



June 2014

NUCLEAR WEAPONS

Ten-Year Budget Estimates for Modernization Omit Key Efforts, and Assumptions and Limitations Are Not Fully Transparent

Why GAO Did This Study

DOE and DOD are undertaking an extensive effort to sustain and modernize the nuclear weapons stockpile, research and production infrastructure, delivery systems, and the nuclear command and control system. Completing this effort is expected to cost hundreds of billions of dollars over decades. Congress mandated the development of an annual report on the departments' plans and 10-year budget estimates for these efforts. Congress also mandated GAO to review the accuracy and completeness of the DOE and DOD report, with respect to the budget estimate contents and methodology.

This report addresses whether DOE's and DOD's 10-year budget estimates for sustaining and modernizing the nuclear deterrent are consistent with their funding plans, including whether the report provides complete information and a transparent methodology. GAO analyzed the DOE and DOD plans and estimates as of July 2013, and the DOE and DOD guidance and methodologies used to prepare their budget estimates.

What GAO Recommends

To improve the completeness and transparency of subsequent joint reports, GAO recommends that the Secretary of Defense direct DOD components to (1) include at least a range of potential 10-year budget estimates for projects and programs, based on preliminary cost information (this is consistent with a December 2013 recommendation GAO made to DOE); and (2) document assumptions and limitations affecting its NC3 funding estimates. DOD agreed with these recommendations.

View [GAO-14-373](#). For more information, contact John Pendleton at (202) 512-3489 or pendletonj@gao.gov, or David Trimble at (202) 512-3841 or trimbled@gao.gov.

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What GAO Found

The Departments of Energy's (DOE) and Defense's (DOD) \$263.8 billion, 10-year estimates in their report to Congress for sustaining and modernizing U.S. nuclear weapons capabilities are generally consistent with their funding plans through fiscal year 2018. However, GAO identified shortcomings with respect to the completeness of the budget estimates and the transparency of the assumptions and limitations that underlie the 10-year estimate. Specifically:

- **Nuclear stockpile and infrastructure:** Based on GAO's recent review of DOE's long-term plans and estimates for sustaining and modernizing the nuclear enterprise, we found that DOE's \$97.5 billion estimate in the report includes less funding than will be needed through fiscal year 2018 to meet program milestones for planned nuclear weapon life extensions, and through fiscal year 2023 to meet milestones for constructing key facilities.
- **Nuclear delivery systems:** DOD's \$125.5 billion estimate in the report does not include potential budget estimates for Air Force efforts to modernize intercontinental ballistic missiles or to develop a new bomber. Instead, DOD treated these efforts as zero-cost in the estimate. Consequently, DOD may be significantly underreporting its 10-year estimate, depending on the magnitude of the costs resulting from upcoming decisions about how to modernize these delivery systems.
- **Nuclear command, control, and communications (NC3):** DOD's methodology for preparing its \$40.8 billion estimate to sustain and modernize its system for assuring connectivity between the President and nuclear forces is not fully transparent because key assumptions and potential limitations are not documented in the report to Congress. As a result, Congress has a limited basis for understanding the estimate, or for comparing the estimates in one annual report to the next, as it assesses long-term affordability when allocating resources.

The report omits estimates for certain programs, such as the new bomber, and is not fully transparent in describing key assumptions and limitations for estimating nuclear command, control, and communications system funding, which limits its utility for budgetary planning. Key principles that GAO derived from federal budget guidance stress the importance of including all relevant funding estimates in the plan, as well as documenting methodological assumptions and potential limitations. However, DOD did not specifically direct the Air Force to include a range of potential budget estimates in the report for developing a new intercontinental missile or bomber, where a firm estimate was unavailable. DOD also did not direct that key assumptions and limitations be documented in the report for preparing its NC3 estimates. GAO reported in December 2013 that DOE's nuclear stockpile and infrastructure estimates did not include a range of preliminary budget estimates to account for known future expenses. GAO recommended that DOE include a range of potential budget estimates for preliminary projects and programs in future funding plans, and DOE generally agreed with this recommendation. Without a range of potential estimates and fully documented assumptions and limitations, the report is an incomplete tool for congressional oversight.

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Abbreviations

C3	Command, Control, and Communications
DISA	Defense Information Systems Agency
DOD	Department of Defense
DOD CIO	Department of Defense Chief Information Officer
DOE	Department of Energy
ICBM	Intercontinental Ballistic Missile
FYDP	Future Years Defense Program
FYNSP	Future Years Nuclear Security Program
NC3	Nuclear Command, Control, and Communications
NNSA	National Nuclear Security Administration
SLBM	Submarine-launched Ballistic Missile
SSBN	Ship Submersible Ballistic Nuclear (ballistic missile submarine)

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June 10, 2014

Congressional Committees

The Department of Energy (DOE), through its National Nuclear Security Administration (NNSA),¹ and the Department of Defense (DOD) are undertaking an extensive, multifaceted effort to sustain and modernize U.S. nuclear weapons capabilities, including the nuclear weapons stockpile, research and production infrastructure, delivery systems, and nuclear command, control, and communications (NC3) system. Strategic missiles, submarines, aircraft, and the nuclear weapons they carry are aging, and both delivery systems and nuclear bombs and warheads are being deployed beyond their intended service lives. Key NNSA nuclear weapons research, development, and production facilities date back to the 1940s and 1950s, and, according to the administration, require renovation or replacement to ensure a safe, secure, and effective nuclear arsenal for as long as such weapons exist. Completing this effort is expected to cost hundreds of billions of dollars over decades.

The administration has laid out its plans to undertake this nuclear modernization effort in a number of different documents. The April 2010 *Nuclear Posture Review Report* signaled the administration's intent to make new investments in developing strategic delivery systems,² upgrade the NC3 system, and modernize NNSA's government-owned, contractor-operated nuclear security enterprise.³ In a February 2011 letter to the

¹NNSA is a separately organized agency within DOE that is responsible for the management and security of DOE's nuclear weapons, nuclear nonproliferation, and naval reactor programs.

²Section 1070 of the National Defense Authorization Act for Fiscal Year 2008, Pub. L. No. 110-181 (2008) required the Secretary of Defense, in consultation with the Secretary of Energy and Secretary of State, to conduct a comprehensive review of the nuclear posture of the United States for the next 5 to 10 years. DOD published the conclusions and recommendations from that review in the April 2010 *Nuclear Posture Review Report*.

³NNSA oversees three national nuclear weapons design laboratories—Lawrence Livermore National Laboratory in California, Los Alamos National Laboratory in New Mexico, and Sandia National Laboratories in New Mexico and California. It also oversees four nuclear weapons production plants—the Pantex Plant in Texas, the Y-12 National Security Complex in Tennessee, the Kansas City Plant in Missouri, and DOE's Savannah River Site in South Carolina, which conducts tritium operations. NNSA also oversees the Nevada National Security Site, formerly known as the Nevada Test Site.

United States Senate,⁴ the President further certified this administration's intent to modernize or replace the triad of strategic nuclear delivery systems, which include a heavy bomber and air-launched cruise missile, an intercontinental ballistic missile (ICBM), and a ballistic-missile submarine (SSBN) and submarine-launched ballistic missile (SLBM). In NNSA's *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, the administration renewed the *Nuclear Posture Review Report's* commitments to refurbish and modernize the nuclear bombs and warheads currently in the stockpile, and to construct new research and production facilities to support these stockpile refurbishments.⁵

GAO has assessed NNSA's long-range plans and budget estimates for modernizing U.S. nuclear weapons capabilities.⁶ The Ike Skelton National Defense Authorization Act for Fiscal Year 2011 mandated that GAO study and report annually on whether NNSA's nuclear security budget materials provide for funding that is sufficient to modernize and refurbish the nuclear security enterprise.⁷ Under this mandate we annually review NNSA's justification of the President's budget request, which typically includes a Future Years Nuclear Security Program (FYNSP),⁸ and have also reviewed NNSA's *Stockpile Stewardship and Management Plan*, which provides information on modernization and operations plans and

⁴White House, Office of the Press Secretary, letter to the Senate of the United States (Washington, D.C.: Feb. 2, 2011).

⁵Department of Energy, *Fiscal Year 2014 Stockpile Stewardship and Management Plan Report to Congress* (Washington, D.C.: June 2013). The *Stockpile Stewardship and Management Plan* is NNSA's formal means for communicating to Congress the status of certain activities and its long-range plans and budget estimates for sustaining the stockpile and modernizing the nuclear security enterprise.

⁶DOE and DOD are undertaking these modernization efforts during a time of budgetary uncertainty. Since 2011, DOE has reprioritized its nuclear modernization programs in response to budgetary uncertainties, including delaying key infrastructure projects and nuclear weapons life extensions. In May 2013, the Deputy Secretary of Defense stated that defense budget options would be developed for budgets at 5 and 10 percent below current levels.

⁷Pub. L. No. 111-383, § 3113 (2011), as amended by Pub. L. No. 112-239, § 3132(a)(2) (2013).

⁸The NNSA's annual justification of the President's budget request, which typically includes the FYNSP, provides program information and budget estimates for the next 5 years and is reviewed by the Office of Management and Budget. Pub. L. No. 106-65, § 3253 (1999), as amended, requires NNSA to submit a FYNSP "at or about the time the President's budget is submitted to Congress."

budget estimates over the next 25 years. Our most recent report in response to this mandate was published in December 2013.⁹

Congress has also required reporting on DOD and DOE plans and estimates for sustaining and modernizing U.S. nuclear weapons capabilities. Section 1043 of the National Defense Authorization Act for Fiscal Year 2012, as amended, requires the preparation of an annual report coordinated with DOE and DOD (hereafter the “joint report”) regarding the plan for the nuclear weapons stockpile, complex,¹⁰ delivery systems, and command and control system.¹¹ The report is to include information on their 10-year budget estimates and nuclear sustainment and modernization plans.¹² The July 15, 2013, joint report included a 10-year sustainment and modernization estimate totaling \$263.8 billion for both departments through fiscal year 2023, including \$122.3 billion from fiscal years 2014 through 2018.¹³

The National Defense Authorization Act for Fiscal Year 2013 mandated GAO to annually review the accuracy and completeness of the joint report with respect to the budget estimate contents and methodology.¹⁴ This report assesses the extent to which DOE’s and DOD’s budget estimates in the July 2013 joint report are accurate and complete (consistent) with respect to their long-term nuclear modernization plans, including whether the report provides complete information and a transparent methodology.¹⁵

⁹GAO, *Modernizing the Nuclear Security Enterprise: NNSA’s Budget Estimates Do Not Fully Align with Plans*, [GAO-14-45](#) (Washington, D.C.: Dec. 11, 2013).

¹⁰Except when referencing the statutory requirement, this report hereafter refers to the “nuclear weapons complex” as the “nuclear security enterprise.”

¹¹See Pub. L. No. 112-81, § 1043(a) (2011), *amended by* National Defense Authorization Act for Fiscal Year 2013, Pub. L. No. 112-239, § 1041 (2013) *and* National Defense Authorization Act for Fiscal Year 2014, Pub. L. No. 113-66, § 1054 (2013).

¹²See § 1043(a)(2).

¹³The first annual report prepared under this mandate was issued in May 2012.

¹⁴See Pub. L. No. 112-239, § 1041(a)(2) (adding § 1043(c)).

¹⁵In this report we use the term “budget estimates” to refer to estimates of future budget requests from DOE and DOD.

To address our objective, we examined the departments' plans and budget estimates for sustaining and modernizing the nuclear deterrent in three areas: (1) DOE nuclear security enterprise modernization; (2) DOD nuclear delivery systems; and (3) the DOD NC3 system.¹⁶ We applied a two-step approach:

- First, to assess the extent to which DOE's and DOD's budget estimates in the July 2013 joint report are consistent with respect to their long-term nuclear modernization plans, we obtained and analyzed the DOE and DOD plans and estimates from their July 2013 joint report and compared them with each department's fiscal year 2014 budget-justification materials and internal funding plans. Drawing upon our recent work to review NNSA's nuclear security budget materials, which resulted in our December 2013 report,¹⁷ we compared DOE's estimates in the joint report through fiscal year 2018 with the NNSA's funding plans in the FYNSP, and compared estimates in the joint report for fiscal years 2019 through 2023 with NNSA's estimates in the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*. To evaluate DOD's plans and estimates for nuclear delivery systems and the NC3 system, we compared DOD's estimates in the joint report through fiscal year 2018 with the funding plans in its Future Years Defense Program (FYDP).¹⁸ Because DOD has not prepared formal funding plans used to formulate projected defense budget requests that extend beyond fiscal year 2018, we reviewed Air Force, Navy, and Defense Information Systems Agency (DISA) plans, and discussed DOD's long-term budget estimates in the joint report with relevant DOD officials. We did not assess the overall reliability of the FYNSP or FYDP, or the departments' underlying budget estimating processes, because such analysis exceeded the scope of our mandate.

¹⁶The scope of the plans and estimates we reviewed was limited to those in effect at the time the joint report was released in July 2013. Some of these plans and estimates may have changed since that time. Although section 1043 requires information related to the nuclear weapons command and control system, DOD expanded the relevant portion of the report to include nuclear command, control, and communications.

¹⁷[GAO-14-45](#).

¹⁸We used the FYDP for our comparison of DOD's estimates in the report because, like the FYNSP, the FYDP is used to formulate projected budget requests for the current year and at least 4 subsequent years. We refer to the FYNSP and FYDP in this report as "internal funding plans."

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- Second, to assess whether the joint report includes complete information and a transparent methodology, we drew upon our December 2013 report and obtained new information from DOE about how it used the *Fiscal Year 2014 Stockpile Stewardship and Management Plan* to prepare the plans and estimates in the joint report for sustaining and modernizing the nuclear security enterprise and nuclear weapons stockpile. We also obtained DOD guidance (provided in a series of e-mails and a briefing) and methodologies used to prepare the 10-year budget estimates for sustaining and modernizing nuclear delivery systems and the nuclear command and control system. We derived general principles for developing and preparing long-term funding plans by reviewing key federal and departmental guidance, standards, and practices for cost-estimating, budget preparation, financial planning, and public reporting.¹⁹ We then used these derived principles as criteria for evaluating DOE's and DOD's guidance and methodologies for preparing the 10-year budget estimates in the joint report. To the extent we determined differences between the principles we derived and the departments' guidance and methodologies, we discussed the causes and potential effects with relevant officials.

We conducted this performance audit from July 2013 to June 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Additional details of our scope and methodology are included in appendix I.

Background

Section 1043 of the National Defense Authorization Act for Fiscal Year 2012 requires the President, in consultation with the Secretary of Defense and Secretary of Energy, to submit a report on the plan for the nuclear weapons stockpile, complex, delivery systems, and command and control

¹⁹Such federal guidance included the following: Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013); V 3.0 *Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013); and *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines.

system for each of fiscal years 2013 through 2019.²⁰ Ten-year budget estimates are among several elements that Congress required in the joint report. The other required elements include detailed descriptions of DOE's and DOD's plans to

- enhance the safety, security, and reliability of the U.S. nuclear weapons stockpile;
- sustain and modernize the nuclear weapons complex;
- maintain, modernize, and replace delivery systems for nuclear weapons;
- sustain and modernize the nuclear weapons command and control system; and
- retire, dismantle, or eliminate any nuclear weapons, delivery systems, or silos/submarines that carry such weapons or delivery systems.²¹

A provision in the National Defense Authorization Act for Fiscal Year 2013 expanded the reporting requirement under section 1043 with respect to costs.²² As amended, section 1043 requires the joint report to include a detailed estimate of the budget requirements associated with sustaining and modernizing the U.S. nuclear deterrent and nuclear weapons stockpile, including the costs associated with the plans outlined under the elements above, over the 10-year period following the date of the report.²³ The joint report is also to include a detailed description of costs included in the budget estimates and the methodology used to create the estimates.²⁴ DOE's and DOD's 10-year estimates for sustaining and modernizing U.S. nuclear weapons capabilities—including nuclear delivery systems, the nuclear command and control system, and the

²⁰Pub. L. No. 112-81, § 1043(a) (2011). The report is to be transmitted to the congressional defense committees, the Senate Committee on Foreign Relations, and the House Committee on Foreign Affairs. § 1043(a)(1). The President has delegated this reporting function to the Secretary of Defense and Secretary of Energy. See 77 Fed. Reg. 12,721 (Mar. 2, 2012).

²¹§ 1043(a)(2). The report must also include a detailed description of the steps taken to implement the plan submitted in the previous year, including difficulties encountered in implementation. § 1043(a)(2)(G).

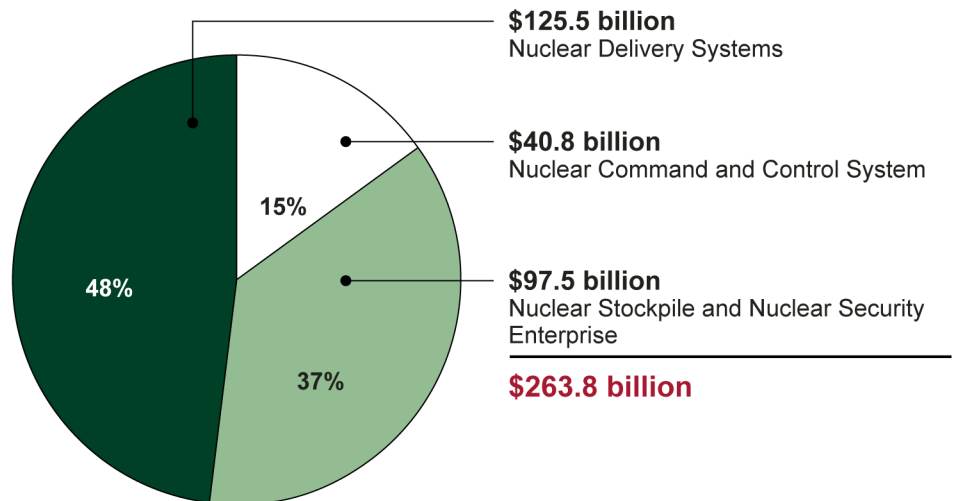
²²See Pub. L. No. 112-239, § 1041(a)(1) (amending § 1043(a)(2)(F)).

²³§ 1043(a)(2)(F). The budget requirements are to include applicable and appropriate costs associated with DOD's procurement, military construction, operation and maintenance, and research, development, test, and evaluation accounts. *Id.*

²⁴§ 1043(a)(3).

nuclear stockpile and nuclear security enterprise—total \$263.8 billion through fiscal year 2023. These estimates are presented in figure 1.

Figure 1: Departments of Energy (DOE) and Defense (DOD) 10-Year Estimates for Sustaining and Modernizing the U.S. Nuclear Deterrent as of July 2013



Source: GAO analysis of DOE and DOD data. | GAO-14-373

NNSA is required to submit the FYNISP to Congress at or about the same time as the President's budget,²⁵ and it is typically included as part of NNSA's annual budget-justification documents. NNSA's Management and Budget office aggregated the FYNISP for fiscal years 2014 through 2018 by incorporating inputs from relevant program offices, including the Office of Defense Programs, Office of the Chief Information Officer, and Office of Safeguards and Security.

The FYDP is DOD's 5-year funding plan; it is updated annually and provides DOD's current budget request and budget estimates for at least 4 subsequent fiscal years. The FYDP includes thousands of discrete program elements, each of which may include funding projections for DOD's appropriations accounts, including operation and maintenance; research, development, test, and evaluation; and procurement. The FYDP is maintained by DOD's Director of Cost Assessment and Program Evaluation, who works with the Office of the Under Secretary of Defense

²⁵Pub. L. No. 106-65, § 3253 (1999) (codified as amended at 50 U.S.C. § 2453).

(Comptroller) to ensure that the data presented in the annual budget-justification materials are equivalent to the FYDP estimates at the appropriation account level.

DOE's and DOD's 10-Year Estimates Are Incomplete, and DOD's Methodology for Preparing Some Estimates Is Not Fully Transparent

DOE's and DOD's \$263.8 billion budget estimates in the July 2013 joint report are generally consistent with their internal funding plans through fiscal year 2018, but their overall estimates in the joint report are incomplete; although DOE's methodological assumptions are transparent in the related *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, key DOD methodological assumptions and limitations underlying some estimates are not documented in the joint report, limiting the report's transparency. DOE's \$97.5 billion estimate in the July 2013 joint report is consistent with the budget estimates described in its *Fiscal Year 2014 Stockpile Stewardship and Management Plan*; however, as we previously found, DOE's budget estimates do not represent total funding needed over the 10-year period covered by the joint report for key areas of its modernization plans, and therefore do not fully align with aspects of these plans. In December 2013 we recommended that DOE include a range of preliminary budget estimates in future funding plans to improve alignment, and DOE generally concurred with this recommendation. In this review, we found that DOD's \$125.5 billion estimate for nuclear delivery systems is generally consistent with its budget-justification documents and funding plans, but DOD's 10-year budget estimate did not include potential estimates for key Air Force modernization efforts. Additionally, in preparing the \$40.8 billion estimate for sustaining and modernizing the NC3 system, DOD did not document key methodological assumptions and limitations or make them transparent in the report.

GAO Previously Reported That DOE's Budget Estimates for Certain Near-Term and Long-Term Modernization Efforts Are Incomplete

DOE's \$97.5 billion estimate in the joint report for sustaining and modernizing the nuclear stockpile and nuclear security enterprise is consistent with the funding plans in its FYNSP and its *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, and its methodological assumptions for preparing this estimate are transparent, but as we found in December 2013,²⁶ these estimates are incomplete because they are less than what will be needed through fiscal year 2023 to meet the schedules of key modernization efforts. Within DOE, NNSA's Office of

²⁶GAO-14-45.

Defense Programs prepared the *Fiscal Year 2014 Stockpile Stewardship and Management Plan* and its included budget estimates, which also form the basis for the budget estimates included in the joint report. As such, both documents used inputs from the FYNRP and other relevant offices.

DOE described its sustainment and modernization plans for the nuclear weapons stockpile and nuclear security enterprise in the June 2013 *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, and in the July 15, 2013, joint report. DOE's plans focus substantially on efforts to refurbish various types of warheads and bombs associated with DOD's weapon systems. Meeting production milestones for the planned scope of work requires significant advanced investment. In these plans, DOE stated its intentions to

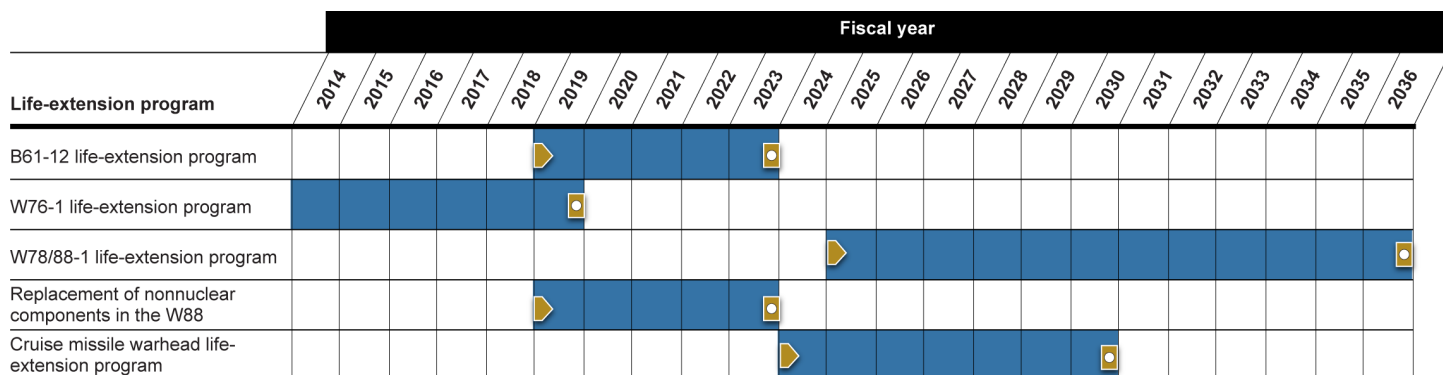
- continue to produce refurbished W76-1 SLBM warheads through fiscal year 2019;
- in fiscal year 2019, begin producing refurbished B61-12 gravity bombs and replacing aging nonnuclear components in W88 SLBM warheads; both of these activities would take place through the early 2020s;
- in fiscal year 2024, begin producing a modernized cruise missile warhead; and
- in fiscal year 2025, begin producing an interoperable warhead—the W78/88-1—for use on ICBM and SLBM systems,²⁷ as reported in the 2010 *Nuclear Posture Review Report*.²⁸

NNSA's production plans for nuclear weapons refurbishments, as of July 2013, are summarized in figure 2. To support these nuclear weapons refurbishments, DOE's plans also include constructing new plutonium and uranium facilities, which would replace existing facilities that are decades old, lack modern safety features, and are difficult and expensive to sustain.

²⁷In June 2012, the DOD-DOE Nuclear Weapons Council requested that the Air Force, Navy, and NNSA study the feasibility and costs of options to extend the service life of the W78 ICBM warhead, including options that would replace not only the W78 warhead, but also could replace the W88 SLBM warhead.

²⁸The *Nuclear Posture Review Report* recommended a study of life-extension program options for the W78 ICBM warhead, including the possibility of using the resulting warhead also on SLBMs to reduce the number of warhead types.

Figure 2: National Nuclear Security Administration (NNSA) Production Schedules for Planned Nuclear Weapons Life-Extension Programs as of July 2013



▶ First production unit^a
 ■ Production complete

Source: GAO analysis of NNSA data. | GAO-14-373

^aThe “first production unit” is the first complete bomb or warhead from a production line that is certified for deployment.

The joint report does not explicitly discuss NNSA’s methodology for developing its plan and estimates, but the report refers to the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, which provides information on how the estimates were developed. NNSA uses a system of planning, programming, budgeting, and evaluation to develop its annual budget requests and to plan for future budget requests. As we reported in December 2013, NNSA incorporated an automatic increase of 2 percent per year to account for inflation for those activities after fiscal year 2018 that were expected to continue to operate at the same level of effort as during the FYNRP period. Further, we reported that for activities where NNSA expected a change to the level of effort—such as life-extension programs—NNSA instead used available planning data. In the case of life-extension programs, these data included cost estimates based on an improved cost model that, according to NNSA officials, is more likely to be accurate than estimates generated using the previous approach because they are based on the costs of a life-extension

program that is in progress, rather than a program that was never executed.²⁹

While DOE took steps to ensure that its total budget estimates for each life-extension program would cover the programs' costs to achieve their first production units, in December 2013 we found that NNSA's funding plans included in the FYNSP are less than what will be needed to meet schedules reflected in the joint report. DOE's estimates in the joint report include \$43.4 billion through fiscal year 2018, which is consistent with NNSA's FYNSP and fiscal year 2014 budget submission.³⁰ However, as we concluded in December 2013, to meet planned milestones for key warhead life-extension programs, additional funds above the estimates included in the FYNSP will be needed. For example, we found that the FYNSP understated NNSA's budget estimates for both the cruise missile warhead life-extension program, and for the W78/88-1 ("interoperable warhead") life-extension program, both of which, according to the joint report, are to begin production in the mid-2020s. An NNSA official told us that the agency shifted funding within its budget estimates for these two programs beyond fiscal year 2019 to stay within guidelines set by the Office of Management and Budget for the FYNSP period. According to the official, the estimates beyond 2019 were not subject to funding targets to the same extent as the estimates were for fiscal years 2014 through 2018. As a result, in December 2013 we concluded that DOE may need additional funding before fiscal year 2019 in order to prepare for these modernization efforts and meet its schedules.

In our December 2013 report, we also noted additional shortcomings with the longer-term budget estimates in the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*. For example, we found that DOE incorporated about \$320 million in fiscal year 2014, and \$7.5 billion through fiscal year 2023, in cost savings in its funding plans that the agency expected to achieve through management efficiencies and workforce-prioritization savings, before fully assessing how to achieve the

²⁹NNSA officials indicated that their cost-estimating methodology has further evolved to use previously unavailable actual historical costs for estimating life-extension program costs. GAO has ongoing work to assess NNSA's cost-estimating practices; we expect to issue the final results of this work in the fall of 2014.

³⁰NNSA's top-line estimates in the joint report include an estimated \$5.9 billion in budget authority transfer from DOD, which is identified in DOD's FYDP but not reported in the joint report.

savings. We also found that NNSA excluded most of the budget estimates for a modernized plutonium capability, either for construction of a Chemistry and Metallurgy Research Replacement-Nuclear Facility or an alternative to this facility.³¹ DOE officials told us that their plans were not yet developed enough to be included in the fiscal year 2014 budget justification materials or the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*. Moreover, the estimates were not included in the July 2013 joint report because DOE officials told us that the department adopted guidance requiring that the estimates in the joint report be consistent with estimates in the budget justification and *Stockpile Stewardship and Management Plan*. Key principles that we derived from federal budgeting and cost-estimating guidance indicate that long-term funding plans should include all relevant budget estimates of a program in order to assist decision makers on how to allocate resources. As we concluded in December 2013, in cases where complete budget information is not yet known, funding plans could include a range of potential budget estimates, based on preliminary cost information. We further recommended in our December 2013 report that, to improve future budget estimates, NNSA should include a range of potential budget estimates for projects and programs that the agency knows are needed, even when available budget information is preliminary; DOE generally concurred with this recommendation. By not including preliminary estimates or ranges for these projects and programs, DOE underestimated the total anticipated cost and limited the utility of the joint report.

³¹For recent GAO work on DOE's plutonium plans see GAO, *Modernizing the Nuclear Security Enterprise: Observations on NNSA's Options for Meeting Its Plutonium Research Needs*, [GAO-13-533](#) (Washington, D.C.: Sept. 11, 2013). NNSA did include plutonium funding in its FYNRP budget estimates to mitigate the effects of the planned closure of its existing Chemistry and Metallurgy Research facility in fiscal year 2019; however, we found that no funds were included for modernizing the plutonium capability for the fiscal year 2019 through 2023 period covered by the joint report, even though preliminary schedules indicate funding will be needed during this period.

DOD's Delivery System Estimates Are Consistent with Its Funding Plans but Do Not Include Potential Estimates for Key Air Force Modernization Efforts

DOD's estimates through fiscal year 2018 in the joint report for sustaining the Minuteman III ICBM, heavy bombers, *Ohio*-class submarine, and related delivery systems are generally consistent with DOD's funding plans and budget-justification documents for most appropriations accounts, but the 10-year, \$125.5 billion estimate does not include potential budget estimates for Air Force efforts to modernize ICBMs and bombers. DOD's sustainment and modernization plans are described in the joint report, in DOD's fiscal year 2014 budget-justification documents, and other planning documents. These plans are summarized in table 1.

Table 1: Department of Defense's (DOD) Nuclear Delivery System Sustainment and Modernization Plans as of July 2013

Delivery system	Service life	Sustainment plan	Modernization plan
Heavy bombers	The Air Force expects the B-52 to be in service through at least 2040, and the B-2 potentially until 2058	B-52: Improving tactical datalink and voice communications capabilities, weapons bay upgrades, and additional efforts that stem from the operation and maintenance of a 50-plus-year-old aircraft B-2: Improving avionics, communications, engines, armament systems, low-observable components, and other subsystems	Air Force developing a new heavy bomber, with initial operational capability expected in the mid-2020s
Air-launched cruise missile	The Air Force plans for the AGM-86B air-launched cruise missile to be in service through 2030	Monitoring and addressing age-related issues in arming, fuzing, ^a navigation, electrical, and other subsystems	Air Force completed analysis of alternatives in fiscal year 2013 for a replacement option, with an initial operational capability planned for the mid-2020s
Intercontinental ballistic missile (ICBM)	The Air Force plans for the Minuteman III ICBM to be in service through 2030	Replacing obsolete nuclear reentry system components; maintaining an engineering capability to address emerging issues in guidance, propulsion, reentry, command and control, and other subsystems; and replacing obsolete or nonserviceable weapon-system support equipment and flight-test equipment; and sustaining the UH-1N helicopter to improve security at ICBM sites for routine and emergent operations	Air Force analysis of alternatives to replace, recapitalize, upgrade, or evolve the Minuteman III expected to be completed in fiscal year 2014, with an initial operational capability planned for the mid-2020s
Dual-capable aircraft ^b	Currently fielded Air Force dual-capable fighter aircraft expected to be able to meet Allied commitments into the 2020s	Performing regular operations and maintenance for F-16 fighter squadrons in Italy	Air Force developing a nuclear-capable variant of the F-35 and a tail section for the B61-12 bomb that will increase the bomb's accuracy, thereby allowing the refurbished bomb to be designed with a reduced nuclear yield

Delivery system	Service life	Sustainment plan	Modernization plan
Fleet ballistic missile submarine (SSBN)	The Navy plans to retire the <i>Ohio</i> -class submarines at the rate of roughly one boat per year beginning in 2027	Performing intermediate maintenance and industrial support for the incremental overhaul, repair, and refueling of the remaining <i>Ohio</i> -class submarines; improving land-side and in-transit security systems	Navy planning to replace all 14 <i>Ohio</i> -class submarines with 12 new SSBNs, with initial operations expected in 2031 following a decade of ship construction, testing, and crew and platform certifications
Submarine-launched ballistic missile (SLBM)	The Navy plans for the Trident II SLBM to be in service through at least 2042	Developing nonnuclear components to improve the reliability, safety, and security for the W88 warhead's MK5 reentry system; redesigning and replacing missile guidance and electronic systems; sustaining other missile components reaching the end of their service lives; procuring additional missiles; executing capital maintenance projects at Navy-owned Naval Industrial Reserve Ordnance Plants	No plan to replace the Trident II until the 2040s

Source: GAO analysis of DOD data. | GAO-14-373

^aA fuze is a nonnuclear component that helps to control the timing of the nuclear detonation.

^bDual-capable aircraft are fighter aircraft capable of delivering nuclear weapons. Currently the Air Force maintains F-15 and F-16 fighter aircraft capable of delivering specific versions of the B61 nuclear bomb.

The Air Force and Navy budget estimates in the joint report are generally consistent with DOD's FYDP for operation and maintenance; research, development, test, and evaluation; and procurement accounts through fiscal year 2018. These estimates include

- \$26.9 billion—\$15.2 billion for the Air Force,³² and \$11.7 billion for the Navy—in military personnel and operation and maintenance;
- \$20.5 billion—\$14 billion for the Air Force, and \$6.5 billion for the Navy³³—in research, development, test, and evaluation; and
- \$9.4 billion—\$1.9 billion for the Air Force, and \$7.5 billion for the Navy—in procurement and ship construction.

Although generally consistent with DOD's funding plans through fiscal year 2018, the joint report does not include potential estimates for key Air Force modernization efforts that fall within the 10-year reporting period

³²This estimate does not include approximately \$0.6 billion in funding for F-16 fighter aircraft with nuclear responsibilities.

³³This estimate does not include approximately \$0.8 billion in NNSA funding for nuclear reactor design for the Navy's *Ohio*-replacement submarine.

required for the report to Congress. As previously noted, key principles for preparing long-term funding plans that we derived from federal budgeting and cost-estimating guidance indicate that all relevant estimates should be included in the plan, even if they are preliminary, to help decision makers anticipate changes to the administration's planned requirements over the long term. Absent such estimates, decision makers are left to speculate on those plans when assessing the estimates and considering the long-term affordability of the administration's near-term programmatic decisions. However, the Air Force did not include potential estimates over the 10-year period for replacing the Minuteman III ICBM, or the potential estimates for developing and producing the new bomber that are likely to occur beyond the FYDP. Rather than provide potential budget estimates, DOD treated these efforts as zero-cost over the 10-year period of the report. Additionally, the extent to which the Air Force's estimate includes all potential costs for replacing the air-launched cruise missile is uncertain because at the time the report was prepared, DOD had not yet developed its initial acquisition strategy for this program. Consequently, DOD's 10-year estimate in the joint report may be significantly underreported, depending on the magnitude of the costs resulting from upcoming decisions about how to modernize these delivery systems. DOD's 5-year and 10-year budget estimates for sustaining and modernizing nuclear delivery systems are summarized in table 2.

Table 2: Department of Defense's (DOD) 5-Year and 10-Year Nuclear Delivery System Sustainment and Modernization Estimates as of July 2013

Dollars in billions			
Delivery system	Fiscal years 2014-2018	Fiscal years 2019-2023	Total
Heavy bombers			
• B-2 and B-52	\$12.9	\$14.8	\$27.7
• New bomber	8.8	Not provided	8.8
Cruise missiles			
• Air-launched cruise missile	0.3	0.4	0.7
• Air-launched cruise missile replacement	1.0	1.7	2.7
Intercontinental ballistic missile (ICBM)			
• Minuteman III	7.3	6.8	14.1
• Minuteman III replacement	Not provided	Not provided	Not provided
Dual-capable aircraft ^a	1.6	1.1	2.7
Fleet ballistic-missile submarine (SSBN)			
• <i>Ohio</i> -class submarine	7.0	7.4	14.4
• <i>Ohio</i> -replacement submarine ^b	8.4	19.4	27.8
• Submarine-launched ballistic missile (SLBM) (Trident II)	12.8	13.8	26.6
Total	\$60.1	\$65.4	\$125.5^c

Source: GAO analysis of DOD data. | GAO-14-373

Notes: Data are from the July 15, 2013, joint report.

^aDual-capable aircraft are fighter aircraft capable of delivering nuclear weapons. Currently the Air Force maintains F-15 and F-16 fighter aircraft capable of delivering specific versions of the B61 nuclear bomb.

^bIncludes \$0.8 billion through fiscal year 2018, and \$1.2 billion total funding, from the National Nuclear Security Administration (NNSA) for nuclear reactor design.

^cDOD published in the July 2013 joint report a 10-year estimate for strategic delivery systems of \$116.7 billion. However, DOD did not include \$8.8 billion for research and development for a new bomber as part of the 10-year estimate published in the report, even though it had included this amount as part of the \$60.1 billion estimate through fiscal year 2018.

Air Force officials told us that it would be premature to include potential budget estimates for development programs in their early stages because their long-term costs are uncertain. For example, at the time the joint report was published, the Air Force had not yet completed its analysis of alternatives for replacing the Minuteman III. As we reported in September

2013, the Air Force expects a wide range of costs for replacing the Minuteman III ICBM, depending on the replacement option that DOD selects.³⁴ In contrast, the Navy's *Ohio* Replacement Program included \$27.8 billion in research, development, test, and evaluation and ship construction estimates over the 10-year period for a new SSBN. However, the Navy's submarine-replacement program is further along in the acquisition process than either the Air Force's ICBM-replacement effort, or its new bomber program. DOD officials told us that it would be highly speculative to include potential costs for replacing the Minuteman III ICBM because that program is not yet defined. An Air Force official added that specific estimates for the new bomber were considered too sensitive to include in the report.³⁵ Moreover, in its guidance for preparing the joint report, provided in various e-mails and a briefing to DOD officials, the Office of the Under Secretary of Defense for Policy sought consistency with the President's budget submission and DOD's funding plans, without specifically directing the Air Force or the Navy to project potential budget estimates that would be required to bring such efforts to completion. However, as we concluded in December 2013,³⁶ departments and agencies could include at least a range of potential budget estimates in their funding plans for preliminary projects, based on available cost information. By treating key Air Force modernization efforts as zero-cost, instead of including a range of potential budget estimates based on preliminary cost information, DOD limited the value of the joint report as a congressional tool for understanding the estimate or for assessing the long-term affordability of DOD's modernization plans.

³⁴GAO, *ICBM Modernization: Approaches to Basing Options and Interoperable Warhead Designs Need Better Planning and Synchronization*, [GAO-13-831](#) (Washington, D.C.: Sept. 20, 2013).

³⁵Although estimated program costs are sensitive, DOD included rough estimates for the new bomber through fiscal year 2023 in its estimates for developing long-range strike capabilities in another unclassified report. See DOD, *Annual Aviation Inventory and Funding Plan, Fiscal Years (FY) 2014-2043* (Washington, D.C.: May 2013).

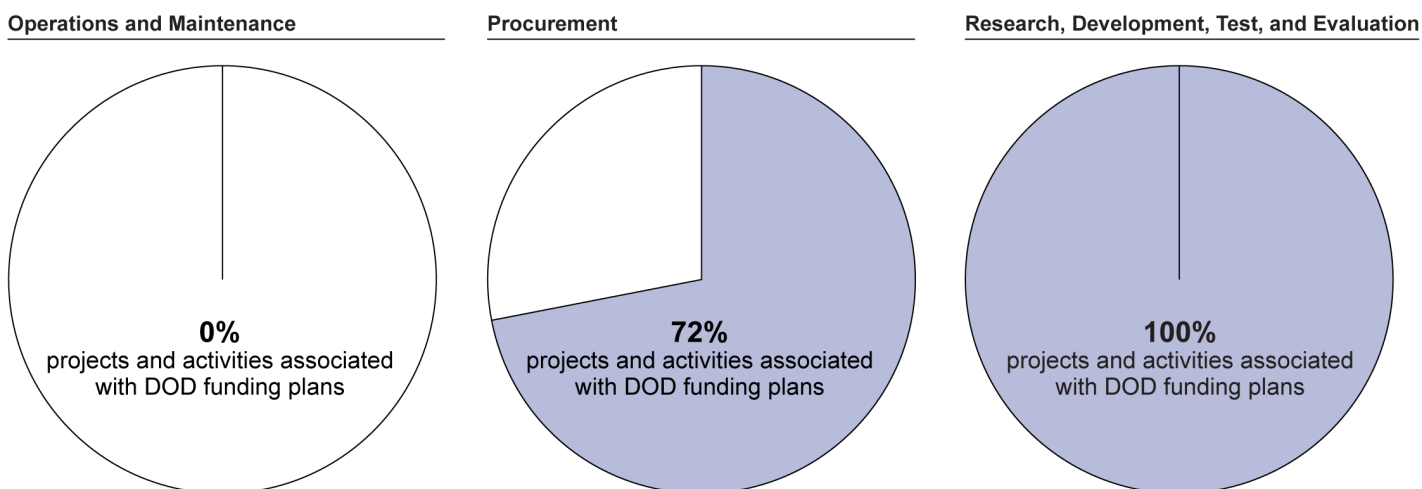
³⁶[GAO-14-45](#).

DOD's Methodology for Estimating NC3 Sustainment and Modernization Costs Was Not Fully Transparent

DOD's methodology for preparing its \$40.8 billion estimate through fiscal year 2023 for sustaining and modernizing the NC3 system was not fully transparent because some assumptions and potential limitations are not documented in the joint report. Among other functions, the NC3 system is intended to enable informed and timely decisions by the President on whether to execute nuclear response options. The NC3 system is highly complex; it consists of satellites, early warning radars, aircraft, communications networks, and other systems that are managed by the Air Force, Navy, DISA, and other organizations. Moreover, many systems that make up the NC3 system also support nonnuclear military operations. DOD plans to enhance the NC3 system by improving its resiliency, investing in secure voice-conferencing capabilities, and modernizing aging systems so that they continue to meet operational requirements. For the joint report, the DOD Chief Information Officer (DOD CIO) prepared the plans and 10-year budget estimates for sustaining and modernizing the NC3 system because of the system's crosscutting complexity.

Because of the complexity of the NC3 system, the DOD CIO made certain assumptions at the outset to simplify the development of its estimate. In particular, the DOD CIO used DISA's October 2011 *Nuclear Command, Control, and Communications (C³) System Program Tracking Report* as an authoritative source to begin identifying relevant programs in the FYDP, and determining how much funding from these programs should be allocated to the NC3 mission. However, the DISA report led to a key methodological limitation because it did not associate all projects and activities with specific FYDP programs. Specifically, the DISA report associated only 85 of 120 NC3 projects and activities (71 percent) with specific FYDP programs. As summarized in figure 3, the DISA report did not associate any of the operation and maintenance activities, and associated only 72 percent of the procurement activities directly to the FYDP, leaving the DOD CIO without the means to prepare budget estimates for these projects and activities directly. However, DOD did not document the DISA report's limitation and its potential effect on the NC3 estimate in the July 2013 joint report. Key principles for preparing funding plans, which we derived from several federal guidance documents, indicate that potential methodological limitations should be disclosed in order to enhance the quality of the funding plan.

Figure 3: Not All Nuclear Command, Control, and Communications Activities Were Associated with Department of Defense (DOD) Funding Plans



Source: GAO analysis of DOD data. | GAO-14-373

Although DOD did not disclose the limitation in the joint report, the DOD CIO made further assumptions to overcome it, thereby covering all affected NC3 activities in its 10-year estimate in the joint report. However, in contrast to the key principles we identified, which indicate that key assumptions should be clearly stated and well documented, DOD's guidance for preparing the joint report did not direct the DOD CIO to describe its methodology for preparing this estimate, nor did DOD document in the joint report the assumptions it made when preparing the analysis. As a result, it could be difficult for Congress to understand the basis for this estimate, or compare one year's estimates to the next, as it assesses long-term affordability when allocating resources.

Conclusions

Sustaining and modernizing the U.S. nuclear stockpile, nuclear security enterprise, nuclear delivery systems, and the NC3 system is a long-term, complex, multifaceted effort that requires resource planning and commitment by both the administration and Congress that could cost more than \$250 billion over the next 10 years. The annual requirement for DOE and DOD to report on their plans and estimate their 10-year budgets is one means that Congress uses to gather information it needs to measure the administration's progress from year to year, and to understand the administration's plans to invest in nuclear deterrence capabilities over the long term, given the constrained budget environment. Under such circumstances, accurate and complete budget

estimates over the long term are needed to help decision makers assess affordability when making tradeoffs among requirements.

Under a separate statutory mandate, we reported on DOE's plans and 25-year budget estimates for sustaining and modernizing the nuclear stockpile and nuclear security enterprise in December 2013. As we reported at that time, DOE's estimates do not represent the total funding needed for nuclear weapons life-extension programs or infrastructure-modernization efforts. In that report we recommended that DOE should include at least a range of potential budget estimates for future projects and programs that it knows are needed. DOE generally concurred with our recommendation.

In reviewing DOD's plans and estimates for sustaining and modernizing nuclear delivery systems, we found that DOD's guidance for preparing the joint report sought consistency between the report's estimates and the fiscal year 2014 budget submission and 5-year funding plans. However, this resulted in a missed opportunity to identify the potential long-term costs for these efforts. Unless the Secretary of Defense directs the Secretary of the Air Force and Secretary of the Navy to include in future reports at least a range of potential budget estimates for key modernization programs based on preliminary cost information, its estimates in subsequent annual joint reports will be incomplete and understated.

Finally, estimating the costs for sustaining and modernizing the NC3 system is perhaps the most difficult and challenging task that DOD faced in preparing its contributions to the report. The DOD CIO was able to simplify the complexity of the NC3 system in its estimates to some degree, but it did not describe the assumptions behind its analysis, nor did it characterize its potential limitations in the joint report. Unless the Secretary of Defense directs that key assumptions and limitations are documented in future reports, the basis for its NC3 estimates may not be adequately transparent for Congress to determine reasonable resource allocations, and Congress may not be able to identify changes in the estimates from one annual report to the next.

Recommendations for Executive Action

We are making two recommendations to the Secretary of Defense to improve subsequent joint reports to Congress on plans for sustaining and modernizing U.S nuclear weapons capabilities:

-
- To ensure the accuracy and completeness of DOD's estimates for sustaining and modernizing strategic delivery systems over the 10-year period covered in subsequent joint reports, we recommend the Secretary of Defense direct the Secretary of the Air Force and Secretary of the Navy, as appropriate, to include at least a range of potential budget estimates for projects and programs in future modernization plans that extend beyond the period covered by their 5-year internal funding plans, based on preliminary cost information.
 - To improve the transparency of the joint report's methodologies, thereby assisting Congress in understanding the basis for DOD's NC3 estimates in subsequent joint reports, we recommend the Secretary of Defense direct the DOD CIO to document in the report the methodological assumptions and limitations affecting the report's estimates for sustaining and modernizing the NC3 system.

We are not making recommendations to the Secretary of Energy because in our December 2013 report reviewing NNSA's nuclear security budget materials we recommended that the Administrator of NNSA should include in future modernization plans at least a range of potential budget estimates for projects and programs that the agency knows are needed, based on available information about these projects' and programs' future costs. DOE generally agreed with this recommendation.

Agency Comments and Our Evaluation

We provided DOE and DOD with copies of our draft report for their review and comment. In response, we received written comments from both departments, which are reprinted in appendixes II and III, respectively. DOD agreed with both of our recommendations. DOD also provided a document describing the methodology it used to prepare the estimates for sustaining and modernizing the NC3 system, and the limitations inherent in that methodology. We believe that had DOD included such documentation in the joint report, as we have recommended, it would have helped Congress to better understand the assumptions and limitations that underpin these estimates. DOE neither agreed nor disagreed with our report, as we made no new recommendations to NNSA. Both departments also provided technical comments, which we incorporated, as appropriate.

We are sending copies of this report to the appropriate congressional committees and to the Secretary of Defense; Chairman, Joint Chiefs of Staff; Secretary of the Air Force; Secretary of the Navy; Secretary of

Energy; and Administrator, NNSA. This report is also available at no charge on the GAO website at <http://www.gao.gov>.

Should you or your staffs have any questions about this report, please contact John Pendleton at (202) 512-3489 or pendletonj@gao.gov, or David Trimble at (202) 512-3841 or trimbled@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made contributions to this report are listed in appendix IV.



John H. Pendleton
Director
Defense Capabilities and Management



David C. Trimble
Director
Natural Resources and Environment

List of Committees

The Honorable Carl Levin
Chairman
The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Richard J. Durbin
Chairman
The Honorable Thad Cochran
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Dianne Feinstein
Chairwoman
The Honorable Lamar Alexander
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
United States Senate

The Honorable Howard P. "Buck" McKeon
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
Chairman
The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Mike Simpson
Chairman
The Honorable Marcy Kaptur
Ranking Member
Subcommittee on Energy and Water Development, and Related Agencies
Committee on Appropriations
House of Representatives

Appendix I: Scope and Methodology

We reviewed the July 15, 2013, joint report to Congress from the Department of Energy (DOE) and the Department of Defense (DOD) that describes their plans and 10-year budget estimates for sustaining and modernizing U.S. nuclear weapons capabilities and assessed whether their budget estimates in that report are accurate and complete (consistent) with respect to their long-term plans, including whether the report provides complete information and a transparent methodology, in three areas: (1) DOE nuclear security enterprise modernization; (2) DOD nuclear delivery systems; and (3) the DOD nuclear command, control, and communications (NC3) system. To address our objective, we obtained and analyzed the DOE and DOD plans and estimates from the July 15, 2013, joint report, and analyzed the DOE and DOD data and methodologies used to prepare their 10-year budget estimates. We compared their plans and estimates from fiscal year 2014 through fiscal year 2018 with their fiscal year 2014 budget-justification materials and each department's internal funding plans.

We performed our review at both DOE and DOD. For our review of DOE's plans and estimates, we drew upon our December 2013 report.¹ We compared DOE's estimates in the joint report with the NNSA's funding plans in the Future Years Nuclear Security Program (FYNSP) and the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, which includes estimated funding requirements for NNSA modernization that cover the time required for the joint report and beyond.² For our review of DOD's plans and estimates for nuclear delivery systems and the nuclear command and control system, we used DOD's fiscal 2014 budget-justification submission and its funding plans in its Future Years Defense Program (FYDP). Because DOD has not prepared internal funding plans used to project estimated budget requests beyond fiscal year 2018, we reviewed Air Force, Navy, and defense-wide plans, including the Air Force's *Core Function Master Plan for Nuclear Deterrence*, the Navy's long-range shipbuilding plan, DOD's 30-year aviation inventory plan, and

¹GAO, *Modernizing the Nuclear Security Enterprise: NNSA's Budget Estimates Do Not Fully Align with Plans*, [GAO-14-45](#) (Washington, D.C.: Dec. 11, 2013).

²Department of Energy, *Fiscal Year 2014 Stockpile Stewardship and Management Plan Report to Congress* (Washington, D.C.: June 2013). The *Stockpile Stewardship and Management Plan* is NNSA's formal means for communicating to Congress the status of certain activities and its long-range plans and budget estimates for sustaining the stockpile and modernizing the nuclear security enterprise. The *Stockpile Stewardship and Management Plan* includes 25-year budget estimates for NNSA's plans.

the Defense Information Systems Agency's (DISA) *Nuclear Command, Control, and Communications (C³) Program and Tracking Report*. We discussed the consistency of the estimates in the joint report with the departments' plans with DOE and DOD officials. We used the FYNSP and FYDP for our comparison of the fiscal year 2014 through fiscal year 2018 period because they are the internal funding plans that NNSA and DOD use to document their projected budget requests for the current year and at least 4 subsequent years.³ We did not assess the overall reliability of DOE's and DOD's internal funding plans themselves, or the departments' underlying budget-estimating processes because such analysis exceeded the scope of our mandate. We also did not independently verify the reliability of DOD's or DOE's specific budget estimates, but rather determined the estimates to be sufficiently accurate and complete if the budget estimates in the joint report were consistent with their funding plans, including their respective budget-justification materials, FYNSP, and FYDP.⁴ GAO has previously reported on DOD's and DOE's challenges in generating reliable budget estimates and programming data.⁵

We relied on findings developed for our December 2013 review of NNSA's *Fiscal Year 2014 Stockpile Stewardship and Management Plan* to identify reasons for any inconsistencies we identified when comparing relevant documents, and further discussed these causes and potential effects with NNSA officials. At DOD, we met with officials from a range of components responsible for developing and preparing the department's

³DOD's FYDP is a centralized DOD report that provides information on DOD's current and planned out-year budget requests. DOE's FYNSP is a similar document.

⁴In our recent work assessing the *Fiscal Year 2014 Stockpile Stewardship and Management Plan*, we assessed the reliability of DOE's budget estimate data by interviewing knowledgeable agency officials about the data; reviewing their methodologies for using the data to construct their estimates; and conducting electronic tests of the data to identify missing values, outliers, or other anomalies. We determined that the data underlying the budget estimates were sufficiently reliable for our purposes when completing that review. See [GAO-14-45](#).

⁵GAO, *Department of Energy: Observations on Project and Program Cost Estimating in NNSA and the Office of Environmental Management*, [GAO-13-510T](#) (Washington, D.C.: May 8, 2013); *Modernizing the Nuclear Security Enterprise: NNSA's Reviews of Budget Estimates and Decisions on Resource Trade-offs Need Strengthening*, [GAO-12-806](#) (Washington, D.C.: July 31, 2012); and *DOD Weapon Systems: Missed Trade-off Opportunities During Requirements Reviews*, [GAO-11-502](#) (Washington, D.C.: June 16, 2011).

contributions to the joint report. In addition to the Air Force, Navy, and Department of Defense Chief Information Officer (DOD CIO), we met with officials from the Office of the Secretary of Defense and from joint components, including

- Office of the Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy;
- Office of the Deputy Assistant Secretary of Defense for Strategic and Tactical Systems;
- Office of the Deputy Assistant Secretary of Defense for Nuclear Matters;
- Office of the Under Secretary of Defense (Comptroller);
- Office of the Director, Cost Analysis and Program Evaluation;
- Joint Staff, J5; and
- United States Strategic Command, J8.

To analyze DOE's and DOD's methodologies for preparing their 10-year estimates, we first obtained documentation of DOE's and DOD's methodologies and their source data for creating the 10-year estimates in the joint report. For DOE, we drew upon our December 2013 report to describe how DOE used the *Fiscal Year 2014 Stockpile Stewardship and Management Plan* to prepare the plans and estimates in the joint report for sustaining and modernizing the nuclear security enterprise and nuclear weapons stockpile. We also met with NNSA officials to discuss how the joint report was prepared. At DOD, we obtained Air Force, Navy, and DOD CIO documentation of their methodologies used to create DOD's 10-year estimates for sustaining and modernizing nuclear delivery systems and the nuclear command and control system. We also obtained guidance in the form of e-mails and a briefing from the Office of the Under Secretary of Defense for Policy, and interviewed officials from those offices and from U.S. Strategic Command. We then compared DOE's information and DOD's guidance and methodologies with the key principles for developing and preparing long-term funding plans that we derived by reviewing key federal and departmental guidance, standards, and practices for cost-estimating, budget preparation, financial planning, and public reporting. Such federal guidance included Circular No. A-11, *Preparation, Submission, and Execution of the Budget*,⁶ *Capital*

⁶Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013).

*Programming Guide version 3.0,*⁷ and *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies,*⁸ all published by the Office of Management and Budget, and the *GAO Cost Estimating and Assessment Guide.*⁹ To the extent we determined differences between the principles we derived and the departments' guidance and methodologies, we discussed the causes and potential effects with relevant officials. We conducted this performance audit from July 2013 to June 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

⁷Executive Office of the President, Office of Management and Budget, *V 3.0 Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013).

⁸Executive Office of the President, Office of Management and Budget, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines.

⁹GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: Mar. 2, 2009).

Appendix II: Comments from the Department of Energy



Department of Energy
National Nuclear Security Administration
Washington DC 20585

OFFICE OF THE ADMINISTRATOR

May 1, 2014

Mr. David Trimble
Director
Natural Resources and Environment
Government Accountability Office
Washington, DC 20458

Dear Mr. Trimble:

The National Nuclear Security Administration (NNSA) appreciates the opportunity to review the Government Accountability Office's (GAO) draft report titled "MODERNIZING U.S. NUCLEAR WEAPONS CAPABILITIES: Ten-Year Budget Estimates Omit Key Efforts, and Assumptions and Limitations Are Not Fully Transparent, GAO-14-373." GAO conducted this audit in response to a Congressional mandate to review annually the accuracy and completeness of the joint Department of Defense (DoD)/Department of Energy (DOE) report on plans for the nuclear weapons stockpile, complex, delivery systems, and command and control systems (required by Section 1043 of the fiscal year (FY) 2012 NDAA).

GAO concluded that the 10-year estimates in the joint DoD/DOE report are generally consistent with funding plans through 2018. However, they identified concerns with the completeness of estimates and transparency of assumptions and limitations that underlie those estimates. GAO provided two recommendations to DoD.

While no recommendations were made to NNSA, the report does reference a comparable recommendation to NNSA in GAO's December 2013 report entitled "NNSA's Budget Estimates Do Not Fully Align with Plans, GAO-14-45." This recommendation suggests adding a range of budget estimates for preliminary projects and programs in future modernization plans. As noted in our response to that report, we would like to reiterate that NNSA currently provides a reliable range of estimates based on sound decision making and factoring in all available information.



Printed with soy ink on recycled paper

If you have any questions concerning this response, please contact Dean Childs,
Director, Office of Audit Coordination and Internal Affairs, at (301) 903-1341.

Sincerely,


Frank G. Klotz
Administrator

Enclosure

Appendix III: Comments from the Department of Defense



NUCLEAR, CHEMICAL, AND
BIOLOGICAL DEFENSE PROGRAMS

ASSISTANT SECRETARY OF DEFENSE
3050 DEFENSE PENTAGON
WASHINGTON, DC 20301-3050

MAY 21 2014

Mr. John H. Pendleton
Director, Defense Capabilities and Management
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Mr. Pendleton:

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-14-373, "MODERNIZING U.S. NUCLEAR WEAPONS CAPABILITIES: Ten-Year Budget Estimates Omit Key Efforts, and Assumptions and Limitations Are Not Fully Transparent," dated April 3, 2014 (GAO Code 351853).

The Department is providing official written response to recommendations and providing comments for inclusion in the report. Thank you for your review and consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "A. Weber", is positioned above the printed name.

Andrew Weber

Attachments:

1. DoD Response to the GAO Recommendations
2. DoD comments

GAO DRAFT REPORT DATED APRIL 03, 2014
GAO-14-373 (GAO CODE 351853)

**“MODERNIZING U.S. NUCLEAR WEAPONS CAPABILITIES: Ten-Year Budget
Estimates Omit Key Efforts, and Assumptions and Limitation Are Not Fully Transparent”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATION**

RECOMMENDATION 1: To ensure the accuracy and completeness of Department of Defense’s (DoD) estimates for sustaining and modernizing strategic delivery systems over the 10-year period covered in subsequent joint reports, we recommend the Secretary of Defense direct the Secretary of the Air Force and Secretary of the Navy, as appropriate, to include at least a range of potential budget estimates for projects and programs in future modernization plans that extend beyond the period covered by their 5-year funding plans, based on preliminary cost information.

DoD RESPONSE: The DoD concurs with the GAO recommendation stated above. DoD will include, at a minimum, a range of potential budget estimates for projects and programs in future modernization plans that extend beyond the period covered by its 5-year funding plans, based on preliminary cost information.

RECOMMENDATION 2: To improve the transparency of the joint report’s methodologies, thereby assisting Congress in understanding the basis for DoD’s NC3 estimates in subsequent joint reports, we recommend the Secretary of Defense direct the DoD CIO to document in the report methodological assumptions and limitations affecting the report’s estimates for sustaining and modernizing the NC3 system.

DoD RESPONSE: The DoD concurs with the GAO recommendation stated above. DoD will include all key assumptions and potential limitations utilized in NC3 estimates for sustaining and modernizing the NC3 system in future joint reports. A copy of the NC3 budget projection methodology utilized is attached for inclusion into Appendix III of the report.

Appendix IV: GAO Contacts and Staff Acknowledgments

GAO Contacts

John H. Pendleton, (202) 512-3489 or pendletonj@gao.gov
David C. Trimble, (202) 512-3841 or trimbled@gao.gov

Staff Acknowledgments

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