, intelligence, fuel handling, and the movement of supplies. Other responsibilities include managing the planning and execution of joint and coalition military exercises and treaty obligations as directed by NATO (the North Atlantic Treaty Organization) and by bilateral agreements, for example. Finally, those commands support legal responsibilities such as contracting, logistics support, and facilities management.

Opponents of restructuring also argue that it is politically and practically too difficult, considering the uncertainties in the world. The reorganization envisioned in this option would be the single largest restructuring since the 1986 Goldwater-Nichols Act, and it could eliminate up to 45 general officer positions overseas. However, others,

including senior staff members of the Office of the Secretary of Defense, argue that despite the difficulty, the new threat environment and the need for additional combat troops demand consideration of just such a widespread reorganization.

050-19—Discretionary**Replace Military Personnel in Some Support Positions with Civilian Employees of the Department of Defense**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	201	417	649	894	924	3,086	8,194
Outlays	191	406	637	882	922	3,040	8,140

This option would replace 20,000 of the 1.4 million uniformed military personnel in certain support jobs with civilian employees of the Department of Defense (DoD). An examination of job functions reveals some jobs that one service considers “military essential” but the others do not and some functions that clearly could be open to civilians. Some analysts put the number of military positions that could be converted to civilian jobs as high as 90,000. Successfully converting 20,000 positions—and reducing military end strength by that amount—could save \$191 million in outlays in 2004 and \$3 billion over five years. Greater savings could be possible if some of those positions were deemed eligible for competition with contract personnel. Some of the savings from this option would occur because civilians, unencumbered by military-specific responsibilities, have more time available to perform their jobs, so fewer could be substituted for military personnel.

Under this option, the replacement of the 20,000 military positions with civilian employees of DoD would be phased in over four years. Also, the savings estimated for this option assume that future military and civilian pay raises are in accordance with statutory provisions.

Although in recent years, many analysts have called on DoD to reduce costs by transferring military positions to civilian ones, only a small percentage of the department’s total personnel have been subject to review. In 2002, DoD undertook an inventory of all positions (civilian and military), categorizing them by function and determining whether they were inherently governmental and, if so, whether they had to be filled by military personnel. That inventory could be used to identify many support positions that, although currently occupied by

military personnel, could be performed by civilian employees of DoD at lower cost.

For positions in the functional category of Morale, Welfare, and Recreation Services, for example, the Army fills 2 percent of those jobs with military personnel, whereas the Navy fills 13 percent, and the Air Force categorizes 32 percent as military. Removing the military designation on the Air Force positions could open up 1,000 jobs to civilians. In another example, the Army fills 35 percent of the positions in the functional category of Legal Services and Support with military personnel, and the Navy fills 53 percent. However, the Air Force requires 70 percent of those positions to be military personnel. Removing the military designation on some Air Force and Navy positions could open another 500 jobs to civilians.

Opponents of this option would argue that the process of defining, evaluating, and then redesignating personnel positions would be lengthy and cumbersome, with hard-to-define savings. Furthermore, they would point out, comparisons among services can be misleading to some extent, because certain functional areas have service-specific aspects. For example, the Navy claims that it must rely on military personnel on board ships to serve in support positions.

Finally, if civilian employees of DoD were substituted for military personnel without reducing end strength, DoD’s total costs would increase, not decrease. However, proponents of transferring military personnel out of nonmilitary tasks argue that even if military end strength was not reduced, “warfighters” would still be freed up to fulfill their primary purpose.

050-20—Discretionary**Increase the Use of Warrant Officers to Attract and Retain Personnel**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	214	189	159	124	81	767	1,318
Outlays	203	190	161	125	83	763	1,312

Warrant officers, who account for only about 1 percent of active-duty military personnel, currently serve as senior technical experts and managers in a wide variety of occupations and, in the Army, as pilots of helicopters and fixed-wing aircraft. In rank, they fall between enlisted personnel and other commissioned officers. Warrant officers—and the closely related limited duty officers in the Navy—tend to have long careers in which they gain considerable expertise.

This option would slowly expand the use of warrant officers as a means of attracting and retaining high-quality, skilled personnel, particularly in occupations with attractive civilian alternatives. To achieve savings, it would offer smaller pay raises to senior enlisted personnel.

Programs designed to help the military meet its personnel needs tend to be more cost-effective the more narrowly focused they are on the people and the decisions that they are intended to affect. Some analysts have pointed out that growing numbers of midcareer and senior enlisted personnel have substantial college training, which current military pay scales may not adequately recognize. The Department of Defense (DoD), in part to address that trend, has increased pay for senior enlisted personnel more rapidly than for other military personnel. For example, between 1999 and 2003, real pay for senior enlisted personnel rose by about 31 percent while real pay for enlisted personnel generally increased by about 16 percent.

Instead of raising the pay of all midcareer and senior enlisted personnel, however, DoD could offer warrant officer positions (with their higher pay) to those people it most wanted to retain or to those who were serving in military occupations with the best-paying civilian alternatives. Under this option, pay raises for senior enlisted personnel from 2004 through 2006 would

be 1.25 percentage points below those currently planned by DoD. In 2007 and 2008, pay raises for those senior personnel would be 1.25 percentage points below the increase in the employment cost index. This option would also convert 10,000 positions for enlisted personnel in the top four grades to warrant officer positions. Net savings from those changes would total \$763 million from 2004 through 2008. A program that expanded opportunities for warrant officers could be focused on specific occupational areas, such as information technology, where a robust civilian sector can make military compensation noncompetitive. Traditionally, DoD has used enlistment and reenlistment bonuses to fill such positions, although some people might argue that current bonus levels are too small to provide meaningful differences in pay among occupations.

Advocates of this proposal might also point to other advantages. Expanded opportunities for warrant officers might be more attractive to graduates of two-year colleges, who could come in as professionals instead of having to serve a long apprenticeship in the enlisted ranks. Serving as a warrant officer rather than as an enlistee might also appeal to people who would rather remain technical specialists than assume leadership responsibilities. It is possible that the resulting more-experienced workforce could reduce the size of the force that DoD needs.

Critics of this proposal would argue that converting senior enlisted positions to warrant officer positions would create a new set of problems. Currently, there are relatively few warrant officers—only about 15,400 were serving on active duty at the end of 2002. Adding another 10,000 officers to that pool could make the force more top-heavy without a commensurate increase in leadership skills. Some people within the military might object to having a larger group of senior technicians who did not have leadership responsibilities.

RELATED OPTION: 050-17

RELATED CBO PUBLICATION: *The Warrant Officer Ranks: Adding Flexibility to Military Personnel Management*, February 2002

050-21—Discretionary**Reduce Recruiting Budgets**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	135	275	462	536	609	2,017	6,259
Outlays	128	247	421	518	598	1,910	6,092

This option would reduce spending on recruiting and advertising for active-duty forces to the 2002 level, saving \$128 million in outlays in 2004 and about \$1.9 billion over five years. After several years of difficulty in reaching recruiting goals, the military services all managed to meet or exceed their targets in 2002. For 2003, the recruiting environment appears to remain favorable. For example, as of November 30, 2002, the Army had about 35,000 recruits in its Delayed Entry Program (DEP) waiting to report for training, as compared with about 19,000 at the same time last year and only 17,000 the year before. The quality of recruits is also high for all of the services, with more than 90 percent of those in the DEP classified as high quality. Over the long term, prospects for recruiting also appear favorable, as the unusual combination of demographic and economic factors that made recruiting so difficult in the past seems unlikely to reappear.

In the latter half of the 1990s, the military services experienced considerable difficulty—and occasionally failed to meet—their recruiting targets. Much of that difficulty, however, can be attributed to the unusually low unemployment rates among teenagers during those years. The unemployment rate for people ages 16 to 19—which had hovered near 20 percent in the early 1990s—fell, and in 1999 dropped below 14 percent for the first time in the history of the All-Volunteer Force. Low unemployment

rates translate into better civilian opportunities for the young adults that the military tries to attract, making the recruiting mission more difficult and costly.

The Department of Defense's spending on recruiting and related activities (measured in constant dollars) increased by more than 30 percent between 1980 and 2002; because of the decreasing size of the military, the increase in spending per recruit was far greater. In 2002, the cost per active-duty enlisted recruit was two and a half times what it had been in 1980. The factors that required those increases have, however, abated. The unemployment rate among teenagers is back to about 17 percent, and the size of the young-adult population, which has already increased by 15 percent from its post-baby-boom low in 1994, is projected to grow steadily through 2011. In addition, the military services have recently begun significant recruiting efforts among college students and students who have had some college coursework, which should further increase the pool of high-quality candidates.

The savings from this option would, however, make the recruiting mission more challenging. If the recruiting environment worsened significantly, this option could result either in a need for additional resources for recruiting or in another failure to meet recruiting goals.

050-22—Discretionary**Have the Departments of Defense and Veterans Affairs Purchase Drugs Jointly**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	44	114	144	157	173	632	1,773
Outlays	38	104	138	154	170	604	1,723

In 2002, the Departments of Defense (DoD) and Veterans Affairs (VA) together spent about \$4.7 billion on pharmaceuticals. Nationwide, spending on prescription drugs has grown roughly twice as fast in recent years as total national spending on health care. Constraining such cost growth is an important goal for DoD and VA.

This option would consolidate DoD's and VA's purchases of pharmaceutical products, as the Congressional Commission on Servicemembers and Veterans Transition Assistance recommended in 1999. Specifically, it would require the two agencies to organize a joint procurement office and develop a common clinically based formulary, or a list of prescription drugs that both agencies' health plans would agree to provide. Formularies can save money by encouraging providers to substitute generic versions for brand-name drugs or by including only specific preferred brand-name drugs within a therapeutic class. The joint formulary would apply throughout the VA health system, to mail-order pharmacy services, and at military hospitals and clinics. Once in place, it would allow the agencies to enter into more "committed volume" contracts with pharmaceutical manufacturers, which generally lead to lower drug prices. In addition, this option would merge the two agencies' mail-order pharmacy services. Those changes would save DoD and VA a total of \$38 million in outlays in 2004 and \$604 million through 2008.

In recent years, DoD and VA have attempted to combine some purchases, but that collaboration has been limited, and they continue to maintain separate formularies and procurement offices. VA's National Acquisition Center is responsible for purchasing prescription drugs for most federal agencies except DoD, and it negotiates and maintains the federal supply schedules of prices for those items. The Defense Supply Center Philadelphia (DSCP),

an office of the Defense Logistics Agency, negotiates prices for pharmaceutical products and draws up contracts with vendors to buy and deliver those products to military treatment facilities. DSCP also makes plans to deliver those items overseas quickly in the event of a conflict.

Proponents of joint purchasing would argue that DoD and VA need to rein in the rapid growth of prescription drug costs. In addition, those proponents would say, the need for separate procurement offices is not apparent. According to a 1998 report by DoD's Inspector General, only a tiny fraction of the items that the DSCP procures on behalf of military facilities are "militarily unique"; most are common items. VA officials maintain that the National Acquisition Center has already achieved significant savings on many of its pharmaceutical purchases through committed-volume contracts. A recent study by the Institute of Medicine seems to confirm that point: it estimated that VA saved about 15 percent on drug purchases in six therapeutic classes by selecting a preferred drug in each class.

In developing a common formulary, the two agencies would need to adopt procedures by which physicians could prescribe nonformulary drugs to patients who needed them (for example, because they were allergic to the formulary drugs). The design and execution of such an exception process would affect the savings from this option. The stricter the process, the higher would be the cost of documenting and judging a patient's need for a nonformulary drug. A less restrictive process, however, would reduce the government's bargaining power and could reduce the savings from this option.

Critics of consolidation argue that such savings are unachievable. The veterans who obtain health care from VA

make up a very different mix of medical cases than military beneficiaries do—for example, more of them suffer from mental illness, substance abuse, or severe disabilities (such as spinal cord injuries). Therefore, the degree of overlap in prescription drugs dispensed by the two agencies may be limited.

Some observers argue that DoD and VA have already taken important steps to expand their joint procurement. The General Accounting Office estimates that the departments currently save about \$170 million per year through joint purchasing contracts. From October 1998 to April 2002, DoD and VA awarded joint contracts for 18 products. Nevertheless, DoD officials contend that they must maintain their own procurement office to ensure that drug supplies will be available quickly in the event of war. Some officials believe that the agencies will achieve the bulk of any possible savings simply by sharing price data

with each other so they can negotiate the lowest prices with pharmaceutical manufacturers and suppliers.

Finally, some analysts might argue that this option would not go far enough. Savings could be even larger if DoD implemented a uniform formulary for all three types of pharmacies that its beneficiaries use: pharmacies at military hospitals and clinics, the mail-order service, and retail pharmacies (where beneficiaries receive partial reimbursement through insurance). DoD officials say that as they have tightened the formularies of drugs available at military facilities, beneficiaries have increasingly turned to retail outlets—which often costs DoD more than if the department had purchased the drugs at federal prices and dispensed them itself. (Consequently, the estimate for this option assumes that DoD's insurance claims for pharmacy services would increase.) If DoD could enforce a single formulary at all pharmacy outlets, it would achieve greater savings.

050-23—Discretionary**Introduce a “Cafeteria Plan” for the Health Benefits of Family Members of Active-Duty Military Personnel**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	18	76	188	207	216	705	1,931
Outlays	14	64	164	199	212	653	1,861

Under the Department of Defense’s (DoD’s) current health care system, many families may be overinsured. That is, given a choice, many would prefer a somewhat less generous health care plan and greater cash compensation. This option would give families that choice by having DoD provide the family members of active-duty personnel with a special cash allowance for their health coverage. The allowance, which would be nontaxable (like the current housing allowance), could be used in one of three ways. First, family members could purchase TRICARE coverage, which would include any of the current options (TRICARE Standard, TRICARE Extra, and TRICARE Prime). Second, they could use some of the money to purchase a new “low option” TRICARE plan and keep the remaining funds. That version of TRICARE would be similar to TRICARE Prime in that it would have many managed care features. However, it would also incorporate a substantial deductible as well as copayments for health care services obtained at either military treatment facilities or from civilian providers. Third, military family members could show proof of employer-provided insurance and apply the allowance toward their share of the premiums, copayments, and deductibles.

This option would save \$653 million in outlays over the next five years. That estimate incorporates the cost of the cash allowances. It also accounts for the decrease in demand for health care by people choosing the new low-option plan, because copayments and deductibles would improve the efficiency of health care utilization. The estimate also takes into consideration the fact that there are a few eligible family members of active-duty personnel who are not currently using TRICARE and who thus cost the system nothing but who would be likely to apply for the cash allowance.

Supporters of this option argue that it would offer several advantages. First, families of active-duty personnel would have greater choice about the mix of benefits and cash that they received. Second, those who chose the low-option plan would be more likely to make cost-effective use of medical services because they would face a share of the costs of those services. Third, some health coverage costs would be shifted from DoD to spouses’ civilian employers, reducing the department’s spending. Finally, because family members would have to commit to an arrangement for their health insurance annually, total utilization would be easier to predict than it is under the current system, which users may join or leave at any time. Consequently, this option would improve resource planning within the military health system and allow DoD to negotiate firmer contracts for pharmaceuticals and civilian medical services. That advantage would exist even if most beneficiaries chose to remain in one of the three traditional TRICARE plans.

Opponents of this option note that people who selected the low-option TRICARE coverage would be taking on additional risks and might face financial difficulties if someone in their family fell seriously ill. However, that level of coverage would be designed to include a reasonable “stop-loss” limit to control the financial consequences of catastrophic illness.

Opponents also point out that families who chose an employer-provided plan might face the complication of having their coverage disrupted if the active-duty spouse experienced a permanent change of station in the middle of the year. DoD would have to develop methods to prorate cash allowances and deductibles for people forced to change their health care plans midyear.

050-24—Discretionary**Create Incentives for Military Families to Save Energy**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	4	21	42	52	53	173	460
Outlays	3	16	35	48	52	154	437

The Department of Defense (DoD) spent about \$360 million last year on gas, electricity, and water for the approximately 200,000 family housing units in the United States that it owns. Many of those units are slated for privatization by 2006, but DoD expects to retain about 121,000 units for the foreseeable future. To date, the department's efforts to reduce energy costs in family housing units by promoting conservation have met with limited success. One reason is that service members living in DoD-owned housing do not pay for their utilities and may not even know how much gas, electricity, and water they use. Landlords in the private sector have found that utility use typically declines by about 20 percent when tenants are responsible for their own utility bills.

This option would install utility meters in DoD's housing units, provide cash allowances for utility bills to the families living there, and then charge them for utilities on the basis of actual use. Residents who spent less than their allowance could keep the savings; those who spent more would pay the extra cost out of pocket. The budget for allowances would be set equal to the expected cost of utilities under the new system, or about 80 percent of what DoD now spends. The department would allocate that amount among the different housing units on the basis of their size, energy efficiency, and location. Although DoD would incur the up-front costs of determining allowance amounts, setting up a billing system, and installing meters, this option could save \$3 million in outlays in 2004 and a total of \$154 million from 2004 through 2008.

Once the program was established, the allowance budget for each year could be set equal to the previous year's

actual utility charges plus an adjustment for inflation. If service members were able to cut their utility usage by more than 20 percent, allowances would fall and the savings from this option would increase. If, however, 20 percent overestimates service members' ability to reduce their usage, allowances would be higher and the savings would be less.

The proposed system would operate very similarly to one being implemented by DoD in most privatized units. Energy costs are borne explicitly by the families occupying the units. Extending that system to units owned and operated by DoD should be straightforward. Many of the department's housing units already have a connection where a meter could be installed.

The principal advantage of this option is that it would reduce DoD's costs by giving military families who live on-base the same incentives for conservation that most homeowners and renters have—including military families who live off-base. Because families who conserved aggressively would receive more in allowances than they would be charged for utilities, they would be rewarded. Families who did not economize would face utility bills in excess of their allowances.

Critics of this option might argue that, in the case of some housing units, the allowances did not account for physical characteristics that made energy conservation difficult. People living in such units might find that the allowances did not cover all of their utility costs even after they had made reasonable conservation efforts. To address those concerns, DoD could grant exemptions from the metering requirement, utility allowances, and charges.

050-25—Discretionary**Consolidate and Encourage Efficiencies in Military Exchanges**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	73	129	186	191	195	774	1,828
Outlays	53	109	166	184	192	704	1,745

The Department of Defense (DoD) operates three chains of military exchanges—the Army and Air Force Exchange Service, the Navy Exchange Command, and the Marine Corps exchange system. Those chains, which provide a wide array of retail goods and consumer services at military bases, have combined annual sales of about \$10 billion.

This option would consolidate the three systems into a single organization. In addition, it would introduce incentives for more-efficient operations by requiring the combined system to pay all of its operating costs out of its own sales revenue, rather than relying on DoD to provide some services free of charge. Those changes would save about \$200 million annually after a three-year phase-in period. (The next option, 050-26, would go one step farther and consolidate the exchanges with DoD's separate network of commissaries.)

Numerous studies sponsored by the Office of the Secretary of Defense have shown that consolidating the exchange systems could lead to significant efficiencies. It would eliminate the costs of duplicative purchasing and personnel departments, warehouse and distribution systems, and management headquarters. Although consolidation would entail some one-time costs, the Congressional Budget Office (CBO) estimates that those costs would be more than offset by one-time savings from the reduction in inventories that consolidation would permit.

DoD provides the exchanges with about \$400 million in free services each year, CBO estimates. Those services include maintaining some parts of buildings (such as roofs, windows, and heating and cooling systems), transporting goods overseas, and providing utilities at overseas stores. Under this option, the combined system would reimburse DoD for the cost of such services and would thus have an incentive to economize on their use. Furthermore, the requirement for the system to pay all of

its own operating costs would improve the exchanges' visibility in the defense budget.

Today, earnings from the exchanges are used to support the military's morale, welfare, and recreation programs, which contribute to service members' quality of life. If the combined exchange system continued to provide earnings to support those programs, it would do so from earnings that represented receipts in excess of the full cost of operations. To compensate the morale, welfare, and recreation programs for the lower level of support that could result from lower earnings by the system of exchanges, this option assumes that the Congress would appropriate about \$50 million annually in additional funds for those programs. That direct funding would increase the Congress's control over spending on morale, welfare, and recreation activities.

One obstacle to implementing this option would be the need to find an acceptable formula for allocating among the individual services the funds for morale, welfare, and recreation activities. The services might be concerned that they would not receive a fair share of the earnings from a combined exchange system or of the additional appropriations for those activities. In addition, they might fear that over a period of years, the Congress would reduce the amount of additional funding appropriated for those activities.

Some critics of consolidation argue that the Navy Exchange Command and the Marine Corps system, with their unique service identities, are better able to meet the needs of their patrons than a larger, DoD-wide system would be. But proponents of consolidation point to the Army and Air Force Exchange Service, which has successfully served two distinct services for many years. People who shop in exchanges say their main concern is the ability of exchanges to offer low prices and a wide selection of goods—a concern that a consolidated system might be able to satisfy more effectively.

RELATED OPTION: 050-26

RELATED CBO PUBLICATION: *The Costs and Benefits of Retail Activities at Military Bases*, October 1997

050-26—Discretionary**Consolidate the Department of Defense's Retail Activities and Provide a Grocery Allowance to Service Members**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	326	410	497	537	579	2,350	5,471
Outlays	231	342	435	494	542	2,044	5,081

The Department of Defense (DoD) operates four separate retail systems on military bases: a network of grocery stores (commissaries) for all of the services and three chains of general retail stores (exchanges) for the Army and Air Force, the Navy, and the Marine Corps. This option would consolidate those systems into a single retail chain that would operate more efficiently, without any appropriated subsidy. The consolidated system, like the current separate systems, would be responsible for giving military personnel access to low-cost groceries and other retail goods at all DoD installations, including those in isolated or overseas locations.

The current commissary and exchange systems operate under very different funding mechanisms. The commissary system, which is run by the Defense Commissary Agency (DeCA), has annual sales of about \$5 billion, but it also receives an appropriation of about \$1 billion a year. The three exchange systems (the Army and Air Force Exchange Service, the Navy Exchange Command, and the Marine Corp exchange system) have annual sales totaling about \$10 billion. They do not receive direct appropriations; instead, they rely on sales revenue to cover their costs.

One reason that exchanges can operate without an appropriated subsidy is that they charge their customers a higher markup over wholesale prices than commissaries do. Another reason is that the exchange systems are non-appropriated-fund (NAF) entities rather than federal agencies, which enables them to use more flexible and businesslike practices concerning personnel and procurement. DeCA, by contrast, is a federal agency, so its employees are civil service personnel, and it follows standard federal procurement practices. This option assumes that

consolidation would eliminate duplicative overhead headquarters functions and that DeCA's civil service employees would be converted to a NAF workforce.

Under this option, the commissary and exchange systems would be consolidated over a five-year period. When that process was complete, DoD's costs would be about \$1.1 billion a year lower (in 2004 dollars)—about \$900 million from eliminating the subsidy for commissaries and \$200 million from eliminating duplicate functions among the exchange systems. This option would return half of that \$1.1 billion to active-duty service members through a tax-free grocery allowance of about \$500 per year payable to personnel eligible to receive the current cash allowances to cover food costs. The grocery allowance would be phased in to coincide with the consolidation of commissary and exchange stores at each base. The remaining \$550 million a year would represent savings for DoD.

Low-cost shopping on bases has long been a benefit of military service. But recent increases in security on bases and changes in the civilian retail industry have made it more difficult and costly for DoD's fragmented retail systems to provide that benefit. Both commissaries and exchanges must now compete with large discount chains that offer low-cost, one-stop shopping for groceries and general merchandise just outside the gates of many military installations.

To break even without appropriated funds, the consolidated system would have to charge about 10 percent more for groceries than commissaries do now. (That estimate is based on the difference between the 20 percent markup that exchanges charge and the 5 percent markup

that commissaries charge and evidence that exchanges pay lower wholesale prices than commissaries do for the same goods.) At the current level of commissary sales, a 10 percent price increase would cost customers an extra \$500 million annually.

About \$300 million of that price increase would be borne by the military retirees who now shop in commissaries. As a result, this option could face strong opposition from associations of retirees. The average family of a retired service member would pay an additional \$150 per year for groceries.

Active-duty members and their families would benefit from consolidation. The average such family would pay about \$240 more per year for groceries—but that figure would be more than offset by the grocery allowance that the family would receive under this option. (A military family would have to spend about \$5,000 per year on groceries in commissaries before a 10 percent price increase outweighed the benefits of a \$500 allowance.) Cash

allowances would be particularly attractive to personnel who lived off-base and could shop near their home more conveniently than on-base. Moreover, all military families—active-duty, reserve, and retired—would gain from longer store hours, more convenient one-stop shopping, access to private-label groceries (not currently available in commissaries), and the security of a military shopping benefit that did not depend on the annual appropriation process. Some people might nonetheless oppose the change, as it would disrupt familiar modes of shopping.

DoD could target the \$500 in cash payments to service members in a variety of ways. An allowance based solely on pay grade might be the most effective in enhancing retention and rewarding service members for their work. However, some people might argue that an allowance tied to pay grade and family size would be more equitable. If desired, supplemental payments could be made to junior enlisted personnel with large families who might otherwise be eligible for Food Stamps.

RELATED OPTION: 050-25

RELATED CBO PUBLICATION: *The Costs and Benefits of Retail Activities at Military Bases*, October 1997

050-27—Discretionary**Eliminate the Department of Defense's Elementary and Secondary Schools**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	-20	-3	26	49	67	118	754
Outlays	-16	-6	19	43	63	103	718

The Domestic Dependent Elementary and Secondary Schools (DDESS) system operates schools on several military bases in the United States to educate dependents of military personnel living there. The Department of Defense (DoD) also operates a separate school system for military dependents living overseas.

This option would phase out most of the schools that the DDESS system runs in favor of increased use of local public schools and would consolidate management of any remaining schools into the much larger overseas school system. Those changes would save DoD a total of \$300 million in outlays between 2004 and 2008. Savings for the federal government as a whole would be less—about \$103 million through 2008—because the Department of Education would have to spend more on Impact Aid, which it provides to local school districts that enroll dependents of federal employees. (These cost estimates assume that funding for Impact Aid would immediately increase so that the average amount paid per student living on federal land would remain at its current level.)

Proponents of this option would argue that the DDESS system takes an uneven and largely arbitrary approach to educating the dependents of active-duty service members. The distribution of its schools is mainly a historical accident, dating to the time when segregated public schools in the South did not adequately serve an integrated military. The great majority of military bases in the United States have no DDESS school. And where such schools do exist, they generally enroll only dependents of active-duty members who live on-base; those living off-base, and dependents of civilian employees, are the responsibility of local school districts. In addition, most bases with DESS facilities offer only elementary and middle schools; high school students living on-base use the public schools. In most of the places where the DDESS system operates schools, accredited public

schools are readily available—with the possible exceptions of Guam, Puerto Rico, and West Point, where DoD would continue to run domestic schools under this option.

Closing these schools need not create major disruptions. The roughly 25,000 students who might be affected already change schools frequently, in large part because they move often as their military parent is reassigned. In many locations, the public school district could continue to use DoD's facilities. (DoD already offers support to some local districts by allowing public schools to operate on-base or providing additional limited funding on a per-student basis.) Finally, to ease the transition, DoD's schools would be phased out at a rate of one per district per year rather than all at once. And the local school districts would receive additional one-time funding and would have facilities and equipment transferred to help them absorb their new teaching load.

This option might have several disadvantages, however. First, many parents of DDESS students might be reluctant to see the schools phased out because they believe DoD schools offer higher-quality education than local public schools do. Second, if local school districts did not retain the on-base schools, former DDESS students might face longer commutes. Third, some of the savings to the federal government from this option would be offset by increased costs to local school districts. In the past, those districts have effectively been subsidized by not having to pay any of the costs of educating DDESS students while receiving at least some direct and indirect tax revenues from their parents. This option would eliminate that subsidy.

DoD has undertaken a study of this issue and is due to issue a report next year.

050-28—Discretionary**Price Military Housing According to Market Rates**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	0	1,785	1,459	1,156	1,032	5,432	9,427
Outlays	0	53	461	823	849	2,186	5,541

This option would charge rents for on-base housing. Each military family would receive a cash allowance for housing and would choose among government-owned and -operated, privatized, or private-sector housing. Rents for on-base housing would be set at market-clearing levels (levels at which there would be neither excess vacancies nor waiting lists) and would be based on the size and quality of the units. This option would therefore equalize the value of the housing benefits that the Department of Defense (DoD) provides to families living on- and off-base and to families of different sizes.

About two-thirds of military families receive cash allowances for housing and buy or rent dwellings in the local community. About one-third of military families give up their housing allowance to live in government-owned and -operated housing or to live in privatized housing sponsored by DoD. For those families, the forgone housing allowance can be viewed as the “rent” paid to live in on-base housing. Under the current system, housing allowances provided to military families are based on the costs of rental housing typically occupied by civilians with comparable income, regardless of family size—although in making housing assignments, DoD often provides larger units to larger families. Moreover, the quality of on-base housing has no bearing on the “rent” paid—that is, the forgone allowance.

The current system creates an incentive for military service members (particularly those with large families) to prefer on-base housing or privatized housing over living in the community. For example, a married junior enlisted member with three dependents might be assigned to a three-bedroom townhouse on-base, but the member’s forgone housing allowance might equal the cost of a two-bedroom apartment in the community. That incentive inflates the demand for government-owned and priva-

tized housing. In response to that higher demand, DoD is increasing the number of larger units. In addition, the growing number of large military families will boost the demand for ancillary family support services on-base. Convenient access to subsidized on-base services, such as child care and commissaries, also creates a financial incentive to live on-base rather than in the community.

Charging market-based rates for both DoD-owned and privatized units would equalize the value of the housing benefit for all personnel regardless of whether they live on- or off-base. Under this option, for example, that junior enlisted member would either live in a two-bedroom unit (either on-base or off-base) with no out-of-pocket costs or pay to obtain a three-bedroom unit (either on-base or off-base). Because the financial incentive to prefer on-base housing would be removed and the demand for those units would fall, proponents of this approach would argue that fewer aging units would need to be renovated or replaced. On-base (or privatized) housing units would be replaced or renovated if they met one of two criteria: their value to service members (the market-clearing rents they could command) was sufficient to cover both operating costs and amortized capital costs, or their historical nature or importance for military readiness made the units indispensable. Those criteria would limit DoD to renovating or replacing about 25 percent of its existing housing stock, the Congressional Budget Office estimates.

Savings from this option could total more than \$2 billion in outlays and more than \$5 billion in budget authority from 2004 through 2008. On average, the market rent would tend to equal the housing allowance, so military personnel would not incur net costs. Savings could be less if future decisions about realigning or closing bases required substantial new construction of family housing

units. Savings could be greater if the reduced demand for on-base housing also lessened the demand for ancillary services, such as child care centers or commissaries.

Opponents of this approach argue that it ignores the important nonmonetary aspects of living on-base (foster-

ing unit cohesion, for example). In addition, large families currently living on-base would be worse off than they are now because they would lose subsidized access to larger dwellings. This option also would represent a significant break with military tradition and therefore could have a negative impact on morale.

RELATED CBO PUBLICATION: *Military Family Housing in the United States*, September 1993

050-29—Discretionary**Change Depots' Pricing Structure for Repairs**

(Millions of dollars)	2004	2005	2006	2007	2008	Total	
						2004-2008	2004-2013
Savings							
Budget authority	42	88	135	138	142	546	1,312
Outlays	31	73	118	133	139	495	1,252

Unit commanders can repair many components of weapon systems, such as transmissions and radars, in their own local repair facilities or pay to have the components repaired in centralized maintenance depots. Under current policies, however, the prices that the depots charge units for repairing such components (known as depot-level reparables, or DLRs) exceed the actual cost of making the repairs. Those pricing policies raise total costs to the Department of Defense (DoD) because they discourage commanders from relying on the depots even when doing so would be less costly for DoD as a whole. For example, one avionics sensor used by the Army costs \$16,000 to repair at a local facility and \$12,000 to repair at a depot. Nevertheless, under the current pricing structure, the depot charges \$71,000 to repair the sensor—creating an incentive for unit commanders to use their local facilities even though the actual cost of the repair is less at the depot.

This option would change depots' pricing policies so that depots would charge only the actual cost of repairs. By encouraging unit commanders to choose the most cost-effective source of repair, the new pricing policy could lower the annual cost of repairs by a total of about \$500 million over five years.

Currently, the prices that depots charge for repairing DLRs include both the additional transportation, materials, and labor costs that the depots incur in making the repairs and an allocated share of the depots' fixed overhead costs. Under this option, the prices charged for repairing DLRs would cover only those costs that vary with the number of DLRs being repaired in the depot—for instance, transportation, materials, and direct labor costs. Fixed costs that do not vary with the level of workload—including overhead—would be covered through

a flat charge paid by customers that would not depend on the level of workload.

That two-part pricing structure, which is similar to the pricing structures used by some telephone and utility companies, has been proposed as a cost-saving initiative by economists at RAND, the Center for Naval Analyses, and elsewhere. The Air Force implemented a two-part pricing system for DLRs on a test basis in 2002. A study by RAND concluded that two-part pricing would reduce the prices that depots charge by more than one-third in many cases. A price reduction of one-third could shift a significant amount of the workload for DLRs now being done in local facilities to depots. That could in turn reduce the department's total cost of repairs because—according to studies by RAND, the Navy, and the Office of the Secretary of Defense (OSD)—maintenance done locally can range from 25 percent more expensive to twice as expensive as repairs done at depots.

Although no set of accounting systems captures the total cost of repairs done in local facilities, OSD currently estimates that total cost to be in the range of \$25 billion a year. If a two-part pricing structure shifted just 2 percent of that local workload to depots, \$500 million worth of repairs would be shifted each year, and DoD could realize savings of \$125 million a year, on average, through 2008.

Shifting some of that work to depots might also improve the quality of maintenance. Because local facilities are not as well equipped for some tasks as depots are, repairs can also take longer or have higher failure rates. In addition, the high prices currently charged by depots for repairs give local maintenance personnel an incentive to scavenge parts from a broken DLR to use in repairing others,

eventually sending the DLR on to a depot with multiple broken parts—increasing labor and repair costs at both local facilities and the depots.

One disadvantage of this option is that developing appropriate prices for the depot facilities could prove difficult. Depot managers, eager to attract work by keeping their prices as low as possible, might try to move costs into the flat charge or direct appropriations that were in fact part of their costs that varied with workload. Alternatively, depot managers might be reluctant to separate repair costs that varied with workload from those that were fixed because doing so would highlight their degree of excess capacity.

Another concern about changing the price of repairs is the problem of predicting behavioral responses. The DLR pricing system that is currently being used was intended to encourage commanders to be more careful in their use of DLRs. Although it has had that desired effect, it has also created an inappropriate incentive to undertake repairs in local facilities. Although the potential benefits of a two-part pricing system are significant, there is a risk that a new system might also have unexpected and unintended consequences.