The Cost of Replacing the Department of Defense’s Current Aviation Fleet

The U.S. Air Force, Army, and Department of the Navy—which includes the Navy and the Marine Corps—operate large fleets of aircraft. The Congressional Budget Office produced three reports about those fleets, projecting the number and costs of aircraft the Department of Defense (DoD) would need to procure to maintain the fleets’ current size through 2050. In this report, CBO synthesizes the information in the three reports and compares the military services’ procurement costs.

The Air Force’s fleet is much older, on average, than those of the Army and the Department of the Navy. If the Air Force maintained its current fleet size, CBO estimates, its costs for procuring aircraft in upcoming years would rise considerably. Those increases would result in an overall increase in DoD’s costs for procuring aircraft, CBO projects. Between 2000 and 2018, DoD’s annual costs for procuring aircraft averaged about $26 billion (in 2018 dollars); CBO projects that the costs of DoD’s procurement plans would average $40 billion in the 2030s.


2. All costs refer to budget authority. To allow comparisons with the Congressional Budget Office’s earlier reports in this series on long-term aviation costs, all costs are expressed in 2018 dollars. To remove the effects of inflation, CBO adjusted costs with either the gross domestic product price index from the Bureau of Economic Analysis or with CBO’s projection of that index. The years referred to in this report are federal fiscal years, which run from October 1 to September 30 and are designated by the calendar year in which they end.

The Demographics of the Current Fleets
As of 2018, the Air Force had about 5,600 aircraft, the Army had about 4,300, and the Department of the Navy had about 4,000. Although each of the military services has some older aircraft in its fleet, aircraft procured in the 1980s (which today are at least 30 years old) and earlier are most common in the Air Force (see the top panel of Figure 1). Some of the older aircraft have high replacement costs (see the bottom panel of Figure 1). The Air Force’s older fleets with high replacement costs include F-15 and F-16 fighter aircraft and A-10 attack aircraft procured in the 1980s, as well as KC-135 aerial refueling aircraft and B-52 bombers procured in the 1960s.

Budgets for Procuring Aircraft Since 2000
DoD’s budgets for procuring aircraft rose through most of the 2000s, peaking at $34 billion in 2010 (see Figure 2). Despite an increase in 2016, the budgets for procuring aircraft have generally trended downward since 2010. However, the smallest budget in the 2010s ($25 billion in 2014) exceeded any budget for procuring aircraft over the 2000–2006 period.

Although the Air Force had the largest budgets for procuring aircraft of the three departments in the 2000s, the Department of the Navy’s budgets for procuring aircraft have been largest in the 2010s. Overall, between 2000 and 2018, the Air Force’s budgets for procuring aircraft
The cost of replacing the Department of Defense’s current aviation fleet averaged $10 billion, compared with $11 billion for the Department of the Navy and $5 billion for the Army.

Projected Costs for Procuring Aircraft
CBO’s three reports projected the costs through 2050 to procure the aircraft in the military services’ publicly articulated plans and to replace other aircraft on a one-for-one basis when they reach the end of their service life. CBO formed no judgment about whether the aircraft procurements in its analyses were necessary or appropriate.

In CBO’s projections, DoD’s costs for procuring aircraft increase steadily through the mid-2030s and peak at $44 billion in 2038 (see Figure 3). DoD’s costs would exceed the peak appropriation of the past 20 years ($34 billion in 2010) every year between 2030 and 2043, CBO estimates, and would exceed the 2000–2018 average ($26 billion) every year between 2021 and 2047.

CBO’s individual projections for the three military services are as follows:
The Air Force’s costs of procuring aircraft would rise above $15 billion during the mid-to late 2020s and peak at about $26 billion in 2033.

The Department of the Navy’s costs would remain relatively flat, at about $11 billion per year in the 2020s, and then fall to $7 billion in 2032. The Department of the Navy’s costs would generally rise thereafter, to $17 billion in 2038, and would remain above $14 billion through 2042.

The Army’s costs for procuring aircraft would peak at $5 billion in 2032 and would be lower in every year (often substantially so) than the costs CBO projects for the Air Force or the Department of the Navy.

Both DoD’s and the Air Force’s costs for procuring aircraft would be greatest in the 2030s, compared with those costs in other decades between 2000 and 2050. By contrast, the Department of the Navy and the Army appropriated more to procure aircraft in the 2010s than CBO projects either service would appropriate in any subsequent decade through the 2040s.

Large Upcoming Programs
CBO projects that DoD has about 80 upcoming aircraft procurement programs through 2050, but a comparatively small number of them may account for a disproportionate share of future costs:

- Two Air Force programs, the F-35A fighter and the Penetrating Counter Air (PCA) air-superiority aircraft, account for about $280 billion in procurement costs through 2050. As such, they represent more than half of the Air Force’s projected costs for procuring aircraft and more than a quarter of DoD’s projected total costs between 2020 and 2050. The Air Force’s KC-46 tanker program also has larger projected costs than any of the Department of the Navy’s or the Army’s aviation programs (see Figure 4).

- The Department of the Navy’s most costly aviation procurement programs are, in order, a projected F/A-18E/F replacement aircraft, the F-35B and F-35C fighter aircraft, and a projected replacement for the V-22 tiltrotor aircraft.

- The Army’s most costly aviation programs are the Future Long-Range Assault Aircraft (FLRAA), expected to replace the Army’s H-60 Black Hawk helicopters, and the Future Attack Reconnaissance Aircraft (FARA), which may eventually replace the Army’s AH-64 Apache helicopters.
CBO projects increasing costs for procuring aircraft through the late 2030s, primarily because of the Air Force’s costs.

Three of the Air Force’s aviation programs have the highest procurement costs.

FARA = Future Attack Reconnaissance Aircraft; FLRAA = Future Long-Range Assault Aircraft; PCA = Penetrating Counter Air.
Uncertainties
Considerable uncertainties could affect CBO’s projections. First, the plans themselves are, in many cases, uncertain. DoD has not yet decided when or whether to replace some existing aircraft. Second, even when plans have been formulated, the eventual costs of procuring the new aircraft remain unclear.

Several major programs, including the PCA aircraft, the FLRAA, and the FARA, are in development rather than production. Development of the replacements for the F/A-18E/F, V-22, and C-17 cargo aircraft has not yet begun. Aircraft development can precede production by many years: F-35 research, development, test, and evaluation appropriations commenced in 1994, but F-35 procurement appropriations commenced in 2006. Technical challenges could change schedules, characteristics, or costs for any of the programs CBO analyzed. Fiscal constraints or changing strategic demands could change DoD’s decisions about procuring aircraft. The military services could adjust procurement schedules to make budget changes less abrupt, including delaying modernization by extending the service life of various aircraft. Programs to extend service life require up-front investment but could cost less than the procurement programs they would delay.