



## 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.<sup>1</sup> 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.<sup>2</sup>

1. See Congressional Budget Office, *The Cost of Replacing Today's Naval Aviation Fleet* (January 2020), [www.cbo.gov/publication/55949](http://www.cbo.gov/publication/55949), *The Cost of Replacing Today's Army Aviation Fleet* (May 2019), [www.cbo.gov/publication/55180](http://www.cbo.gov/publication/55180), and *The Cost of Replacing Today's Air Force Fleet* (December 2018), [www.cbo.gov/publication/54657](http://www.cbo.gov/publication/54657).
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

### 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.

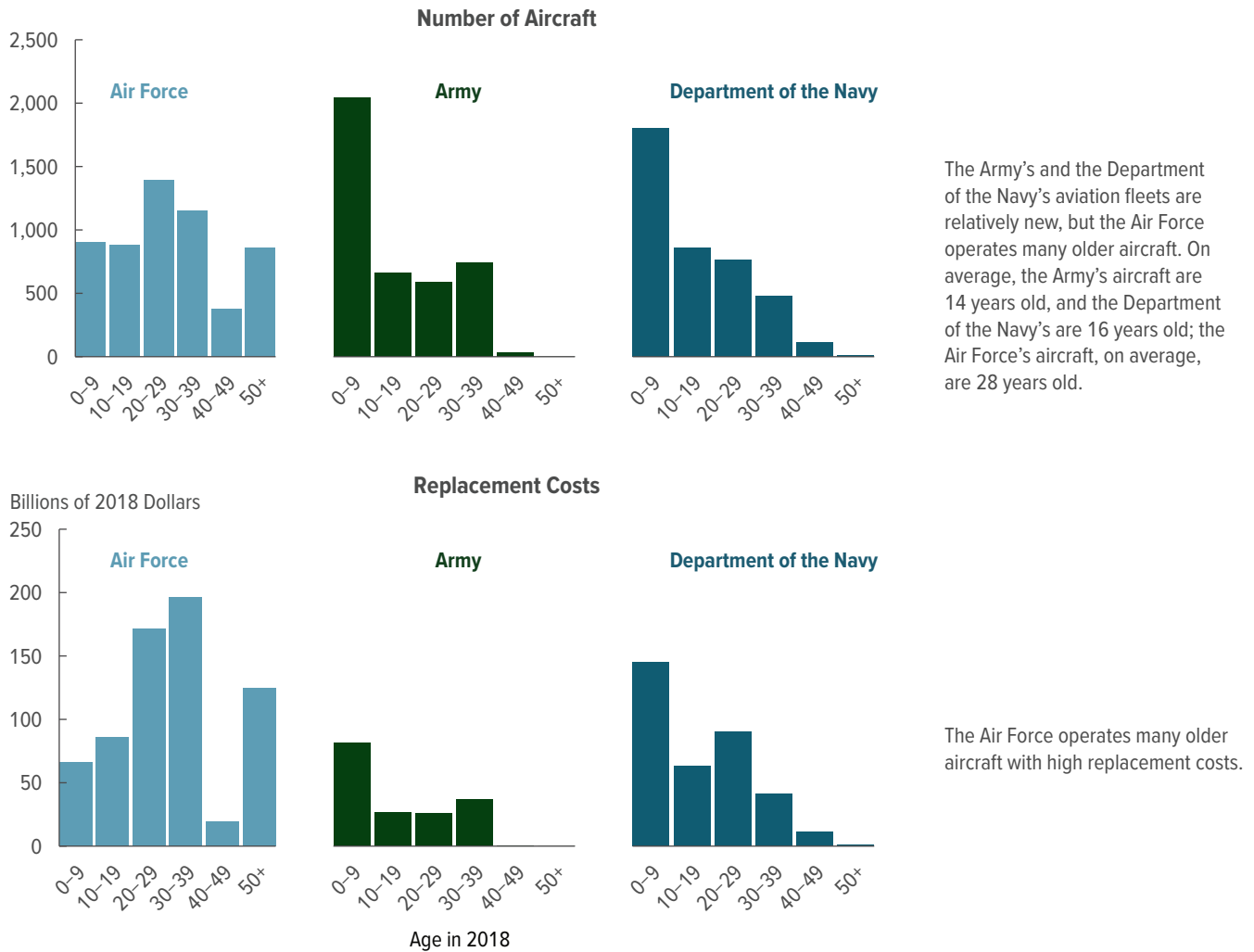
Although the Air Force had the largest budgets for procuring aircraft of the three departments in the 2000s, the Department of the Navy's budgets for procuring aircraft have been largest in the 2010s. Overall, between 2000 and 2018, the Air Force's budgets for procuring aircraft

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run from October 1 to September 30 and are designated by the calendar year in which they end.

Figure 1.

**Ages and Replacement Costs of the Department of Defense's Fleet, 2018**



Source: Congressional Budget Office, using data from the Department of Defense.

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.

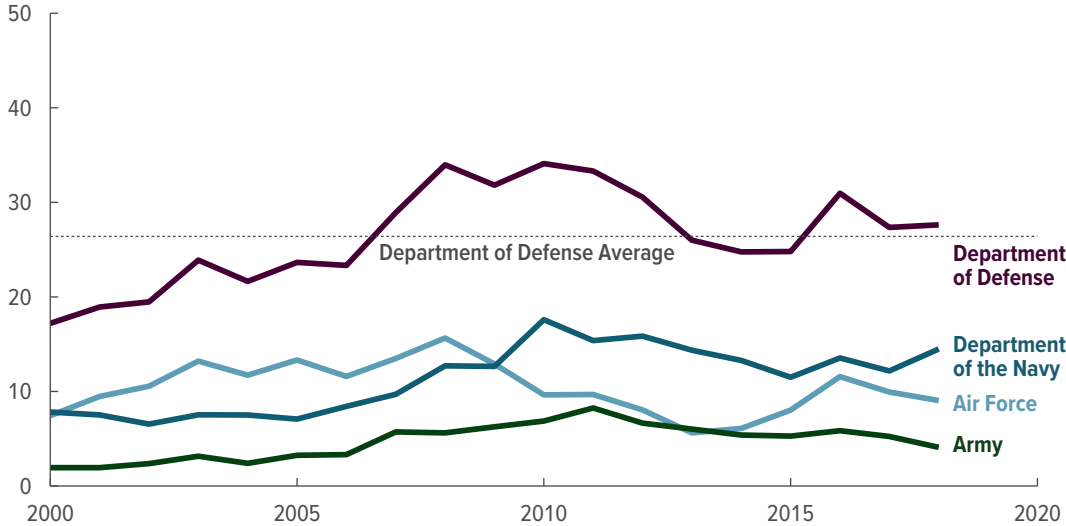
In CBO's projections, DoD's costs for procuring aircraft increase steadily through the mid-2030s and peak at \$44 billion in 2038 (see Figure 3). DoD's costs would exceed the peak appropriation of the past 20 years (\$34 billion in 2010) every year between 2030 and 2043, CBO estimates, and would exceed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

CBO's individual projections for the three military services are as follows:

Figure 2.

**The Department of Defense's Budgets for Procuring Aircraft, 2000 to 2018**

Billions of 2018 Dollars



Although the Air Force's budgets for procuring aircraft were larger in the 2000s than in the 2010s, the Department of the Navy's budgets for procuring aircraft were larger in the 2010s.

Source: Congressional Budget Office, using data from the Department of Defense.

- 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**

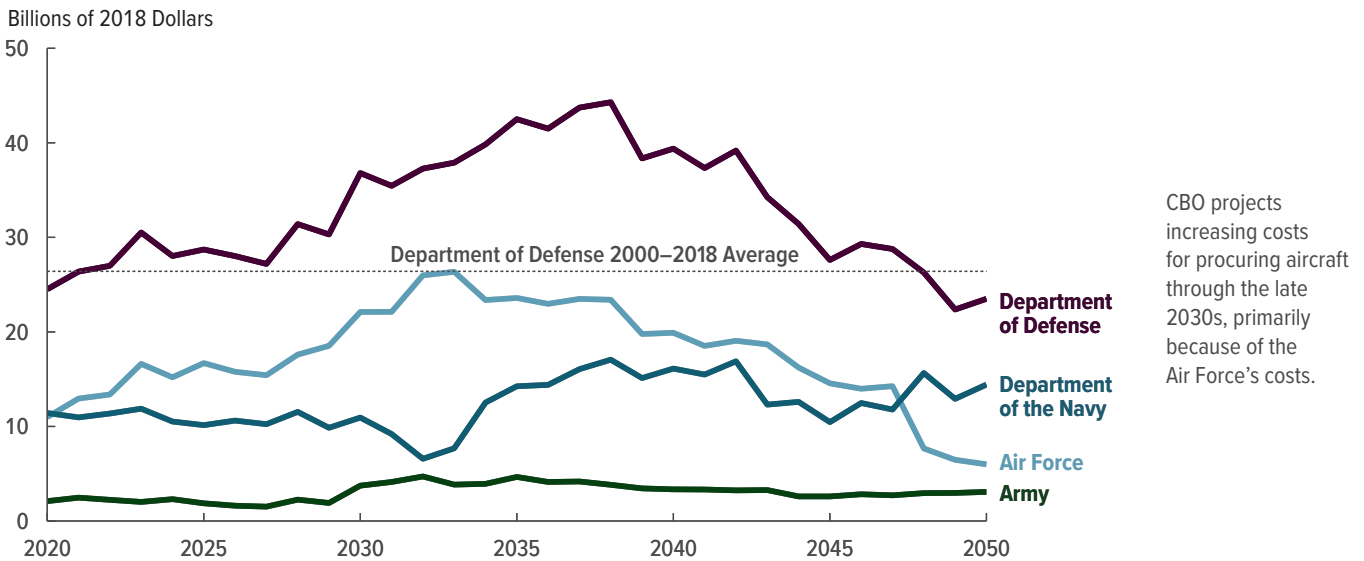
CBO projects that DoD has about 80 upcoming aircraft procurement programs through 2050, but a

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.

Figure 3.

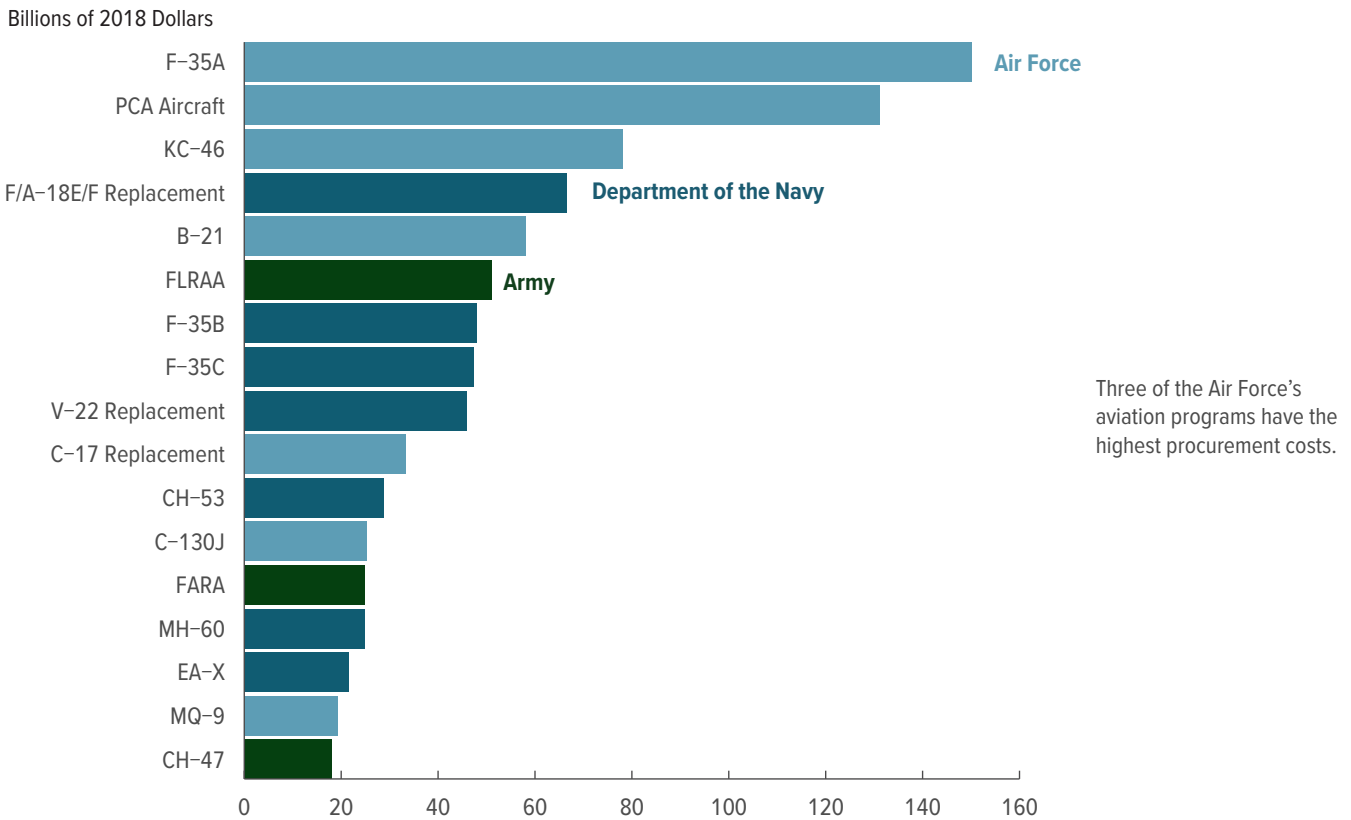
**Projected Costs for the Department of Defense's Procurement of New Aircraft, 2020 to 2050**



Source: Congressional Budget Office.

Figure 4.

**The Department of Defense's Aviation Programs With the Highest Procurement Costs, 2020 to 2050**



Source: Congressional Budget Office.

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.

This Congressional Budget Office report was prepared at the request of the Chairman and Ranking Member of the Senate Budget Committee. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Edward G. Keating prepared the report with guidance from David Mosher. Jennifer Shand provided helpful comments, as did J.J. Gertler of the Congressional Research Service and Julianne Nelson of CNA. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.) Derek Trunkey also assisted with the preparation of the report, and Eric J. Labs fact-checked it.

Wendy Edelberg and Jeffrey Kling reviewed this report. The editor was Rebecca Lanning, and the graphics editor was Robert Rebach. The report is available on CBO's website ([www.cbo.gov/publication/55950](http://www.cbo.gov/publication/55950)).

CBO continually seeks feedback to make its work as useful as possible. Please send any comments to [communications@cbo.gov](mailto:communications@cbo.gov).



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