March 2016

DATA CENTER CONSOLIDATION

Agencies Making Progress, but Planned Savings Goals Need to Be Established

Accessible Version

On March 4, 2016, this report was revised to correct the briefing slides in Appendix I, including the title slide and slides 12, 37, 38, 40, 41, 42, 43, and 44.

GAO-16-323

DATA CENTER CONSOLIDATION

Agencies Making Progress, but Planned Savings Goals Need to Be Established

Why GAO Did This Study

In 2010, as the focal point for information technology management across the government, OMB's Federal Chief Information Officer launched the Federal Data Center Consolidation Initiative to reduce the growing number of centers. Information technology reform legislation was subsequently enacted in December 2014 that included a series of provisions related to the federal data center consolidation effort, including requiring agencies to report on cost savings and requiring GAO to annually review agency inventories and strategies.

GAO's objectives were to (1) review agencies' data center closures to date and plans for further closures, (2) evaluate agencies' progress in achieving consolidation savings and describe plans for future savings, and (3) assess agencies' progress against OMB's data center optimization targets. To do so, GAO assessed agencies' data center inventories, reviewed agency-reported cost savings and avoidance documentation, and compared agencies' data center optimization data as of November 2015 against OMB's established targets.

What GAO Recommends

GAO is recommending that 10 agencies take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets. GAO is also recommending that 22 agencies take action to improve optimization progress, including addressing any identified challenges. Fourteen agencies agreed with GAO's recommendations, 4 did not state whether they agreed or disagreed, and 6 stated that they had no comments.

View GAO-16-323. For more information, contact David Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

The 24 agencies participating in the Federal Data Center Consolidation Initiative have collectively made progress on their data center closures efforts. As of November 2015, agencies identified a total of 10,584 data centers, of which they reported closing 3,125 through fiscal year 2015. Notably, the Departments of Agriculture, Defense, the Interior, and the Treasury accounted for 84 percent of these total closures. Agencies are also planning to close an additional 2,078 data centers—for a total of 5,203—by the end of fiscal year 2019.

In total, 19 of the 24 agencies reported achieving an estimated $2.8 billion in cost savings and avoidances from fiscal years 2011 to 2015. In particular, the Departments of Commerce, Defense, Homeland Security, and the Treasury accounted for about $2.4 billion (or about 86 percent) of the total. Further, 21 agencies collectively reported planning an additional $5.4 billion in cost savings and avoidances, for a total of approximately $8.2 billion, through fiscal year 2019.

Agency-reported Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2019)
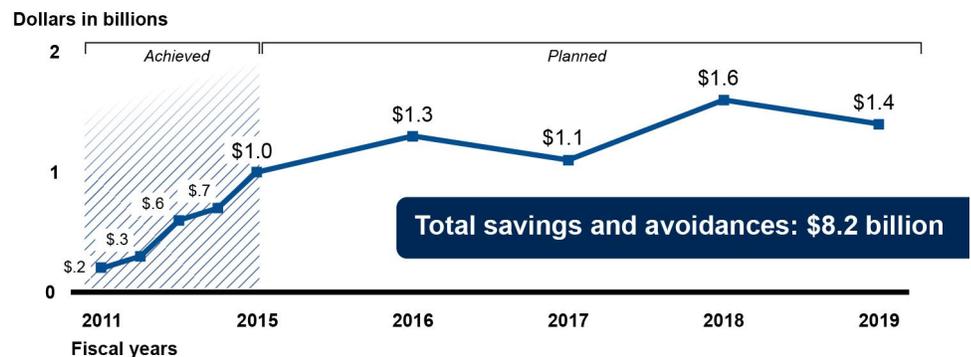
Source: GAO analysis of agency data. | GAO-16-323

However, planned savings may be higher because 10 agencies that reported planned closures from fiscal years 2016 through 2018 have not fully developed their cost savings goals for these fiscal years. Agencies provided varied reasons for not having fully developed these goals, including facing challenges such as being in the process of re-evaluating their data center consolidation strategies. Until agencies address their challenges and complete savings goals, the $8.2 billion in total savings may be understated and agencies will not be able to satisfy provisions of a recently enacted information technology acquisition reform law.

Of the 24 agencies, 22 made limited progress against the Office of Management and Budget's (OMB) fiscal year 2015 data center optimization performance metrics, such as the utilization of data center facilities. Two agencies did not have a basis to report on progress. Of the nine metric targets, only one was met by half of the 24 agencies, while the remaining eight were each met by less than half. Agencies reported challenges in meeting OMB's targets, such as the decentralized nature of some agencies. Until agencies take action to improve progress against OMB's metrics, including addressing any challenges identified, they could be hindered in making progress against OMB's optimization targets.

_____ **United States Government Accountability Office**

Contents

Table

Figures

Abbreviations

CIO	chief information officer
FITARA	Federal Information Technology Acquisition Reform provisions
FDCCI	Federal Data Center Consolidation Initiative
IT	information technology
OMB	Office of Management and Budget

March 3, 2016

Congressional Committees

The federal government's demand for information technology (IT) is ever increasing. In recent years, as federal agencies have modernized their operations, put more of their services online, and increased their information security profiles, their need for computing power and data storage resources has increased. Over time, this increasing demand led to a dramatic rise in the number of federal data centers and a corresponding increase in operational costs. Concerned about the size of the federal data center inventory and the potential to improve efficiency and performance, the Office of Management and Budget's (OMB) Federal Chief Information Officer (CIO) launched the Federal Data Center Consolidation Initiative (FDCCI) in 2010.

Further recognizing the importance of reforming the government-wide management of IT, in December 2014, Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) were enacted as a part of the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.[1] Among other things, the law includes the following requirements related to federal data center consolidation:[2]

- Agencies shall annually report to OMB about federal data center inventories and strategies to achieve consolidation, including yearly calculations of investment and cost savings.[3]

---

[1]*Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015*, Pub. L. No. 113-291, division A, title VIII, subtitle D, 128 Stat. 3292, 3438 (Dec. 19, 2014).

[2]Pub. L. No. 113-291 § 834, 128 Stat. 3444 – 3448 (44 U.S.C. 3601 note). Unless otherwise noted, this statute applies to the 24 agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b). The Department of Defense, the Intelligence Community, and portions of other agencies that operate systems related to national security are subject only to certain provisions, as provided for in the statute.

[3]In lieu of submitting a data center inventory and strategy, pursuant to FITARA, the Department of Defense may submit this information as part of a defense-wide plan and report on cost savings, as required under §§ 2867(b)(2) and 2867(d) of the *National Defense Authorization Act for Fiscal Year 2012* (10 U.S.C. § 2223a note).

- OMB shall develop, and make publicly available, a goal, broken down by year, for the amount of planned cost savings and optimization improvements achieved through FDCCI, and for each year thereafter through October 1, 2018, compare progress against those goals.

- GAO shall annually review and verify the quality and completeness of agency federal data center inventories and strategies for consolidation.

Pursuant to FITARA, we reviewed federal agencies' data center consolidation efforts. The specific objectives were to (1) review agencies' data center closures to date and plans for further closures, (2) evaluate agencies' progress in achieving data center consolidation savings and describe plans for future savings, and (3) assess agencies' progress against OMB's data center optimization targets.

On December 10, 2015, we briefed congressional committee staff on the results of our study. This report officially transmits our results to the committees and recommendations to the agencies. To perform this work, we assessed agencies' data center inventories, reviewed agency-reported cost savings and avoidance documentation, and compared agencies' data center optimization data as of November 2015 against OMB's established targets. The updated briefing slides included in appendix I provide greater detail on our scope and methodology.[4]

We conducted this performance audit from August 2015 to March 2016 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.

---

[4]The briefing in appendix I was updated on February 2, 2016, from the version provided to the committees on December 10, 2015, in order to reflect changes made as a result of a technical correction to the Department of Commerce's fiscal year 2015 cost savings and avoidances amount from $133.34 million to $113.34 million.

In summary, we found that the 24 departments and agencies (agencies)[5] participating in FDCCI have collectively made progress on their data center closure efforts, but fell short of OMB's initiative-wide goal for agencies to close 40 percent of all non-core centers by fiscal year 2015.[6] Specifically, as of November 2015, agencies identified a total of 10,584 data centers,[7] of which they reported closing 3,125.[8] The Departments of Agriculture, Defense, the Interior, and the Treasury accounted for 84 percent of these total closures. However, agencies were 1,023 closures short of OMB's fiscal year 2015 goal to close 40 percent, or 4,144, of all non-core centers. Although OMB's fiscal year 2015 goal was not met, agencies are on track to exceed the goal by the end of fiscal year 2016. In total, agencies are planning to close a total of 5,203 data centers by the end of fiscal year 2019. See figure 1 for a summary of agencies' total data centers and reported and planned closures.

---

[5]The 24 agencies that FITARA requires to participate in FDCCI are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development.

[6]OMB currently categorizes data centers as "core" (i.e., primary consolidation points for agency enterprise IT services) or "non-core."

[7]Of the total reported data centers, 224 were reported by agencies as core data centers, while the remaining 10,360 were reported as non-core.

[8]Agencies reported closing 4 core data centers and 3,121 non-core data centers.

Figure 1: Agencies' Total Data Centers and Completed and Planned Closures (fiscal years 2010 through 2019), as of November 2015
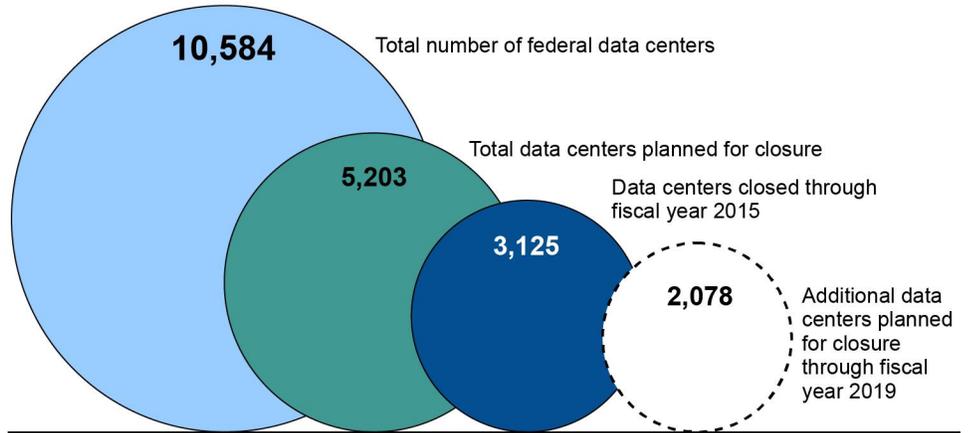
Source: GAO analysis of agency data. | GAO-16-323

In addition, 19 of the 24 agencies reported achieving an estimated $2.8 billion in cost savings and avoidances from their data center consolidation and optimization efforts from fiscal years 2011 to 2015. Notably, the Departments of Commerce, Defense, Homeland Security, and the Treasury accounted for about $2.4 billion (or about 86 percent) of the total. Further, 21 agencies collectively reported planning an additional $5.4 billion in cost savings and avoidances, for a total of approximately $8.2 billion, through fiscal year 2019. See table 1 for a summary of agencies' reported cost savings and avoidances.

Table 1: Agency-reported Data Center Consolidation Cost Savings and Avoidances (dollars in millions)

Fiscal year	Actual or estimated cost savings and avoidances					Planned cost savings and avoidances				
	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Total	$191	$253	$620	$684	$1,006	$1,316	$1,121	$1,564	$1,427	**$8,181**

Total: Actual or estimated cost savings and avoidances: $2,754

Total: Planned cost savings and avoidances $5,427

Note: Totals may not add up due to rounding.

Source: GAO analysis of agency data. | GAO 16 323

However, planned savings may be higher because 10 of the 21 agencies that reported planned closures from fiscal years 2016 through 2018 have not fully developed their cost savings and avoidance goals for these fiscal

years. These 10 agencies are the Departments of the Interior, State, Transportation, and the Treasury; the Environmental Protection Agency; the National Aeronautics and Space Administration; the National Science Foundation; the Nuclear Regulatory Commission; the Office of Personnel Management; and the Small Business Administration.

Agencies provided varied reasons for not having this information, including that they were in the process of re-evaluating their data center consolidation strategies, as well as facing other challenges in determining such information. For example, the Department of Transportation stated that developing fiscal year 2017 and beyond cost savings targets has been difficult because many of the department's spaces are leased with no dedicated metering and are owned by different business entities or agencies across the government (e.g., the General Services Administration).

The reporting of planned savings goals is increasingly important considering the enactment of FITARA, which requires agencies to develop yearly calculations of cost savings as part of their multi-year strategies to consolidate and optimize their data centers. Until agencies address their challenges and complete and report such information, the $8.2 billion in total savings and avoidances may be understated and agencies will not be able to satisfy the data center consolidation strategy provisions of FITARA.

Finally, agencies made limited progress against OMB's fiscal year 2015 core data center optimization performance metrics.[9] In total, 22 of the 24 agencies have reported data center optimization information to OMB.[10] However, of the nine metrics with targets, only one—full-time equivalent ratio (a measure of data center labor efficiency)—was met by half of the 24 agencies, while the remaining eight were each met by less than half of the agencies. See figure 2 for a summary of agencies' progress against OMB's data center optimization metric targets.

---

[9]In May 2014, OMB issued a set of metrics to measure the extent to which agencies' data centers are optimized in areas such as data center energy, labor, and storage. For more information, see OMB, *Fiscal Year 2014 PortfolioStat*, Memorandum M-14-08 (Washington, D.C.: May 7, 2014).

[10]Two agencies—the National Science Foundation and the Small Business Administration—do not have any reported core data centers in their inventories and, therefore, do not have a basis to measure and report optimization progress.

Figure 2: Agencies' Progress against OMB Data Center Optimization Metric Targets

Number of agencies
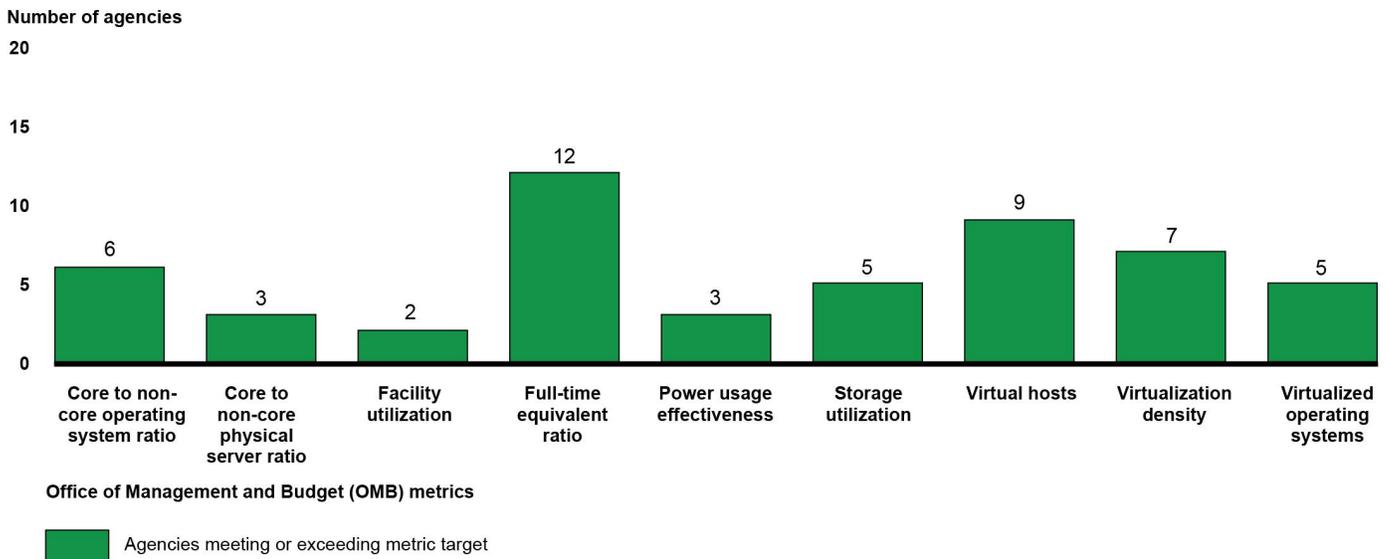
Source: GAO analysis of agency and OMB data. | GAO-16-323

Agencies reported a variety of challenges in meeting OMB's data center optimization targets, such as the decentralized nature of their agencies making consolidation and optimization efforts more difficult. Addressing this challenge and others is increasingly important in light of the enactment of FITARA, which requires agencies to measure and report progress in meeting data center optimization performance metrics. OMB also had not yet addressed our September 2014 recommendation to incorporate a metric for server utilization, which was reported by OMB to be as low as 5 percent across the federal government in 2009. Although OMB agreed with our recommendation, the agency has not yet taken any action to address such a change. Until agencies take action to improve progress against OMB's data center optimization metrics, including addressing any challenges identified, they could be hindered in the implementation of the data center consolidation provisions of FITARA and in making initiative-wide progress against OMB's optimization targets.

Conclusions

After 6 years into FDCCI, agencies have reported significant data center closures—totaling more than 3,100 through fiscal year 2015—with the Departments of Agriculture, Defense, the Interior, and the Treasury accounting for 84 percent of the total. Although agencies fell short of

OMB's fiscal year 2015 consolidation goal, current agency plans identify about 2,100 additional centers planned for closure through fiscal year 2019. If executed as planned, such closures will help agencies to continue to increase their operational efficiency and achieve savings.

Agencies are also reporting significant consolidation cost savings and avoidances, which totaled about $2.8 billion through fiscal year 2015, and are expected to increase to over $8.0 billion in future years. Notably, the Departments of Commerce, Defense, Homeland Security, Transportation, and the Treasury account for 96 percent of the total planned savings. However, many agencies lack complete cost savings goals over the next several years even though they have closures planned. The establishment of these targets is increasingly important in light of FITARA, which specifically requires agency and OMB reporting of data center savings. Until agencies complete such targets, the $8.2 billion in planned savings and avoidances may be understated and agencies will not be able to satisfy the data center consolidation strategy provisions of FITARA.

OMB's May 2014 publication of the data center optimization metrics was a considerable step forward in helping OMB to provide better oversight of agencies' efforts to optimize their core data centers. While OMB's optimization targets provided clear and transparent goals for agencies' fiscal year 2015 optimization efforts, agencies made limited progress against those targets. Expeditiously implementing FITARA, which includes several provisions aimed at improving the federal data center optimization effort, should improve agencies' optimization progress. Furthermore, OMB's implementation of our September 2014 recommendation to develop a metric for server utilization could help ensure that agencies are more efficiently using computing resources. Finally, until agencies improve their optimization planning and demonstrate improved progress against OMB's targets, they may be challenged in implementing the data center consolidation provisions of FITARA intended to increase operational efficiency and achieve cost savings, and OMB may be challenged in demonstrating that the next phase of FDCCI is meeting its established objectives.

Recommendations for Executive Action

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretaries of the Departments of the Interior, State,

Transportation, and the Treasury; the Administrators of the Environmental Protection Agency, National Aeronautics and Space Administration and Small Business Administration; the Directors of the National Science Foundation and Office of Personnel Management; and the Chairman of the Nuclear Regulatory Commission take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

We also recommend that the Secretaries of the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Attorney General of the United States; the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, and U.S. Agency for International Development; the Director of the Office of Personnel Management; the Chairman of the Nuclear Regulatory Commission; and the Commissioner of the Social Security Administration take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Agency Comments and Our Evaluation

We received comments on a draft report from OMB and from the 24 agencies to which we made recommendations. Of those 24 agencies, 14 agreed with our recommendations, 4 did not state whether they agreed or disagreed, and 6 stated that they had no comments. Multiple agencies also provided technical comments, which we have incorporated as appropriate. The following is a detailed discussion of each agency's comments.

- In an e-mail received on February 5, 2016, OMB staff from the Office of the General Counsel discussed plans to address our September 2014 recommendation[11] related to incorporating a metric for server utilization that we highlighted in the briefing as not being implemented. Specifically, OMB stated that it is planning to include a new server

---

[11]GAO, *Data Center Consolidation: Reporting Can Be Improved to Reflect Substantial Planned Savings,* GAO-14-713 (Washington, D.C.: Sept. 25, 2014).

utilization metric in its forthcoming Data Center Optimization Initiative guidance. In addition, OMB provided data center inventory totals that differed slightly from the number of data centers we found due to the timing of data collection. As we have previously reported, the number of data centers changes regularly as agencies update their inventories. Therefore, we did not make any changes to our inventory totals, which were based on data provided to us by the agencies during our review. OMB also provided technical comments, which we have incorporated as appropriate.

- In an e-mail received on February 11, 2016, a senior advisor from the Department of Agriculture's Office of the CIO stated that the department concurred with our recommendation. The department added that its Farm Service Agency has projected closing the remainder of its 891 county server rooms in fiscal year 2016, which is expected to significantly improve core data center optimization.

- In written comments, the Department of Commerce's Deputy Secretary stated that the department agreed with our recommendation and described planned actions to address it. Specifically, the department stated that it will continue to improve progress against OMB's data center optimization metrics where possible and provide quarterly updates on data center consolidation to OMB. The Department of Commerce's comments are provided in appendix II.

- In written comments, the Department of Defense's CIO stated that the department concurred with our recommendation and described planned actions to address it. For example, the department stated that it is moving toward commercial cloud hosting services to enable the migration of workloads to more efficient environments, thus positively affecting the virtualization and density metrics. In addition, the department is implementing energy efficiency measures across its population of core data centers. The Department of Defense's comments are provided in appendix III.

- In an e-mail received on January 20, 2016, a policy analyst from the Department of Education's Office of the Secretary/Executive Secretariat stated that the department concurred with our recommendation.

- In written comments, the Department of Energy's CIO did not agree or disagree with our recommendation, but stated that the department continually strives to improve the effectiveness and efficiency of its computer systems and will continue to optimize its data centers through advanced metering and data center facility improvements to

improve power utilization. However, the department also noted that, due to the diversity in the computing systems and types of data centers used (e.g., a significant number of scientific computing and data modeling systems), it is not always feasible to consolidate or relocate the computing infrastructure and that several performance metrics are not necessarily relevant to optimization of desired outcomes for these types of computing facilities. While we acknowledge similar agency-reported challenges in meeting OMB's optimization targets in our report, such as mission critical applications requiring proximity to users, we continue to believe that actions can be taken to address this challenge and others in order to improve data center optimization progress.

In addition, the Department of Energy stated that it is currently awaiting new guidance from OMB on the data center optimization metrics and targets. As we acknowledge in our report, OMB is working to publish updated FDCCI guidance, which will describe the second phase of the initiative and focus on data center optimization. The department added that, in preparation for the new OMB guidance, it has established an agency-wide working group that is chartered with identifying best practices in data center metering, optimization, consolidation, and cloud migration, and plans to develop a detailed implementation plan after the new optimization guidance is established. We support the department's efforts to prepare for the new guidance and believe that such actions could assist in addressing the previously-mentioned optimization challenges and improve optimization progress. The Department of Energy's comments are provided in appendix IV.

- In written comments, the Department of Health and Human Service's Assistant Secretary for Legislation stated that the department concurred with our recommendation and will work to improve the data center optimization metrics that do not currently meet OMB's established targets. The Department of Health and Human Service's comments are provided in appendix V.

- In written comments, the Department of Homeland Security's Director for the Departmental GAO-Office of the Inspector General Liaison Office stated that the department concurred with our recommendation and described planned actions to address it. Specifically, the department stated that its Office of the CIO will continue to improve its progress in achieving the performance metrics for the data center optimization areas that did not meet OMB's targets. In addition, the Office of the CIO will work to address challenges related to IT management within the department's federated organization structure

and will determine the appropriate steps needed to increase operational efficiency to meet OMB's performance targets. The department also provided technical comments, which we have incorporated as appropriate. The Department of Homeland Security's comments are provided in appendix VI.

- In written comments, the Department of Housing and Urban Development's CIO stated that the department had no comments on the draft report, but stated that it remains committed to maximizing the value of federal IT including promoting FDCCI. The Department of Housing and Urban Development's comments are provided in appendix VII.

- In written comments, the Department of the Interior's Principal Deputy Assistant Secretary for Policy, Management and Budget stated that the department generally agreed with our findings and concurred with our recommendations. The department also described planned actions to implement the recommendations. For example, the department stated that it will establish planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. In addition, the department's Office of the CIO is developing data center optimization metrics to measure bureau and office progress in meeting optimization targets. The Department of the Interior's comments are provided in appendix VIII.

- In an e-mail received on February 5, 2016, an audit liaison from the Department of Justice's Justice Management Division stated that the department had no comments on the report.

- In an e-mail received on February 2, 2016, a special assistant from the Department of Labor's Office of the Assistant Secretary for Administration and Management stated that the department had no comments on the report.

- In written comments, the Department of State's Comptroller stated that the department concurred with our recommendations and described planned actions to address them. Specifically, the department stated that it has developed an approach that includes the consolidation of data centers, continuation of virtualization efforts, increased usage of enterprise solutions, and implementation of data center operations policies that will result in efficient data center utilization and reductions in overlap and excess costs across the department's data centers. In addition, the department stated that it will work toward meeting established data center optimization targets. The Department of State's comments are provided in appendix IX.

- In written comments, the Department of Transportation's Assistant Secretary for Administration stated that the department concurred with our recommendations and described planned actions to address them. For example, the department stated that its Office of the CIO is working to ensure data center consolidation efforts support long-term goals to drive cost savings and optimization improvements. The Department of Transportation's comments are provided in appendix X.

- In an e-mail received on February 5, 2016, an audit liaison from the Department of the Treasury's Office of the CIO did not agree or disagree with our recommendations, but stated that the department will need to change the way it measures the impact of FDCCI for fiscal year 2016 and beyond. The department also noted that it looks forward to collaborating with OMB on the new data center optimization guidance. The Department of the Treasury also provided technical comments, which we have incorporated as appropriate.

- In written comments, the Department of Veterans Affairs' Interim Chief of Staff stated that the department concurred with our recommendation and described planned actions to address it. For example, the department stated that approximately 70 data centers have been tentatively identified for potential consolidation by the end of fiscal year 2019 and, upon completion, these consolidations are expected to the improve optimization performance metrics. The department also noted that it will continue to seek opportunities for consolidation of applications hosted at its medical centers. Finally, the department stated that it established the Service Delivery and Engineering Transformation Team to guide and monitor optimization efforts at the enterprise level, including initiating multiple mid-term or longer-term projects expected to result in continuous improvement and greater data center operations optimization. The department also provided technical comments, which we have incorporated as appropriate. The Department of Veterans Affairs' comments are provided in appendix XI.

- In written comments, the Environmental Protection Agency's CIO did not agree or disagree with our recommendations, but stated that the agency had no issues or substantive modifications to the report. The agency also provided a technical comment, which we have incorporated as appropriate. The Environmental Protection Agency's comments are provided in appendix XII.

- In written comments, the Administrator of the General Services Administration stated that the agency agreed with the draft report and acknowledged that improvements are necessary to meet the data

center optimization targets. The General Services Administration's comments are provided in appendix XIII.

- In written comments, the National Aeronautics and Space Administration's CIO stated that the agency concurred with our recommendations and described planned actions to address them. For example, the agency stated that it has been assessing, and plans to use, a modeling tool to create cost savings and avoidance projections for fiscal years 2016 through 2018 by the end of September 2016. In addition, the agency stated that it plans to establish a strategy for improving each deficient data center optimization metric, as well as meet with the agency's data center owners to further educate them on how to create efficiencies, by the end of March 2017. The National Aeronautics and Space Administration's comments are provided in appendix XIV.

- In an e-mail received on February 5, 2016 an audit liaison from the National Science Foundation stated that the agency had no comments on the report.

- In written comments, the Nuclear Regulatory Commission's Executive Director for Operations stated that the agency had no comments on the report. The Nuclear Regulatory Commission's comments are provided in appendix XV.

- In written comments, the Office of Personnel Management's CIO stated that the agency concurred with our recommendations and described planned actions to implement them. For example, the agency stated that it is developing plans to expeditiously migrate applications and systems to two new data centers, which will enable the agency to forecast and complete cost savings and avoidances and to track challenges. Further, the agency stated that its migration to a new data center infrastructure will enable the collection of data that will assist the agency in improving data center optimization areas identified by OMB. The Office of Personnel Management's comments are provided in appendix XVI.

- In an e-mail received on January 26, 2016, a program manager from the Small Business Administration's Office of Congressional and Legislative Affairs stated that the agency had no comments on the report.

- In written comments, the Social Security Administration's Executive Counselor to the Commissioner stated that agency agreed with our recommendation and described planned actions to address it. Specifically, the agency stated that it is working to optimize its utilization as it transitions to a new data center. In addition, the agency

stated that it will continue to optimize its other support data center through virtualization and consolidation of IT equipment. The agency also provided technical comments, which we have incorporated as appropriate. The Social Security Administration's comments are provided in appendix XVII.

- In written comments, the U.S. Agency for International Development's Assistant Administrator of the Bureau for Management did not agree or disagree with our recommendation, but described planned actions to implement it. Specifically, the agency stated that it will take action to improve progress in the two data center optimization areas not meeting OMB's targets, including addressing identified challenges, so that OMB will be satisfied with the agency's submission. The U.S. Agency for International Development's comments are provided in appendix XVIII.

We are sending copies of this report to interested congressional committees, the Director of OMB, the secretaries and agency heads of the departments and agencies addressed in this report, and other interested parties. In addition, the report will be available at no charge on GAO's website at http://www.gao.gov.

If you or your staffs have any questions on the matters discussed in this report, please contact me at (202) 512-9286 or pownerd@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 major contributions to this report are listed in appendix XIX.

David A. Powner Director, Information Technology Management Issues

List of Committees

The Honorable John McCain Chairman The Honorable Jack Reed Ranking Member Committee on Armed Services United States Senate

The Honorable Ron Johnson Chairman The Honorable Thomas R. Carper Ranking Member Committee on Homeland Security and Governmental Affairs United States Senate

The Honorable Mac Thornberry Chairman The Honorable Adam Smith Ranking Member Committee on Armed Services House of Representatives

The Honorable Jason Chaffetz Chairman The Honorable Elijah Cummings Ranking Member Committee on Oversight and Government Reform House of Representatives

Appendix I: Briefing for Staff Members of Congressional Committees

GAO

Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established

Briefing for Staff Members of the
Senate Armed Services Committee
Senate Homeland Security and Governmental Affairs Committee
House Armed Services Committee
House Oversight and Government Reform Committee
December 10, 2015

GAO

Contents

The federal government's demand for information technology (IT) is ever increasing. In recent years, as federal agencies have modernized their operations, put more of their services online, and increased their information security profiles, their need for computing power and data storage resources has increased. Over time, this increasing demand led to a dramatic rise in the number of federal data centers and a corresponding increase in operational costs. In response, the Office of Management and Budget's (OMB) Federal Chief Information Officer (CIO) launched the Federal Data Center Consolidation Initiative (FDCCI) in 2010.

During the past several years, we reported[12] and testified[13] that, while data center consolidation could potentially save the federal government billions of dollars, weaknesses existed in the execution and oversight of the initiative. For example, in September 2014, we reported that agencies had achieved an estimated $1.1 billion in cost savings and avoidances from fiscal years 2011 through 2013 from their data center consolidation efforts, but that savings could be higher because many agencies were underreporting. As a result, we recommended that the agencies improve their reporting of savings. The agencies generally agreed with our recommendations.

---

[12]GAO, *Data Center Consolidation: Reporting Can Be Improved to Reflect Substantial Planned Savings,* GAO-14-713 (Washington, D.C.: Sept. 25, 2014); *Data Center Consolidation: Strengthened Oversight Needed to Achieve Cost Savings Goal*, GAO-13-378 (Washington, D.C.: Apr. 23, 2013); *Data Center Consolidation: Agencies Making Progress on Efforts, but Inventories and Plans Need to Be Completed*, GAO-12-742 (Washington, D.C.: July 19, 2012); and *Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings*, GAO-11-565 (Washington, D.C.: July 19, 2011).

[13]GAO, *Information Technology: OMB and Agencies Need to More Effectively Implement Major Initiatives to Save Billions of Dollars*, GAO-13-796T (Washington, D.C.: July 25, 2013); *Information Technology: OMB and Agencies Need to Focus Continued Attention on Eliminating Duplicative Investments*, GAO-13-685T (Washington, D.C.: June 11, 2013); and *Data Center Consolidation: Strengthened Oversight Needed to Achieve Billions of Dollars in Savings*, GAO-13-627T (Washington, D.C.: May 14, 2013).

Introduction

Recognizing the importance of reforming the government-wide management of IT, in December 2014, Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) were enacted as a part of the *Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.*[14] Among other things, the law includes the following requirements related to federal data center consolidation:[15]

- Agencies shall annually report to OMB about federal data center inventories and strategies to achieve consolidation, including yearly calculations of investment and cost savings.[16]

- OMB shall develop, and make publicly available, a goal, broken down by year, for the amount of planned cost savings and optimization improvements achieved through FDCCI, and for each year thereafter through October 1, 2018, compare progress against those goals.

- GAO shall annually review and verify the quality and completeness of agency federal data center inventories and strategies for consolidation.

---

[14]*Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015*, Pub. L. No. 113-291, division A, title VIII, subtitle D, 128 Stat. 3292, 3438 (Dec. 19, 2014).

[15]Pub. L. No. 113-291 § 834, 128 Stat. 3444 – 3448 (44 U.S.C. 3601 note). Unless otherwise noted, this statute applies to the 24 agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b). The Department of Defense, the Intelligence Community, and portions of other agencies that operate systems related to national security are subject only to certain provisions, as provided for in the statute.

[16]In lieu of submitting a data center inventory and strategy, the Department of Defense may submit this information as part of a defense-wide plan and report on cost savings, as required under §§ 2867(b)(2) and 2867(d) of the *National Defense Authorization Act for Fiscal Year 2012* (10 U.S.C. § 2223a note).

GAO

Our objectives were to

(1) review agencies' data center closures to date and plans for further closures,

(2) evaluate agencies' progress in achieving data center consolidation savings and describe plans for future savings, and

(3) assess agencies' progress against OMB's data center optimization targets.

Scope and Methodology

For our first objective, we obtained and analyzed data center inventory documentation from the 24 departments and agencies (agencies) in our review.[17] To determine data center closures to date, we totaled agency reported closures from fiscal years 2010 through 2015, and to identify future closures we totaled agency reported planned closures from fiscal years 2016 through 2019. We also compared agencies' completed data center closures to OMB's initiative-wide consolidation goal, as documented in its March 2013 memorandum.[18]

To verify the quality, completeness, and reliability of agencies' data center inventories,[19] we compared data center closures completed and planned to similar information reported on http://data.gov—a website dedicated to providing the public with access to datasets developed by federal agencies. We also checked for missing data, outliers, and other obvious errors, such as missing closure status information. Finally, we obtained written responses from agency officials regarding actions taken to ensure the reliability of their inventory data, as well as discussed any discrepancies or potential errors identified to determine the cause or request additional information. We determined that the data were sufficiently complete and reliable to report on agencies' consolidation progress and planned closures.

---

[17]The 24 agencies that FITARA requires to participate in FDCCI are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development.

[18]OMB, *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*, Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013).

[19]We did not physically visit agencies' data center locations to verify their inventory totals.

For our second objective, we obtained and analyzed cost savings and avoidance documentation, relative to requirements of OMB's March 2013 memorandum[20] from the 24 agencies in our review. This documentation included, but was not limited to, agencies' quarterly reports of cost savings and avoidances submitted to OMB and other agency-developed spreadsheets and reporting tools. To determine cost savings achieved to date, we totaled agency reported savings and avoidances from fiscal years 2011 through 2015, and to identify future planned savings we totaled agency projected savings and avoidances from fiscal years 2016 through 2019. Finally, we compared agencies' planned cost savings targets to OMB's requirement for agencies to establish such targets as part of their August 2015 quarterly report submissions.

To assess the reliability of agencies' cost savings and avoidance data, we reviewed agency documentation for missing data or other errors (e.g., incorrect calculations). We compared the cost savings and avoidances reported to us by agencies with cost savings identified in OMB's quarterly report to Congress on the status of IT reform efforts.[21] In addition, we obtained written responses from agency officials to confirm our understanding of their reported savings and avoidances and obtain additional information regarding the steps that the agency took to ensure the reliability of its figures and validate these figures. We also discussed with agency officials any discrepancies or potential errors identified during our review of their supporting documentation to determine the cause or request additional information. We determined that the data were sufficiently reliable to report on agencies' estimated cost savings achieved to date and their estimated future savings.

---

[20]OMB, Memorandum M-13-09.

[21]OMB, *Quarterly Report to Congress: Information Technology Oversight and Reform* (Washington, D.C.: October 2015).

For our third objective, we obtained and analyzed documentation of the 24 agencies' progress related to OMB's data center optimization metrics, as identified in OMB's May 2014 memorandum.[22] This documentation included data exports from the IT Dashboard, an OMB public website which provides detailed information on federal agencies' major IT investments, as well as agency-provided documentation of their optimization data as submitted through OMB's web-based portal and other agency-provided spreadsheets. To determine the extent to which agencies had met OMB's targets, we compared agency reported metrics values with the targets for fiscal year 2015 published on the IT Dashboard.

To assess the reliability of agencies' optimization metrics data, we reviewed agency documentation for missing data or other errors (e.g., anomalies and outliers). For optimization data obtained from the agencies, we compared it to the optimization data available on the IT Dashboard. In addition, we obtained written responses from agency officials and interviewed OMB officials to obtain additional information regarding the steps taken to ensure the reliability of and validate the optimization data. We also discussed with agency officials any discrepancies or potential errors identified during our review of their supporting documentation to determine the cause or request additional information. We determined that the data were sufficiently reliable to report on agencies' optimization progress.

---

[22]OMB, *Fiscal Year 2014 PortfolioStat*, Memorandum M-14-08 (Washington, D.C.: May 7, 2014). According to OMB, agencies will be measured by the extent to which their data centers are optimized in areas such as data center energy, labor, and storage.

GAO

Scope and Methodology

We conducted this performance audit from August 2015 to December 2015 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.

The 24 agencies participating in FDCCI have collectively made progress on their data center closure efforts, but fell short of OMB's initiative-wide goal for agencies to close 40 percent of all non-core centers by fiscal year 2015.[23] Specifically, as of November 2015, agencies identified a total of 10,584 data centers,[24] of which they reported closing 3,125.[25] Notably, the Departments of Agriculture, Defense, the Interior, and the Treasury accounted for 84 percent of these total closures. However, agencies were 1,023 closures short of OMB's fiscal year 2015 goal to close 40 percent, or 4,144, of all non-core centers. Although OMB's fiscal year 2015 goal was not met, agencies are on track to exceed the goal by the end of fiscal year 2016. In total, agencies are planning to close a total of 5,203 data centers by the end of fiscal year 2019. See figure 1 for a summary of agencies' total data centers and reported and planned closures.

---

[23]OMB currently categorizes data centers as "core" (i.e., primary consolidation points for agency enterprise IT services) or "non-core."

[24]Of the total reported data centers, 224 were reported by agencies as core data centers, while the remaining 10,360 were reported as non-core.

[25]Agencies reported closing 4 core data centers and 3,121 non-core data centers.

Figure 1: Agencies' Total Data Centers and Completed and Planned Closures (fiscal years 2010 through 2019), as of November 2015

Total number of federal data centers — 10,584

Total data centers planned for closure — 5,203

Data centers closed through fiscal year 2015 — 3,125

Additional data centers planned for closure through fiscal year 2019 — 2,078

Source: GAO analysis of agency data.

Results in Brief

In total, 19 of the 24 agencies reported achieving an estimated $2.8 billion in cost savings and avoidances from their data center consolidation and optimization efforts from fiscal years 2011 to 2015. Notably, the Departments of Commerce, Defense, Homeland Security, and the Treasury accounted for about $2.4 billion (or about 86 percent) of the total. Further, 21 agencies collectively reported planning an additional $5.4 billion in cost savings and avoidances, for a total of approximately $8.2 billion, through fiscal year 2019. See table 1 for a summary of agencies' reported cost savings and avoidances.

Table 1: Agency-reported Data Center Consolidation Cost Savings and Avoidances (dollars in millions)

Fiscal year	Actual or estimated cost savings and avoidances					Planned cost savings and avoidances				Total
	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Total	$191	$253	$620	$684	$1,026	$1,316	$1,121	$1,564	$1,427	**$8,201**
	$2,774 total					$5,427 total				

Source: GAO analysis of agency data.

Note: Totals may not add up due to rounding.

However, planned savings may be higher because 10 of the 21 agencies that reported planned closures from fiscal years 2016 through 2018 have not fully developed their cost savings and avoidances goals for these fiscal years. Agencies provided varied reasons for not having this information, including that they were in the process of re-evaluating their data center consolidation strategies, as well as facing other challenges in determining such information. The reporting of planned savings goals is increasingly important considering the enactment of FITARA, which requires agencies to develop yearly calculations of cost savings as part of their multi-year strategies to consolidate and optimize their data centers. Until agencies address their challenges and complete and report such information, the $8.2 billion in total savings and avoidances may be understated and agencies will not be able to satisfy the data center consolidation provisions of FITARA.

Results in Brief

Agencies made limited progress against OMB's fiscal year 2015 data center optimization performance metrics. Of the nine metric targets, only one—full-time equivalent ratio (a measure of data center labor efficiency)—was met by half of the 24 agencies, while the remaining eight were each met by less than half of the agencies. See figure 2 for a summary of agencies' progress against OMB's optimization metric targets.

Figure 2: Agencies' Progress against OMB Data Center Optimization Metric Targets

Number of agencies

Office of Management and Budget (OMB) metrics

■ Agencies meeting or exceeding metric target
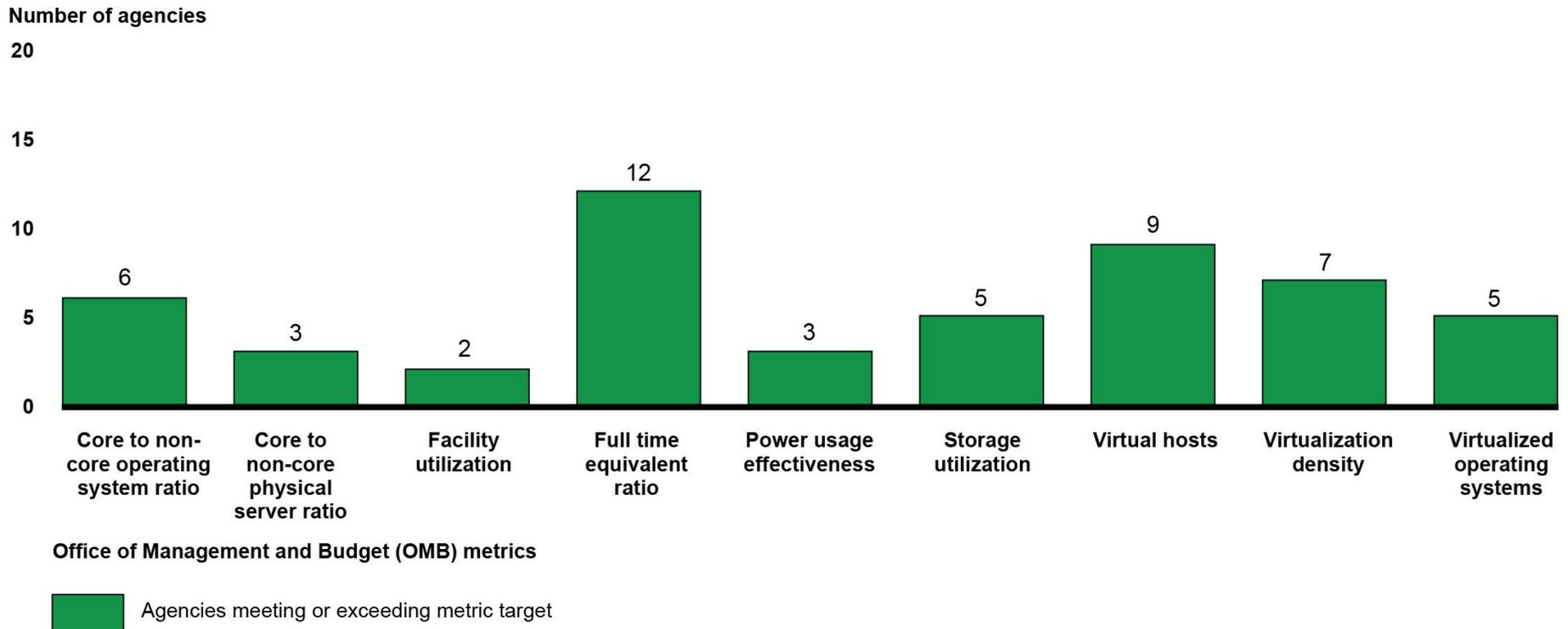
Source: GAO analysis of agency and OMB data.

Results in Brief

Agencies reported a variety of challenges in meeting OMB's data center optimization targets, such as the decentralized nature of their agencies making consolidation and optimization efforts more difficult. Addressing this challenge and others is increasingly important in light of the enactment of FITARA, which requires agencies to measure and report progress in meeting data center optimization performance metrics. OMB also had not yet addressed our September 2014 recommendation to incorporate a metric for server utilization, which was reported by OMB to be as low as 5 percent across the federal government in 2009. Until agencies take action to improve progress against OMB's data center optimization metrics, including addressing any challenges identified, they could be hindered in the implementation of the data center consolidation provisions of FITARA and in making initiative-wide progress against OMB's optimization targets.

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we are recommending that 10 agencies take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. We are also recommending that 22 agencies take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

We received comments on a draft of our briefing from OMB and from the 24 agencies to which we made recommendations. Of those comments, 4 agencies agreed with our recommendations; 2 did not explicitly agree or disagree with our recommendations, but described plans to address them; 12 stated that they had no comments; and 7 reviewed the draft but did not comment on the recommendations. Multiple agencies also provided technical comments, which we incorporated as appropriate.

The federal government's increasing demand for IT led to a dramatic rise in the number of federal data centers and a corresponding increase in operational costs. According to OMB, the federal government had 432 data centers in 1998, more than 1,100 in 2009, and 9,540 in July 2014. Operating such a large number of centers has been and continues to be a significant cost to the federal government, including costs for hardware, software, real estate, and cooling. For example, in 2007, the Environmental Protection Agency estimated that the electricity cost to operate federal servers and data centers across the government was about $450 million annually. According to the Department of Energy, a typical data center has 100 to 200 times the energy use intensity of a commercial building. In 2009, OMB reported[26] that server utilization rates as low as 5 percent across the federal government's estimated 150,000 servers were a driving factor in the need to establish a coordinated, government-wide effort to improve the efficiency, performance, and environmental footprint of federal data center activities.

---

[26]OMB, *Inventory of Federal Data Center Activity*, Budget Data Request No. 09-41 (Washington, D.C.: Aug. 10, 2009).

Concerned about the size of the federal data center inventory and the potential to improve the efficiency, performance, and the environmental footprint of federal data center activities, OMB, under the direction of the Federal CIO, established FDCCI in February 2010. This initiative's four high-level goals were to

- promote the use of "green IT"[27] by reducing the overall energy and real estate footprint of government data centers;

- reduce the cost of data center hardware, software, and operations;

- increase the overall IT security posture of the government; and

- shift IT investments to more efficient computing platforms and technologies.

As part of FDCCI, OMB required 24 agencies to identify a data center consolidation program manager to lead the agency's consolidation efforts. In addition, agencies were required to submit an asset inventory baseline and other documents that would result in a plan for consolidating their data centers. The asset inventory baseline was to contain detailed information on each data center and identify the consolidation approach to be taken for each one. It would serve as the foundation for developing the final data center consolidation plan. The data center consolidation plan would serve as a technical road map and approach for achieving the targets for infrastructure utilization, energy efficiency, and cost efficiency and was to be incorporated into the agency's fiscal year 2012 budget.

---

[27]"Green IT" refers to environmentally sound computing practices that can include a variety of efforts, such as using energy-efficient data centers, purchasing computers that meet certain environmental standards, and recycling obsolete electronics.

In October 2010, OMB reported that all of the agencies had submitted an inventory and plan. In addition, in a series of memorandums, OMB described plans to monitor agencies' consolidation activities on an ongoing basis. Starting in fiscal year 2011, OMB required agencies to provide an updated data center asset inventory at the end of every third quarter and an updated consolidation plan (including any missing elements) at the end of every fourth quarter. Further, starting in fiscal year 2012, OMB required agencies to provide a consolidation progress report at the end of every quarter. This progress information has subsequently been made available on the federal website dedicated to providing the public with access to datasets developed by federal agencies, http://data.gov.

While OMB is primarily responsible for FDCCI, the agency designated the Federal CIO Council—the principal interagency forum to improve IT-related practices across the federal government—to lead the effort. In addition, OMB established the Data Center Consolidation Task Force to assist in managing and overseeing the initiative. The Task Force is comprised of the data center consolidation program managers from each of the 24 agencies. According to its charter, the Task Force is expected to support collaboration across agencies, including identifying and disseminating key information, solutions, and processes that will help agencies in their consolidation efforts.

OMB has used two different definitions for a data center throughout the life of FDCCI. In 2010, OMB defined a "data center" as any room used for the purpose of processing or storing data that is larger than 500 square feet and meets stringent availability requirements.[28] While agencies included other facilities classified as a "server room" (typically smaller than 500 square feet) and "server closet" (typically smaller than 200 square feet) in their inventories, these facilities were not included in OMB's final tally of data centers.

However, in October 2011, the Federal CIO expanded the definition to include a facility of any size. OMB further clarified its definition in March 2012, as follows:

"…a data center is…a closet, room, floor or building for the storage, management, and dissemination of data and information and [used to house] computer systems and associated components, such as database, application, and storage systems and data stores [excluding facilities exclusively devoted to communications and network equipment (e.g., telephone exchanges and telecommunications rooms)]. A data center generally includes redundant or backup power supplies, redundant data communications connections, environmental controls…and special security devices housed in leased, owned, collocated, or stand-alone facilities."[29]

Under the first definition, OMB identified 2,094 data centers in July 2010. Using the new definition from October 2011, OMB estimated that there were a total of 3,133 federal data centers in December 2011, and its goal was to consolidate approximately 40 percent, or 1,253 data centers, for a savings of approximately $3 billion by the end of 2015.

---

[28]For more information on the classifications used to define availability requirements, see Uptime Institute, *Industry Standard Tier Classifications Define Site Infrastructure Performance* (Santa Fe, N.Mex.: 2005).

[29]OMB, *Implementation Guidance for the Federal Data Center Consolidation Initiative* (Washington, D.C.: Mar. 19, 2012).

Since 2011, the number of federal data centers reported by agencies has continued to grow. In July 2013, we testified[30] that 22 of the 24 FDCCI agencies had collectively reported 6,836 data centers in their inventories—an increase of about 3,700 compared to OMB's previous estimate from December 2011. According to the Federal CIO, the increase in data centers was primarily due to the expanded definition of a data center and improved inventory reporting by the agencies.

Subsequently, in September 2014, we reported[31] that agencies had collectively reported a total of 9,658 data centers in their May 2014 data center inventories. Of the total reported data centers, 242 were reported by agencies as "core" data centers—meaning that they are primary consolidation points for agency enterprise IT services, while the remaining 9,416 were reported as "non-core." We further reported that OMB's March 2013 memorandum stated that the goal is for agencies to close 40 percent of the total non-core data centers, or 3,766 data centers based on the May 2014 inventory data, by the end of fiscal year 2015. Figure 3 shows the growth in total number of federal data centers from 1998 to 2014.

---

[30]GAO-13-796T.

[31]GAO-14-713.

Figure 3: Total Number of Reported Federal Data Centers from 1998 to 2014, as of May 2014

Number of federal data centers
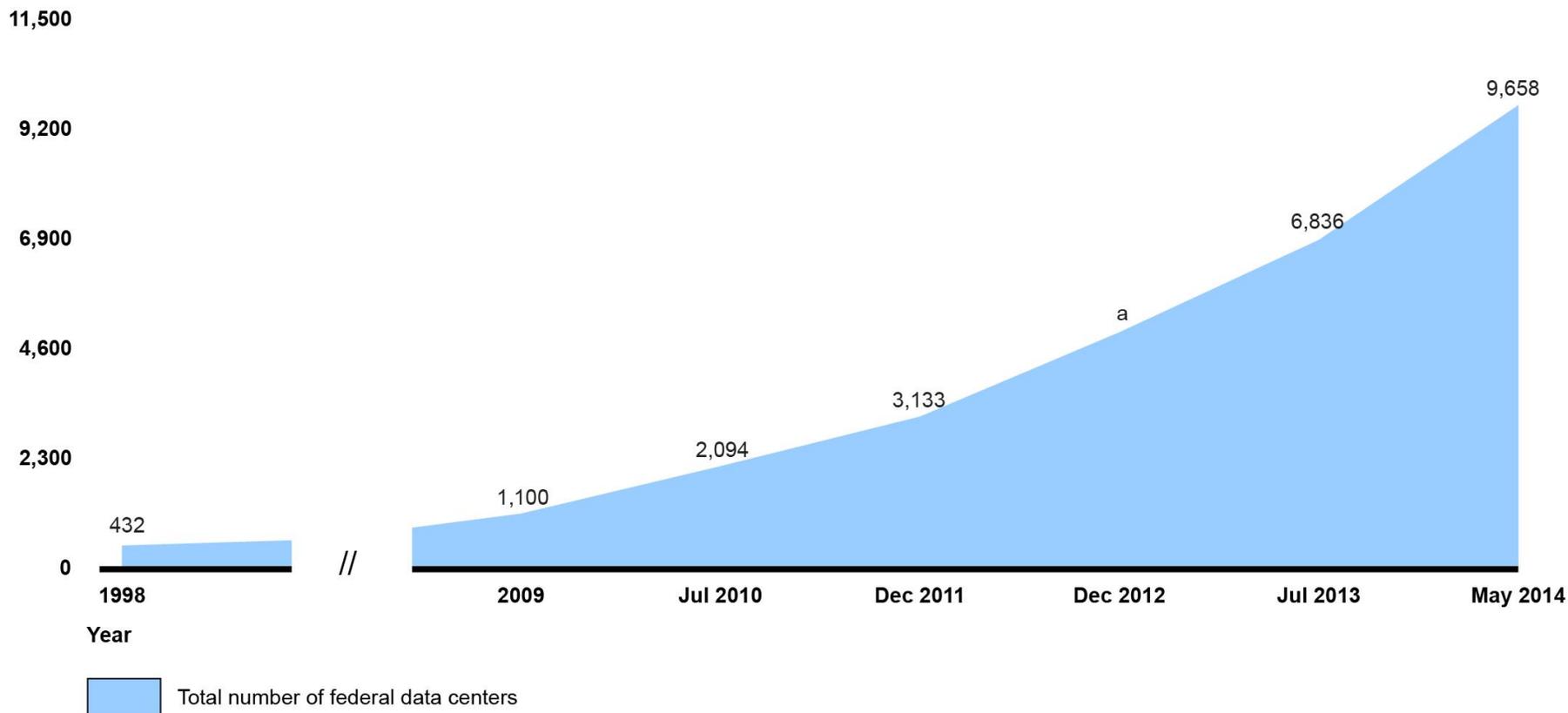
Source: GAO analysis of OMB and agency data.

[a]OMB did not publically report the total number of data centers in 2012. OMB also expanded its definition of a data center in March 2012.

In March 2012, OMB launched the PortfolioStat initiative, which requires agencies to conduct an annual agency-wide IT portfolio review to, among other things, reduce commodity IT[32] spending and demonstrate how its IT investments align with the agency's mission and business functions.[33] PortfolioStat is designed to assist agencies in assessing the current maturity of their IT portfolio management process, make decisions on eliminating duplication, and move to shared solutions in order to maximize the return on IT investments across the portfolio.

In March 2013, OMB issued a memorandum documenting the integration of FDCCI with PortfolioStat stating that agencies should focus on an enterprise-wide approach to address commodity IT (including data centers) in a comprehensive manner.[34] Among other things, the memorandum discussed consolidating previously collected IT-related plans, reports, and data submissions. For example, agencies were no longer required to submit the data center consolidation plans previously required in 2012. However, agencies were still required to update their data center inventories and report quarterly on http://data.gov regarding their consolidation progress.

---

[32]According to OMB, commodity IT includes services such as IT infrastructure (data centers, networks, desktop computers and mobile devices); enterprise IT systems (e-mail, collaboration tools, identity and access management, security, and web infrastructure); and business systems (finance, human resources, and other administrative functions).

[33]OMB, *Implementing PortfolioStat*, Memorandum M-12-10 (Washington D.C.: Mar. 30, 2012).

[34]OMB, Memorandum M-13-09.

OMB's March 2013 guidance also required agencies to categorize their data centers into two categories: core and non-core. Core data centers are the primary consolidation points for agency enterprise IT services and are intended to allow the agency to achieve economies of scale. In contrast, OMB directed agencies to consolidate their non-core data centers and established a goal for agencies to close 40 percent of all non-core centers. The guidance also stated that, to more effectively measure the efficiency of an agency's data center assets, agencies would also be measured by the extent to which their core data centers are optimized for total cost of ownership by incorporating metrics for data center energy, facility, labor, and storage, among other things.

In May 2014, OMB issued a memorandum updating its PortfolioStat guidance for fiscal year 2014.[35] As in past PortfolioStat guidance, the memorandum discussed the importance of PortfolioStat sessions—data-driven reviews of agency portfolio management between the Federal CIO, agency Deputy Secretaries, and other senior agency officials—as a means to continue to drive cost savings. OMB's guidance also reinforced the need for agencies to continue to consolidate their non-core data centers while optimizing their core data centers using metrics established by the Task Force, and documented in OMB's memorandum.

---

[35]OMB, Memorandum M-14-08.

Recognizing the importance of reforming the government-wide management of IT, including the growing number of federal data centers, in December 2014 FITARA was enacted. Among other things, the law includes the following requirements related to the data center consolidation effort:[36]

- Agencies shall submit to OMB a comprehensive inventory of the data centers owned, operated, or maintained by or on behalf of the agency.
- Agencies shall submit a multi-year strategy to achieve the consolidation and optimization of the agency's data centers no later than the end of fiscal year 2016.[37] This strategy should include
  - performance metrics that are consistent with the government-wide data center consolidation and optimization metrics by which the quantitative and qualitative progress of the agency toward the goals of the FDCCI can be measured;
  - a timeline for agency activities to be completed under the FDCCI, with an emphasis on benchmarks the agency can achieve by specific dates; and
  - year-by-year calculations of investment and cost savings through October 1, 2018, broken down by each year.

---

[36]Pub. L. No. 113-291 § 834, 128 Stat. 3444 – 3448 (44 U.S.C. 3601 note). Unless otherwise noted, this statute applies to the agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b). The Department of Defense, the Intelligence Community, and portions of other agencies that operate systems related to national security are subject only to certain provisions, as provided for in the statute.

[37]In lieu of the multi-year strategy, the Department of Defense may submit a department-wide plan and report on cost savings required under §§ 2867(b)(2) and 2867(d) of the *National Defense Authorization Act for Fiscal Year 2012* (10 U.S.C. § 2223a note).

- OMB's Administrator of the Office of Electronic Government shall ensure that agencies' progress toward meeting government-wide data center consolidation and optimization metrics is made publically available, review agencies' inventories and strategies to determine whether they are comprehensive and complete, and monitor the implementation of the agencies' strategies.

- Not later than December 19, 2015, OMB's Administrator of the Office of Electronic Government shall develop, and make publicly available, a goal, broken down by year, for the amount of planned cost savings and optimization improvements achieved through FDCCI and, for each year thereafter through October 1, 2018, compare reported cost savings and optimization improvements against those goals.

In June 2015, OMB released guidance on how agencies are to implement the law.[38] OMB's guidance stated that it is intended to, among other things, assist agencies in aligning their IT resources with statutory requirements; establish government-wide IT management controls that will meet the law's requirements, while providing agencies with flexibility to adapt to unique agency processes and requirements; establish a common baseline for the CIO's role and strengthen the relationship with agency CIOs and bureau CIOs; and strengthen CIO accountability for IT cost, schedule, and performance. The guidance also described the topics that agencies and OMB would address during the fiscal year 2015 PortfolioStat sessions which included, for example, agencies' progress in using cloud computing[39] and shared services to optimize their data center activities. Finally, the guidance stated that agencies should continue to provide FDCCI updates in their quarterly reports to OMB and that OMB would publish updated FDCCI guidance, which will describe the second phase of the initiative and will focus on data center optimization. In September 2015, staff from OMB's Office of E-Government and Information Technology stated that the guidance is expected to be finalized by the end of December 2015.

---

[38]OMB, *Management and Oversight of Federal Information Technology*, Memorandum M-15-14 (Washington, D.C.: June 10, 2015).

[39]Cloud computing relies on Internet-based services and resources to provide computing services to customers, while freeing them from the burden and costs of maintaining the underlying infrastructure.

From July 2011 through September 2015, we issued several reports[40] and testified[41] on agency efforts to consolidate federal data centers and achieve cost savings. For example, in September 2014, we reported that 19 of the 24 FDCCI agencies collectively reported achieving an estimated $1.1 billion in cost savings from fiscal years 2011 through 2013, and that, by 2017, that figure was estimated to rise to about $5.3 billion. However, we found that planned savings may be higher because 6 agencies—the Departments of Health and Human Services, the Interior, Justice, and Labor, the General Services Administration, and the National Aeronautics and Space Administration—that reported closing as many as 67 data centers also reported limited or no savings.

In addition, we found that 11 of the 21 agencies with planned cost savings had underreported their fiscal years 2012 through 2015 figures to OMB by approximately $2.2 billion. While several agencies noted communication issues as the reason for this, others did not provide a reason. We concluded that until agencies fully report their savings, the $5.3 billion in total savings would be understated. Finally, we reported that OMB's May 2014 data center optimization metrics did not address server utilization, even though OMB reported this to be as low as 5 percent across the federal government in 2009. We noted that, without this metric, OMB may lack important information on agencies' progress. As a result, we recommended that OMB implement a metric for server utilization and assist agencies in reporting their consolidation cost savings, and that agencies fully report their consolidation cost savings. OMB and the agencies to which we made recommendations generally agreed with them.

---

[40]GAO, *Information Technology Reform: Billions of Dollars in Savings Have Been Realized, but Agencies Need to Complete Reinvestment Plans,* GAO-15-617 (Washington, D.C.: Sept. 15, 2015); GAO-14-713; GAO-13-378; GAO-12-742; and GAO-11-565.

[41]See, for example, GAO, *Information Technology: Reform Initiatives Can Help Improve Efficiency and Effectiveness,* GAO-14-671T (Washington, D.C.: June 10, 2014); GAO-13-796T, and GAO-13-627T.

In a November 2014 response to our report, the Department of Defense noted that, in addition to the $2.6 billion in cost savings planned by fiscal year 2017, the department expected that figure to increase to $4.7 billion in future years as efficiencies are gained. In June 2015, we testified[42] that this increased the total federal planned data center consolidation savings to about $7.4 billion.

More recently, in September 2015, we reported that agencies had continued to make progress and had collectively reported achieving an estimated $2.0 billion in data center consolidation cost savings from fiscal years 2011 through 2014. However, we found that agencies had not fully reported their savings to OMB and, as a result, OMB's May 2015 quarterly report to Congress did not reflect approximately $484 million in savings that had been reported to us. We determined that this was due, in part, to several agencies not yet having fully implemented our prior recommendations from September 2014 to report all savings and avoidances to OMB. Specifically, as of June 2015, 3 of the 11 agencies—the Departments of Commerce and Energy and the Environmental Protection Agency—had implemented our prior recommendation by reporting their data center consolidation cost savings to OMB. The remaining 8 agencies[43] had not yet fully implemented our recommendation, although many had taken action by reporting a portion, but not all, of their data center consolidation cost savings and avoidances to OMB. We concluded that implementation of our prior recommendations in this area could help ensure that agencies report all data center consolidation savings to OMB.

---

[42]GAO, *Information Technology: Additional Actions and Oversight Urgently Needed to Reduce Waste and Improve Performance in Acquisitions and Operations*, GAO-15-675T (Washington, D.C.: June 10, 2015).

[43]The eight agencies are the Departments of Agriculture, Defense, the Interior, Transportation, the Treasury, and Veterans Affairs, the National Aeronautics and Space Administration, and the Office of Personnel Management.

Agencies Have Made Progress in Closing Data Centers, but OMB's Initiative-wide Goal for Consolidation through Fiscal Year 2015 Was Not Met

As previously stated, the number of federal data centers has continued to increase as OMB expanded the definition of a data center in 2012 and agencies have improved their inventory reporting. For example, in September 2014, we reported[44] that agencies had identified 9,658 data centers in their May 2014 inventories. As of November 2015, agencies collectively reported a total of 10,584 data centers[45]—an increase of 926 centers compared to the total we previously reported in September 2014.

In total, agencies' reported that they had closed 3,125 data centers (including core and non-core)[46] through fiscal year 2015. Notably, the Departments of Agriculture, Defense, the Interior, and the Treasury accounted for 2,620 (or 84 percent) of the total completed closures.

However, agencies' closures were 1,023 data centers short of OMB's goal to close 40 percent, or 4,144,[47] of all non-core centers by the end of fiscal year 2015. See figure 4 for a summary of the total number of reported federal data centers and closures over time.

---

[44]GAO-14-713.

[45]Of the total reported data centers, 224 were reported by agencies as core data centers, while the remaining 10,360 were reported as non-core.

[46]Agencies reported closing 4 core data centers and 3,121 non-core data centers.

[47]This closure goal is based on agencies' inventory data as of November 2015.

Figure 4: Total Number of Reported Federal Data Centers and Closures, as of November 2015

Number of federal data centers
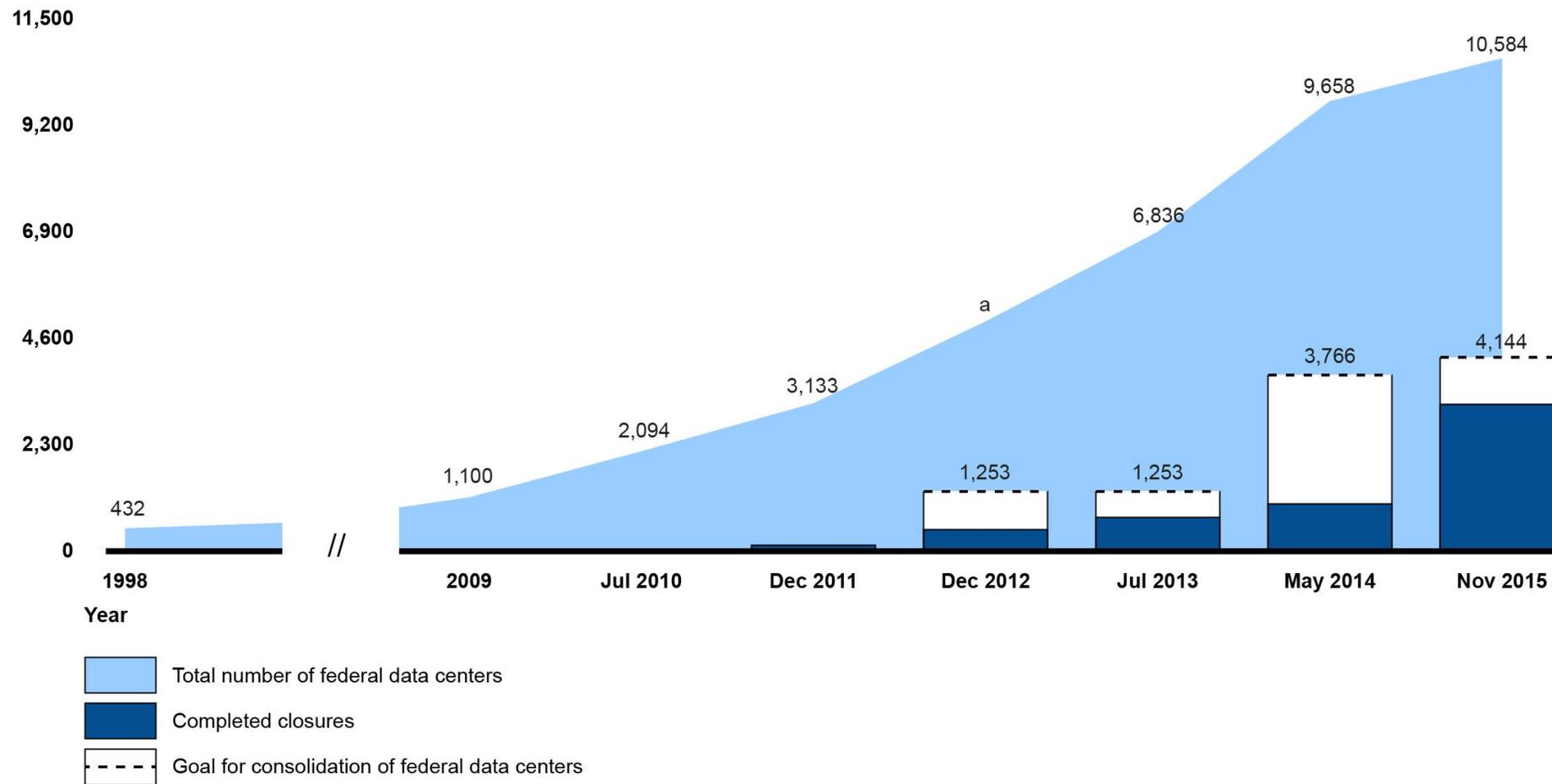
Source: GAO analysis of OMB and agency data.

[a]OMB did not publically report the total number of data centers in 2012. OMB also expanded its definition of a data center in March 2012.

Although OMB's goal was not met by the end of fiscal year 2015, agencies' non-core closures are on track to exceed OMB's goal by the end of fiscal year 2016.[48] In total, agencies are planning to close an additional 2,078 data centers (including core and non-core)[49]—for a total of 5,203—by the end of fiscal year 2019.

See figure 5 for a graphical depiction of agencies' total data centers and reported and planned closures.

---

[48]OMB's non-core closure goal and our estimated time frame for when agencies' closures will exceed the goal are based on inventory data as of November 2015. Agencies are planning to close 4,371 non-core centers by the end of fiscal year 2016—an amount that exceeds OMB's goal by 227 centers.

[49]Agencies reported plans to close 5 core data centers and 2,073 non-core centers.

Figure 5: Agencies' Total Data Centers and Completed and Planned Closures (fiscal years 2010 through 2019), as of November 2015

10,584 Total number of federal data centers

224 core data centers

10,360 - Non-core data centers

5,203 Total data centers planned for closure

3,125 Data centers closed through fiscal year 2015

2,078 Additional data centers planned for closure through fiscal year 2019
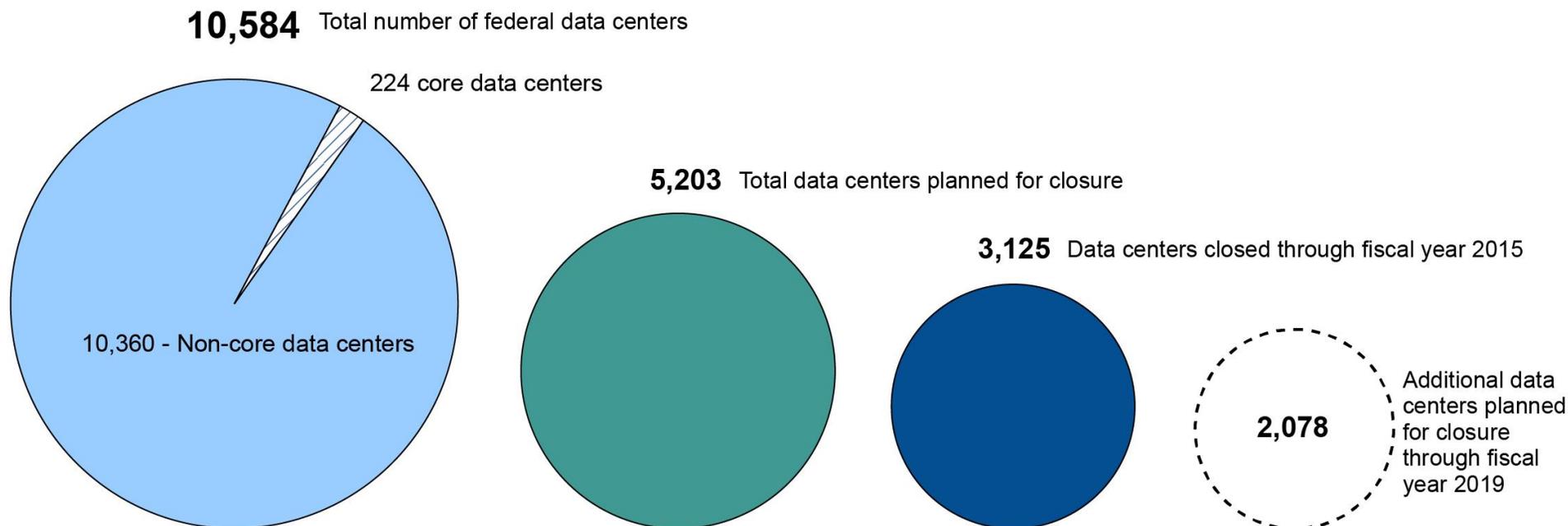
Source: GAO analysis of agency data.

See table 2 for a listing of agencies' total data centers (including a breakdown of core and non-core centers), and reported and planned closures. Attachment I contains additional details regarding each agency's completed closures through fiscal year 2015 and total planned closures through fiscal year 2019.

Table 2: Total Number of Reported Core and Non-core Data Centers and Completed and Planned Closures by Agency, as of November 2015

Agency	Core data centers	Non-core data centers	Total number of data centers	Closures through fiscal year 2015 (percent of total data centers)	Total completed and planned for closure through fiscal year 2019 (percent of total data centers)
Department of Agriculture	4	2,271	2,275	1,340 (59%)	2,259 (99%)
Department of Commerce	15	359	374	78 (21%)	84 (22%)
Department of Defense[a]	12	3,181	3,193	538 (17%)	1,402 (44%)
Department of Education	3	2	5	1 (20%)	2 (40%)
Department of Energy	5	49	54	15 (28%)	15 (28%)
Department of Health and Human Services	27	200	227	62 (27%)	74 (33%)
Department of Homeland Security	3	102	105	39 (37%)	45 (43%)
Department of Housing and Urban Development	1	1	2	0 (0%)	1 (50%)
Department of the Interior	6	414	420	169 (40%)	174 (41%)
Department of Justice	3	107	110	67 (61%)	107 (97%)
Department of Labor	9	79	88	20 (23%)	54 (61%)
Department of State	4	386	390	5 (1%)	9 (2%)
Department of Transportation	16	447	463	50 (11%)	160 (35%)
Department of the Treasury	4	2,211	2,215	573 (26%)	579 (26%)
Department of Veterans Affairs	86	270	356	20 (6%)	29 (8%)
Environmental Protection Agency	4	77	81	23 (28%)	29 (36%)
General Services Administration	3	121	124	90 (73%)	118 (95%)
National Aeronautics and Space Administration	11	48	59	29 (49%)	38 (64%)
National Science Foundation	0	2	2	1 (50%)	2 (100%)
Nuclear Regulatory Commission	1	8	9	2 (22%)	7 (78%)
Office of Personnel Management	4	0	4	0 (0%)	0 (0%)
Small Business Administration	0	15	15	0 (0%)	12 (80%)
Social Security Administration	2	0	2	0 (0%)	0 (0%)
U.S. Agency for International Development	1	10	11	3 (27%)	3 (27%)
Totals	**224**	**10,360**	**10,584**	**3,125 (30%)**	**5,203 (49%)**

Source: GAO analysis of agency data.

[a]Department of Defense inventory data as of August 2015.

Key examples of agency successes in closing data centers include the following:

- *Department of Agriculture*—reported 1,340 data center closures from fiscal years 2011 through 2015. According to the department's inventory, 1,286 of the reported closures were identified as server rooms/closets at Farm Service Agency locations throughout the United States.

- *Department of the Treasury*—reported 573 data center closures from fiscal years 2010 through 2015. According to the department's inventory, 549 of the reported closures were data centers identified as server rooms/closets at Internal Revenue Service locations throughout the United States. In total, the department's closures resulted in eliminating or repurposing about 318,000 square feet of data center floor area.

- *Department of Defense*—reported 419 data center closures from fiscal years 2010 through 2014. According to the department's inventory, 21 of the reported closures were data centers identified as having at least 5,000 square feet of gross floor area. In total, the department's closures resulted in eliminating or repurposing about 548,000 square feet of data center floor area.

- *Department of the Interior*—reported 169 data center closures from fiscal years 2010 through 2015. According to the department's inventory, 18 reported closures were data centers identified as having at least 500 square feet of gross floor area. In total, the department's closures resulted in eliminating or repurposing about 53,000 square feet of data center floor area.

The agencies included in our review confirmed that their data center inventories generally included all types of data centers (i.e., agency-owned, collocated, outsourced, and cloud computing-provided) in accordance with OMB's FDCCI guidance. However, certain agencies noted special circumstances that affected their abilities to report all types of centers. For example, several agencies noted challenges in reporting data centers provided by cloud computing service providers, such as that certain inventory information (e.g., floor space, electricity used, and electricity costs) required for reporting are not obtainable from such providers. Further, the Department of Energy stated that its inventory did not include data centers operated by the department's national laboratories, as well as management and operating contractors; however, the department noted that it is working to add these centers to its inventory beginning in January 2016.

Agencies' Reported Savings Exceed More than $2.5 Billion Dollars through Fiscal Year 2015, but Reporting of Planned Savings Incomplete

Leading practices[50] of government and industry have established the importance of developing performance measures, including identifying targets, to gauge progress. They should be measurable, outcome-oriented, and actively tracked and reported. For FDCCI, in February 2012, OMB established a goal for agencies to achieve $3 billion in cost savings by the end of 2015. In addition, in August 2015, OMB required agencies to report planned cost savings and avoidances targets for fiscal years 2016 through 2018.

---

[50]GAO, *Aviation Weather: Agencies Need to Improve Performance Measurement and Fully Address Key Challenges*, GAO-10-843 (Washington, D.C.: Sept. 9, 2011); GAO, *NextGen Air Transportation System: FAA's Metrics Can Be Used to Report on Status of Individual Programs, but Not of Overall NextGen Implementation or Outcomes*, GAO-10-629 (Washington, D.C.: July 27, 2010); OMB, *Guide to the Program Assessment Rating Tool* (Washington, D.C.: January 2008); Department of the Navy, Office of the Chief Information Officer, *Guide for Developing and Using IT Performance Measurements* (Washington, D.C.: October 2001); and General Services Administration, *Performance-Based Management: Eight Steps To Develop and Use Information Technology Performance Measures Effectively* (Washington, D.C.: 1996).

In total, 19 of the 24 agencies reported achieving approximately $2.8 billion in cost savings or avoidances from their data center consolidation and optimization efforts from fiscal years 2011 through 2015. This amount is approximately $226 million short of OMB's initiative-wide goal of $3 billion for the initiative by the end of 2015.

The 5 agencies that did not report any savings—the Departments of Housing and Urban Development and Labor, National Aeronautics and Space Administration, Office of Personnel Management, and Small Business Administration—provided varied reasons for not being able to do so. For example, Office of Personnel Management officials stated that the agency has not closed any of its four core data centers to achieve cost savings and avoidances. As another example, National Aeronautics and Space Administration officials stated that the agency has been unable to capture cost savings and avoidances because of various challenges, including the agency's complex organizational structure which includes multiple centers with multiple missions and multiple IT contractors utilizing data centers within multipurpose facilities—all of which make determining savings extremely complex and impractical. However, the agency stated that it is in the process of implementing a cost modeling tool to assist in estimating cost savings and avoidances, which it plans to complete by March 2016.

See figure 6 for a summary of agencies' reported cost savings and cost avoidances from fiscal years 2011 through 2015.

Figure 6: Summary of Total Agency-reported Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2015)

Actual or estimated cost savings and avoidances (in millions)

Total Savings and Avoidances: $: 2,773.85 million

$190.94 — 2011
$253.45 — 2012
$619.63 — 2013
$684.29 — 2014
$1,025.54 — 2015

Fiscal years
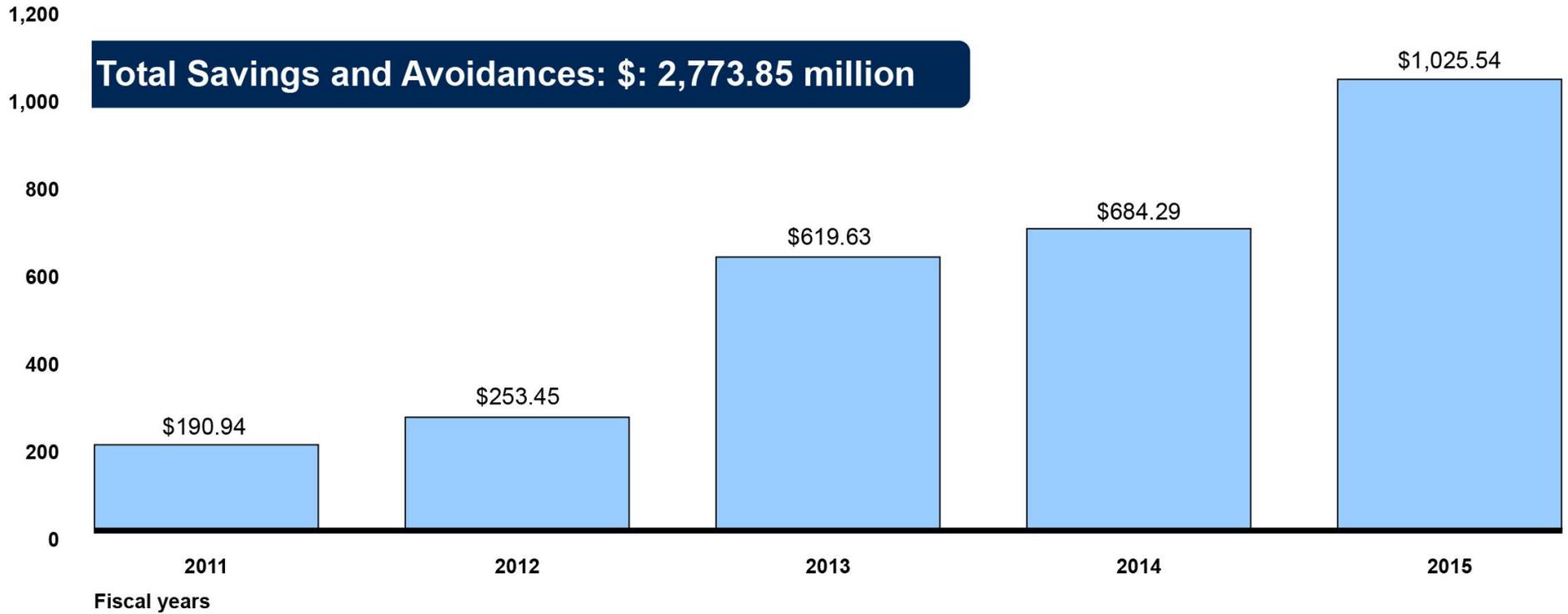
Source: GAO analysis of agency data.

Of the 19 agencies with reported cost savings and avoidances, 4—the Departments of Commerce, Defense, Homeland Security, and the Treasury—accounted for approximately $2.4 billion (or 86 percent) of the reported estimated savings through fiscal year 2015. The Department of the Treasury reported the highest amount of cost savings and avoidances, about $1.4 billion, followed by the Department of Defense reporting approximately $541.1 million.

See table 3 for a listing of agencies' reported cost savings and cost avoidances from fiscal years 2011 through 2015.

Table 3: Agency-reported Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2015) Dollars in millions (rounded)

Agency	Actual or estimated cost savings and avoidances					
	Fiscal year 2011	Fiscal year 2012	Fiscal year 2013	Fiscal year 2014	Fiscal year 2015	Total[a]
Department of Agriculture	$0.00	$11.57	$4.98	$2.67	$2.17	**$21.40**
Department of Commerce	$0.00	$5.41	$52.89	$86.53	$133.34	**$278.16**
Department of Defense	$18.82	$24.17	$99.12	$123.19	$275.76	**$541.05**
Department of Education	$0.00	$0.25	$0.24	$0.24	$0.24	**$0.95**
Department of Energy	$0.00	$7.82	$0.62	$0.48	$1.27	**$10.19**
Department of Health and Human Services	$0.00	$0.00	$0.62	$6.02	$0.00	**$6.64**
Department of Homeland Security	$0.00	$43.19	$93.11	$58.38	$17.90	**$212.58**
Department of Housing and Urban Development	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Department of the Interior	$0.00	$4.51	$5.31	$4.44	$4.64	**$18.90**
Department of Justice	$0.29	$2.75	$3.74	$4.00	$5.61	**$16.37**
Department of Labor	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Department of State	$1.60	$3.53	$5.68	$7.63	$11.60	**$30.03**
Department of Transportation	$0.00	$10.06	$21.25	$42.80	$66.07	**$140.18**
Department of the Treasury	$170.23	$112.19	$298.07	$309.43	$464.56	**$1,354.48**
Department of Veterans Affairs	$0.00	$5.59	$5.22	$4.50	$3.80	**$19.11**
Environmental Protection Agency	$0.00	$17.78	$13.09	$1.12	$4.07	**$36.06**
General Services Administration	$0.00	$3.38	$9.47	$16.52	$7.38	**$36.75**
National Aeronautics and Space Administration	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
National Science Foundation	$0.00	$1.18	$2.50	$3.07	$0.09	**$6.84**
Nuclear Regulatory Commission	$0.00	$0.09	$0.00	$0.00	$0.00	**$0.09**
Office of Personnel Management	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Small Business Administration	$0.00	$0.00	$0.00	$0.00	$0.00	**$0.00**
Social Security Administration	$0.00	$0.00	$0.00	$13.30	$27.05	**$40.35**
U.S. Agency for International Development	$0.00	$0.00	$3.73	$0.00	$0.00	**$3.73**
Total[a]	**$190.94**	**$253.45**	**$619.63**	**$684.29**	**$1,025.54**	**$2,773.85**

Source: GAO analysis of agency data.
aTotals may not add up due to rounding.

Key examples of agency-reported savings or avoidances include the following:

- *Department of the Treasury*—$1.35 billion in cost avoidances from fiscal years 2011 through 2015 based on year-over-year reductions in the ratio of IT infrastructure spending compared to overall IT spending across the department's IT portfolio. More specifically, the ratio of spending on IT infrastructure to overall IT spending has declined from about 46 percent to about 35 percent due, in part, to the department's data center consolidation initiative and related efforts.

- *Department of Defense*—$541.05 million in cost savings from fiscal years 2011 through 2015 from efficiencies achieved, in part, through virtualization and operating system reductions, and facility closures resulting in eliminating staff and reducing the facility costs per square foot.

- *Department of Commerce*—$278.16 million in cost savings and avoidances between fiscal years 2011 and 2015. According to the department, about $235 million of the total was due to reductions in the total cost of the National Oceanic and Atmospheric Administration's data center infrastructure by reducing the data center energy and real estate footprint, virtualizing operating systems and applications, and migrating systems, applications, and services to the cloud.

- *Department of Homeland Security*—$212.58 million in cost savings from fiscal years 2012 through 2015 from the migration of component agency data center operations to one of two department enterprise data centers (or other internal agency consolidations), which the department reported has reduced its IT footprint and resulted in more efficient operations. The department also noted that consolidating data centers has had other positive impacts, such as improved disaster recovery capabilities, enhanced continuity of operations, and standardization and modernization of technologies across the department's component agencies.

In addition to savings through fiscal year 2015, our analysis of planned savings shows that, collectively, agencies are reporting that they expect to continue to achieve significant savings in future years. Specifically, 21 agencies are planning an additional $5.4 billion in cost savings and avoidances, for a total of approximately $8.2 billion, through fiscal year 2019. The remaining 3 agencies—the National Aeronautics and Space Administration, Office of Personnel Management, and Small Business Administration—did not report any planned savings. Agencies' total planned savings and avoidances are approximately $752 million higher than we testified in June 2015,[51] and approximately $2.9 billion higher than we reported in September 2014.[52] See table 4 for a summary of agencies' total planned data center consolidation cost savings and avoidances over time.

Table 4: Agencies' Total Planned Data Center Consolidation Cost Savings and Avoidances (dollars in billions)

	September 2014	June 2015	November 2015
Total cost savings and avoidances	$5.3	$7.4	$8.2

Source: GAO analysis of agency data.

---

[51]GAO-15-675T.

[52]GAO-14-713.

See figure 7 for a summary of agencies' reported planned cost savings and cost avoidances from fiscal years 2011 through 2019.

Figure 7: Summary of Total Agency-reported Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2019)

Planned cost savings and avoidances through fiscal year 2019 (in millions)

Total Savings and Avoidances: $8,200.91 million
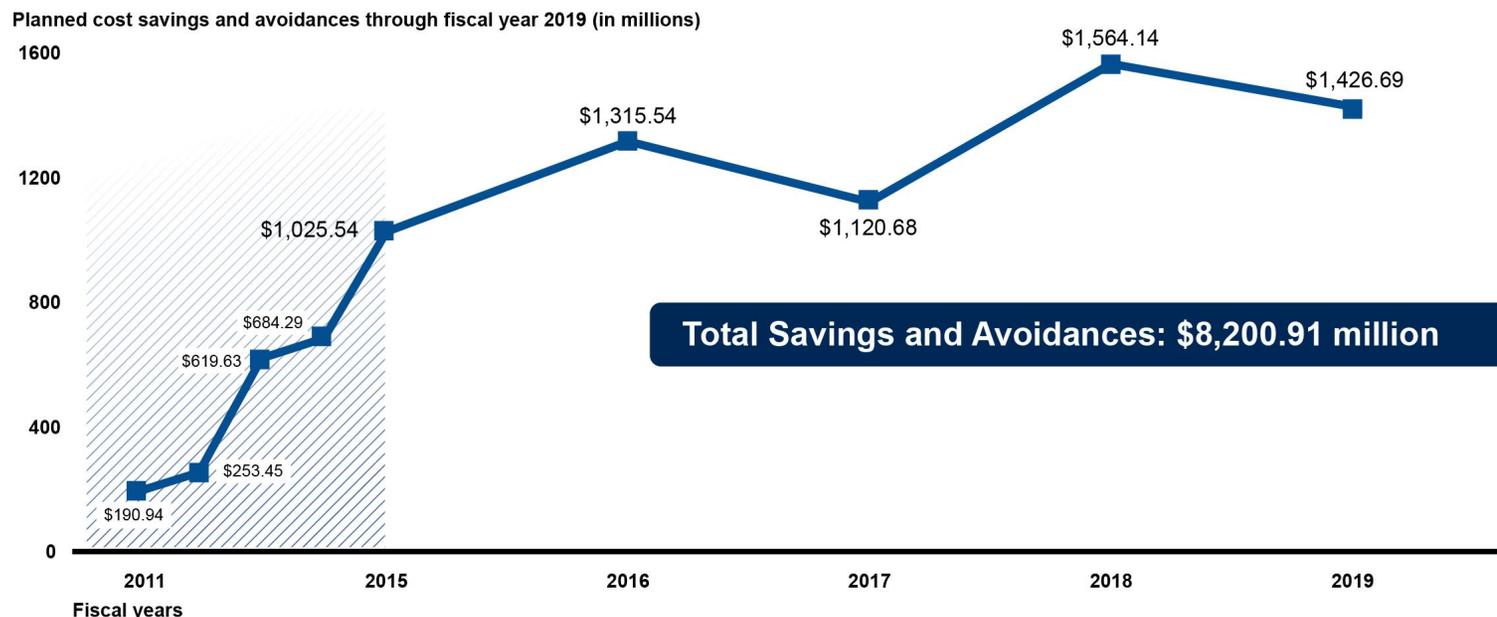
Source: GAO analysis of agency data.

Five agencies—the Departments of Commerce, Defense, Homeland Security, Transportation, and the Treasury—account for about $7.9 billion (or about 96 percent) of the total planned savings reported. The Department of Defense reported the highest amount of cost savings and avoidances, about $4.9 billion, followed by the Department of the Treasury reporting approximately $1.9 billion.

See table 5 for agencies' total planned savings and avoidances from fiscal years 2011 through 2019.

Table 5: Agency-reported Total Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2019)

	Total fiscal years 2011 through 2015 cost savings and avoidances	Planned savings and avoidances estimated by agencies				Totals[a]
		Fiscal year 2016	Fiscal year 2017	Fiscal year 2018	Fiscal year 2019	
Department of Agriculture	$21.40	$8.21	$7.91	$0.31	–	**$37.83**
Department of Commerce	$278.16	$138.71	$163.79	$124.88	–	**$705.54**
Department of Defense	$541.05	$547.66	$921.93	$1,420.84	$1,420.84	**$4,852.33**
Department of Education	$0.95	$0.24	$0.24	$0.24	$0.24	**$1.89**
Department of Energy	$10.19	$0.18	$0.00	$0.00	$0.00	**$10.36**
Department of Health and Human Services	$6.64	$5.50	$9.38	$7.92	–	**$29.43**
Department of Homeland Security	$212.58	$4.86	$6.49	$0.00	$0.00	**$223.93**
Department of Housing and Urban Development	$0.00	$0.00	$3.00	$0.00	–	**$3.00**
Department of the Interior	$18.90	–	–	–	–	**$18.90**
Department of Justice	$16.37	$5.61	$5.61	$5.61	$5.61	**$38.81**
Department of Labor	$0.00	$5.21	$1.51	$3.25	–	**$9.97**
Department of State	$30.03	–	–	–	–	**$30.03**
Department of Transportation	$140.18	$88.95	–	–	–	**$229.13**
Department of the Treasury	$1,354.48	$506.14	–	–	–	**$1,860.62**
Department of Veterans Affairs	$19.11	$3.70	$0.00	$0.00	–	**$22.81**
Environmental Protection Agency	$36.06	–	–	–	–	**$36.06**
General Services Administration	$36.75	$0.59	$0.83	$1.09	–	**$39.26**
National Aeronautics and Space Administration	$0.00	–	–	–	–	**$0.00**
National Science Foundation	$6.84	–	–	–	–	**$6.84**
Nuclear Regulatory Commission	$0.09	–	–	–	–	**$0.09**
Office of Personnel Management	$0.00	–	–	–	–	**$0.00**
Small Business Administration	$0.00	–	–	–	–	**$0.00**
Social Security Administration	$40.35	–	–	–	–	**$40.35**
U.S. Agency for International Development	$3.73	$0.00	$0.00	$0.00	–	**$3.73**
Totals[a]	**$2,773.85**	**$1,315.54**	**$1,120.68**	**$1,564.14**	**$1,426.69**	**$8,200.91**

Source: GAO analysis of agency data.

[a]Totals may not add up due to rounding.

Agencies' planned savings may be higher because most of the agencies that reported planned closures from fiscal years 2016 through 2018 have not fully developed their cost savings and avoidance targets for these fiscal years. Specifically, although OMB required all agencies to report on fiscal years 2016 through 2018 planned cost savings and avoidance targets as a one-time submission in August 2015, 11 of the 21 agencies with closures planned for this time period had fully developed the savings and avoidance targets. The 11 agencies were the Departments of Agriculture, Commerce, Defense, Education, Health and Human Services, Homeland Security, and Housing and Urban Development, Justice, Labor, Veterans Affairs, and the General Services Administration. For example, the Department of Health and Human Services estimated that it plans to save a total $22.8 million from fiscal years 2016 through 2018, during which time it plans to close 11 data centers.

The remaining 10 agencies with data center closures planned from fiscal years 2016 through 2018 have either partially developed or did not develop planned savings and avoidance targets. Specifically, of the 10 agencies, 2 partially developed targets for these fiscal years while the remaining 8 did not develop them. For example, the Department of Transportation reported in its data center inventory that it plans to close 33 data centers from fiscal years 2016 through 2018, but has only determined a cost saving and avoidance target for fiscal year 2016. Further, the Small Business Administration and National Aeronautics and Space Administration reported plans to close 12 and 9 data centers, respectively, from fiscal years 2016 through 2018, but neither had determined any planned cost savings or avoidance targets for these fiscal years.

Table 6 shows the agencies that have planned closures reported from fiscal years 2016 through 2018 but have only developed partial or no planned savings targets.

Table 6: Agencies with Planned Closures for Fiscal Years 2016 through 2018, but Partial or No Planned Cost Savings and Avoidance Targets

Agency	Total planned data center closures for fiscal years 2016 through 2018	Have planned savings and avoidance targets developed for fiscal years 2016 through 2018?
Department of the Interior	4	No
Department of State	1	No
Department of Transportation	33	Partially
Department of the Treasury	3	Partially
Environmental Protection Agency	6	No
National Aeronautics and Space Administration	9	No
National Science Foundation	1	No
Nuclear Regulatory Commission	5	No
Office of Personnel Management	In development[a]	No
Small Business Administration	12	No

Source: GAO analysis of agency data.
Key:
Partially—agency had planned cost savings and avoidance targets for some, but not all, fiscal years from 2016 through 2018.
No—agency did not have planned savings and avoidance targets for all fiscal years from 2016 through 2018.
[a]In September 2015, the Office of Personnel Management indicated that it is planning to consolidate its four core data centers into a new commercial data center; however, the agency had not yet formally documented these plans in its data center inventory.

Agencies provided varied reasons for not having developed planned cost savings and avoidance targets, including facing challenges in determining such information. For example, the Department of State noted that it is re-examining the department's cost avoidance figures in light of its new strategy for consolidating data centers as well as meeting federal government cybersecurity objectives. Citing similar reasons, the Department of Veterans Affairs stated that it did not have planned cost savings information because the department is reassessing its strategic plan in light of significant upfront investments needed for the deployment of new national data centers. As another example, the Department of Transportation stated that developing fiscal year 2017 and beyond cost saving targets has been difficult because many of the department's spaces are leased with no dedicated metering and are owned by different business units or agencies across the government (e.g., the General Services Administration). Finally, the Environmental Protection Agency stated that it is still obtaining an understanding of its data center costs and noted that it anticipates being able to use that information to provide more refined savings estimates in the future.

Addressing these challenges is increasingly important considering the enactment of FITARA, which requires agencies to develop yearly calculations of cost savings as part of their multi-year strategies to consolidate and optimize their data centers. Until agencies address their challenges and complete and report their savings targets, the $8.2 billion in total savings and avoidances may be understated and agencies will not be able to satisfy the data center consolidation provisions of FITARA.

Agencies Are Reporting on OMB's Data Center Optimization Metrics, but Limited Progress Was Made against Fiscal Year 2015 Targets

In May 2014, OMB issued a memorandum[53] that included a set of 11 data center optimization metrics established by the Data Center Consolidation Task Force. According to OMB, these metrics apply to core data centers only and address several data center optimization areas, including cost per operating system, energy, facility, labor, storage, and virtualization. In addition, OMB established a target value for nine metrics that agencies were expected to achieve by the end of fiscal year 2015; it did not establish target values for the cost-per-operating-system metric and the virtualization optimization metric.[54] See table 7 for a description of the data center optimization metrics and target values expected to be achieved by agencies by the end of fiscal year 2015.

---

[53]OMB, Memorandum M-14-08.

[54]The cost-per-operating-system metric provides for measuring progress on optimizing data center costs, while the virtualization optimization metric is calculated from an average of three other related metrics.

Table 7: Core Data Center Optimization Metrics and Targets

Metric	Metric area	Description	Target value (to be achieved by the end of fiscal year 2015)
Core to non-core operating system ratio	Virtualization	The number of operating systems in core data centers versus the number of operating systems in non-core data centers.	At least 65 percent
Core to non-core physical server ratio	Facility	The number of physical servers in core data centers versus the number of physical servers in non-core data centers.	At least 65 percent
Cost per operating system per hour	Cost per operating system	The total costs of a data center divided by the number of operating systems, figured for an hourly cost basis.	No target established
Facility utilization	Facility	The total number of server racks multiplied by 30 square feet and then divided by the total square feet reported in the data center.	At least 80 percent
Full-time equivalent ratio	Labor	The total number of servers divided by the total number of data center personnel (government and contract employees).	At least 25 servers per full-time equivalent
Power usage effectiveness	Energy	The amount of total power consumed at a facility divided by the total amount of IT power consumed. For example, if total electricity usage is 870 kilowatts and total IT electricity usage is 535 kilowatts, then power usage effectiveness would be equal to 1.63.	1.5 or lower
Storage utilization	Storage	The total storage used divided by the total storage available.	75 percent for in-house storage utilization and/or 80 percent for cloud computing/outsourced facilities
Virtualization density	Virtualization	The number of virtual operating systems per virtual host.	10 operating systems per virtual host
Virtual hosts	Virtualization	The number of virtualized hosts divided by the total number of servers.	At least 20 percent
Virtualized operating systems	Virtualization	The number of virtualized operating systems divided by the total number of operating systems.	75 percent of operating systems virtualized
Virtualization optimization percent	Virtualization	Average of the preceding three metrics: virtualized operating systems, virtualization density, and virtual hosts.	Not applicable—average of the three metrics above

Source: GAO analysis of OMB and Task Force data.

However, OMB has not yet implemented a metric for server utilization, as we recommended in September 2014.[55] Specifically, we previously found that OMB's May 2014 optimization metrics did not address a key issue—server utilization rates, which OMB reported[56] in 2009 were as low as 5 percent across the federal government and which were a driving force cited by OMB for launching FDCCI. We noted that, because of these concerns, determining progress against this metric was critical to improving the efficiency, performance, and environmental footprint of federal data center activities. As a result, we recommended that OMB develop and implement a metric for server utilization as part of any future evaluation of the data center optimization metrics. OMB agreed with our recommendation.

---

[55]GAO-14-713.

[56]OMB, *Inventory of Federal Data Center Activity*, Budget Data Request No. 09-41 (Washington, D.C.: Aug. 10, 2009).

For OMB's established metrics, in total, 22 of the 24 agencies have reported data center optimization information to OMB. The remaining 2 agencies—the National Science Foundation and the Small Business Administration—do not have any reported core data centers in their inventories and, therefore, do not have a basis to measure and report optimization progress. In addition, 3 agencies—the Office of Personnel Management, Social Security Administration, and the U.S. Agency for International Development—reported that certain metrics could not be calculated based on their data center environments. In several cases, other methods for calculating the metrics have been developed for internal measurement and reporting; the agencies are also reporting progress against at least seven of OMB's nine metrics.

However, agencies made limited progress against OMB's fiscal year 2015 data center optimization targets. Of the nine metrics with targets,[57] no targets were met by all the reporting agencies and only one—the full-time equivalent ratio—was met by half of the agencies. The remaining eight metric targets were each met by less than half of the agencies. See figure 8 for a summary of the number of agencies meeting each OMB metric target.

---

[57]OMB did not establish a target for the cost per operating system and the virtualization optimization metrics.

Figure 8: Agencies' Progress against OMB Data Center Optimization Metric Targets

Office of Management and Budget (OMB) metric categories

Core to non-core operating system ratio

6	14	4

Core to non-core physical server ratio

3	17	4

Facility utilization

2	20	2

Full time equivalent ratio

12	10	2

Power usage effectiveness

3	18	3

Storage utilization

5	17	2

Virtual hosts

9	13	2

Virtualization density

7	15	2

Virtualized operating systems

5	17	2

0   8   16   24

Number of agencies

- Total meeting or exceeding metric target
- Did not meet metric target
- Not applicable [a]

Source: GAO analysis of agency and OMB data.

[a]Certain agencies do not have any reported core data centers in their inventories and, therefore, do not have basis to measure and report optimization progress. In addition, other agencies reported that certain metrics could not be calculated based on their data center environments.

Further, of the 22 agencies reporting optimization progress, 2—the Department of Housing and Urban Development and the U.S. Agency for International Development—met the performance targets for at least half of the metrics. See table 8 for a listing of which agencies met or did not meet each of OMB's targets.

Table 8: Agency Data Center Optimization Performance Compared against OMB Metric Targets

Agency	Core to non-core operating system ratio	Core to non-core physical server ratio	Facility utilization	Full time equivalent ratio	Power usage effectiveness	Storage utilization	Virtual hosts	Virtualization density	Virtualized operating systems	Number met
Department of Agriculture	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Met	Met	Met	4 of 9
Department of Commerce	Not Met	Not Met	Not Met	Met	Met	Not Met	Not Met	Not Met	Not Met	2 of 9
Department of Defense	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Met	Not Met	Met	2 of 9
Department of Education	Met	Met	Not Met	Not Met	Not Met	Met	Met	Not Met	Not Met	4 of 9
Department of Energy	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	1 of 9
Department of Health and Human Services	Met	Met	Not Met	Met	Not Met	Not Met	Met	Not Met	Not Met	4 of 9
Department of Homeland Security	Not Met	Met	Not Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	2 of 9
Department of Housing and Urban Development	Met	Not Met	Not Met	Met	Not Met	Met	Met	Met	Met	6 of 9
Department of the Interior	Not Met	Not Met	Not Met	Met	Not Met	Met	Met	Not Met	Not Met	3 of 9
Department of Justice	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	1 of 9
Department of Labor	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Met	Not Met	Not Met	1 of 9
Department of State	Not Met	Not Met	Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	2 of 9
Department of Transportation	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	1 of 9
Department of the Treasury	Not Met	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Met	Not Met	2 of 9
Department of Veterans Affairs	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	0 of 9
Environmental Protection Agency	Met	Not Met	Not Met	Not Met	Met	Not Met	Not Met	Met	Not Met	3 of 9

Table 8: Agency Data Center Optimization Performance Compared against OMB Metric Targets (cont.)

Agency	Core to non-core operating system ratio	Core to non-core physical server ratio	Facility utilization	Full time equivalent ratio	Power usage effectiveness	Storage utilization	Virtual hosts	Virtualization density	Virtualized operating systems	Number met
General Services Administration	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Met	Not Met	1 of 9
National Aeronautics and Space Administration	Not Met	Not Met	Not Met	Met	Not Met	Met	Not Met	Not Met	Not Met	2 of 9
National Science Foundation[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nuclear Regulatory Commission	Met	Not Met	Not Met	Not Met	Not Met	Not Met	Met	Met	Met	4 of 9
Office of Personnel Management[b]	N/A	N/A	Not Met	Met	Not Met	Not Met	Not Met	Not Met	Not Met	1 of 7
Small Business Administration[a]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Social Security Administration[b]	N/A	N/A	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	Not Met	0 of 7
U.S. Agency for International Development[b]	Met	Not Met	Met	Not Met	N/A	Met	Met	Met	Met	6 of 8

Key:

● = met—the agency's reported progress met or exceeded OMB's fiscal year 2015 target for the related metric.

◌ = not met—the agency's reported progress did not meet OMB's fiscal year 2015 target for the related metric.

N/A—not applicable.

Source: GAO analysis of agency data.

[a]Agency did not have any reported core data centers in its inventory and, therefore, does not have basis to measure and report optimization progress

[b]Agency reported that certain metrics, as noted, could not be calculated based on its data center environment.

Agencies reported that they experienced a variety of challenges while trying to meet OMB's data center optimization performance targets for fiscal year 2015.

- *Decentralized organizational structure*—Five agencies reported that their decentralized organizational structure makes consolidation and optimization difficult. For example, the Department of Justice reported that it is taking a considerable amount of time and resources to evolve its federated organization towards a consolidated and optimized IT infrastructure. The department noted that expecting the targets to be achieved by fiscal year 2015 may have been overly optimistic and aggressive given the scale and complexity of its transformation effort and the constraints imposed by federal contracting and funding lifecycles. The Departments of Commerce, Homeland Security, and Veterans Affairs, and the Office of Personnel Management also reported issues related to their decentralized IT management.

- *Mission critical applications require proximity to users*—Four agencies reported that certain data centers cannot be consolidated because the volume or type of information involved (such as with geospatial information systems) requires the data center to be close in proximity to the users. For example, the Department of Defense noted that it has a large number of data center-like assets that are associated with specific facilities and equipment (e.g., medical imaging equipment and machine shops) that it views as impractical to consolidate. The department added that, while the data center-like assets do not serve as typical data centers and are not candidates for consolidation, they are counted as data centers under OMB's current definition. The Departments of Commerce and the Interior, as well as the Environmental Protection Agency, reported similar issues.

- *Incomplete consolidation effort*—Four agencies reported that their consolidation effort is not yet complete, which impacts their ability to meet optimization targets. For example, the Department of Agriculture noted that it still has a sizable number (approximately 900) of its data centers planned for closure. The department expects that the closure of those data centers will result in more progress against the optimization metrics. The Department of Justice, the Nuclear Regulatory Commission, and the Social Security Administration also expect their performance relative to OMB's metrics to improve as more of their consolidation efforts are completed.

- *Competing priorities for resources*—Three agencies reported that their consolidation program managers find their available resources drawn off by other, higher-priority efforts. For example, the Environmental Protection Agency reported that other initiatives (such as cybersecurity efforts) with higher visibility and short time frames often result in the re-allocation of resources intended to support the agency's data center consolidation activities. In addition, the Department of Labor noted that efforts to update and validate the data used to report progress against OMB's metrics competes for staff resources with the performance of the consolidation activities. The Office of Personnel Management also reported challenges related to competing priorities.

Addressing these challenges is increasingly important in light of the enactment of FITARA, which requires the measurement and reporting of progress in meeting data center optimization performance metrics. However, until OMB implements a metric for server utilization, it may not be fully aware of agencies' progress in an area that was a driving force in launching FDCCI. Further, until agencies take action to improve progress against OMB's data center optimization metrics, including addressing any challenges identified, they could be hindered in the implementation of FITARA's data center consolidation provisions and in making initiative-wide progress against OMB's optimization targets.

Conclusions

After slightly more than 5 years into FDCCI, agencies have reported significant data center closures—totaling more than 3,100 through fiscal year 2015—with the Departments of Agriculture, Defense, the Interior, and the Treasury accounting for 84 percent of the total. Although agencies fell short of OMB's fiscal year 2015 consolidation goal, current plans identify about 2,100 additional centers planned for closure through fiscal year 2019. If executed as planned, such closures will help agencies to continue to increase their operational efficiency and achieve savings.

Agencies are also reporting significant consolidation cost savings and avoidances, which totaled about $2.8 billion through fiscal year 2015, and are expected to increase to over $8.0 billion in future years. Notably, the Departments of Commerce, Defense, Homeland Security, Transportation, and the Treasury account for 96 percent of the total planned savings. However, many agencies lack complete cost savings goals over the next several years even though they have closures planned. The establishment of these targets is increasingly important in light of FITARA, which specifically requires agency and OMB reporting of data center savings. Until agencies complete such targets, the $8.2 billion in planned savings and avoidances may be understated and agencies will not be able to satisfy the data center consolidation provisions of FITARA.

Conclusions

OMB's May 2014 publication of the data center optimization metrics was a considerable step forward in helping OMB provide better oversight of agencies' efforts to optimize their core data centers. While OMB's optimization targets provided clear and transparent goals for agencies' fiscal year 2015 optimization efforts, agencies made limited progress against those targets. Expeditiously implementing FITARA, which includes several provisions aimed at improving the federal data center optimization effort, should improve agencies' optimization progress. Furthermore, OMB's implementation of our prior recommendation to develop a metric for server utilization could help ensure that agencies are more efficiently using computing resources. Finally, until agencies improve their optimization planning and demonstrate improved progress against OMB's targets, they may be challenged in implementing the data center consolidation provisions of FITARA intended to increase operational efficiency and achieve cost savings, and OMB may be challenged in demonstrating that the next phase of FDCCI is meeting its established objectives.

Recommendations for Executive Action

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretaries of the Departments of the Interior, State, Transportation, and the Treasury; the Administrators of the Environmental Protection Agency, National Aeronautics and Space Administration and Small Business Administration; the Directors of the National Science Foundation and Office of Personnel Management; and the Chairman of the Nuclear Regulatory Commission take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

We also recommend that the Secretaries of the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Attorney General; the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, and U.S. Agency for International Development; the Director of the Office of Personnel Management; the Chairman of the Nuclear Regulatory Commission; and the Commissioner of the Social Security Administration take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Agency Comments and Our Evaluation

We received comments on a draft of our briefing from OMB and from the 24 agencies to which we made recommendations. Of those comments, 4 agencies agreed with our recommendations; 2 did not explicitly agree or disagree with our recommendations, but described plans to address them; 12 stated that they had no comments; and 7 reviewed the draft but did not comment on the recommendations. Multiple agencies also provided technical comments, which we incorporated as appropriate. The following is a detailed discussion of each of the agency's comments:

- In an e-mail received on November 25, 2015, a policy analyst from OMB's Office of E-Government and Information Technology stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 24, 2015, a senior technical advisor from the Department of Agriculture's Office of the Chief Information Officer did not comment on our recommendation, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 30, 2015, an audit liaison from the Department of Commerce's Office of the Secretary did not explicitly agree or disagree with our recommendation, but described plans to address it. Specifically, the department stated that it continues to make progress in all areas of FDCCI and will focus on the OMB goals not met in the future. The department also provided technical comments which we incorporated as appropriate.

  Our draft briefing provided to the Department of Commerce for comment stated that the department had reported a total of 1,556 data centers in its data center inventory, of which it had closed 229 centers through fiscal year 2015 and planned to close 22 additional centers—for a total of 251—by fiscal year 2019. This was based on the data center inventory file provided by

the department on September 4, 2015. In commenting on a draft of our briefing, the department stated that the inventory file provided in September 2015 contained errors, including multiple duplicative records, which occurred when information was consolidated from the department's bureaus. Subsequently, the department provided an updated data center inventory that reported a total of 374 data centers, of which it had closed 78 centers through fiscal year 2015 and planned to close 6 additional centers—for a total of 84—by fiscal year 2019. As a result, we updated the briefing to reflect this newly-reported inventory information.

- In an e-mail received on November 30, 2015, an audit liaison from the Department of Defense's Office of the Chief Information Officer did not comment on our recommendation, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 24, 2015, a policy analyst from Education's Office of the Secretary/Executive Secretariat stated that the department concurred with our recommendation to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Our draft briefing provided to the Department of Education for comment included an additional recommendation that the department take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. This was based on the agency not having established cost savings and avoidance targets for fiscal years 2017 and 2018. Subsequently, the department provided additional documentation that included targets from fiscal years 2017 through 2019. As a result, we have removed the recommendation and made appropriate changes in the briefing to reflect the updated information.

GAO

Agency Comments and Our Evaluation

- In an e-mail received on November 25, 2015, a management analyst from the Department of Energy's Office of the Chief Information Officer did not comment on our recommendation, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 25, 2015, an audit liaison from the Department of Health and Human Services stated that the department had no comments on the draft briefing.

- In an e-mail received on December 2, 2015, an audit liaison from the Department of Homeland Security's Office of the Chief Information Officer stated that the department concurred with our recommendation. The department also provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 23, 2015, an audit liaison officer from the Department of Housing and Urban Development's Office of the Chief Information Officer, Audit Compliance Branch stated that the department concurred with our recommendation.

- In an e-mail received on November 24, 2015, a GAO/Office of the Inspector General audit liaison from the Department of the Interior stated that the department had no comments on the draft briefing.

- In an e-mail received on November 25, 2015, an audit liaison specialist from the Department of Justice's Justice Management Division stated that the department had no comments on the draft briefing.

Agency Comments and Our Evaluation

- In an e-mail received on November 30, 2015, a special assistant from the Department of Labor's Office of the Assistant Secretary for Administration and Management did not comment on our recommendation, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 30, 2015, an IT policy analyst from the Department of State stated that the department had no comments on the draft briefing.

- In an e-mail received on December 2, 2015, the Department of Transportation's Director of IT Compliance stated that the department agreed with the report and our recommendations.

- In an e-mail received on November 30, 2015, an audit liaison from the Department of the Treasury's Office of the Chief Information Officer did not comment on our recommendations, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 20, 2015, an audit liaison from the Department of Veterans Affairs' Office of Congressional and Legislative Affairs did not explicitly agree or disagree with our recommendation, but described plans to address it. Specifically, the department stated that it is taking action to improve progress toward data center optimization including, for example, initiating a study in fiscal year 2015 to assess existing IT development cloud services and identifying the most cost-effective model for the future of the department's data center operations. According to the department, the study resulted in preliminary recommendations for correcting the path forward for large scale enterprise data center optimization.

- In an e-mail received on November 25, 2015, an audit liaison from the Environmental Protection Agency's Office of Environmental Information stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 20, 2015, a financial management analyst from the General Services Administration's Office of Administrative Services, GAO/Inspector General Audit Response Division did not comment on our recommendation, but provided technical comments which we have incorporated as appropriate.

- In an e-mail received on November 23, 2015, an executive officer from the National Aeronautics and Space Administration's Office of the Chief Information Officer stated that the agency had no comments on the draft briefing. The agency added that it anticipated concurring with our recommendation.

- In an e-mail received on December 1, 2015, an audit liaison from the National Science Foundation stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 23, 2015, an executive technical assistant from the Nuclear Regulatory Commission's Office of the Executive Director for Operations stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 24, 2015, a senior analyst from the Office of Personnel Management stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 24, 2015, a program manager from the Small Business Administration's Office of Congressional and Legislative Affairs stated that the agency had no comments on the draft briefing.

- In an e-mail received on November 24, 2015, an audit liaison from the Social Security Administration did not comment on the recommendation to take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges. The agency provided technical comments which we have incorporated as appropriate.

  Our draft briefing provided to the Social Security Administration for comment included a recommendation that the agency take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. This was based on the agency having a data center closure planned during that time period, but not having established cost savings and avoidance targets. Subsequently, the agency provided additional information indicating that it did not have any closures planned from fiscal year 2016 through 2018. As a result, we have removed the recommendation and made appropriate changes in the briefing to reflect the updated information.

- In an e-mail received on November 30, 2015, an audit liaison from the U.S. Agency for International Development's Office of the Chief Financial Officer stated that the agency had no comments on the draft briefing.

Table 9: Agencies' Reported Closures Completed from Fiscal Years 2010 through 2015, as of November 2015

Agency	Total data centers	Completed data center closures						Total
		Fiscal year 2010	Fiscal year 2011	Fiscal year 2012	Fiscal year 2013	Fiscal year 2014	Fiscal year 2015	
Department of Agriculture	2,275	0	16	24	6	1	1,293	**1,340**
Department of Commerce	374	1	10	16	29	14	8	**78**
Department of Defense[a]	3,193	2	59	77	106	175	119	**538**
Department of Education	5	0	0	0	0	0	1	**1**
Department of Energy	54	1	2	2	2	2	6	**15**
Department of Health and Human Services	227	0	17	11	16	13	5	**62**
Department of Homeland Security	105	0	7	13	6	0	13	**39**
Department of Housing and Urban Development	2	0	0	0	0	0	0	**0**
Department of the Interior	420	0	19	23	19	25	83	**169**
Department of Justice	110	27	3	6	13	5	13	**67**
Department of Labor	88	1	1	3	8	2	5	**20**
Department of State	390	0	1	3	0	1	0	**5**
Department of Transportation	463	1	13	11	12	10	3	**50**
Department of the Treasury	2,215	1	3	5	9	206	349	**573**
Department of Veterans Affairs	356	1	0	2	6	9	2	**20**
Environmental Protection Agency	81	0	1	14	3	1	4	**23**
General Services Administration	124	0	0	0	37	45	8	**90**
National Aeronautics and Space Administration	59	10	5	5	3	3	3	**29**
National Science Foundation	2	0	0	1	0	0	0	**1**
Nuclear Regulatory Commission	9	0	0	0	0	0	2	**2**
Office of Personnel Management	4	0	0	0	0	0	0	**0**
Small Business Administration	15	0	0	0	0	0	0	**0**
Social Security Administration	2	0	0	0	0	0	0	**0**
U.S. Agency for International Development	11	2	0	1	0	0	0	**3**
Total	**10,584**	**47**	**157**	**217**	**275**	**512**	**1,917**	**3,125**

Source: GAO analysis of agency data.
aDepartment of Defense inventory data as of August 2015.

Table 10: Agencies' Planned Closures from Fiscal Years 2016 through 2019, as of November 2015

Agency	Total data centers	Completed closures (fiscal years 2010 through 2015)	Planned data center closures				Total
			Fiscal year 2016	Fiscal year 2017	Fiscal year 2018	Fiscal year 2019	
Department of Agriculture	2,275	1,340	897	10	12	0	**2,259**
Department of Commerce	374	78	5	0	1	0	**84**
Department of Defense[a]	3,193	538	256	79	435	4	**1,402[b]**
Department of Education	5	1	1	0	0	0	**2**
Department of Energy	54	15	0	0	0	0	**15**
Department of Health and Human Services	227	62	7	3	1	0	**74[c]**
Department of Homeland Security	105	39	4	2	0	0	**45**
Department of Housing and Urban Development	2	0	0	1	0	0	**1**
Department of the Interior	420	169	3	1	0	0	**174[d]**
Department of Justice	110	67	8	7	10	15	**107**
Department of Labor	88	20	12	6	16	0	**54**
Department of State	390	5	0	0	1	0	**9[e]**
Department of Transportation	463	50	31	0	2	77	**160**
Department of the Treasury	2,215	573	2	1	0	0	**579[f]**
Department of Veterans Affairs	356	20	4	4	0	0	**29[g]**
Environmental Protection Agency	81	23	4	2	0	0	**29**
General Services Administration	124	90	10	8	10	0	**118**
National Aeronautics and Space Administration	59	29	6	3	0	0	**38**
National Science Foundation	2	1	1	0	0	0	**2**
Nuclear Regulatory Commission	9	2	1	1	3	0	**7**
Office of Personnel Management	4	0	0	0	0	0	**0**
Small Business Administration	15	0	1	11	0	0	**12**
Social Security Administration	2	0	0	0	0	0	**0**
U.S. Agency for International Development	11	3	0	0	0	0	**3**
Total	**10,584**	**3,125**	**1,253**	**139**	**491**	**96**	**5,203**

Source: GAO analysis of agency data.

Attachment I
Details of Agencies' Completed and Planned Data Center Closures

[a]Department of Defense inventory data as of August 2015.

[b]This figure includes 90 Department of Defense data centers that were originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data centers were closed as planned or revised the closure dates to a later fiscal year.

[c]This figure includes one Department of Health and Human Services data center that was originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data center was closed as planned or revised the closure date to a later fiscal year.

[d]This figure includes one Department of the Interior data center that was originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data center was closed as planned or revised the closure date to a later fiscal year.

[e]This figure includes three Department of State data centers that were originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data centers were closed as planned or revised the closure dates to a later fiscal year.

[f]This figure includes three Department of the Treasury data centers that were originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data centers were closed as planned or revised the closure dates to a later fiscal year.

[g]This figure includes one Department of Veteran Affairs data center that was originally planned for closure in fiscal year 2015 but, as of November 2015, the department had not yet determined whether the data center was closed as planned or revised the closure date to a later fiscal year.

Appendix II: Comments from the Department of Commerce

THE DEPUTY SECRETARY OF COMMERCE
Washington, D.C. 20230

February 3, 2016

Mr. David A. Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Powner:

In accordance with 31 U.S.C. 720, enclosed is the Department of Commerce's statement of actions taken in response to the recommendations in the U.S. Government Accountability Office (GAO) report titled *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established* (GAO-16-323, February 2016).

Thank you for your work on this report. The Department agrees with the recommendations and will take steps to implement them. The enclosed statement provides additional information.

If you have any questions, please contact Steven Cooper, the Department's Chief Information Officer, at (202) 482-4797.

Sincerely,

Bruce H. Andrews

Enclosure

**Department of Commerce's Response and Statement of Action
GAO Draft Report titled *Data Center Consolidation: Agencies Making Progress, but
Planned Savings Goals Need to Be Established*
(GAO-16-323, February 2016)**

The Government Accountability Office (GAO) made one recommendation to the Department of
Commerce in the report.

- **Recommendation 1:** GAO recommends DOC take action to improve progress in the data
  center optimization areas that we reported as not meeting OMB's established targets,
  including addressing any identified challenges.

  Commerce Response: The Department of Commerce agrees with the recommendation and
  continues to make progress toward the established targets per OMB.

  <u>Actions</u>

  Commerce will continue to provide quarterly updates on data center consolidation as
  mandated by the Integrated Data Collection via OMB.

  Commerce will continue to improve the progress against OMB's metrics of data center
  optimization where possible.

Appendix III: Comments from the Department of Defense

DEPARTMENT OF DEFENSE
6000 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-6000

CHIEF INFORMATION OFFICER

February 12, 2016

Mr. David Powner
Director, Information Technology
U.S. Government Accountability Office
441 G Street, NW
Washington DC 20548

Dear Mr. Powner:

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-16-323, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established," dated January 7, 2016 (GAO Code 100514).

Attached is DoD's proposed response to the subject report. My point of contact is Bob Brown who can be reached at james.r.brown632.civ@mail.mil and phone (571) 372-4445.

Sincerely,

DE
VRIES.DAVID.LEE.109396
8235

Digitally signed by DE
VRIES.DAVID.LEE.1093968235
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
ou=OSD, cn=DE VRIES.DAVID.LEE.1093968235
Date: 2016.02.12 17:41:42 -05'00'

Terry A. Halvorsen

Enclosure:
As stated

GAO DRAFT REPORT DATED JANUARY 7, 2016
GAO-16-323 (GAO CODE 100514)

"DATA CENTER CONSOLIDATION: AGENCIES MAKING PROGRESS, BUT PLANNED SAVINGS GOALS NEED TO BE ESTABLISHED"

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

DoD RESPONSE #1: DoD concurs with the recommendation and understand you have interest in how DoD will address the seven of the nine OMB metric targets for data center optimization.

DoD is considering several actions to more aggressively drive toward established DCC objectives. For instance, DoD is moving toward realization of on-premises and off-premises, commercial cloud hosting services to enable migration of workloads to more efficient environments thus positively affecting the virtualization and density metrics. The DoD CIO is also working directly with the Services to reconcile the instances of multiple Installation Processing Nodes (IPNs) on individual Bases/Posts/Camps/Stations. All of these actions will enable the closure of additional data centers, increase efficiencies in all categories, and drive greater savings.

A specific challenge to DoD is the population of Special Purpose Processing Nodes (SPPNs), which are, by definition, capabilities physically tied to equipment or facilities (i.e., non-severable). SPPNs, therefore, offer very little opportunity for consolidation. In fact, SPPNs typically exist in mixed use facilities (not dedicated DC facilities), making many DC efficiency actions impractical or impossible. Consequently, DoD is pursuing relief from OMB on including SPPN inventory values in metric calculations. DoD will, however, continue to inventory SPPNs and seek to improve efficiencies as practical/possible.

Another challenge for DoD is the lack of investment dollars for new facilities. Having to reuse existing facilities limits the potential for Power Utilization Efficiency (PUE) objective achievement. DoD is implementing energy efficiency measures across its population of Core Data Centers (CDCs) as possible, and DoD is close to the current OMB objective of 1.5.

Finally, DoD has begun using the Program Objective Memorandum (POM) and related Issue Paper processes to realize savings achieved through DCC actions.

Appendix IV: Comments from the Department of Energy

Department of Energy
Washington, DC 20585

February 10, 2016

Mr. David Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, D.C. 20548

Dear Mr. Powner:

I am pleased to provide the Department of Energy's (DOE) response to the Government Accountability Office's (GAO) Draft report, *"Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established (GAO-16-323)"*.

GAO issued the following recommendation to DOE: *take action to improve progress in the data center optimization process in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.*

The mission of the Department of Energy is to ensure America's security and prosperity by addressing energy, environmental, and nuclear challenges through transformative science and technology solutions. Carried out at 47 geographically dispersed locations across the United States, the Department's mission depends on high-energy mission specific facilities that support the pursuit of new and advanced forms of energy, basic science and research, and technologies that will lead to a clean and affordable energy economy. The diversity of the missions dictates diversity in the computing systems and the types of data centers needed to accomplish these missions. The various types of data centers include, for example, Research and Engineering Supercomputers, High Performance Visual and Data Computer Modeling systems, and Data Collection and System Monitoring / SCADA systems.

There are a number of agency-specific factors that should be considered with the FY 2015 OMB metrics. For example, due to the significant number of scientific computing, data modeling and SCADA systems within DOE, it is not always feasible to consolidate or relocate the computing infrastructure from the geographic locations. Additionally, several performance metrics, such as Virtualization, Data Storage, and Facility Density, are not necessarily relevant to optimization of desired outcomes for these types of computing facilities.

DOE remains committed to the responsible management of its data centers and continually strives to improve the effectiveness and efficiency of its computing systems. Consistent with the requirements of EO13693, DOE will continue to optimize its data centers through advanced metering and data center facility improvements to lower Power Utilization Effectiveness (PUE).

DOE is currently awaiting formal guidance from OMB on the data center optimization metrics and targets that are required to support the FITARA Data Center Optimization Initiative (DCOI). As of November 19, 2015, the Federal CIO Council terminated the Data Center Task Force and stated revised guidance will be issued. Additionally, OMB has suspended the data center performance metric updates, pending release of the new guidance. OMB is no longer requiring agencies to report on the performance metrics specified in OMB M-14-08.

In preparation for the new OMB guidance, DOE has established an agency-wide Data Center Working Group that is chartered with identifying best practices in data center metering, optimization, consolidation and cloud migration and is supporting these practices throughout DOE. This Working Group is serving as a focus group for communicating FITARA, OMB and GAO information and requirements for data centers as well as providing summary data center performance status to all members. DOE will develop a detailed implementation plan when the new OMB metrics required under FITARA are established.

If you have any questions, please contact me or Jake Wooley at (301) 903-0992.

Sincerely,

Michael Johnson
Chief Information Officer

Appendix V: Comments from the Department of Health and Human Services

DEPARTMENT OF HEALTH & HUMAN SERVICES

OFFICE OF THE SECRETARY

Assistant Secretary for Legislation
Washington, DC 20201

FEB 1 1 2016

David Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Dear Mr. Powner:

Attached are comments on the U.S. Government Accountability Office's (GAO) report entitled, *"Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established"* (GAO-16-323).

The Department appreciates the opportunity to review this report prior to publication.

Sincerely,

Jim R. Esquea
Assistant Secretary for Legislation

Attachment

<u>**GENERAL COMMENTS OF THE DEPARTMENT OF HEALTH AND HUMAN
SERVICES (HHS) ON THE GOVERNMENT ACCOUNTABILITY OFFICE'S (GAO)
DRAFT REPORT ENTITLED: DATA CENTER CONSOLIDATION: AGENCIES
MAKING PROGRESS, BUT PLANNED SAVINGS GOALS NEED TO BE ESTABLISHED
(GAO-16-323)**</u>

The U.S. Department of Health and Human Services (HHS) appreciates the opportunity from the
Government Accountability Office (GAO) to review and comment on this draft report.

<u>**GAO Recommendation**</u>
GAO recommends that the Secretary of HHS take action to improve progress in the data center
optimization areas that we reported as not meeting OMB's established targets, including
addressing any identified challenges.

<u>**HHS Response**</u>
HHS concurs with GAO's recommendation. HHS will work to improve our five optimization
metrics that do not currently meet OMB's established targets (facility utilization, power usage
effectiveness, storage utilization, virtualization density, and virtualized operating systems) through
the new Data Center Optimization Initiative. HHS is awaiting the release of federal standards and
guidance to update their approach.

Appendix VI: Comments from the Department of Homeland Security

U.S. Department of Homeland Security
Washington, DC 20528

**Homeland
Security**

February 3, 2016

David A. Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Re: Draft Report GAO-16-323, "DATA CENTER CONSOLIDATION: Agencies
        Making Progress, but Planned Savings Goals Need to Be Established"

Dear Mr. Powner:

Thank you for the opportunity to review and comment on this draft report. The U.S.
Department of Homeland Security (DHS) appreciates the U.S. Government
Accountability Office's (GAO) work in planning and conducting its review and issuing
this report.

The Department is pleased to note GAO's positive acknowledgement of DHS as one of
19 of 24 agencies reporting an estimated total of $2.8 billion in cost savings and
avoidances from their data center consolidation and optimization efforts for Fiscal Years
(FY) 2011 to 2015. In addition, DHS was recognized as one of four agencies that
accounted for the approximately $2.4 billion (86 percent) of the reported estimated
savings through FY 2015 and reported approximately $212.58 million in cost savings
from FY 2012-2015.

The draft report contained one recommendation for DHS with which the Department
concurs. Specifically, GAO recommended that the Secretary of Homeland Security:

Recommendation 1: Take action to improve progress in the data center optimization
areas that we [GAO] reported as not meeting Office of Management and Budget (OMB)
established targets, including addressing any identified challenges.

Response: Concur. The DHS Office of the Chief Information Officer (OCIO) will
continue to improve its progress in achieving the performance metrics for the seven data
center optimization areas that did not meet the OMB targets. GAO reported that the
Department achieved the targets for both Core to Non-Core Physical Server Ratio and
Full-Time Equivalent Ratio. DHS OCIO expects that the virtualization metrics will rise

dramatically during FY 2016 and 2017 as Components complete their major physical system migrations and make the determination to move to virtual solutions. DHS OCIO will continue to encourage and assist with the migrations, whether virtual or physical, to support the overall goals of the data center consolidation effort. Further, the Department will work to address the challenges related to Information Technology management within DHS' federated organizational structure and will determine the appropriate steps needed to increase operational efficiency to meet the OMB performance targets. Estimated Completion Date: November 30, 2016.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,

Jim H. Crumpacker, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

2

Appendix VII: Comments from the Department of Housing and Urban Development

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, DC 20410-3000

CHIEF INFORMATION OFFICER

JAN 2 9 2016

Mr. David A. Powner
Director, Information Technology
 Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Powner:

      Thank you for the opportunity to comment on the Government Accountability Office
(GAO) draft report entitled, *Data Center Consolidation: Agencies Making Progress, but Planned
Savings Goals Need to Be Established* (GAO-16-323).

      The U.S. Department of Housing and Urban Development reviewed the draft report and has
no comment. The Department remains committed to maximizing the value of Federal Information
Technology which includes promoting the Federal Data Center Consolidation Initiative.

      If you have questions or require additional information, please contact Janice Ausby,
Deputy Chief Information Officer, Business and IT Resource Management Office, at (202) 402-
7605 (Janice.L.Ausby@hud.gov), or Juanita L. Toatley, Audit Liaison, Audit Compliance Branch,
at (202) 402-3555 (Juanita.L.Toatley@hud.gov).

                              Sincerely,
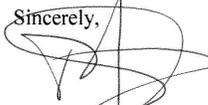
                              Rafael C. Diaz
                              Chief Information Officer

Appendix VIII: Comments from the Department of the Interior

United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

FEB 0 4 2016

Mr. David A. Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Powner:

Thank you for providing the Department of the Interior (Department) the opportunity to review and comment on the draft Government Accountability Office (GAO) Report entitled *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established* (GAO-16-323).

We appreciate GAO's review of the progress made by federal agencies to comply with the Office of Management and Budget's (OMB) Federal Data Center Consolidation Initiative. The GAO concluded that data center consolidation as planned will help agencies continue to increase their operational efficiency and achieve savings. The GAO issued two recommendations to the Department in response to its overall findings. We generally agree with the findings and concur with the recommendations and offer the following responses.

Recommendation 1: To better ensure that the federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretary of the Department of the Interior take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Response: The Department has already begun addressing the challenges establishing and completing planned data center cost savings and avoidance targets. The Office of the Chief Information Officer (OCIO) collects information on all DOI data centers on an ongoing basis. Currently the collection includes cost savings and avoidance data for open and closed data centers. DOI will establish planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Recommendation 2: The Secretary of the Department of the Interior take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response: The Department is committed to meeting OMB's data center optimization targets. The Department has worked diligently over the past five years to consolidate data centers. The

focus is now shifting from data center consolidation to data center optimization. The OCIO is developing data center optimization metrics to measure bureau and office progress in meeting optimization targets. The optimization metrics will become part of the 2016 OCIO Organizational Assessment, a scorecard used to measure bureau and office progress against predefined targets.

If you have any questions, or need additional information, please contact me.

Sincerely,

Kristen J. Sarri
Principal Deputy Assistant Secretary
Policy, Management and Budget

Appendix IX: Comments from the Department of State

United States Department of State

Comptroller

Washington, DC 20520

FEB 0 6 2016

Dr. Loren Yager
Managing Director
International Affairs and Trade
Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548-0001

Dear Dr. Yager:

We appreciate the opportunity to review your draft report,
"DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned
Savings Goals Need to Be Established." GAO Job Code 100514.

The enclosed Department of State comments are provided for incorporation
with this letter as an appendix to the final report.

If you have any questions concerning this response, please contact
Paula Lee, IT Specialist, Office of Business Management and Planning, Bureau of
Information Resource Management at (202) 453-9756.

Sincerely,

Christopher H. Flaggs

Enclosure:
　　As stated

cc:　GAO – David A. Powner
　　IRM – Steven Taylor
　　State/OIG - Norman Brown

Department of State Comments on GAO Draft Report

DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established
(GAO-16-323, GAO Code 100514)

The Department of State appreciates the opportunity to comment on the draft report *"Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established."*

Recommendation: To better ensure that federal data consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretary of State take action to address challenges in establishing and to complete planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Response:

The Department of State (DOS) concurs with the recommendation of addressing challenges of establishing and completing planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. The Department has developed an approach that includes Department-mandated and previously planned consolidations of data centers, continuation of virtualization efforts, increased usage of Enterprise solutions, and implementation of data center operations policies that will result in efficient data center utilization and reductions overlap and excess costs across DOS data centers.

Recommendation: We also recommend that the Secretary of State take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response:

The Department concurs with the recommendation, and will work towards meeting established targets, and look forward to working with OMB on their upcoming Federal Data Center Consolidation initiative updates.

Appendix X: Comments from the Department of Transportation

U.S. Department
of Transportation

**Office of the Secretary
of Transportation**

Assistant Secretary
for Administration

1200 New Jersey Avenue, SE
Washington, DC 20590

FEB 2 2016

David Powner
Director, Information Technology Management Issues
U.S. Government Accountability Office
441 G Street NW
Washington, DC 20548

Mr. Powner:

The Department of Transportation (DOT) is leveraging its Federal Information Technology
Reform Act (FITARA) authorities to further evaluate and validate its data center footprint and
associated cost savings. We continue to ensure that data center consolidation and optimization
efforts improve efficiency and achieve cost savings. The following examples represent recent
activity in this area:

- The Department's Office of the Chief Information Officer (OCIO) has bolstered its
  efforts on data center consolidation activities to align with modernization activities
  including cloud adoption.
- The Federal Aviation Administration (FAA) recently awarded an enterprise-wide FAA
  Cloud Services contract to develop cloud readiness profiles for suitable applications to
  drive cloud adoption and facilitate data center consolidation; and
- The OCIO is working with Operating Administrations to ensure data center
  consolidation efforts support long-term goals to drive cost savings and optimization
  improvements.

Upon review of the draft report, we concur with the recommendations regarding addressing
challenges in establishing and completing planned data center cost savings and avoidance
targets, as well as improving progress in data center optimization. The Department will provide
a detailed response to each recommendation within 60 days of the final report's issuance.

We appreciate the opportunity to respond to the GAO draft report. Please contact Madeline M.
Chulumovich, Director, Audit Relations and Program Improvement, at (202) 366-6512 with any
questions or if you would like to obtain additional details.

Sincerely,

Jeff Marootian
Assistant Secretary for Administration

Appendix XI: Comments from the Department of Veterans Affairs

DEPARTMENT OF VETERANS AFFAIRS
Washington DC 20420

February 12, 2016

Mr. David A. Powner
Director, Information Technology
  Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Powner:

The Department of Veterans Affairs (VA) has reviewed the U.S. Government Accountability Office's (GAO) draft report, *"DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established"* (GAO-16-323). VA agrees with GAO's conclusions and concurs with GAO's recommendation to the Department.

The enclosure specifically addresses GAO's recommendation in the draft report and provides an action plan. VA also provides technical comments to the draft report.

VA appreciates the opportunity to comment on your draft report.

Sincerely,

Robert D. Snyder
Interim Chief of Staff

Enclosure

Enclosure

Department of Veterans Affairs Response to
Government Accountability Office (GAO) Draft Report
*"DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned
Savings Goals Need to Be Established"*
(GAO-16-323)

GAO Recommendation: **GAO recommends that the Secretary of Veterans Affairs take action to improve progress in the data center optimization areas that GAO reported as not meeting OMB's established targets, including addressing any identified challenges.**

VA Comment: Concur. VA is in the process of reassessing its data center optimization strategy and has made significant progress toward key milestones in that process.

As a result of a Pilot project initiated in fiscal year (FY) 2015 to analyze the effectiveness of consolidating small (non-enterprise) data centers across the Department of Veterans Affairs (VA), approximately 70 data centers have been tentatively identified for potential consolidation by the end of FY 2019. Once completed, these consolidations are expected to increase the overall closure rate to approximately 20 percent, which would significantly improve VA's data center current closure rate of approximately 6 percent, while also improving its optimization performance metrics.

VA has noted in past conversations and correspondence with GAO, that the vast majority of VA data centers are located at medical facilities. Many of these data centers contain mission-critical medical device systems. The current (legacy) VA information technology (IT) architecture reflects older concepts that originated at a time when data center consolidation was not yet mature, and long before the concept of cloud computing was envisioned. The thinking at that time was that these systems must remain in proximity to the medical devices they support (such as medical imaging equipment, critical care monitoring equipment, biomedical equipment, and other medical devices that impact mission-critical medical care services to the Veteran). VA recognizes that this localized, distributed architecture is no longer necessary to support mission-critical systems, yet investment funds for transition to more modern architectures remain very limited. That said, wherever practical, VA will continue to seek opportunities for consolidation of applications hosted at VA medical centers, resulting in a progressively more mature and comprehensive data center consolidation plan that takes full advantage of emerging cloud concepts.

In September 2015, VA established the Service Delivery and Engineering (SDE) Transformation Team to guide and monitor a collection of SDE Optimization Efforts designed to address implementation of multiple cost savings and avoidance measures at the enterprise level. These efforts are aimed at increasing staff efficiency and pilot testing data center optimization improvement opportunities to assure security compliance and cost effectiveness prior to full implementation. As part of this effort, VA has successfully completed multiple, short-term milestones for organizational process changes to improve staff efficiency, has completed additional mid-term milestones (such

Enclosure

Department of Veterans Affairs (VA) Response to
Government Accountability Office (GAO) Draft Report
**"DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned
Savings Goals Need to Be Established"**
(GAO-16-323)

as implementation of a "Storage on Demand" contract for development), and has
initiated multiple other mid-term or longer-term projects expected to result in continuous
improvement and greater data center operations optimization (such as a development
application pilot utilizing commercial cloud services to enable technical and financial
feasibility assessment). VA's planned timeframe for completing the pilot projects;
analyzing the results for Lessons Learned, inherent constraints, and financial feasibility;
and for making final recommendations for the road ahead is mid-FY 2017. Due to the
incremental strategy employed in reaching that longer-term, decisional milestone, VA
expects to be able to report significant cost savings and avoidance along the way.

2

Appendix XII: Comments from the Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENVIRONMENTAL INFORMATION

FEB 1 0 2016

MEMORANDUM

SUBJECT: EPA's Response to GAO Draft Report 16-323, Data Center Consolidation

FROM: Ann Dunkin
             Chief Information Officer

TO: David Powner, Director
             Information Technology Management Issues (GAO)

Thank you for providing the Office of Environmental Information (OEI) with the opportunity to review and comment on GAO's Draft Report 16-323, Data Center Consolidation. This memorandum is the Environmental Protection Agency's (EPA's) response to that draft report. We have no issues or substantive modifications to this draft report. However, we noted that the sentence on the second page, "Two agencies did not a have basis to report on progress," should be corrected to place the "a" after "have".

cc: Bob Trent, OCFO
        Patricia Randolph Williams, OEI
        Harrell Watkins, OEI
        Tim Thorpe, OEI
        Anne Mangiafico, OEI

Appendix XIII: Comments from the General Services Administration

GSA

The Administrator

February 17, 2016

The Honorable Gene L. Dodaro
Comptroller General of the United States
U.S. Government Accountability Office
Washington, DC 20548

Dear Mr. Dodaro:

The U.S. General Services Administration (GSA) appreciates the opportunity to review and comment on the U.S. Government Accountability (GAO) draft report entitled, *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established* (GAO-16-323).

GSA agrees with the draft report, and acknowledges that improvements are necessary to meet the data center optimization targets. In the last two quarters, we have taken a more aggressive approach to closing data centers by focusing on the infrastructure in three of our regional offices, including Kansas City, Philadelphia, and New York City. We will continue this work through the remainder of the fiscal year and expect those efforts will improve our data center optimization targets.

GSA continues to pursue operational improvements to better serve the American people and plans to implement the recommendations in this report. If you have any additional questions or concerns, please do not hesitate to contact me at the number below or Ms. Lisa A. Austin, Associate Administrator, Office of Congressional and Intergovernmental Affairs, at (202) 501-0563.

Sincerely,

Denise T. Roth

Denise Turner Roth
Administrator

cc: Mr. David A. Powner, Director, Information Technology Management Issues, GAO

U.S. General Services Administration
1800 F Street, NW
Washington, DC 20405
Telephone: (202) 501-0800
Fax: (202) 219-1243

Appendix XIV: Comments from the National Aeronautics and Space Administration

National Aeronautics and Space Administration

Headquarters
Washington, DC 20546-0001

FEB -8 2016

Reply to Attn of: Office of the Chief Information Officer

David A. Powner
Director ·
Information Technology Management Issues
United States Government Accountability Office
Washington, DC 20548

Dear Mr. Powner:

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to review and comment on the Government Accountability Office (GAO) draft report entitled, "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established" (GAO-16-323), dated January 7, 2016.

In the draft report, GAO makes two recommendation addressed to the NASA Administrator intended to better ensure that NASA's data center consolidation and optimization efforts improve efficiency and achieve cost savings. NASA's response to GAO's recommendation, including planned corrective actions, follows:

> **Recommendation 1:** The NASA Administrator [should] take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.
>
> **Management's Response**: Concur. NASA has been assessing available Total Cost of Ownership (TCO) models to identify the model that most accurately replicates NASA environment. This was documented in NASA's response to "GAO Initial Questions and Requests Job Code 1000254" in January 2015. We anticipate using the model, which is based in part on NASA's actual data center inventory, to produce historical approximations of closures that have already taken place as well as creating projections for FY16-FY18.
>
> **Estimated Completion Date:** NASA expects to generate historical approximations by the third quarter of FY16. NASA anticipates generating FY16-FY18 projections by the fourth quarter of FY16. Estimated completion date: September 22, 2016.
>
> **Recommendation 2:** The NASA Administrator [should] take action to improve progress in the data center optimization areas that were reported as not meeting

2

Office of Management and Budget (OMB) established targets, including addressing any identified challenges.

Management's Response: Concur. NASA will establish a strategy for improvement for each deficient metric and meet with data center owners to promote and explain these strategies and further educate our data center owners on how to create efficiencies.

Estimated Completion Date: NASA expects that the improvement strategies will be developed by the third quarter of FY16. Meetings with data center owners will be targeted for completion during the first quarter of FY17. Estimated completion date: March 30, 2017.

Once again, thank you for the opportunity to review and comment on this draft report. If you have any questions or require additional information, please contact Ruth McWilliams at (202) 358-5125.

Sincerely,
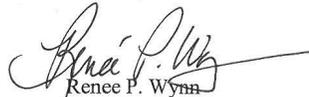
Renee P. Wynn
Chief Information Officer

Appendix XV: Comments from the Nuclear Regulatory Commission

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 3, 2016

Mr. David A. Powner, Director
Information Technology Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, D.C. 20548

Dear Mr. Powner:

Thank you for providing the U.S. Nuclear Regulatory Commission (NRC) with the opportunity to review and comment on the U.S. Government Accountability Office's (GAO's) draft report GAO-16-323, "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established." The NRC staff has reviewed the draft report and has no comments.

If you have any questions regarding this response, please contact John Jolicoeur. Mr. Jolicoeur can be reached by telephone at (301) 415-1642.

Sincerely,

Victor McCree
Executive Director
  for Operations

Appendix XVI: Comments from the Office of Personnel Management

UNITED STATES OFFICE OF PERSONNEL MANAGEMENT
Washington, DC 20415

Chief Information
Officer

February 9, 2016

Mr. David A. Powner
Director
Information Technology, Management Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Powner:

Thank you for providing us the opportunity to respond to the Government Accountability Office
(GAO) draft report, *Data Center Consolidation Progress and Savings*, GAO-16-323, 100514.

We recognize that even the most well run programs benefit from external evaluations and we
appreciate your input as we continue to enhance our programs. Responses to your
recommendations are provided below.

Recommendation #1: To better ensure that federal data center consolidation and optimization
efforts improve government efficiency and achieve cost savings, we recommend that [the
Director of the Office of Personnel Management] take action to address challenges in
establishing, and to complete, planned data center cost savings and avoidance targets for fiscal
years 2016 through 2018.

Management Response:

OPM concurs. OPM is developing plans to expeditiously migrate OPM applications and
systems to two new data centers. The plans will establish the priority and timelines for moving
systems enabling OPM to forecast and complete cost savings and avoidance and to track the
challenges associated with OPM goals.

Recommendation #2: We also recommend that [the Director of the Office of Personnel
Management] take action to improve progress in the data center optimization areas that we
reported as not meeting OMB's established targets, including addressing any additional
challenges.

Management Response:

OPM concurs. OPM is aggressively pursuing the completion of a new data center infrastructure
that will reduce the data center footprint from six to two locations. The migration of OPM
systems to the new data centers will take up to five years to complete starting June 2016. As the

www.opm.gov   Recruit, Retain and Honor a World-Class Workforce to Serve the American People   www.usajobs.gov

migration plans evolve, OPM will be able to collect the data that will assist the agency in improving data center optimization areas identified by OMB.

I appreciate the opportunity to respond to this draft report. If you have any questions regarding our response, please contact Dovarius Peoples, (202) 418 - 9942, Dovarius.Peoples@opm.gov.

Sincerely,

Donna K. Seymour
Chief Information Officer

2

Appendix XVII: Comments from the Social Security Administration

SOCIAL SECURITY
Office of the Commissioner

February 5, 2016

Mr. David A. Powner
Director, Information Technology
United States Government Accountability Office
441 G. Street, NW
Washington, D.C. 20548

Dear Mr. Powner,

Thank you for the opportunity to review the draft report, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established" (GAO-16-323). Please see our attached comments.

If you have any questions, please contact me at (410) 965-0520. Your staff may contact Gary S. Hatcher, Senior Advisor for the Audit Liaison Staff, at (410) 965-0680.

Sincerely,

Frank Cristaudo
Executive Counselor to the Commissioner

SOCIAL SECURITY ADMINISTRATION   BALTIMORE, MD 21235-0001

RECOMMENDATION RESPONSES

Recommendation 1

The Commissioner of the Social Security Administration should take action to improve progress in the data center optimization areas that GAO reports as not meeting OMB's established targets, including addressing any identified challenges.

Response

We agree that we could improve progress in data center optimization. We are transitioning to a new data center. While we undergo this transition, we are working to optimize our utilization to convert our existing NCC to our new NSC. We expect to complete this transition in September 2016.

Once the transition to our new data center is complete, we will have the capability to report on OMB's targets for the related metrics. In addition, we will continue to optimize our Second Support Center through virtualization and consolidation of IT equipment as necessary.

Appendix XVIII: Comments from the U.S. Agency for International Development

February 3, 2016

David A. Powner
Director
Information Technology Management
U.S. Government Accountability Office
44 G Street, NW
Washington, DC 20548

Re: DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings
        Goals Need to Be Established, GAO-16-323

Mr. Powner:

I am pleased to provide the United States Agency for International Development's
(USAID's) formal response to the Government Accountability Office (GAO) draft report entitled
*"DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals
Need to Be Established " (*GAO-16-323).

This letter, together with the enclosed USAID comments, is provided for incorporation as
an appendix to the final report. Thank you for the opportunity to respond to the GAO draft
report and for the courtesies extended by your staff while conducting this audit.

Sincerely,

Angelique M. Crumbly
Assistant Administrator
Bureau for Management

Enclosure: a/s

- 2 -

USAID COMMENTS ON GAO DRAFT REPORT
No. GAO-16-323

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings,

Recommendation 1: We recommend that the USAID Administrator take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response: As shown in Table 8 of this draft report, USAID has met OMB targets for six of eight applicable data center optimization areas. USAID will take action to improve progress in the remaining two areas (core to non-core physical server ratio and full time equivalent ratio), including addressing any identified challenges, so that OMB is satisfied with USAID's submission.

Target Date: February 28, 2017

Appendix XIX: GAO Contact and Staff Acknowledgments

GAO Contact

David A. Powner, (202) 512-9286 or pownerd@gao.gov

Staff Acknowledgments

In addition to the contact named above, individuals making contributions to this report included Dave Hinchman (Assistant Director), Justin Booth, Chris Businsky, Rebecca Eyler, and Jon Ticehurst.

Appendix XX: Accessible Data

Data Tables

Data Table for Highlights line chart. Agency-reported Data Center Consolidation Cost Savings and Avoidances (fiscal years 2011 through 2019)

FY	Cost Savings
2011	0.2
2012	0.3
2013	0.6
2014	0.7
2015	1
2016	1.3
2017	1.1
2018	1.6
2019	1.4

Data Table for Figure 1: Agencies' Total Data Centers and Completed and Planned Closures (fiscal years 2010 through 2019), as of November 2015

	Total
Total number of federal data centers	10,584
Total data centers planned for closure	5,203
data centers closed through fiscal year 2015	3,125
additional centers planned for closure through fiscal year 2019	2,078

Data Table for Figure 2: Agencies' Progress against OMB Data Center Optimization Metric Targets

Core to Non-core Operating System Ratio	6
Core to Non-core Physical Server Ratio	3
Facility Utilization	2
Full Time Equivalent Ratio	12
Power Usage Effectiveness	3
Storage Utilization	5

Virtual Hosts	9
Virtualization Density	7
Virtualized Operating Systems	5

Agency Comment Letters

Text of Appendix II: Comments from the Department of Commerce

Page 1

February 3, 2016

Mr. David A. Powner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

Dear Mr. Powner:

In accordance with 3 I U.S.C. 720, enclosed is the Department of Commerce's statement of actions taken in response to the recommendations in the U.S. Government Accountability Office (GAO) report titled Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established (GAO-16-323, February 2016).

Thank you for your work on this report. The Department agrees with the recommendations and will take steps to implement them. The enclosed statement provides additional information.

If you have any questions, please contact Steven Cooper, the Department's Chief Information Officer, at (202) 482-4797.

Sincerely,

Bruce H. Andrews

Enclosure

<u>Page 2</u>

The Government Accountability Office (GAO) made one recommendation to the Department of Commerce in the report.

Recommendation 1:

GAO recommends DOC take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Commerce Response:

The Department of Commerce agrees with the recommendation and continues to make progress toward the established targets per OMB.

Actions

Commerce will continue to provide quarterly updates on data center consolidation as mandated by the Integrated Data Collection via OMB.

Commerce will continue to improve the progress against OMB's metrics of data center optimization where possible.

Text of Appendix III: Comments from the Department of Defense

<u>Page 1</u>

February 12, 2016

Mr. David Powner

Director, Information Technology

U.S. Government Accountability Office 441 G Street, NW

Washington DC 20548

Dear Mr. Powner:

This is the Department of Defense (DoD) response to the GAO Draft Report GAO-16-323, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established," dated January 7, 2016 (GAO Code 100514).

Attached is DoD's proposed response to the subject report. My point of contact is Bob Brown who can be reached at james.r.brown632.civ@mail.mil and phone (571) 372-4445.

Sincerely,

Terry A. Halvorsen

Page 2

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

RECOMMENDATION 1:

 The GAO recommends that the Secretary of Defense take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

DoD RESPONSE #1:

DoD concurs with the recommendation and understand you have interest in how DoD will address the seven of the nine OMB metric targets for data center optimization.

DoD is considering several actions to more aggressively drive toward established DCC objectives. For instance, DoD is moving toward realization of on-premises and off-premises, commercial cloud hosting services to enable migration of workloads to more efficient environments thus positively affecting the virtualization and density metrics. The DoD CIO is also working directly with the Services to reconcile the instances of multiple Installation Processing Nodes (IPNs) on individual Bases/Posts/Camps/Stations. All of these actions will enable the closure of additional data centers, increase efficiencies in all categories, and drive greater savings.

A specific challenge to DoD is the population of Special Purpose Processing Nodes (SPPNs), which are, by definition, capabilities physically tied to equipment or facilities (i.e., non- severable). SPPNs, therefore, offer very little opportunity for consolidation. In fact, SPPNs typically exist in mixed use facilities (not dedicated DC facilities), making many DC efficiency actions impractical or impossible. Consequently, DoD is pursuing relief from OMB on including SPPN inventory values in metric calculations. DoD will, however, continue to inventory SPPNs and seek to improve efficiencies as practical/possible.

Another challenge for DoD is the lack of investment dollars for new facilities. Having to reuse existing facilities limits the potential for Power Utilization Efficiency (PUE) objective achievement. DoD is implementing energy efficiency measures across its population of Core Data Centers (CDCs) as possible, and DoD is close to the current OMB objective of 1.5.

Finally, DoD has begun using the Program Objective Memorandum (POM) and related Issue Paper processes to realize savings achieved through DCC actions.

Text of Appendix IV: Comments from the Department of Energy

Mr. David Powner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, D.C. 20548

Dear Mr. Pawner:

I am pleased to provide the Department of Energy's (DOE) response to the Government Accountability Office's (GAO) Draft report, "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established (GA0-16-323) ".

GAO issued the following recommendation to DOE: take action to improve progress in the data center optimization process in the data

center optimization areas that t11e reported as not meeting OMB 's established targets, including addressing any identified challenges.

The mission of the Department of Energy is to ensure America's security and prosperity by addressing energy, environmental, and nuclear challenges through transformative science and technology solutions. Carried out at 47 geographically dispersed locations across the United States, the Department 's mission depends on high-energy mission specific facilities that support the pursuit of new and advanced forms of energy, basic science and research , and technologies that will lead to a clean and affordable energy economy. The diversity of the missions dictates diversity in the computing systems and the types of data centers needed to accomplish these missions. The various types of data centers include, for example, Research and Engineering Supercomputers, High Performance Visual and Data Computer Modeling systems, and Data Collection and System Monitoring I SCADA systems.

There are a number of agency-specific factors that should be considered with the FY 20 15 OMB metrics. For example, due to the significant number of scientific computing, data modeling and SCADA systems within DOE, it is not always feasible to consolidate or relocate the computing infrastructure from the geographic locations. Additionally, several performance metrics, such as Virtualization, Data Storage, and Facility Density, are not necessarily relevant to optimization of desired outcomes for these types of computing facilities.

DOE remains committed to the responsible management of its data centers and continually strives to improve the effectiveness and efficiency of its computing systems. Consistent with the requirements of EO 13693, DOE will continue to optimize its data centers through advanced metering and data center facility improvements to lower Power Utilization Effectiveness (PUE).

DOE is currently awaiting formal guidance from OMB on the data center optimization metrics and targets that are required to support the FITARA Data Center Optimization Initiative (DCOI). As of November 19, 20 15, the Federal CIO Council terminated the Data Center Task Force and stated revised guidance will be issued. Additionally, OMB has suspended the data center perf01mance metric updates, pending release of the new guidance. OMB is no longer requiring agencies to rep01i on the performance metrics specified in OMB M-14-08.

Page 2

In preparation for the new OMB guidance, DOE has established an agency-wide Data Center Working Group that is chartered with identifying best practices in data center metering, optimization, consolidation and cloud migration and is supporting these practices throughout DOE. This Working Group is serving as a focus group for communicating FITARA, OMB and GAO information and requirements for data

centers as well as providing summary data center performance status to all members. DOE will develop a detailed implementation plan when the new OMB metrics required under FITARA are established.

If you have any questions, please contact me or Jake Wooley at (301) 903-0992. Sincerely,

Michael Johnson

Chief Information Officer

Text of Appendix V: Comments from the Department of Health and Human Services

Page 1

David Powner

Director, Information Technology Management Issues U .S. Government Accountability Office

441 G Street NW Washington, DC 20548

Dear Mr. Powner:

Attached are comments on the U.S. Government Accountability Office's (GAO) report entitled, "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established"   (GA0-16-323).

The Department appreciates the opportunity to review this report prior to publication.

Sincerely,

Jim R. Esquea

Assistant Secretary for Legislation

Attachment

Page 2

The U.S. Department of Health and Human Services (HHS) appreciates the opportunity from the Government Accountability Office (GAO) to review and comment on this draft report.

GAO Recommendation

GAO recommends that the Secretary of HHS take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

HHS Response

HHS concurs with GAO's recommendation . HHS will work to improve our five optimization metrics that do not currently meet OMB's established targets (facility utilization , power usage effectiveness, storage utilization, virtualization density, and virtualized operating systems) through the new Data Center Optimization Initiative. HHS is awaiting the release of federal standards and guidance to update their approach.

Text of Appendix VI: Comments from the Department of Homeland Security

Page 1

February 3, 2016

David A. Powner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

Re: Draft Report GA0-16-323, "DATA CENTER CONSOLIDATION: Agencies

Making Progress, but Planned Savings Goals Need to Be Established"

Dear Mr. Powner:

Thank you for the opportunity to review and comment on this draft report. The U.S. Department of Homeland Security (DHS) appreciates the U.S. Government Accountability Office's (GAO) work in planning and conducting its review and issuing this report.

The Department is pleased to note GAO's positive acknowledgement of DHS as one of 19 of 24 agencies reporting an estimated total of $2.8 billion in cost savings and avoidances from their data center consolidation and optimization efforts for Fiscal Years (FY) 2011 to 2015. In addition, DHS was recognized as one of four agencies that accounted for the approximately $2.4 billion (86 percent) of the reported estimated savings through FY 2015 and reported approximately $212.58 million in cost savings from FY 2012-2015.

The draft report contained one recommendation for DHS with which the Department concurs. Specifically, GAO recommended that the Secretary of Homeland Security:

Recommendation 1:

Take action to improve progress in the data center optimization areas that we [GAO] repmied as not meeting Office of Management and Budget (OMB) established targets, including addressing any identified challenges.

Response: Concur.

The DHS Office of the Chief Information Officer (OCIO) will continue to improve its progress in achieving the performance metrics for the seven data center optimization areas that did not meet the OMB targets. GAO reported that the Department achieved the targets for both Core to Non-Core Physical Server Ratio and Full-Time Equivalent Ratio. DHS OCIO expects that the virtualization metrics will rise

<u>Page 2</u>

dramatically during FY 2016 and 2017 as Components complete their major physical system migrations and make the determination to move to virtual solutions. DHS OCIO will continue to encourage and assist with the migrations, whether virtual or physical, to support the overall goals of the data center consolidation effort. Further, the Department will work to address the challenges related to Infonnation Technology management within DHS' federated organizational structure and will determine the appropriate steps needed to increase operational efficiency to meet the OMB performance targets.

Estimated Completion Date: November 30, 2016.

Again, thank you for the opportunity to review and comment on this draft report. Technical comments were previously provided under separate cover. Please feel free to contact me if you have any questions. We look forward to working with you in the future.

Sincerely,

Jim R. Crumpacker

Director

Departmental GAO-OIG Liaison Office

Text of Appendix VII: Comments from the Department of Housing and Urban Development

Mr. David A. Powner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

Dear Mr. Powner:

Thank you for the opportunity to comment on the Government Accountability Office (GAO) draft report entitled, Data Center

Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established (GA0-16-323).

The U.S. Department of Housing and Urban Development reviewed the draft report and has no comment. The Department remains committed to maximizing the value of Federal Information Technology which includes promoting the Federal Data Center Consolidation Initiative.

If you have questions or require additional information, please contact Janice Ausby, Deputy Chief Information Officer, Business and IT Resource Management Office, at (202) 402- 7605 or Juanita L. Toatley, Audit Liaison, Audit Compliance Branch,

Rafeal Diaz

Chief Information Officer

Text of Appendix VIII: Comments from the Department of the Interior

Page 1

FEB 4, 2016

Mr. David A. Pawner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548 Dear

Mr. Powner:

Thank you for providing the Depat1ment of the Interior (Depat1ment) the opportunity to review and comment on the draft Government Accountability Office (GAO) Report entitled Data Center Consolidation: Agencies A1aking Progress, but Planned Savings Goals Need to Be Established (GA0-16-323).

We appreciate GAO's review of the progress made by federal agencies to comply with the Office of Management and Budget's (OMB) Federal Data

Center Consolidation Initiative. The GAO concluded that data center consolidation as planned will help agencies continue to increase their operational efficiency and achieve savings. The GAO issued two recommendations to the Department in response to its overall findings. We generally agree with the findings and concur with the recommendations and offer the following responses.

Recommendation 1:

To better ensure that the federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretary of the Department of the Interior take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Response:

The Department has already begun addressing the challenges establishing and completing planned data center cost savings and avoidance targets. The Office of the Chief Information Officer (OCIO) collects information on all DOI data centers on an ongoing basis. Currently the collection includes cost savings and avoidance data for open and closed data centers. DOI will establish planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Recommendation 2:

The Secretary of the Department of the Interior take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response:

The Department is committed to meeting OMB's data center optimization targets. The Department has worked diligently over the past five years to consolidate data centers. The

Page 2

focus is now shifting from data center consolidation to data center optimization. The OCIO is developing data center optimization metrics to

measure bureau and office progress in meeting optimization targets. The optimization metrics will become part of the 2016 OCIO Organizational Assessment, a scorecard used to measure bureau and office progress against predefined targets.

If you have any questions, or need additional information, please contact me.

Kristin J. Sarri

Principal Deputy Assistant Secretary Policy, Management and Budget

Text of Appendix IX: Comments from the Department of State

Page 1

FEB. 6, 2016

Dr. Loren Yager Managing Director

International Affairs and Trade Government Accountability Office 441 G Street, N.W.

Washington, D.C. 20548-0001

Dear Dr. Yager:

We appreciate the opportunity to review your draft report, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established." GAO Job Code 100514.

The enclosed Department of State comments are provided for incorporation with this letter as an appendix to the final report.

If you have any questions concerning this response, please contact

Paula Lee, IT Specialist, Office of Business Management and Planning, Bureau of Information Resource Management at (202) 453-9756.

Sincerely,

Christopher H. Flaggs

Enclosure:

As stated

cc: GAO - David A. Powner IRM - Steven Taylor State/OIG - Norman Brown

Page 2

The Department of State appreciates the opportunity to comment on the draft report "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established."

Recommendation:

To better ensure that federal data consolidation and optimization efforts improve governmental efficiency and achieve cost savings, we recommend that the Secretary of State take action to address challenges in establishing and to complete planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Response:

The Department of State (DOS) concurs with the recommendation of addressing challenges of establishing and completing planned data center cost savings and avoidance targets for fiscal years 2016 through 2018. The Department has developed an approach that includes Department-mandated and previously planned consolidations of data centers, continuation of virtualization efforts, increased usage of Enterprise solutions, and implementation of data center operations policies that will result in efficient data center utilization and reductions overlap and excess costs across DOS data centers.

Recommendation:

We also recommend that the Secretary of State take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response:

The Department concurs with the recommendation, and will work towards meeting established targets, and look forward to working with OMB on their upcoming Federal Data Center Consolidation initiative updates.

Text of Appendix X: Comments from the Department of Transportation

FEB. 2, 2016

David Powner

Director, Information Technology Management Issues

U.S. Government Accountability·Office

441 G Street NW

Washington, DC 20548

Mr. Powner:

The Department of Transportation (DOT) is leveraging its Federal Information Technology Reform Act (FITARA) authorities to further evaluate and validate its data center footprint and associated cost savings. We continue to ensure that data center consolidation and optimization efforts improve efficiency and achieve cost savings. The following exan1ples represent recent activity in this area:

- The Department 's Office of the Chief Information Officer (OCIO) has bolstered its efforts on data center consolidation activities to align with modernization activities including cloud adoption.

- The Federal Aviation Administration (FAA) recently awarded an enterprise-wide FAA Cloud Services contract to develop cloud readiness profiles for suitable applications to drive cloud adoption and facilitate data center consolidation; and

- The OCIO is working with Operating Administrations to ensure data center consolidation efforts support long-term goals to drive cost savings and optimization improvements.

Upon review of the draft report, we concur with the recommendation s regarding addressing challenges in establishing and completing planned data center cost savings and avoidance targets, as well as improving progress in data center optimization . The Department will provide a detailed response to each recommendation within 60 days of the final report's issuance.

We appreciate the opportunity to respond to the GAO draft repo1i. Please contact Madeline M. Chulumovich, Director, Audit Relations and Program Improvement, at (202) 366-6512 with any questions or if you would like to obtain additional details.

Sincerely,

Jeff Marootian

Assistant Secretary for Administration

Text of Appendix XI: Comments from the Department of Veterans Affairs

Page 1

February 12, 2016

Mr. David A. Powner

Director, Information Technology Management Issues

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

Dear Mr. Powner:

The Department of Veterans Affairs (VA) has reviewed the U.S. Government Accountability Office's (GAO) draft report, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established" (GA0-16-323). VA agrees with GAO's conclusions and concurs with GAO's recommendation to the Department.

The enclosure specifically addresses GAO's recommendation in the draft report and provides an action plan. VA also provides technical comments to the draft report.

VA appreciates the opportunity to comment on your draft report.

Sincerely,

Robert D. Snyder

Interim Chief of Staff

Enclosure

Page 2

GAO Recommendation:

GAO recommends that the Secretary of Veterans Affairs take action to improve progress in the data center optimization areas that GAO reported as not meeting OMB's established targets, including addressing any identified challenges.

VA Comment: Concur.

VA is in the process of reassessing its data center optimization strategy and has made significant progress toward key milestones in that process.

As a result of a Pilot project initiated in fiscal year (FY) 2015 to analyze the effectiveness of consolidating small (non-enterprise) data centers across the Department of Veterans Affairs (VA), approximately 70 data centers have been tentatively identified for potential consolidation by the end of FY 2019. Once completed, these consolidations are expected to increase the overall closure rate to approximately 20 percent, which would significantly improve VA's data center current closure rate of approximately 6 percent, while also improving its optimization performance metrics.

VA has noted in past conversations and correspondence with GAO, that the vast majority of VA data centers are located at medical facilities. Many of these data centers contain mission-critical medical device systems. The current (legacy) VA information technology (IT) architecture reflects older concepts that originated at a time when data

center consolidation was not yet mature, and long before the concept of cloud computing was envisioned. The thinking at that time was that these systems must remain in proximity to the medical devices they support (such as medical imaging equipment, critical care monitoring equipment, biomedical equipment, and other medical devices that impact mission-critical medical care services to the Veteran). VA recognizes that this localized, distributed architecture is no longer necessary to support mission-critical systems, yet investment funds for transition to more modern architectures remain very limited. That said, wherever practical, VA will continue to seek opportunities for consolidation of applications hosted at VA medical centers, resulting in a progressively more mature and comprehensive data center consolidation plan that takes full advantage of emerging cloud concepts.

In September 2015, VA established the Service Delivery and Engineering (SOE) Transformation Team to guide and monitor a collection of SOE Optimization Efforts designed to address implementation of multiple cost savings and avoidance measures at the enterprise level. These efforts are aimed at increasing staff efficiency and pilot testing data center optimization improvement opportunities to assure security compliance and cost effectiveness prior to full implementation. As part of this effort, VA has successfully completed multiple, short-term milestones for organizational process changes to improve staff efficiency, has completed additional mid-term milestones (such

Page 3

as implementation of a "Storage on Demand" contract for development), and has initiated multiple other mid-term or longer-term projects· expected to result in continuous improvement and greater data center operations optimization (such as a development application pilot utilizing commercial cloud services to enable technical and financial feasibility assessment). VA's planned timeframe for completing the pilot projects; analyzing the results for Lessons Learned, inherent constraints, and financial feasibility; and for making final recommendations for the road ahead is mid-FY 2017. Due to the incremental strategy employed in reaching that longer-term, decisional milestone, VA expects to be able to report significant cost savings and avoidance along the way.

Text of Appendix XII: Comments from the Environmental Protection Agency

SUBJECT: EPA's Response to GAO Draft Report 16-323. Data Center Consolidation

FROM: Ann Dunkin

Chief Information Officer

TO: David Pawner, Director

Information Technology Management Issues (GAO)

Thank you for providing the Office of Environmental Infom1ation (OEI) with the opportunity to review and comment on GAO's Draft Report 16-323, Data Center Consolidation. This memorandum i s the Environmental Protection Agency's (EPA 's) response to that draft repo11. We have no issues or substantive modifications to this draft report. However, we noted that the sentence on the second page, "Two agencies did not a have basis to report on progress ," should be corrected to place the "a" after "have".

cc: Bob Trent, OCFO

Patricia Randolph Williams, OEI Harrell Watkins, OEI

Tim Thorpe, OEI

Anne Mangiafico. OEI

Text of Appendix XIII: Comments from the General Services Administration

February 17, 2016

The Honorable Gene L. Dodaro

Comptroller General of the United States

U.S. Government Accountability Office Washington, DC 20548

Dear Mr. Dodaro:

The U.S. General Services Administration (GSA) appreciates the opportunity to review and comment on the U.S. Government Accountability (GAO) draft report entitled, Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established   (GA0-16-323).

GSA agrees with the draft report, and acknowledges that improvements are necessary to meet the data center optimization targets. In the last two quarters, we have taken a more aggressive approach to closing data centers by focusing on the infrastructure in three of our regional offices, including Kansas City, Philadelphia, and New York City. We will continue this work through the remainder of the fiscal year and expect those efforts will improve our data center optimization targets.

GSA continues to pursue operational improvements to better serve the American people and plans to implement the recommendations in this report. If you have any additional questions or concerns, please do not hesitate to contact me at the number below or

Ms. Lisa A. Austin, Associate Administrator, Office of Congressional and Intergovernmental Affairs, at (202) 501-0563.

Sincerely,

Denise Turner Roth

Administrator

cc: Mr. David A. Pawner, Director, Information Technology Management Issues, GAO

Text of Appendix XIV: Comments from the National Aeronautics and Space Administration

Page 1

Office of the Chief Information Officer

David A. Powner

Director ·

FEB. 8, 2016

Information Technology Management Issues

United States Government Accountability Office Washington, DC 20548

Dear Mr. Pawner:

The National Aeronautics and Space Administration (NASA) appreciates the opportunity to review and comment on the Government Accountability Office (GAO) draft report entitled, "Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established" (GA0-16-323), dated January 7, 2016.

In the draft report, GAO makes two recommendation addressed to the NASA Administrator intended to better ensure that NASA's data center consolidation and optimization efforts improve efficiency and achieve cost savings. NASA's response to GAO's recommendation , including planned corrective actions, follows:

Recommendation 1:

The NASA Administrator [should] take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Management' s Response: Concur.

NASA has been assessing available Total Cost of Ownership (TCO) models to identify the model that most accurately replicates NASA environment. This was documented in NASA's response to "GAO Initial Questions and Requests Job Code 1000254" in January 2015. We anticipate using the model, which is based inpart on NASA's actual data center inventory, to produce historical approximations of closures that have already taken place as well as creating projections for FY16-FY18.

Estimated Completion Date: NASA expects to generate historical approximations by the third quarter of FY16. NASA anticipates generating FY16-FY18 projections by the fourth quarter of FY16. Estimated completion date: September 22, 2016.

Recommendation 2:

The NASA Administrator [should] take action to improve progress in the data center optimization areas that were reported as not meeting

Page 2

Office of Management and Budget (OMB) established targets, including addressing any identified challenges.

Management' s Response: Concur.

NASA will establish a strategy for improvement for each deficient metric and meet with data center owners to promote and explain these strategies and further educate our data center owners on how to create efficiencies.

Estimated Completion Date: NASA expects that the improvement strategies will be developed by the third quarter of FYI 6. Meetings with data center owners will be targeted for completion during the first quarter of FYI 7.

Estimated completion date: March 30, 2017.

Once again, thank you for the opportunity to review and comment on this draft report. If you have any questions or require additional information, please contact Ruth McWilliams at (202) 358-5I25 .

Sincerely,

Renee Wyn

Chief Information Officer

Text of Appendix XV: Comments from the Nuclear Regulatory Commission

February 3, 2016

Mr. David A. Powner, Director

Information Technology Management Issues

U.S.Government Accountability Office

441 G Street,NW

Washington, D.C.20548 Dear

Mr. Powner:

Thank you for providing the U.S. Nuclear Regulatory Commission (NRC) with the opportunity to review and comment on the U.S. Government Accountability Office's (GAO's) draft report GA0-16-323,"Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established." The NRC staff has reviewed the draft report and has no comments.

If you have any questions regarding this response, please contact John Jolicoeur. Mr. Jolicoeur can be reached by telephone at (301) 415-1642.

Victor Mccree

Executive Director for Operations

Text of Appendix XVI: Comments from the Office of Personnel Management

Page 1

February 9, 2016

Information Technology, Management Issues

U.S. Government Accountability Office

441 G Street, NW

Washington, DC 20548

Dear Mr. Powner:

Thank you for providing us the opportunity to respond to the Government Accountability Office (GAO) draft report, Data Center Consolidation Progress and Savings, GA0-16- , 100514.

We recognize that even the most well run programs benefit from external evaluations and we appreciate your input as we continue to enhance our programs. Responses to your recommendations are provided below.

Recommendation #1:

To better ensure that federal data center consolidation and optimization efforts improve government efficiency and achieve cost savings, we recommend that [the Director of the·Office of Personnel Management] take action to address challenges in establishing, and to complete, planned data center cost savings and avoidance targets for fiscal years 2016 through 2018.

Management Response:

OPM concurs. OPM is developing plans to expeditiously migrate OPM applications and systems to two new data centers. The plans will establish the priority and timelines for moving systems enabling OPM to forecast and complete cost savings and avoidance and to track the challenges associated with OPM goals.

Recommendation #2:

We also recommend that [the Director of the Office of Personnel Management] take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any additional challenges.

Management Response:

OPM concurs. OPM is aggressively pursuing the completion of a new data center infrastructure that will reduce the data center footprint from six to two locations. The migration of OPM systems to the new data centers will take up to five years to complete starting June 2016. As the

Page 2

migration plans evolve, OPM will be able to collect the data that will assist the agency in improving data center optimization areas identified by OMB.

I appreciate the opportunity to respond to this draft report. If you have any questions regarding our response, please contact Dovarius Peoples, (202) 418 - 9942, Do arius.P pl s@opm.gov.

Sincerely,

Donna Seymor

Chief Information Officer

Text of Appendix XVII: Comments from the Social Security Administration

Page 1

February 5, 2016

Mr. David A. Pawner

Director, Information Technology

United States Government Accountability Office 441 G. Street, NW

Washington, D.C. 20548 Dear

Mr. Pawner,

Thank you for the opportunity to review the draft report, "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established" (GA0-16-323). Please see our attached comments.

If you have any questions, please contact me at (410) 965-0520. Your staff may contact Gary S. Hatcher, Senior Advisor for the Audit Liaison Staff, at

(410) 965-0680.

Sincerely,

Frank Cristaudo

Executive Counselor to the Commissioner

Page 2

Recommendation 1

The Commissioner of the Social Security Administration should take action to improve progress in the data center optimization areas that GAO reports as not meeting OMB's established targets, including addressing any identified challenges.

Response

We agree that we could improve progress in data center optimization. We are transitioning to a new data center. While we undergo this transition, we are working to optimize our utilization to convert our existing NCC to our new NSC. We expect to complete this transition in September 2016.

Once the transition to our new data center is complete, we will have the capability to report on OMB's targets for the related metrics. In addition, we will continue to optimize our Second Support Center through virtualization and consolidation of IT equipment as necessary.

Text of Appendix XVIII: Comments from the U.S. Agency for International Development

Page 1

David A. Powner Director

Information Technology Management

U.S. Government Accountability Office 44 G Street, NW

Washington, DC 20548

Re: DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established, GA0-16-323

Mr. Powner:

I am pleased to provide the United States Agency for International Development's (USAID's) formal response to the Government

Accountability Office (GAO) draft report entitled "DATA CENTER CONSOLIDATION: Agencies Making Progress, but Planned Savings Goals Need to Be Established " (GA0-16-323).

This letter, together with the enclosed USAID comments, is provided for incorporation as an appendix to the final report. Thank you for the opportunity to respond to the GAO draft repo1t and for the courtisies extended by your staff while conducting this audit.

Page 2

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings,

Recommendation 1:

We recommend that the USAID Administrator take action to improve progress in the data center optimization areas that we reported as not meeting OMB's established targets, including addressing any identified challenges.

Response:

As shown in Table 8 of thjg draft repo1t, USAID has met OMB targets for six of eight applicable data center optimization areas. USAID will take action to improve progress in the remaining two areas (core to non-core physical server ratio and full time equivalent ratio), including addressing any identified challenges, so that OMB is satisfied with USAID's submission.

Target Date: February 28, 2017

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's website (http://www.gao.gov). Each weekday afternoon, GAO posts on its website newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to http://www.gao.gov and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, http://www.gao.gov/ordering.htm.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

Connect with GAO

Connect with GAO on Facebook, Flickr, Twitter, and YouTube. Subscribe to our RSS Feeds or E-mail Updates. Listen to our Podcasts and read The Watchblog. Visit GAO on the web at www.gao.gov.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Website: http://www.gao.gov/fraudnet/fraudnet.htm E-mail: fraudnet@gao.gov Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Katherine Siggerud, Managing Director, siggerudk@gao.gov, (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548