



May 2017

DATA CENTER OPTIMIZATION

Agencies Need to
Complete Plans to
Address
Inconsistencies in
Reported Savings

Accessible Version

GAO Highlights

Highlights of [GAO-17-388](#), a report to congressional committees

Why GAO Did This Study

In December 2014, IT acquisition reform legislation was enacted that included a series of provisions related to ongoing federal data center consolidation efforts. The legislation required covered agencies to develop data center consolidation strategic plans and report cost savings to OMB. It also included a provision for GAO to annually review agencies' data center inventories and strategies. OMB's Federal Chief Information Officer (CIO) subsequently launched DCOI to build on prior data center consolidation efforts and improve federal data centers' performance.

GAO reviewed agencies' data center closure plans and consolidation savings progress and plans; and evaluated the extent to which agencies' annual consolidation strategic plans are complete. To do so, GAO assessed DCOI agencies' data center inventories, reviewed agencies' reported cost savings documentation, and evaluated their data center optimization strategic plans. GAO also updated its assessments in April 2017 in response to agency comments on its draft report.

What GAO Recommends

GAO is recommending that OMB ensure that agencies complete their DCOI strategic plans and report achieved data center cost savings consistently across all reporting mechanisms. GAO is also recommending that 17 agencies complete their DCOI strategic plans and that 11 agencies ensure the amounts of achieved cost savings are consistent across reporting mechanisms. Twelve agencies agreed with GAO's recommendations, 2 disagreed, and 11 did not state whether they agreed or disagreed, as discussed in the report.

View [GAO-17-388](#). For more information, contact David Powner at (202) 512-9286 or pownerd@gao.gov.

May 2017

DATA CENTER OPTIMIZATION

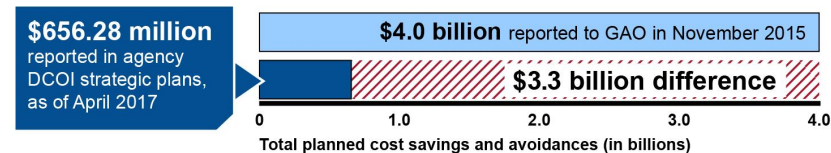
Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings

What GAO Found

The 24 agencies participating in the Office of Management and Budget's (OMB) Data Center Optimization Initiative (DCOI) have made progress on their data center closure efforts. As of August 2016, the agencies collectively had identified a total of 9,995 data centers, of which they reported having closed 4,388 and having plans to close a total of 5,597 through fiscal year 2019. The Departments of Agriculture, Defense, Interior, and Treasury accounted for 84 percent of the completed closures.

In addition, 18 of the 24 agencies reported achieving about \$2.3 billion collectively in cost savings and avoidances from their data center consolidation and optimization efforts from fiscal year 2012 through August 2016. The Departments of Commerce, Defense, Homeland Security, and Treasury accounted for approximately \$2.0 billion (or 87 percent) of the total. Further, 23 agencies reported about \$656 million collectively in planned savings for fiscal years 2016 through 2018. This is about \$3.3 billion less than the estimated \$4.0 billion in planned savings for fiscal years 2016 through 2018 that agencies reported to GAO in November 2015. (See figure.)

Comparison of Fiscal Years 2016-2018 Planned Cost Savings and Avoidances Reported to GAO in November 2015 to Publicly Available Agency DCOI Strategic Plans in April 2017



Source: GAO analysis of agency data. | GAO-17-388

This reduction in planned savings is the result of eight agencies reporting less in planned cost savings and avoidances in their annual DCOI strategic plans, which are required by December 2014 information technology (IT) acquisition reform legislation, as compared to the savings these agencies previously reported to GAO in November 2015. The reduction also does not include cost savings information for one agency that had not submitted its strategic plan in time for our review. GAO has previously recommended that agencies fully report these savings.

Additionally, as of April 2017, 23 of the 24 agencies had submitted a strategic plan. Of the 23 plans, only 7 included all required information. The remaining plans either partially met or did not meet the requirements. Until agencies submit plans that address all required elements, they may be challenged in implementing the data center consolidation and optimization provisions of the legislation. GAO also identified inconsistencies in how 11 agencies reported historical cost savings in their DCOI strategic plans, as compared to a separate required quarterly report to OMB. These inconsistencies, due in part to weaknesses in OMB's oversight of agencies' savings information and their DCOI strategic plan, resulted in a reporting discrepancy of approximately \$1.5 billion between the two sources. Until OMB improves its oversight of agencies' reporting of cost savings, and until agencies address inconsistencies in their reporting, the likelihood of further reporting errors is increased.

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Abbreviations

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

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May 18, 2017

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 improved their information security profiles, their need for computing power and data storage resources has grown. Accordingly, this growing demand has 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 to reduce the growing number of centers.

Congress has also recognized the importance of reforming the government-wide management of IT, and in December 2014, enacted Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) 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 specific requirements related to federal data center consolidation:²

- Covered departments and agencies (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
- OMB shall develop and make publicly available a goal, broken down by year, for the amount of planned cost savings and optimization

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).

²Pub. L. No. 113-291 § 834, 128 Stat. 3444 – 3448 (44 U.S.C. 3601 note). Unless otherwise noted, these requirements apply to the 24 agencies specified in section 834 (corresponding to those agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b)).

³In 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).

improvements achieved through FDCCI, and, for each year thereafter through October 1, 2018, compare progress against those goals.

In addition, FITARA includes a provision for us to annually review and verify the quality and completeness of covered agency federal data center inventories and strategies for consolidation. The specific objectives of this report 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) evaluate the extent to which agencies' annual strategic plans for data center consolidation and optimization are complete.

On December 19, 2016, we delivered a briefing to congressional committees on the results of our study. This report officially transmits the results of our review.

To perform this work, we assessed the data center inventories of the 24 agencies participating in the Data Center Optimization Initiative (DCOI) (which are the same agencies covered by FITARA's data center consolidation provisions) as of August 2016, reviewed agency-reported cost savings and avoidance documentation as of August 2016, and evaluated the extent to which agencies' data center optimization strategic plans (as of December 2016) provided the key elements identified in OMB's memorandum implementing FITARA. The briefing slides included in appendix I provide greater detail on our scope and methodology. Further, this report includes updated information provided to us by the agencies we reviewed, as part of their comments on a draft copy of the report.

We conducted this performance audit from July 2016 to May 2017 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.

As noted above, FITARA requires 24 agencies to submit to OMB a comprehensive inventory of the data centers owned, operated, or maintained by or on behalf of the agency. It also requires agencies to report on data center consolidation and optimization progress. Subsequent to the enactment of FITARA, in August 2016, the Federal CIO announced in a memorandum the DCOI as a successor effort to

FDCCI.⁴ According to OMB, this new initiative supersedes and builds on the results of FDCCI and is intended to improve the performance of federal data centers in areas such as facility utilization and power usage. Among other things, DCOI requires 24 federal agencies⁵ to develop plans and report on strategies (referred to as DCOI strategic plans) to consolidate inefficient infrastructure, optimize existing facilities, improve security posture, and achieve cost savings. Through its August 2016 memorandum, OMB defines a framework for achieving specific data center consolidation and optimization requirements, the criteria for successful agency data center strategies, and the metrics OMB will use to evaluate the success of those strategies.

The guidance also revised the definition of a physical data center to include any room with at least one server that provides services (such as testing and development).⁶ In light of this new definition, OMB directed all agencies to perform a comprehensive review of their data centers and maintain a complete and updated data center inventory.

In summary, the agencies have collectively made progress on their data center closure efforts. Specifically, as of August 2016, the agencies had identified a total of 9,995 data centers, of which they reported closing 4,388. The Departments of Agriculture, Defense, Interior, and Treasury accounted for 84 percent of the completed closures.

Further, the agencies collectively reported that they are planning to meet OMB's fiscal year 2018 consolidation targets to close 25 percent of tiered

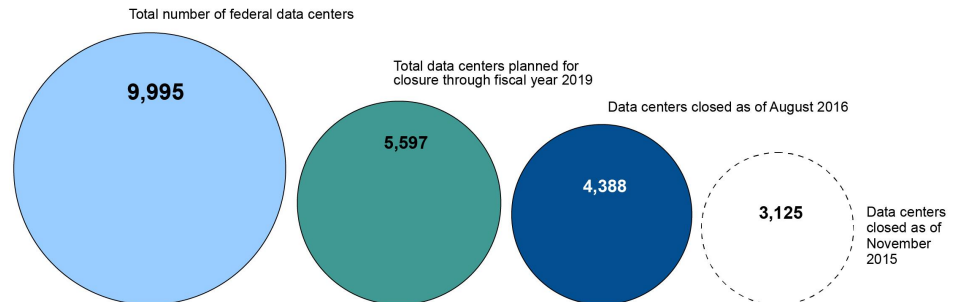
⁴OMB, *Data Center Optimization Initiative (DCOI)*, Memorandum M-16-19 (Washington, D.C.: Aug. 1, 2016).

⁵The 24 agencies that are required to participate in DCOI are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Justice, Labor, State, Transportation, 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.

⁶According to the revised definition, a room with at least one server that provides services (whether in a production, test, staging, development, or any other environment) is to be considered a data center, while a room containing only print servers, routing equipment, switches, security devices (such as firewalls), or other telecommunication components, shall not be considered a data center.

data centers⁷ and 60 percent of non-tiered centers.⁸ Specifically, as of August 2016, our analysis of the agencies' data center inventories showed that they were planning to close approximately 25 percent of the government-wide total of tiered data centers and approximately 66 percent of the government-wide total of non-tiered centers by the end of fiscal year 2018. When accounting for additional closures expected in fiscal year 2019, the agencies reported that they plan to close a total of 5,597 centers. Figure 1 provides a summary of the 24 agencies' total data centers and completed and planned closures.

Figure 1: Reported Number of Data Centers and Completed and Planned Closures for the 24 Agencies (fiscal years 2010 through 2019), as of August 2016



Source: GAO analysis of agency data. | GAO-17-388

Additionally, FITARA and OMB's guidance require the DCOI agencies to provide yearly estimates of cost savings. FITARA contains a series of requirements for OMB and agencies related to reporting on cost savings. For example, according to the law, agencies are to submit a multi-year

⁷According to OMB's August 2016 memorandum, M-16-19, a tiered data center uses each of the following: a separate physical space for IT infrastructure, an uninterruptible power supply, a dedicated cooling system or zone, and a backup power generator for a prolonged power outage. According to OMB, all other data centers shall be considered non-tiered.

⁸In December 2016, OMB stated that its methodology for assessing agencies' progress in meeting the fiscal year 2018 closure targets in OMB M-16-19 (i.e., 25 percent of tiered data centers and 60 percent of non-tiered centers) differs from the methodology that we used in our assessment. Specifically, OMB stated that it publicly posted fiscal year 2018 tiered and non-tiered closure targets for agencies on the IT Dashboard and that those closure targets do not always reflect the exact percentages of the closure targets in OMB M-16-19. This is due to accounting for specific agency circumstances and inventory changes since the start of DCOI, such as data centers that changed tiered classification. Further, OMB noted that it measures agencies' progress against the targets on the IT Dashboard using the number of data centers closed since DCOI began (versus the start of FDCCI in 2010).

strategy for achieving the consolidation and optimization of data centers that includes year-by-year calculations of investment and cost savings through fiscal year 2018.

OMB's August 2016 guidance⁹ also provides additional information regarding how agencies should implement the requirements of FITARA, including how to report cost savings and avoidances.¹⁰ Specifically, covered agencies are to establish a strategic plan that includes information on historical cost savings and avoidances due to data center consolidation and optimization through fiscal year 2015. In addition, OMB's guidance states that agency strategic plans are to include year-by-year calculations of target and actual agency-wide spending and cost savings on data centers from fiscal years 2016 through 2018. OMB has also required agencies to report both their data center consolidation cost savings and avoidances, among other areas, as part of OMB's quarterly data collection process known as the integrated data collection.¹¹

Accordingly, 18 of the 24 agencies collectively reported achieving an estimated \$2.3 billion in cost savings and avoidances from their data center consolidation and optimization efforts from the start of fiscal year 2012 through August 2016. The Departments of Commerce, Defense, Homeland Security, and Treasury accounted for approximately \$2.0 billion (or 87 percent) of the total.

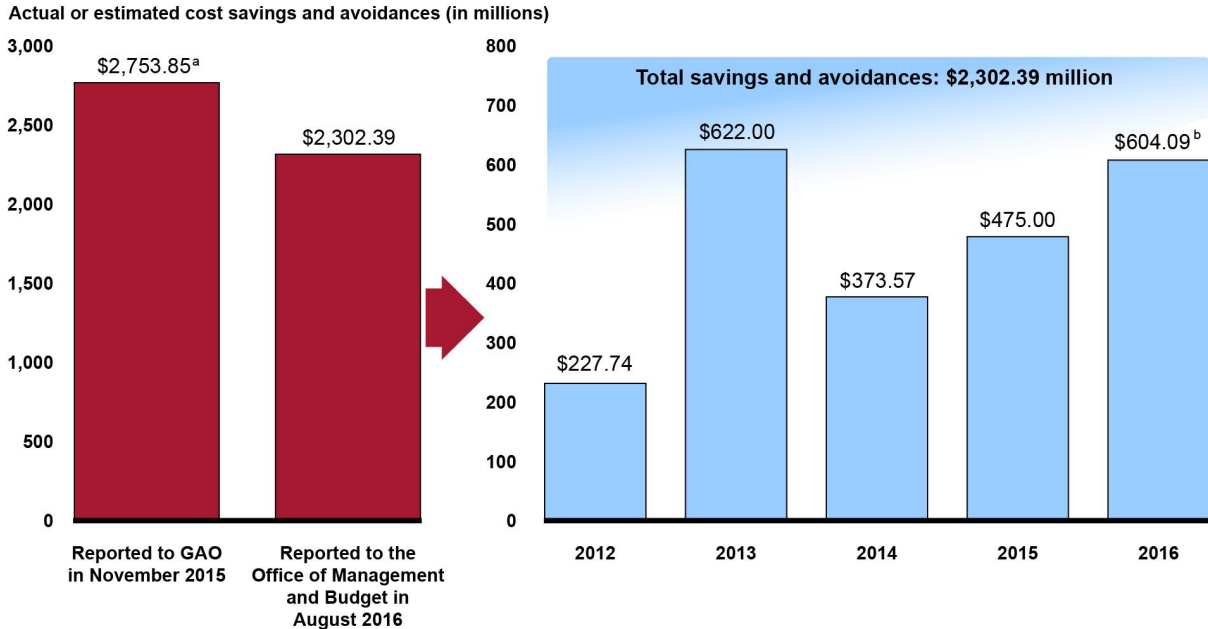
The approximately \$2.3 billion in cost savings and avoidances reported to OMB are about \$451 million less than the total amount of achieved cost savings and avoidances that agencies reported to us in November 2015, even though agencies had 9 additional months to accrue additional savings. Figure 2 provides a comparison of the total cost savings and avoidances agencies reported to us in November 2015 with the achieved cost savings and avoidances that agencies reported to OMB in August 2016.

⁹OMB, Memorandum M-16-19.

¹⁰OMB defines cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defines cost avoidances as results from an action taken in the immediate time frame that will decrease costs in the future.

¹¹*Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management* Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013).

Figure 2: Comparison of the Total Data Center Consolidation Cost Savings and Avoidances Reported to GAO in November 2015 with the Amount Reported to OMB in August 2016



Source: GAO analysis of agency data. | GAO-17-388

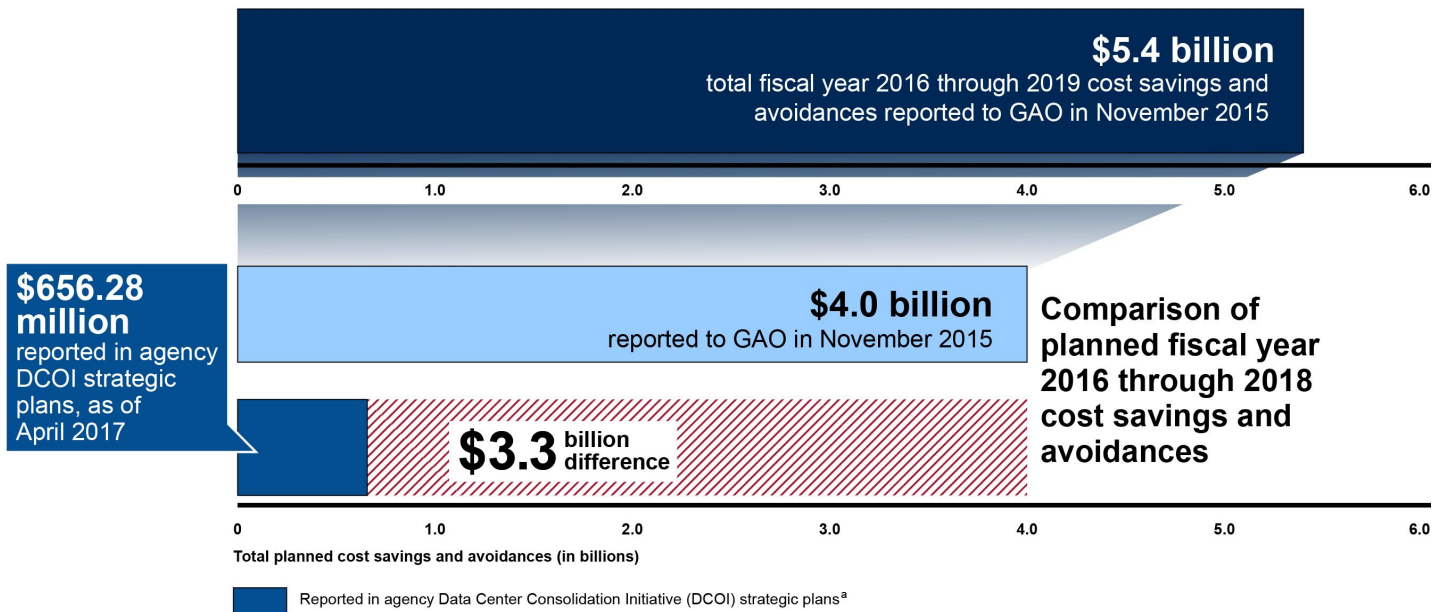
^aThis figure includes approximately \$191 million in fiscal year 2011 savings; however, OMB only requires the reporting of fiscal year 2012 through 2016 savings and avoidances. Therefore, these savings are not accounted for in the total reported to OMB.

^bReflects cost savings and avoidances achieved through August 2016.

In addition, agencies are planning a total of approximately \$656 million in savings between fiscal years 2016 and 2018, according to their DCOI strategic plans. However, this is about \$3.3 billion less than the approximately \$4.0 billion in fiscal year 2016 through 2018 planned savings that agencies reported to us in November 2015. This is also about \$2.1 billion less than OMB’s \$2.7 billion cost savings goal for agencies to achieve by the end of fiscal year 2018, as required by OMB’s August 2016 memorandum.¹² Figure 3 presents a comparison of the amounts of cost savings and avoidances reported by agencies to OMB through their DCOI strategic plans and the amounts the agencies reported to us.

¹²OMB, Memorandum M-16-19.

Figure 3: Comparison of Planned Cost Savings and Avoidances Reported to GAO in November 2015 to Agency DCOI Strategic Plans, as of April 2017



Source: GAO analysis of agency data. | GAO-17-388

^aOMB does not require the reporting of fiscal year 2019 cost savings and avoidances in agency DCOI strategic plans.

^bThis figure includes data from updated plans, submitted after our December 19, 2016, briefing, by the Departments of Agriculture, Education, Energy, Homeland Security, Justice, and Veterans Affairs, the General Services Administration, and the Office of Personnel Management, in response to receipt of a copy of our draft report for comment.

The reduction in planned savings reflects eight agencies reporting less planned cost savings and avoidances in their DCOI strategic plans compared to the savings amounts previously reported to us in November 2015. It also reflects the absence of cost savings information for one agency that had not submitted its strategic plan in time for our review.

Further, in March 2016, we reported¹³ that 10 agencies had not established planned cost savings goals for fiscal years 2016 through 2018 even though they had closures planned during that time period. We concluded that, until agencies complete their savings goals, total planned savings amounts may be understated and agencies will not be able to

¹³*Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established [Reissued on March 4, 2016]*, GAO-16-323 (Washington, D.C.: Mar. 3, 2016).

fully satisfy requirements regarding data center consolidation. Accordingly, we recommended that these agencies complete their planned data center cost savings targets for fiscal year 2016 through 2018. Most agencies agreed with the recommendations or had no comments.

Nonetheless, agencies continue to be challenged in identifying and reporting their cost savings. In the absence of consistent and full reporting of fiscal year 2016 through 2018 planned savings in agencies' DCOI strategic plans, as required by FITARA and OMB, agencies' total planned savings will likely continue to be understated. Therefore, we are re-emphasizing the need for agencies to implement our prior recommendation to complete their planned data center cost savings targets.

Finally, as noted earlier, FITARA required agencies to submit a multi-year strategy to achieve the consolidation and optimization of their data centers no later than the end of fiscal year 2016. Among other things, this strategy was to include such information as data center consolidation and optimization metrics; and year-by-year calculations of investment and cost savings through October 1, 2018.

Further, OMB's August 2016 guidance contained additional information for how agencies are to implement the strategic plan requirements of FITARA. Specifically, the guidance stated that agency DCOI strategic plans are to include, among other things, planned and achieved performance levels for each optimization metric; calculations of target and actual agency-wide spending and cost savings on data centers; and historical cost savings and cost avoidances due to data center consolidation and optimization. OMB's guidance also stated that agencies were required to publicly post their DCOI strategic plan to their agency-owned digital strategy website by September 30, 2016.

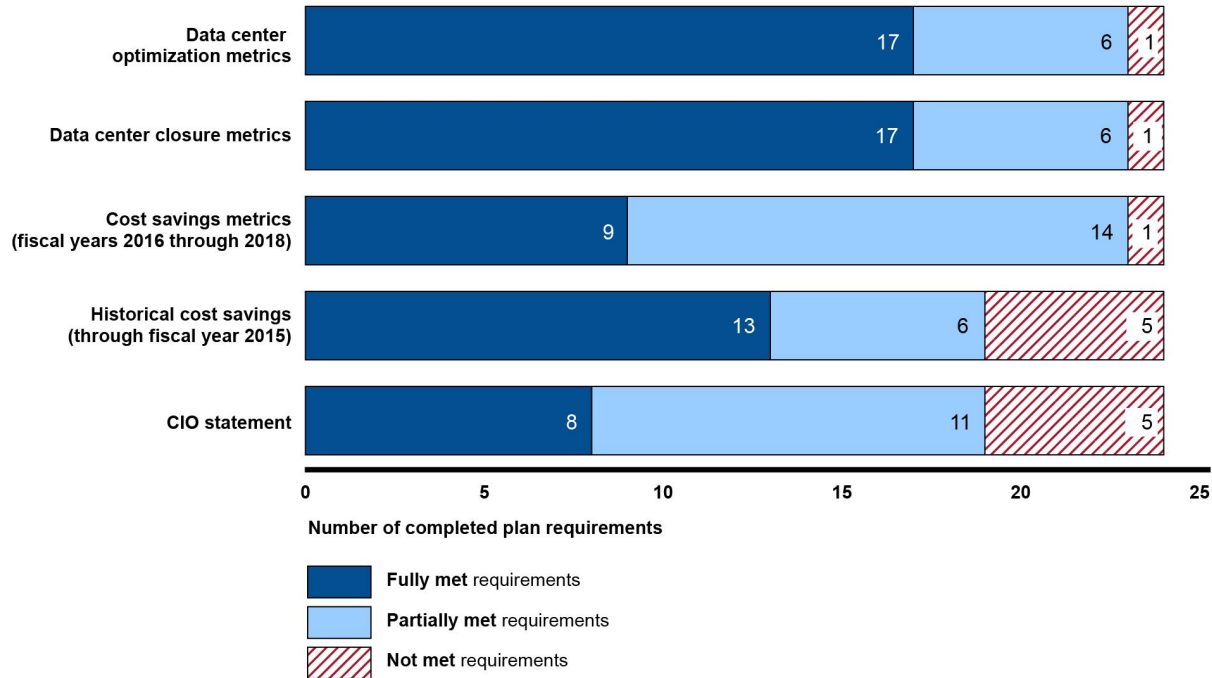
Of the 23 agencies that submitted their DCOI strategic plans,¹⁴ only 7—the Departments of Agriculture, Education, Homeland Security, and

¹⁴After the delivery of our December 2016 briefing, the Departments of Energy and Homeland Security and the Office of Personnel Management provided us with copies of their plans. The Departments of Agriculture, Education, Justice, and Veterans Affairs, and the General Services Administration provided updated plans after reviewing a draft copy of our report. This summary includes the results of our analysis of those plans. The Department of Defense did not submit a plan to us.

Housing and Urban Development, the General Services Administration, the National Science Foundation, and the Office of Personnel Management—had addressed all five elements required by the OMB memorandum implementing FITARA; the remaining 16 either partially met or did not meet the requirements. For example, most agencies partially met or did not meet the requirements to provide information related to data center closures and cost savings metrics. Figure 4 provides an assessment of the completeness of agencies' data center optimization plans, by key element.

Figure 4: Agencies' Completion of Required Information for Data Center Optimization Plan Elements, as of April 2017

Data center consolidation and optimization strategic plan elements



Source: GAO analysis of agency data. | GAO-17-388

Note: This figure includes data from updated plans submitted after our December 19, 2016, briefing by the Departments of Agriculture, Education, Energy, Homeland Security, Justice, and Veterans Affairs, the General Services Administration, and the Office of Personnel Management, in response to receipt of a copy of our draft report for comment. The Department of Defense did not submit a plan and was rated as not met for each element.

Our analysis of the agencies' DCOI strategic plans determined that most of the agencies that submitted a plan met OMB's requirements for

providing planned data center optimization, closure, and savings goals. However, agencies' DCOI strategic plans are also required¹⁵ to include achieved performance levels for each OMB optimization metric, closures, and actual cost savings. Our analysis showed that most plans did not provide information on progress achieved in these areas for fiscal year 2016.

Agencies provided a variety of reasons for why their plans were incomplete, including the difficulty of reporting on fiscal year 2016 actual savings and closures when the data are not yet finalized and the receipt of incomplete data from some agency components. However, although the DCOI strategic plans were due to OMB on September 30, 2016 (before the fiscal year ended), agencies could still have reported achieved progress information in their plans. For example, agencies report data related to fiscal year 2016 achieved optimization progress, closures, and cost savings through other OMB reporting mechanisms, such as the quarterly data submissions, which could have been included in their DCOI strategic plan. Until agencies address the missing elements in their DCOI strategic plans, they will be at risk of not realizing anticipated savings, improved infrastructure utilization, and energy efficiency; they also may not be able to satisfy requirements regarding data center consolidation and optimization.

Since 2013, OMB has required agencies to provide quarterly data submissions that report on their data center consolidation related cost savings and avoidances.¹⁶ As noted above, OMB's August 2016 memorandum also required agencies to report on historical data center-related cost savings in their DCOI plans, which were due in September 2016. In our December 2016 briefing, we reported that, in comparing the August 2016 quarterly data, which at the time were the most recent data available, and the historical savings in the DCOI plans, we identified inconsistencies in the reporting of historical cost savings by agencies across those two reporting mechanisms. Specifically, we found that of the 24 agencies, 9 consistently reported savings information in their DCOI strategic plans and their August 2016 quarterly reports to OMB, 11 agencies did not report consistent information, and 4 agencies (the Departments of Defense, Energy, and Homeland Security, and the Office of Personnel Management) did not submit their DCOI strategic plans.

¹⁵OMB, Memorandum M-16-19.

¹⁶OMB, Memorandum M-13-09.

These inconsistencies resulted in a discrepancy totaling approximately \$1.5 billion between the two mechanisms, and were due, to incomplete data in the DCOI strategic plans that agencies submitted. Subsequently, after receiving a draft copy of this report for comment, three of the four agencies (the Departments of Energy and Homeland Security and the Office of Personnel Management) provided us with a copy of their strategic plan.

According to staff in OMB's Office of the Federal CIO, the OMB staff who review agency budget submissions also worked with the agencies to ensure that they provided complete savings information in their DCOI strategic plan. However, several agencies' DCOI strategic plans did not include the fiscal year 2012 through 2015 savings that were reported in their August 2016 quarterly cost savings update. Further, we identified several instances in which agencies' plans had underreported their planned cost savings and avoidances. We also found other errors in agencies' quarterly data reporting, such as incorrectly categorized data center savings due to initiatives that were incorrectly marked as being data center-related. Until OMB improves its oversight of agencies' reporting of cost savings, and agencies ensure that their savings information is consistent across all reporting mechanisms, the likelihood of further reporting errors is increased. Additionally, until OMB improves its oversight of the information in agencies' DCOI strategic plans, it may be challenged in demonstrating that DCOI is meeting its established objectives.

Conclusions

Continuing to build on progress made under FDCCI, agencies have reported significant data center closures—totaling more than 4,300 through August 2016—and current plans identify more than 1,200 additional centers planned for closure through fiscal year 2019. If executed as planned, such closures will help agencies continue to increase their operational efficiency and achieve savings. Agencies have also reported significant consolidation and optimization cost savings and avoidances. However, agencies' total planned cost savings are \$3.3 billion less than what we reported in 2015. In the absence of planned savings that remain consistent and fully reported, total planned savings are likely to continue to be understated.

OMB's recent guidance on data center optimization was a positive step forward in providing agencies with the detailed guidance to establish their

required strategic plans to optimize their data centers and achieve cost savings. However, not all agencies have submitted their plans and only seven of the plans submitted addressed all the key elements required by FITARA and OMB. Moreover, significant inconsistencies in agencies' reported savings raise further questions regarding the accuracy of agency reporting and OMB's oversight of this initiative. Addressing these inconsistencies and expeditiously completing these plans is increasingly important in order to meet the federal requirements. Until OMB improves its oversight of the information in agencies' strategic plans, and agencies complete the missing elements, they may be challenged in fully implementing the data center consolidation and optimization provisions of FITARA. Further, until OMB improves its oversight of agencies' reporting of cost savings and agencies address inconsistencies in their reporting, savings will likely continue to be underreported.

Recommendations for Executive Action

To better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, we are making two recommendations to OMB. Specifically, we recommend that the Director of OMB direct the Federal CIO to provide the necessary oversight to

- ensure that each agency completes their DCOI strategic plan in accordance with OMB's guidance implementing FITARA and
- ensure that agency reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans.

We also recommend that the following 17 agencies (the Secretaries of the Departments of Commerce, Defense, Energy, Health and Human Services, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; and the Administrators of the Environmental Protection Agency, National Aeronautics and Space Administration, Small Business Administration, and U.S. Agency for International Development; the Chairman of the Nuclear Regulatory Commission; and the Commissioner of the Social Security Administration) each take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Finally, we recommend that the following 11 agencies (the Secretaries of the Departments of Commerce, Education, Health and Human Services, Interior, Labor, State, Transportation, and Treasury; the Administrators of the Environmental Protection Agency, General Services Administration, and the U.S. Agency for International Development) also each take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Agency Comments and Our Evaluation

We received comments on a draft of this report from OMB and from the 24 agencies that we reviewed. Of these, 12 stated they agreed with our recommendations, 2 (the Department of Housing and Urban Development and the Nuclear Regulatory Commission) did not agree, and 11 (including OMB) did not state whether they agreed or disagreed. Multiple agencies also provided technical comments, which we have incorporated as appropriate. The following discusses each agency's comments.

- In an e-mail received on April 5, 2017, a staff member from OMB's Office of General Counsel did not agree or disagree with our recommendation, and offered several comments on our findings. Specifically, the staff member stated that OMB was unable to replicate our totals of the number of data centers closed and remaining. The staff member also noted that we did not include agency cloud service providers or data centers with no closing date in our totals, whereas OMB includes such instances in its counts. In conducting our analysis, we did not count cloud service providers because OMB's guidance specifically states that such providers are not to be considered as data centers. In regard to data centers identified as planned for closure, but without a closing date, we did not count such facilities as closures because the lack of a date suggested only a tentative plan, rather than a firm commitment.

The staff member further stated that OMB could not replicate our cost savings estimates and noted that while OMB relied solely on information reported by agencies to the IT Dashboard, we also had access to contextual information about the data, provided to us by the agencies. The staff member asserted that OMB did not have access to that same information. However, the contextual information referenced by the staff member is only amplifying information we obtained from the agencies through the normal course of our audit

work, as we interviewed agency officials in order to verify the information reported by the agencies to OMB and to verify the results of our analyses. On multiple occasions, our work has pointed out the differences in what agencies are reporting to OMB and what they are reporting to us, and we have made multiple recommendations for OMB and agencies to address these discrepancies. For this reason, we requested and received agencies' validation of the results of our analysis of agency closures and cost savings on multiple occasions. As such, we stand by the results of our analysis and the data center closures and cost savings estimates that we are reporting.

Additionally, the staff member stated that grouping together in one category the agencies that had not fully completed all the required elements of their DCOI strategic plans ignored significant quality differences between the plans, as well as shared problems with each of them. Our report currently summarizes that seven agencies addressed all required plan elements, but that 17 other agencies either partially met or did not meet the requirements. Our report also provides a graphic that illustrates the number of agencies that met, partially met, or did not meet each requirement. Further, the briefing slides that we are transmitting with this report (found in appendix I) detail the extent to which individual agencies completed their strategic plans and also discuss reasons why agencies were unable to complete their plans, including shared challenges. As such, we maintain that the statement in our report appropriately summarizes the findings detailed in our briefing.

- In an e-mail received on April 3, 2017, a senior advisor in the Department of Agriculture's Office of the CIO stated that the CIO concurred with our recommendation that the department had taken action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submitted the completed strategic plan to OMB. The advisor noted that the department had updated its DCOI strategic plan to include fiscal year 2016 achievement information and posted its revised plan. In addition, the advisor said that the department had posted its CIO statement asserting that the agency has complied with all reporting requirements in OMB's memorandum and the data center requirements of FITARA.

Our analysis of the department's updated DCOI strategic plan concluded that the plan included the missing elements we identified during our review. We also confirmed that the department's CIO statement was available publicly on the department's website. As a result, we have removed this recommendation from our report. In

addition, the department provided technical comments, which we have incorporated as appropriate.

- In written comments, the Department of Commerce agreed with our recommendations and described planned actions to address them. Specifically, the department stated that it will continue to aggregate its data center inventory and update its DCOI strategic plan by OMB's April 17, 2017, submission deadline. The department also stated that it will, through the integrated data collection process, continue to collect and report all initiatives resulting in cost savings and avoidances to ensure IT savings are being captured and realized. The Department of Commerce's comments are reprinted in appendix II.
- In an e-mail received on March 27, 2017, a Department of Defense CIO audit liaison stated that the department had no comment on the draft report, and did not state whether the department agreed or disagreed with the recommendations. The department provided technical comments, which we have incorporated as appropriate.
- In written comments, the Department of Education did not agree or disagree with our recommendations but acknowledged that the department had not included historical cost savings and avoidance information in its DCOI strategic plan, as required. The department attributed the omission to its interpretation of DCOI strategic plan guidance, and provided a life cycle cost estimate, rather than the required historical cost savings through 2015. The department stated that it has subsequently corrected its strategic plan, and it provided us with a copy of the plan.

Our draft report provided to the department for comment included a recommendation that the department take action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. Our analysis of the department's updated DCOI strategic plan states that it includes the missing elements we identified during our review. We also confirmed that the department's CIO statement was available publicly on the department's website. As a result, we have removed this recommendation from our report. The Department of Education's comments are reprinted in appendix III.

- In written comments, the Department of Energy concurred with our recommendation that it take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. The department stated that it had submitted its fiscal year 2016 DCOI strategic plan to OMB in February 2017 and posted a copy on an

agency web site. The department further said that in the plan, it reported meeting or exceeding all fiscal year 2016 goals and established performance targets for fiscal years 2017 and 2018, and that the plan included all past and present cost savings and avoidances achieved. Further, the department noted that it expects to complete a comprehensive inventory of its data centers by the release date for the fiscal year 2017 DCOI strategic plan in April 2017.

Our analysis of the department's updated strategic plan found that it includes most of the missing elements we identified during our review. For example, it includes target optimization, closure, and savings metrics for fiscal years 2016 through 2018 and achieved data for those metrics for 2016. However, the plan does not include the costs of closures and optimization, two key components of OMB's required cost savings metric. In the updated plan, the department states that it intends to include such information in the next plan update. Because the department's updated DCOI strategic plan did not include the costs of closures and optimization, we maintain that the recommendation is still valid. The Department of Energy's comments are reprinted in appendix IV.

- In an e-mail received on April 3, 2017, a Department of Health and Human Services audit liaison stated that the department had no comments on the draft report, and did not state whether the department agreed or disagreed with our recommendations.
- In written comments, the Department of Homeland Security concurred with our recommendation that it take action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submit the completed plan to OMB. The department stated that, in March 2017, its Office of the Chief Information Officer finalized its DCOI strategic plan and uploaded it to an agency web page, as directed by OMB. The department further noted that the plan contained all required elements and discussed challenges identified by the department. Finally, the department said that its DCOI metrics and its CIO certification had been uploaded to the web page, as well.

Our analysis of the department's updated DCOI strategic plan found that it includes the missing elements we identified during our review. We also found that the department's CIO statement was available publicly on the department's website. As a result, we have removed this recommendation from our report. In addition, the department provided technical comments, which we have incorporated as appropriate. The Department of Homeland Security's comments are reprinted in appendix V.

- In written comments, the Department of Housing and Urban Development disagreed with our recommendation to take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and to submit its completed strategic plan to OMB. Specifically, the department requested that it be removed from the list of agencies that had not completed elements in their strategic plan. The department noted that its data center consolidation efforts were complete and associated cost savings realized at least 10 years prior. Consequently, the department had completed the estimated savings section of its plan as "not applicable," an option provided by OMB.

After further review of the department's DCOI strategic plan, we agree with the department's assertion that it provided a complete plan. As a result, we have removed this recommendation from our report.

The department also pointed to multiple locations in the report where it stated we had inaccurately assessed the state of its data center consolidation efforts and associated savings, and the completeness of the department's DCOI strategic plan. However, all of the specific instances cited by the department are found in appendix I of this report, which is a briefing that we delivered to Congress on December 19, 2016. Before we delivered our briefing, the department was provided two separate opportunities to comment on the facts and findings contained in our briefing. Specifically, on November 21, 2016, we provided the department with a copy of the briefing for factual correction and on December 6, 2016, we provided a copy of the briefing for comment on the conclusions and recommendations. In response to our first request, a departmental liaison replied on November 30, 2016, that the department had no factual corrections to the briefing. The department did not respond to our second request, despite several attempts that we made to obtain its comments.

The department did not raise these concerns over the factual statements in our briefing until its March 29, 2017, written comments on the draft copy of this report. As this report serves to publish our briefing that was delivered to Congress in December 2016, we have not revised the contents of the briefing that is re-printed in appendix I. However, as noted, we have re-evaluated our characterization of the department's strategic plan that is found in the body of this report, have updated our assessment of the completion of the plan, and removed our recommendation. The Department of Housing and Urban Development's comments are reprinted in appendix VI.

- In written comments, the Department of the Interior agreed with our recommendations and stated that it would take action to complete the

missing items in its DCOI strategic plan, including addressing any identified challenges, and would submit the completed plan to OMB. The department also said it would ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans. The Department of the Interior's comments are reprinted in appendix VII.

- In an e-mail received March 28, 2017, an audit liaison specialist in the Justice Management Division of the Department of Justice stated that the department had no formal comments on the draft report. The liaison also did not state whether the department agreed or disagreed with our recommendation that it take action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. However, the liaison did provide us a copy of an updated DCOI strategic plan and a copy of the department's CIO statement.

Our analysis of the department's updated DCOI strategic plan determined that it includes most of the missing elements we identified during our review. For example, it includes the achieved data values for optimization metric performance, data center closures, and data center consolidation and optimization-related cost savings for fiscal year 2016. We also found that the department's CIO statement was available publicly on the department's website.

Nevertheless, while the updated DCOI plan provides a description of costs for data center consolidations and optimization in fiscal year 2016, it does not provide dollar amounts for the data center investments. Further, while we recognize that the updated plan addresses the majority of the requirements, the department did not include the dollar amounts for its fiscal year 2016 investments in data center consolidation and optimization, as required by OMB's guidance on the implementation of FITARA. Thus, we maintain that our recommendation is still valid. The department also provided technical comments, which we incorporated as appropriate.

- In an e-mail received on April 3, 2017, a Department of Labor audit liaison stated that the department's technical staff had no comments on the draft report and did not state whether the department agreed or disagreed with our recommendations.
- In written comments, the Department of State agreed with our recommendations and described planned actions to address them. Specifically, the department described plans to acquire, subject to funding availability, automated monitoring tools for its enterprise data

centers. It also described plans to engage OMB to rebaseline the closure target for its non-tiered data centers located outside the United States, based on the department's mission needs. In addition, the department noted that it is in the process of identifying the number of server rooms in the United States that meet the DCOI definition of a data center. The department also reaffirmed its commitment to include updated data center closures and cost savings information in its DCOI strategic plan. The Department of State's comments are reprinted in appendix VIII.

- In an e-mail received on March 6, 2017, an audit liaison in the Department of Transportation's Audit Relations and Program Improvement office stated that the department concurred with our recommendations.
- In an e-mail received on March 31, 2017, an audit liaison in the Department of the Treasury's Office of the CIO did not agree or disagree with the recommendations, but commented on our findings. Specifically, the comments noted that the differences we identified in Treasury's reported savings were due to a change in calculation methodology. The comments further noted that the department's February 2017 quarterly report to OMB included both the historical savings identified under the old methodology and the current DCOI savings initiative, to better correlate with savings figures previously reported to us and with savings figures reported in the department's DCOI strategic plan. We agree that, while the gap in Treasury's reported savings to OMB, as compared to savings reported to us, has narrowed substantially, there is still a shortfall between what the department recently reported and what was previously reported to us.
- In written comments, the Department of Veterans Affairs agreed with our recommendation that it take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. The department further stated that it had completed and resubmitted its DCOI strategic plan to OMB in December 2016 and that it had posted the plan on an agency web page.

Our analysis of the department's updated plan determined that the updated plan includes several of the missing elements we identified during our review. For example, it includes the achieved data values for optimization metric performance, data center closures, and data center consolidation and optimization-related cost savings for fiscal year 2016.

However, while the updated DCOI plan provides a description of costs for data center consolidations and optimization in fiscal year 2016, it does not provide dollar amounts for the data center investments. While we found that the department's updated plan addresses most of the requirements, the plan does not include the dollar amounts for the department's fiscal year 2016 investments in data center consolidation and optimization, as required by OMB's guidance on the implementation of FITARA. Further, we also did not find the department's CIO statement available publicly on the department's website. For these reasons, we maintain that our recommendation is still valid. The Department of Veterans Affairs' comments are reprinted in appendix IX.

- In written comments, the Environmental Protection Agency did not agree or disagree with our recommendations, but described actions planned to address them. Specifically, the agency stated that it will update its DCOI strategic plan to include elements not reflected in the 2016 submission and will complete the plan to the extent feasible. The Environmental Protection Agency also stated that it is working toward consistent reporting on cost savings and avoidances in future reporting submissions and is finalizing a cost analysis methodology to be applied to its DCOI strategy. The agency further stated that it would ensure consistent use of the process for all reporting queries. We encourage the agency's efforts to ensure consistent reporting across the various mechanisms that collect DCOI data. The Environmental Protection Agency's comments are reprinted in appendix X.
- In written comments, the General Services Administration agreed with our recommendation that it take action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. The agency stated that it had updated its DCOI strategic plan to complete the missing elements and had posted the plan on its public web page.

Our analysis of the agency's updated DCOI strategic plan determined that the plan includes the missing elements we identified during our review. We also found that the agency's CIO statement was available publicly on the agency's website. As a result, we have removed this recommendation.

The agency also agreed with our recommendation to ensure that the reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans. The agency further described actions it planned to

address the recommendation. Specifically, to better understand variances in OMB's cost model guidance, the agency said it will conduct a variance analysis of the differences in reported savings. Further, the agency said it will determine the most accurate representation of realized savings and will adjust its strategic plan and integrated data collection accordingly, making corrections in prior year projections and actual savings, as appropriate. We encourage the agency's efforts to ensure consistent reporting across the various mechanisms that collect DCOI data. The General Services Administration's comments are reprinted in appendix XI.

- In written comments, the National Aeronautics and Space Administration agreed with our recommendation and stated that it would provide OMB with an update to the agency's DCOI strategic plan that would address missing elements and any identified challenges. The National Aeronautics and Space Administration's comments are reprinted in appendix XII.
- In an e-mail received on March 23, 2017, a National Science Foundation GAO liaison said the agency had no comments on the draft report.
- In written comments, the Nuclear Regulatory Commission stated that it generally agreed with our findings. However, the agency stated that it disagreed with our recommendation to take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and to submit its completed strategic plan to OMB. Specifically, the agency asserted that its plan was completed and submitted via the process referenced by our recommendation and that OMB had assessed the agency's plan as including all information required by the schema provided by OMB. The Nuclear Regulatory Commission further stated that its CIO statement had been posted to an agency web page, along with a document that provided supplemental information beyond its strategic plan.

We acknowledge that the agency completed all the requirements found in the OMB schema; however, its plan did not include all the information required by OMB's August 2016 memorandum on the content of agencies' DCOI strategic plans. Notably, the Nuclear Regulatory Commission did not identify planned cost savings for fiscal years 2016-2018, actual cost savings for fiscal year 2016, or costs for consolidations and optimizations, as required by the memorandum. We also acknowledge that the agency posted its CIO statement to an agency web page, as required. However, OMB requires that this statement describe the reasons that an agency's DCOI strategic plan does not fully comply with all reporting requirements. Because we

found that the Nuclear Regulatory Commission's plan did not have all required information, and because the agency's CIO statement did not address this missing information, we assessed the CIO statement as being only partially complete. All agencies in our review were similarly evaluated. Based on this analysis, we maintain that our findings are accurate and our recommendation appropriate.

The Nuclear Regulatory Commission also asserted that it had provided comments on a draft of the briefing, whereas we state that the agency did not. Specifically, the agency said that it provided written comments to us on November 30, 2016. However, those comments were in response to our November 21, 2016 request for factual corrections to the briefing and the agency's response was incorporated into the briefing, as appropriate. On December 6, 2016, we also requested that the agency comment on the briefing's conclusions and recommendations. We did not receive a response to that request, despite several efforts to obtain one. It was the status of this unanswered request that we summarized in the briefing passage cited by the Nuclear Regulatory Commission.

Additionally, the agency addressed planned actions to implement metering and monitoring capabilities for the data centers it intends to keep, in order to start collecting metrics that could be used to show future cost savings. We encourage these efforts, as the development of such metering and monitoring capabilities are key components of achieving the optimization and efficiency goals of DCOI. The Nuclear Regulatory Commission's written comments are reprinted in appendix XIII.

- In written comments, the Office of Personnel Management agreed with our recommendation to take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit the completed plan to OMB. In addition, the agency stated that it was in the process of updating its plan and would submit the plan to OMB once finalized. The agency later provided a copy of its strategic plan.

Our analysis of the agency's DCOI strategic plan determined that the plan contained all required elements. We also found that the agency's CIO statement was available publicly on the agency's website. As a result, we have removed this recommendation from the report. The Office of Personnel Management's comments are reprinted in appendix XIV.

- In an e-mail received on March 24, 2017, a program analyst with the Small Business Administration's Office of Congressional and

Legislative Affairs stated that the agency had no comments on the draft report and did not state whether the agency agreed or disagreed with the recommendations.

- In written comments, the Social Security Administration agreed with our recommendation. The agency noted that it will continue to economize and evolve its data center optimization management and will continue to encourage open dialog and information exchange between agencies to achieve efficiencies and enhanced data center operations government-wide. The Social Security Administration's comments are reprinted in appendix XV.
- In written comments, the U.S. Agency for International Development did not agree or disagree with the recommendations, but described planned actions to address them. Specifically, the agency stated that it will, in accordance with OMB direction, take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. Further, the agency said that it will, in accordance with OMB, take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans. The U.S. Agency for International Development's comments are reprinted in appendix XVI.

We are sending copies of this report to interested congressional committees, the Director of OMB, the secretaries and 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 about 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 XVII.



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 Claire McCaskill
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 Congressional Committees



Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings

Briefing for the
Senate Armed Services Committee
Senate Homeland Security and Governmental Affairs Committee
House Armed Services Committee
House Oversight and Government Reform Committee
December 19, 2016

Introduction

Objectives

Scope and Methodology

Results in Brief

Background

Results

Conclusions

Recommendations for Executive Action

Agency Comments and Our Evaluation

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 improved their information security profiles, their need for computing power and data storage resources has grown. Accordingly, this growing demand has 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 to reduce the growing number of centers.

More recently, in August 2016, the Federal CIO launched the Data Center Optimization Initiative (DCOI) as a successor effort to FDCCI.¹⁷ According to OMB, this new initiative is intended to improve the performance of federal data centers in areas such as facility utilization and power usage. Among other things, DCOI requires 24 federal departments and agencies (agencies)¹⁸ to develop plans and report on strategies (referred to as DCOI strategic plans) to consolidate inefficient infrastructure, optimize existing facilities, improve security posture, and achieve cost savings.

¹⁷OMB, *Data Center Optimization Initiative (DCOI)*, Memorandum M-16-19 (Washington, D.C.: Aug. 1, 2016).

¹⁸The 24 agencies that are required to participate in DCOI are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Justice, Labor, State, Transportation, 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.

With Congress recognizing the importance of reforming the government-wide management of IT, Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) were enacted in December 2014 as a part of the *Carl Levin and Howard P. ‘Buck’ McKeon National Defense Authorization Act for Fiscal Year 2015*.¹⁹ Among other things, the law includes the following requirements related to federal data center consolidation:²⁰

- Agencies shall annually report to OMB about federal data center inventories and strategies to achieve consolidation, including yearly calculations of investment and cost savings.²¹
- 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.

In addition, the law includes a provision for GAO to annually review and verify the quality and completeness of agency federal data center inventories and strategies for consolidation.

¹⁹*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).

²⁰Pub. L. No. 113-291 § 834, 128 Stat. 3444 – 3448 (44 U.S.C. 3601 note). Unless otherwise noted, these requirements apply to the 24 agencies specified in section 834 (corresponding to those agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b)).

²¹In 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).

Over the past several years, we have reported²² and testified²³ that, while data center consolidation and optimization could potentially save the federal government billions of dollars, weaknesses exist in the execution and oversight of these efforts. For example, in March 2016, we reported that 10 agencies had not developed planned data center consolidation cost savings and avoidance targets for fiscal years 2016 through 2018, even though they had data center closures planned during this time period. As a result, we recommended that these agencies complete their planned cost savings and avoidance targets. Most agencies agreed with our recommendations or had no comments.

²²GAO, *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established [Reissued on March 4, 2016]*, [GAO-16-323](#) (Washington, D.C.: Mar. 3, 2016); *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); *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).

²³GAO, *Information Technology: OMB and Agencies Need to Focus Continued Attention on Implementing Reform Law*, [GAO-16-672T](#) (Washington, D.C.: May 18, 2016); *Information Technology: Implementation of Reform Legislation Needed to Improve Acquisitions and Operations*, [GAO-16-204T](#) (Washington, D.C.: Nov. 4, 2015); *Information Technology: Reform Initiatives Can Help Improve Efficiency and Effectiveness*, [GAO-14-671T](#) (Washington, D.C.: June 10, 2014); *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).

Our objectives for this study 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) evaluate the extent to which agencies' annual strategic plans for data center consolidation and optimization are complete.

To accomplish the first objective, we obtained and analyzed data center inventory documentation from the 24 DCOI agencies in our review. To determine data center closures to date, we totaled agency reported closures from fiscal year 2010²⁴ through August 2016 and, to identify future closures, we totaled agency reported planned closures through fiscal year 2019. We also compared agencies' completed and planned closures to OMB's fiscal year 2018 consolidation goals, as documented in its August 2016 memorandum (M-16-19).

To verify the quality, completeness, and reliability of the agencies' data center inventories, we compared information on data center closures completed and planned to similar information reported on OMB's IT Dashboard—a public website that provides information on federal agencies' major IT investments.²⁵ We also checked for missing data and other errors, such as missing closure status information. Further, we obtained written responses from agency officials regarding actions taken to ensure the reliability of their inventory data, and discussed any discrepancies or potential errors identified to determine the causes or request additional information. We determined that the data were sufficiently complete and reliable to report on agencies' consolidation progress and planned closures.

²⁴OMB launched FDCCI in February 2010, at which point, agencies were required to begin closing data centers. However, current OMB guidance only requires agencies to report historical cost savings and avoidances realized since fiscal year 2012.

²⁵We did not physically visit agencies' data center locations to verify their inventory totals.

For our second objective, we obtained and analyzed cost savings and avoidance²⁶ documentation from the 24 DCOI agencies required by OMB's March 2013 and August 2016 memorandums.²⁷ This documentation included the agencies' quarterly reports of cost savings and avoidances posted to their digital strategy websites and their DCOI strategic plans. To determine cost savings achieved, we totaled agencies' reported savings and avoidances from the start of fiscal year 2012 through August 2016, as found in the August 2016 quarterly reports posted on their digital strategy websites. To identify future planned savings, we totaled the agencies' projected savings and avoidances from fiscal years 2016 through 2018, as reported in their DCOI strategic plans.

²⁶Beginning in March 2013, OMB required agencies to report on both cost savings and cost avoidances. OMB defines cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defines a cost avoidance as the result of an action taken in the immediate time frame that will decrease costs in the future.

²⁷OMB, Memorandum M-16-19 and *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*, Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013).

To assess the reliability of the agencies' cost savings and avoidance data, we reviewed agency documentation for missing data or other errors (e.g., incorrect calculations). We also compared the cost savings and avoidances reflected in the agencies' quarterly reports sent to OMB with the cost savings reported on OMB's IT Dashboard. In addition, we obtained written responses from agency officials to confirm our understanding of their reported savings and avoidances. Finally, we compared agencies' reported cost savings and avoidances with data from our March 2016 report on agencies' data center consolidation efforts.²⁸ As a result of our analyses, we found that certain agencies were reporting less cost savings and avoidances to OMB in their August 2016 quarterly reports and in their DCOI strategic plans compared to the amounts reported to us in November 2015. In certain cases, agencies were able to provide additional explanations for the differences in their savings. This issue is discussed in greater detail later in the briefing slides.

²⁸[GAO-16-323](#).

To address the third objective, we obtained and analyzed 20 of the 24 agencies' DCOI strategic plans, which were required by FITARA and OMB's August 2016 memorandum (M-16-19).²⁹ This documentation included agencies' strategic plan information publicly posted on agency-owned digital strategy websites, and additional agency-provided documentation of their data center consolidation and optimization strategic plans. We also obtained and reviewed agency CIO statements of compliance with FITARA and OMB's guidance. To assess the completeness of agencies' DCOI strategic plans, we compared information contained in the plans to the key elements required to be in the strategic plans, as called for in OMB's memorandum implementing FITARA.

To assess the reliability of the DCOI strategic plans, we reviewed the agencies' documentation to identify any missing data or errors. In addition, we obtained written responses from agency officials regarding the steps taken to ensure the accuracy and completeness of their strategic plan information. We also discussed with the officials any discrepancies or potential errors identified during our reviews of their strategic plans to determine the causes or request additional information. As a result of these efforts, we determined that the agencies' strategic plan information was not reliable due to missing and incomplete data. This issue is discussed in greater detail later in the briefing slides.

²⁹As of December 2016, the remaining four agencies had not finalized and submitted their DCOI strategic plan, which were due by September 30, 2016.

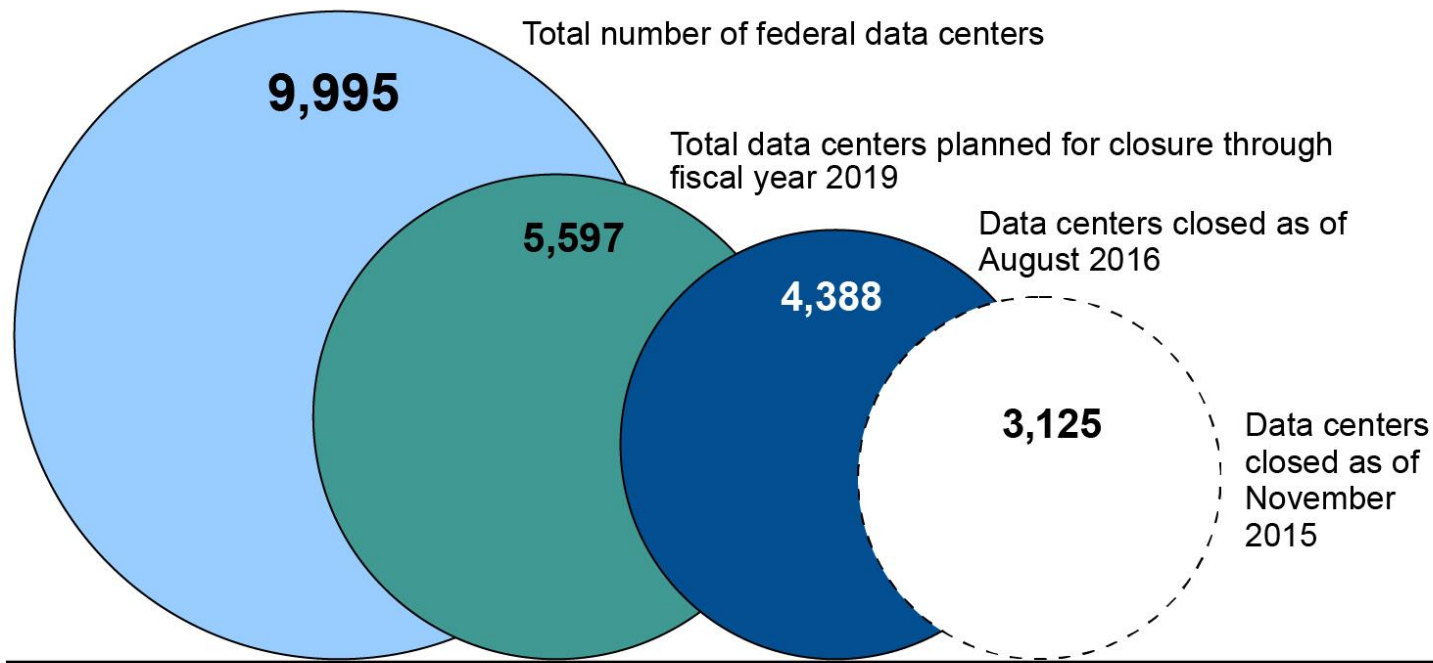
Scope and Methodology

We conducted this performance audit from July 2016 to December 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.

The 24 agencies participating in DCOI have collectively made progress on their data center closure efforts. Specifically, as of August 2016, the agencies had identified a total of 9,995 data centers, of which they reported closing 4,388. The Departments of Agriculture, Defense, Interior, and Treasury accounted for 84 percent of these closures. Further, agencies collectively reported that they are planning to meet OMB's fiscal year 2018 consolidation targets to close 25 percent of tiered data centers³⁰ and 60 percent of non-tiered centers. Specifically, as of August 2016, our analysis of agencies' inventories showed that they were planning to close approximately 25 percent of the government-wide total of tiered data centers and approximately 66 percent of the government-wide total of non-tiered centers by the end of fiscal year 2018. When accounting for additional closures expected in fiscal year 2019, agencies have reported that they plan to close a total of 5,597 centers. Figure 1 provides a summary of agencies' total data centers and completed and planned closures.

³⁰According to OMB's August 2016 memorandum, M-16-19, a tiered data center uses each of the following: a separate physical space for IT infrastructure, an uninterruptible power supply, a dedicated cooling system or zone, and a backup power generator for a prolonged power outage. According to OMB, all other data centers shall be considered non-tiered.

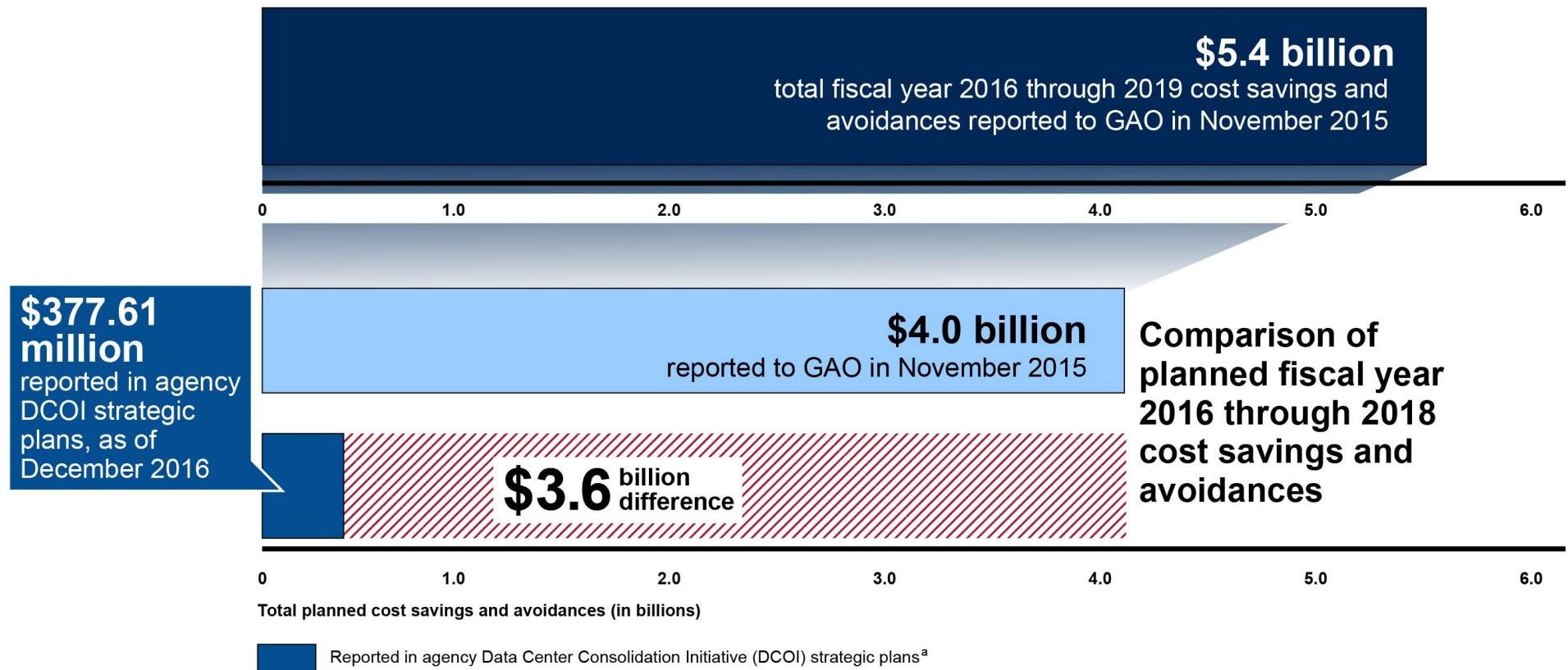
Figure 1: Reported Number of Data Centers and Completed and Planned Closures for the 24 Agencies (fiscal years 2010 through 2019), as of August 2016



Source: GAO analysis of agency data.

In total, 18 of the 24 agencies reported achieving an estimated \$2.3 billion in cost savings and avoidances from their data center consolidation and optimization efforts from the start of fiscal year 2012 through August 2016. The Departments of Commerce, Defense, Homeland Security, and Treasury accounted for approximately \$2.0 billion (or 87 percent) of the total. However, seven agencies are reporting less achieved cost savings and avoidances to OMB compared to savings amounts they previously reported to us in November 2015. Further, agencies are planning a total of approximately \$378 million in savings between fiscal years 2016 and 2018, according to their DCOI strategic plans. This is about \$3.6 billion less than the approximately \$4.0 billion in fiscal year 2016 through 2018 planned savings that agencies reported to us in November 2015. This is also about \$2.3 billion less than OMB's \$2.7 billion cost savings goal for agencies to achieve by the end of fiscal year 2018, as required by OMB M-16-19. This reduction in planned savings reflects 7 agencies reporting less planned cost savings and avoidances in their DCOI strategic plans compared to the savings amounts previously reported to us in November 2015, as well as the absence of cost savings information for 4 agencies that had not submitted their strategic plan. See figure 2 for a comparison of the amounts of cost savings and avoidances reported by agencies to OMB through their DCOI strategic plan and the amounts reported to us.

Figure 2: Comparison of Planned Cost Savings and Avoidances Reported to GAO in November 2015 to Agency DCOI Strategic Plans, as of December 2016



Source: GAO analysis of agency data.

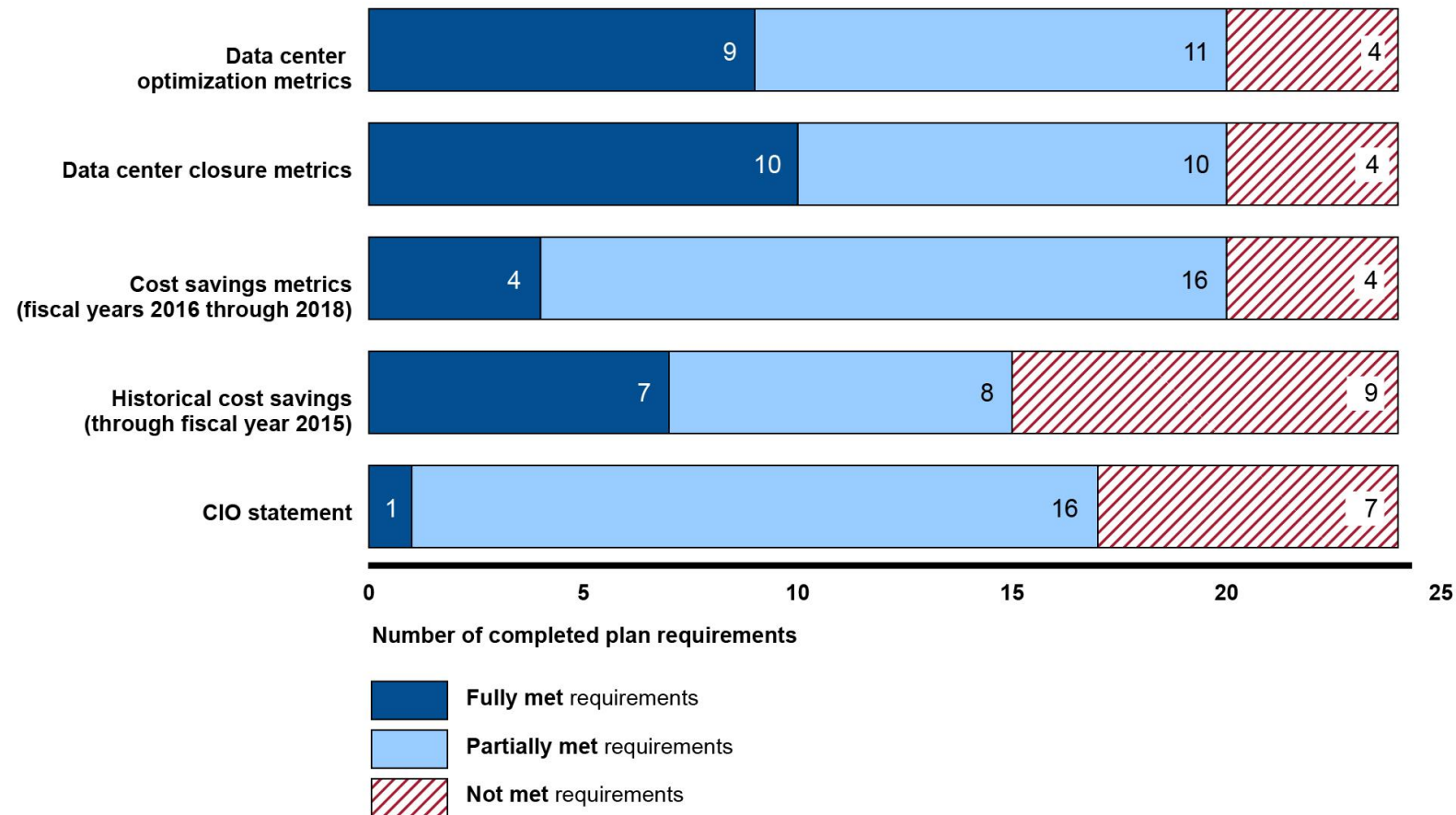
^aOMB does not require the reporting of fiscal year 2019 cost savings and avoidances in agency DCOI strategic plans.

Of the 20 agencies that submitted their DCOI strategic plan as of December 2016,³¹ only 1—the National Science Foundation—had addressed all five elements required by the OMB memorandum implementing FITARA, while the remaining 19 either partially met or did not meet the requirements. For example, most agencies partially met or did not meet the requirements to provide information related to data center closures and cost savings metrics. See figure 3 for an assessment of the completeness of agencies' data center optimization plans, by key element.

³¹The remaining four agencies that have not yet finalized and submitted their plan are the Departments of Defense, Energy, and Homeland Security, and the Office of Personnel Management.

Figure 3: Agencies' Completion of Required Information for Data Center Optimization Plan Elements, as of December 2016

Data center consolidation and optimization strategic plan elements



Source: GAO analysis of agency data.

Note: The four agencies that did not submit a plan were rated as not met for each element.

We also identified inconsistencies in the reporting of historical cost savings by 11 agencies across OMB's two reporting mechanisms—the DCOI strategic plans and the quarterly data submissions. Specifically, of the 24 agencies, 9 consistently reported savings information in their DCOI strategic plan and their August 2016 quarterly reports to OMB, 11 agencies did not report consistent information, and 4 agencies did not submit their DCOI strategic plan. These inconsistencies resulted in a discrepancy totaling approximately \$1.5 billion between the two sources. These inconsistencies were due, in part, to incomplete data in agencies' DCOI strategic plans.

Agencies provided a variety of reasons for why their plans were incomplete, including the difficulty of reporting on fiscal year 2016 actual savings and closures when the data are not yet finalized and the receipt of incomplete data from some agency components. Completing these plans is increasingly important in light of the enactment of FITARA, which requires agencies to establish a multi-year strategy to consolidate and optimize their data centers, including performance metrics and cost savings goals. Moreover, as OMB's data center consolidation and other related initiatives have been underway since 2010, agencies should have all the information necessary to complete their plans. Until agencies address the missing elements in their DCOI strategic plan, they will be at risk of not realizing anticipated savings, improved infrastructure utilization, and energy efficiency; they also may not be able to satisfy federal requirements regarding data center consolidation and optimization. Further, until OMB improves its oversight of agencies' reporting of cost savings and agencies ensure that their savings information is consistent across all reporting mechanisms, the likelihood of further reporting errors is increased. Finally, until OMB improves its oversight of the information in agencies' DCOI strategic plans, it may be challenged in demonstrating that DCOI is meeting its established objectives.

To better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, we are recommending that the Director of OMB direct the Federal CIO to provide the necessary oversight to (1) ensure that agencies complete their DCOI strategic plan in accordance with OMB's guidance implementing FITARA and (2) ensure that agency reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans.

We are also recommending that 23 agencies take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB. Further, we are recommending that 11 agencies take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

We received comments on a draft of our briefing from OMB and 17 of the 24 agencies to which we made recommendations. In its comments, OMB neither agreed nor disagreed with our recommendations. Among the agencies, 4 agencies agreed with our recommendations, 1 (Agriculture) indicated that it did not agree with our recommendation, 3 commented on our findings but did not provide a position on the recommendations, and 8 stated that they had no comments. In addition, 1 agency provided only technical comments, while 2 agencies provided technical comments along with their other comments. All technical comments were incorporated as appropriate. We did not receive a response from 7 agencies.

The federal government's increasing demand for IT has led to an increase 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 10,584 in November 2015. 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 costs to operate federal servers and data centers across the government were 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 reported³² that server utilization rates as low as 5 percent across the federal government's estimated 150,000 servers were a factor driving the need to establish a coordinated, government-wide effort to improve the efficiency, performance, and environmental footprint of federal data center activities.

³² 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 reduce 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.

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.³³ 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.”³⁴

Under the first definition, OMB identified 2,094 data centers in July 2010. Under the subsequent definition, in December 2011, OMB estimated that there were a total of 3,133 federal data centers.

³³For 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).

³⁴OMB, *Implementation Guidance for the Federal Data Center Consolidation Initiative* (Washington, D.C.: Mar. 19, 2012).

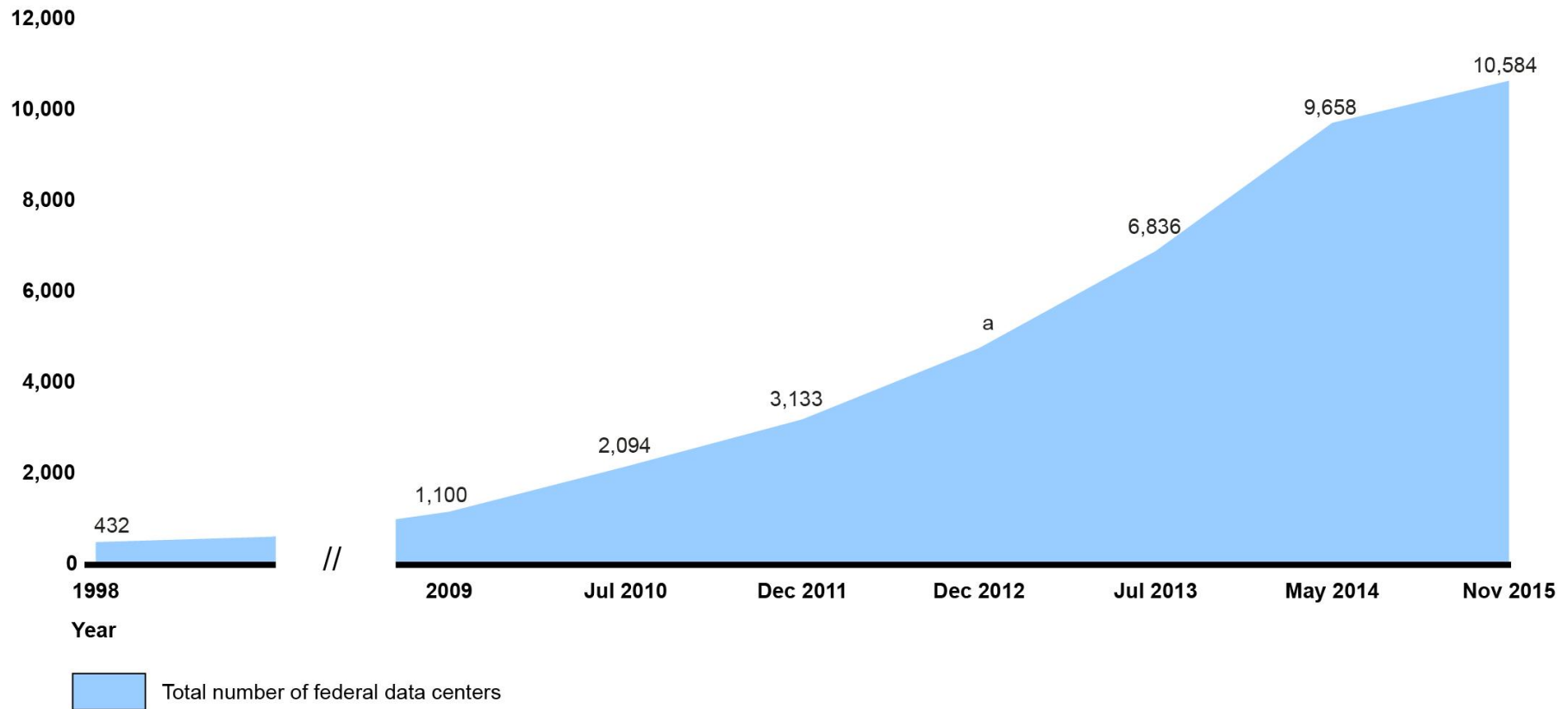
OMB's Inventory of Federal Data Centers Has Grown

Since 2011, the number of federal data centers reported by agencies has continued to grow. In March 2016, we reported³⁵ that agencies had collectively identified a total of 10,584 data centers as of November 2015—an increase of about 7,500 data centers compared to OMB's October 2011 estimate. 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. Figure 4 shows the growth in the total number of reported federal data centers from 1998 to November 2015.

³⁵[GAO-16-323](#).

Figure 4: Total Number of Reported Federal Data Centers from 1998 to 2015, as of November 2015

Number of federal data centers



Source: GAO analysis of OMB and agency data.

^aOMB 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 2013, OMB issued memorandum M-13-09,³⁶ which increased the focus on optimizing the performance of federal data centers. Specifically, OMB 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 primary data centers are optimized for total cost of ownership by incorporating metrics for data center energy, facility, labor, and storage, among other things. Subsequently, in May 2014, OMB issued memorandum M-14-08,³⁷ which established a set of data center optimization metrics to measure agency progress. In addition, OMB established target values that agencies were expected to achieve by the end of fiscal year 2015. We recently reported³⁸ that 22 agencies had made limited progress against OMB's fiscal year 2015 targets due to facing challenges such as the decentralized nature of some agencies.³⁹ As a result, we recommended that the agencies take action to improve optimization progress, including addressing any identified challenges. Most agencies agreed with our recommendations or had no comments.

³⁶OMB, Memorandum M-13-09.

³⁷OMB, *Fiscal Year 2014 PortfolioStat*, Memorandum M-14-08 (Washington, D.C.: May 7, 2014).

³⁸[GAO-16-323](#).

³⁹Two agencies did not have a basis to report on progress.

Legislation Enhances Data Center Consolidation and Optimization Efforts

FITARA was enacted in December 2014. Among other things, the law includes the following requirements related to the data center consolidation effort:

- 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. 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 FDCCI can be measured;
 - a timeline for agency activities to be completed under 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, and including the amount of specific cost savings achieved each fiscal year through FDCCI.
- Each agency shall submit a statement to OMB stating whether the agency's strategic plan has complied with the requirements of the law and make the statement submitted publicly available.
- 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 each agency's strategy.

Legislation Enhances Data Center Consolidation and Optimization Efforts

- 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 August 2016, OMB issued memorandum M-16-19,⁴⁰ which established DCOI and included guidance on how to implement the data center consolidation and optimization provisions of FITARA. Among other things, the guidance requires agencies to consolidate inefficient infrastructure, optimize existing facilities, improve their security posture, and achieve cost savings. For example, agencies are required to maintain a complete inventory of all data center facilities owned, operated, or maintained by or on behalf of the agencies and measure progress toward defined optimization performance metrics on a quarterly basis as part of their data center inventory submission.

OMB M-16-19 also directs agencies to develop a DCOI strategic plan that defines their data center strategy for fiscal years 2016 through 2018. Among other things, this strategy is to include a timeline for agency consolidation and optimization activities with an emphasis on cost savings and optimization performance benchmarks the agency can achieve between fiscal years 2016 and 2018. For example, agencies are required to develop cost savings targets due to consolidation and optimization actions and report any realized cost savings. OMB required agencies to publicly post their DCOI strategic plan to their agency-owned digital strategy website by September 30, 2016, and to post subsequent strategic plan updates by April 14, 2017 and April 13, 2018.

Further, OMB M-16-19 states that OMB will maintain a public dashboard (referred to as the IT Dashboard) that will display government-wide and agency-specific progress in areas such as planned and achieved data center closures, consolidation-related costs savings, and data center optimization performance information. In this regard, OMB began including data center consolidation and optimization progress information on the IT Dashboard in August 2016.

⁴⁰OMB, Memorandum M-16-19.

OMB M-16-19 also provided new guidance for the classification of a physical data center, including revising the definition of a data center to include any room with at least one server that provides services (such as testing and development). According to the revised definition, a room with at least one server that provides services (whether in a production, test, staging, development, or any other environment) is to be considered a data center, while a room containing only print servers, routing equipment, switches, security devices (such as firewalls), or other telecommunication components, shall not be considered a data center.⁴¹

In light of this new definition, OMB directed all agencies to perform a comprehensive review of their data centers and maintain a complete and updated data center inventory. Further, OMB directed agencies to categorize their data centers as either a tiered data center⁴² or a non-tiered data center. OMB M-16-19 defines a tiered data center as one that uses each of the following:

- a separate physical space for IT infrastructure;
- an uninterruptible power supply;
- a dedicated cooling system or zone;
- a backup power generator for a prolonged power outage.

According to M-16-19, all other data centers shall be considered non-tiered.

⁴¹OMB, Memorandum M-16-19.

⁴²According to OMB's guidance, the term "tiered" and its definition are derived from the Uptime Institute's Tier Classification System. However, OMB notes that no specific certification is required in order for a data center to be considered tiered by OMB.

Finally, OMB M-16-19 includes a series of performance metrics in the areas of data center closures, cost savings, and optimization progress.

- **Data center closures:** Agencies are expected to close at least 25 percent of tiered data centers government-wide, excluding those approved as inter-agency shared services⁴³ provider data centers, by the end of fiscal year 2018. Further, agencies are to close at least 60 percent of non-tiered data centers governmentwide by the end of fiscal year 2018. OMB's guidance further notes that, in the long term, all agencies should continually strive to close all non-tiered data centers, noting that server rooms and closets pose security risks and management challenges and are an inefficient use of resources.
- **Cost savings:** Agencies are expected to reduce government-wide annual costs attributable to physical data centers by at least 25 percent, resulting in savings of at least \$2.7 billion, by the end of fiscal year 2018.
- **Data center optimization:** Agencies are expected to measure progress against a series of new metrics to measure data center performance in areas such as energy metering, power usage, facility utilization, and server utilization. Further, OMB's guidance establishes target values for each metric that agencies are to achieve by fiscal year 2018.

OMB's guidance also states that it will measure agency progress on a quarterly basis, by way of their quarterly data center inventory submission.

⁴³For more information about shared services, see OMB, *Federal Information Technology Shared Services Strategy* (Washington, D.C.: May 2, 2012).

Prior GAO Reports on Issues Related to Consolidating Data Centers

From July 2011 through March 2016, we issued a number of reports⁴⁴ and testified⁴⁵ 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 had 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 pointed out that planned savings may be higher because 6 agencies—the Departments of Health and Human Services, Interior, Justice, and Labor, the General Services Administration, and the National Aeronautics and Space Administration—that reported closing as many as 67 data centers had also reported limited or no savings.

In addition, our 2014 report noted that 11 of the 21 agencies with planned cost savings had underreported their fiscal year 2012 through 2015 figures to OMB by approximately \$2.2 billion. While several agencies noted communication issues as the reason for underreporting, 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. Further, 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; we also recommended that agencies fully report their consolidation cost savings. OMB and the agencies to which we made recommendations generally agreed with them. In August 2016, OMB established a metric to measure agencies’ server utilization progress in OMB M-16-19.

⁴⁴[GAO-16-323](#), [GAO-15-617](#), [GAO-14-713](#), [GAO-13-378](#), [GAO-12-742](#), and [GAO-11-565](#).

⁴⁵[GAO-16-672T](#), [GAO-16-204T](#), [GAO-14-671T](#), [GAO-13-796T](#), and [GAO-13-627T](#).

Prior GAO Reports on Issues Related to Consolidating Data Centers

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 an increase in cost savings to \$4.7 billion in future years as efficiencies are gained. In June 2015, we testified⁴⁶ that the Department of Defense's plans had increased the total federal planned data center consolidation savings to about \$7.4 billion.

In September 2015, we reported that agencies had collectively reported achieving an estimated \$2.0 billion in data center consolidation cost savings from fiscal years 2011 through 2014. However, we pointed out 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 having fully implemented our prior recommendations from September 2014 to report all 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.

⁴⁶GAO, *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).

Prior GAO Reports on Issues Related to Consolidating Data Centers

Finally, in March 2016, we reported⁴⁷ that agencies had continued to make progress in their data center consolidation efforts. Specifically, we noted that agencies had reported closing 3,125 of the 10,584 total data centers as of November 2015. We further noted that 19 of the 24 agencies had 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. Agencies were also planning an additional \$5.4 billion in cost savings and avoidances, for a total of approximately \$8.2 billion, through fiscal year 2019. However, we stated that planned savings may be higher because 10 agencies⁴⁸ that reported planned closures from fiscal years 2016 through 2018 had not fully developed their cost savings goals for these fiscal years. In addition, agencies had made limited progress against OMB's fiscal year 2015 data center optimization performance metrics, such as the utilization of data center facilities. Accordingly, we recommended that the agencies take actions to complete their cost savings targets and improve optimization progress. Most agencies agreed with the recommendations or had no comments.

⁴⁷[GAO-16-323](#).

⁴⁸These 10 agencies are the Departments of the Interior, State, Transportation, and the Treasury; Environmental Protection Agency; National Aeronautics and Space Administration; National Science Foundation; Nuclear Regulatory Commission; Office of Personnel Management; and Small Business Administration.

Agencies Are Reporting Plans to Meet OMB’s Fiscal Year 2018 Targets for Data Center Closures

As of August 2016, agencies collectively reported a total of 9,995 data centers⁴⁹—a decrease of 589 data centers compared to the total we previously reported as of November 2015.⁵⁰ While 9 agencies increased their reported number of centers by a collective total of 770 data centers, the overall net decrease was due primarily to the Department of the Treasury removing 1,343 data centers from its August 2016 inventory update. In November 2016, officials from the department’s Office of the CIO stated that the data centers removed from the inventory did not meet OMB’s August 2016 revised definition of a data center and, therefore, should not be included in the inventory count.

In total, agencies reported that they had closed 4,388 data centers (to include 411 tiered centers and 3,977 non-tiered centers) through August 2016. The Departments of Agriculture, Defense, Interior, and Treasury accounted for 3,687 (or 84 percent) of the total number of completed closures.

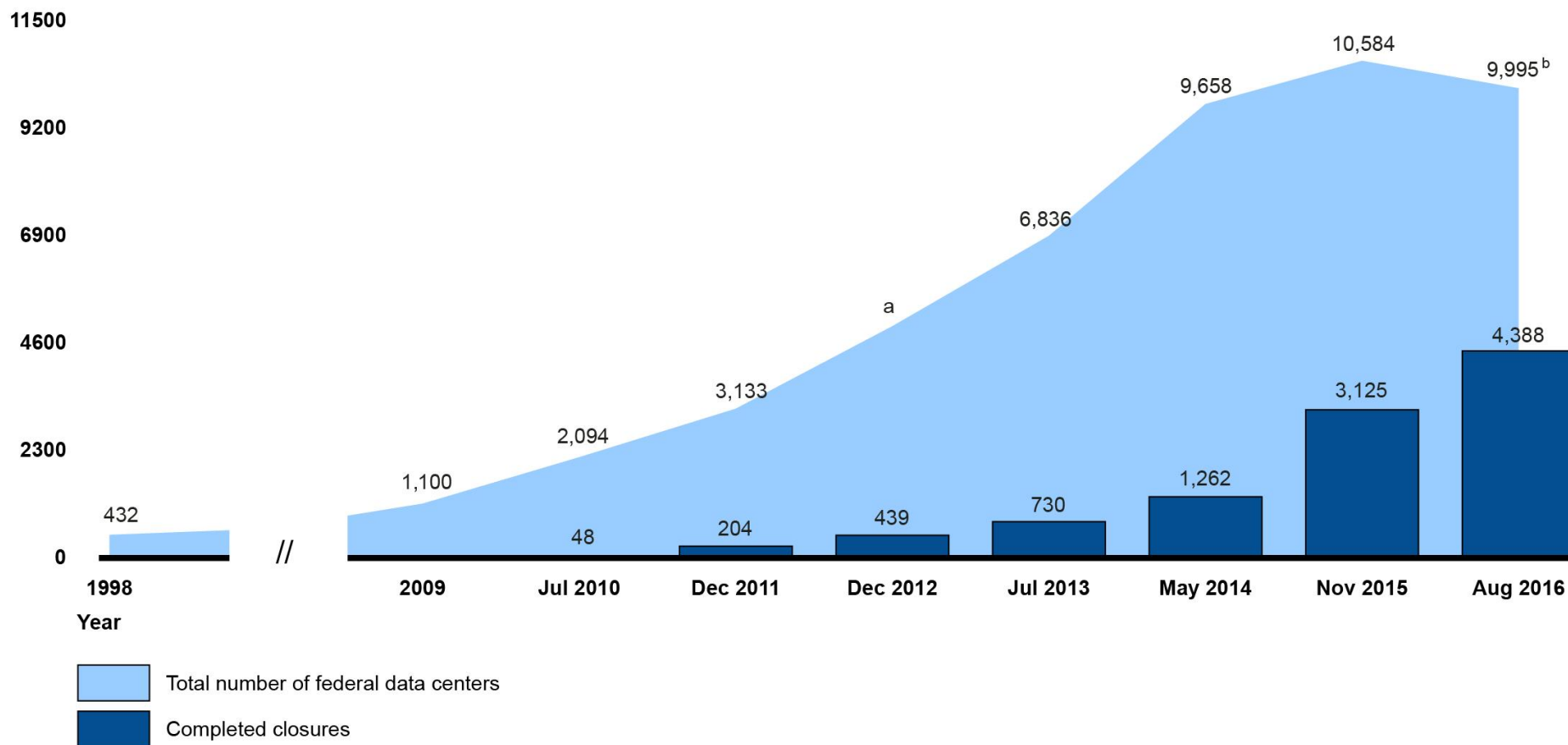
Figure 5 provides a summary of the total number of data centers and closures reported from 1998 through August 2016.

⁴⁹Of the total reported data centers, 2,673 were reported by agencies as tiered data centers, while the remaining 7,322 were reported as non-tiered.

⁵⁰[GAO-16-323](#).

Figure 5: Total Number of Reported Federal Data Centers and Closures, as of August 2016

Number of federal data centers



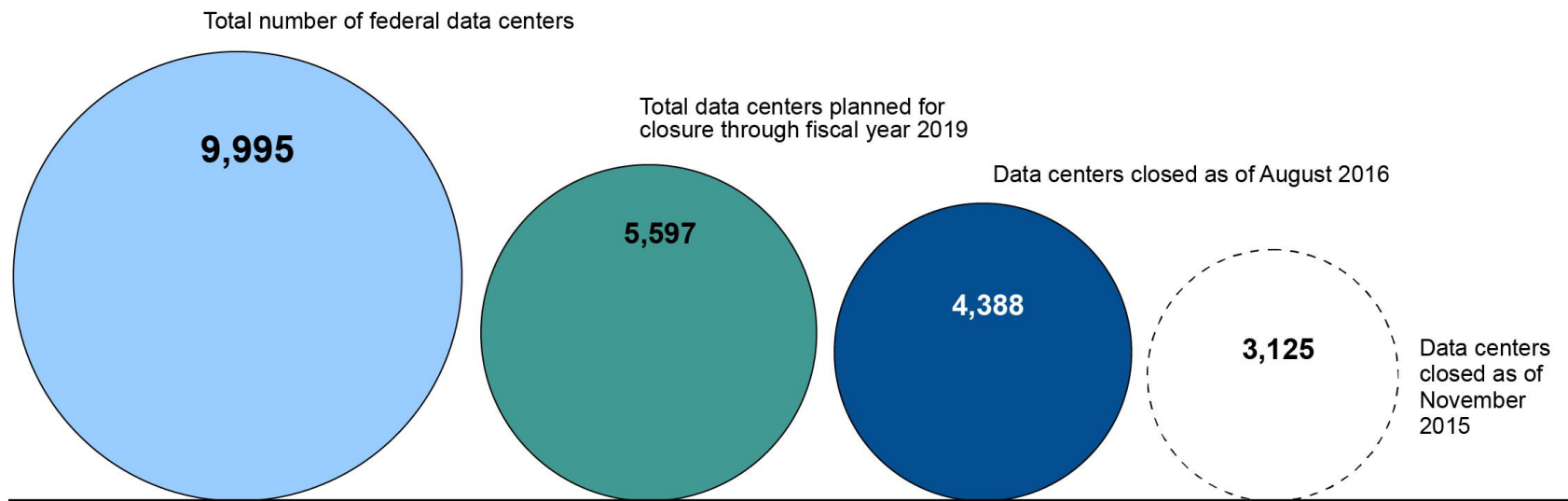
Source: GAO analysis of OMB and agency data.

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

^bOMB revised the definition of a data center in August 2016.

Agencies reported that they are planning to close an additional 1,209 data centers (including tiered and non-tiered)—for a total of 5,597 data centers—by the end of fiscal year 2019. The Departments of Agriculture, Defense, Interior, and Treasury are expected to account for 4,612 (or 82 percent) of the total planned closures. Figure 6 is a graphical depiction of agencies’ total data centers and completed and planned closures.

Figure 6: Agencies’ Total Reported Data Centers and Completed and Planned Closures (fiscal years 2010 through 2019), as of August 2016



Source: GAO analysis of agency data.

Further, table 1 provides a listing of the number of data centers (tiered and non-tiered) and reported and planned closures for each agency.

Table 1: Number of Reported Tiered and Non-tiered Data Centers and Completed and Planned Closures by Agency, as of August 2016

Agency	Total tiered data centers	Total non-tiered data centers	Total data centers	Closures through August 2016 (percent of total data centers)	Completed and planned closures through fiscal year 2019 (percent of total data centers)
Department of Agriculture	35	2,237	2,272	2,232 (98%)	2,260 (99%)
Department of Commerce	244	131	375	79 (21%)	85 (23%)
Department of Defense	1,342	2,416	3,758	708 (19%)	1,598 (43%)
Department of Education	2	2	4	1 (25%)	3 (75%)
Department of Energy	99	118	217	78 (36%)	85 (39%)
Department of Health and Human Services	77	147	224	67 (30%)	79 (35%)
Department of Homeland Security	33	68	101	44 (44%)	47 (47%)
Department of Housing and Urban Development	3	0	3	0 (0%)	2 (67%)
Department of the Interior	93	326	419	176 (42%)	176 (42%)
Department of Justice	40	70	110	69 (63%)	104 (95%)
Department of Labor	11	76	87	26 (30%)	87 (100%)
Department of State	24	366	390	6 (2%)	8 (2%)
Department of Transportation	217	245	462	135 (29%)	237 (51%)
Department of the Treasury	57	815	872	571 (65%)	578 (66%)
Department of Veterans Affairs	275	110	385	26 (7%)	45 (12%)
Environmental Protection Agency	4	79	83	26 (31%)	33 (40%)
General Services Administration	43	82	125	104 (83%)	107 (86%)
National Aeronautics and Space Administration	55	4	59	33 (56%)	39 (66%)
National Science Foundation	0	1	1	0 (0%)	1 (100%)
Nuclear Regulatory Commission	5	11	16	3 (19%)	7 (44%)
Office of Personnel Management	4	0	4	0 (0%)	0 (0%)
Small Business Administration	4	11	15	0 (0%)	12 (80%)
Social Security Administration	3	0	3	1 (33%)	1 (33%)
U.S. Agency for International Development	3	7	10	3 (30%)	3 (30%)
Total	2,673	7,322	9,995	4,388 (44%)	5,597 (56%)

Source: GAO analysis of agency data.

As previously stated, OMB M-16-19 established a government-wide goal for agencies to close at least 25 percent of tiered data centers and at least 60 percent of non-tiered data centers by the end of fiscal year 2018.

As of August 2016, our analysis of agency inventories showed that, collectively, they had closed approximately 15 percent of government-wide tiered data centers and approximately 54 percent of non-tiered centers. More specifically, of the 23 agencies with tiered data centers in their inventories,⁵¹ 12 reported closing at least 25 percent of their tiered data centers.⁵² The General Services Administration, the Nuclear Regulatory Commission, and the U.S. Agency for International Development each reported closing 60 percent or more of their tiered data centers.

⁵¹One agency—the National Science Foundation— did not report any tiered data centers in its inventory.

⁵²In December 2016, OMB stated that its methodology for assessing agencies' progress in meeting the fiscal year 2018 closure targets in OMB M-16-19 (i.e., 25 percent of tiered data centers and 60 percent of non-tiered centers) differs from the methodology that we used in our assessment. Specifically, OMB stated that it publicly posted fiscal year 2018 tiered and non-tiered closure targets for agencies on the IT Dashboard and that those closure targets do not always reflect the exact percentages of the closure targets in OMB M-16-19. This is due to accounting for specific agency circumstances and inventory changes since the start of DCOI, such as data centers that changed tiered classification. Further, OMB noted that it measures agencies' progress against the targets on the IT Dashboard using the number of data centers closed since DCOI began (versus the start of FDCCI in 2010).

Further, of the 21 agencies with non-tiered centers,⁵³ 5 reported closing at least 60 percent of their non-tiered centers. Among these, the Department of Agriculture, the General Services Administration, and the National Aeronautics and Space Administration each reported closing 90 percent or more of their non-tiered data centers.

See table 2 for a comparison of agencies' tiered and non-tiered data center closures, as of August 2016, against OMB's fiscal year 2018 closure targets.

⁵³Three agencies—the Department of Housing and Urban Development, the Social Security Administration, and the Office of Personnel Management—did not report any non-tiered data centers in their inventories.

Table 2: Comparison of Agencies' Completed Tiered and Non-Tiered Data Center Closures against OMB's Fiscal Year 2018 Closure Targets, as of August 2016

Agency	Tiered data centers (25 percent closure target)			Non-tiered data centers (60 percent closure target)		
	Total	Closed	Percent	Total	Closed	Percent
Department of Agriculture	35	19	54%	2,237	2,213	99%
Department of Commerce	244	27	11%	131	52	40%
Department of Defense	1,342	175	13%	2,416	533	22%
Department of Education	2	0	0%	2	1	50%
Department of Energy	99	17	17%	118	61	52%
Department of Health and Human Services	77	14	18%	147	53	36%
Department of Homeland Security	33	13	39%	68	31	46%
Department of Housing and Urban Development	3	0	0%	0	0	n/a
Department of the Interior	93	22	24%	326	154	47%
Department of Justice	40	16	40%	70	53	76%
Department of Labor	11	3	27%	76	23	30%
Department of State	24	6	25%	366	0	0%
Department of Transportation	217	7	3%	245	128	52%
Department of the Treasury	57	19	33%	815	552	68%
Department of Veterans Affairs	275	10	4%	110	16	15%
Environmental Protection Agency	4	1	25%	79	25	32%
General Services Administration	43	27	63%	82	77	94%
National Aeronautics and Space Administration	55	29	53%	4	4	100%
National Science Foundation	0	0	n/a	1	0	0%
Nuclear Regulatory Commission	5	3	60%	11	0	0%
Office of Personnel Management	4	0	0%	0	0	n/a
Small Business Administration	4	0	0%	11	0	0%
Social Security Administration	3	1	33%	0	0	n/a
U.S. Agency for International Development	3	2	67%	7	1	14%
Totals	2,673	411	15%	7,322	3,977	54%

Source: GAO analysis of agency data.

Key: n/a = Not applicable

In addition, based on our analysis of agencies' August 2016 data center inventory data, agencies collectively reported that they plan to meet OMB's tiered and non-tiered closure targets by the end of fiscal year 2018. In total, 23 agencies reported plans to close approximately 25 percent of the government-wide total of tiered data centers.⁵⁴ Specifically, of the 23 agencies with tiered data centers in their inventories, 16 reported plans to close at least 25 percent of their tiered data centers. The remaining seven agencies reported plans to consolidate between 0 and 24 percent of their tiered centers, thus falling short of OMB's target.

Further, 21 agencies collectively reported plans to close approximately 66 percent of the government-wide total of non-tiered data centers.⁵⁵ More specifically, of these agencies, 9 are planning to close at least 60 percent of their non-tiered centers. Six of the 9 agencies plan to close 100 percent of their non-tiered data centers by fiscal year 2018. The remaining 12 agencies are planning to consolidate between 0 and 55 percent of their non-tiered centers.

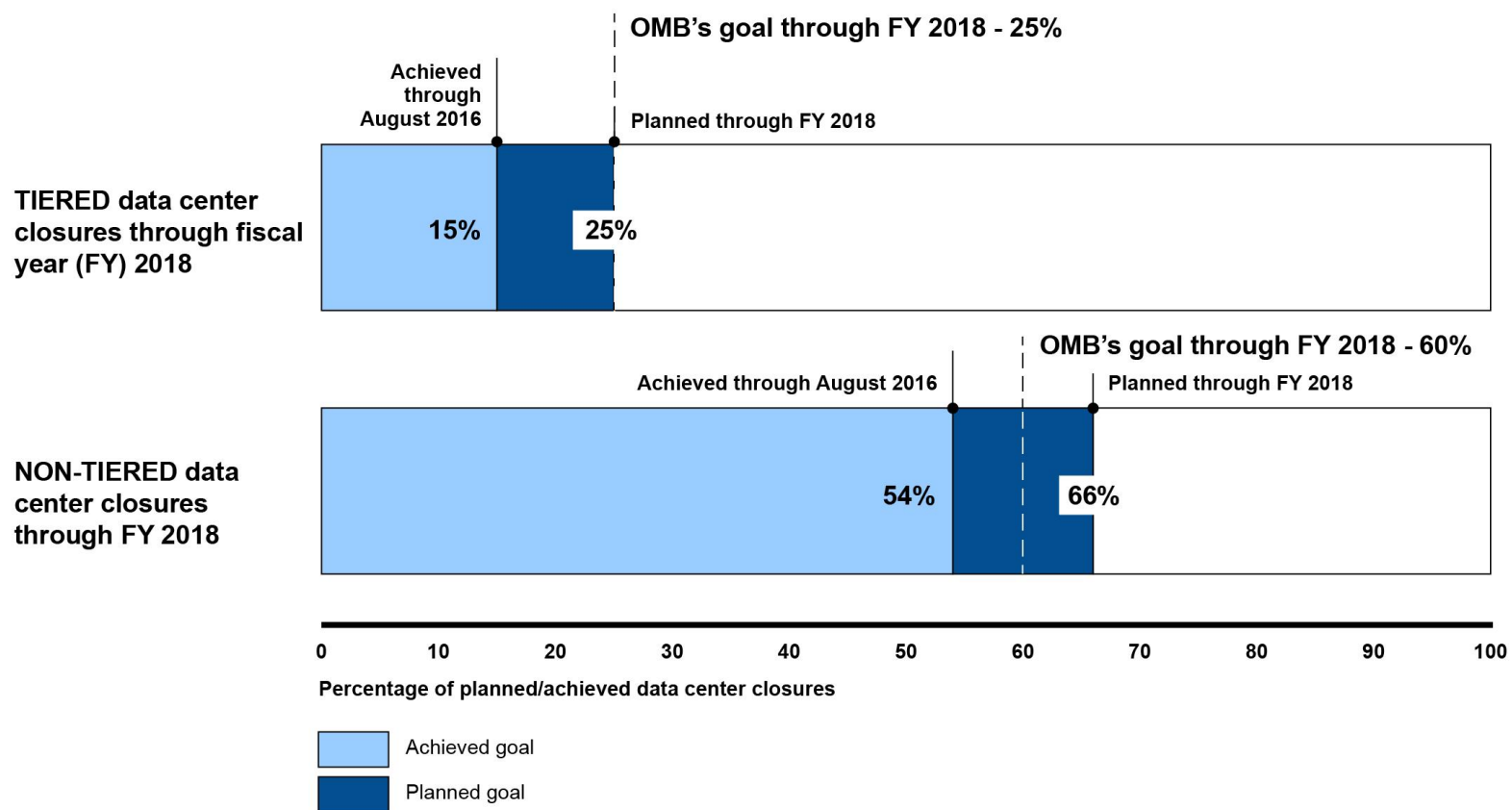
Figure 7 presents a graphical depiction of agencies' progress in achieving data center closure targets through August 2016.

⁵⁴One agency—the National Science Foundation—did not report any tiered data centers in its inventory.

⁵⁵Three agencies—the Department of Housing and Urban Development, the Social Security Administration, and the Office of Personnel Management—did not report any non-tiered data centers in their inventories.

Figure 7: Agencies' Achieved and Planned Progress Measured against OMB Fiscal Year 2018 Data Center Closure Targets

Office of Management and Budget's (OMB) goal of:



Source: GAO analysis of agency data.

Further, table 3 compares agencies' completed and planned tiered and non-tiered data center closures, as of August 2016, with OMB's fiscal year 2018 closure targets.

Table 3: Comparison of Agencies' Completed and Planned Tiered and Non-Tiered Data Center Closures against OMB's Fiscal Year 2018 Targets, as of August 2016

Agency	Tiered data centers (25 percent closure target)			Non-tiered data centers (60 percent closure target)		
	Total	Completed and planned closures	Percent	Total	Completed and planned closures	Percent
Department of Agriculture	35	28	80%	2,237	2,232	100% ^a
Department of Commerce	244	28	11%	131	57	44%
Department of Defense	1,342	365	27%	2,416	1,202	50%
Department of Education	2	1	50%	2	2	100%
Department of Energy	99	20	20%	118	65	55%
Department of Health and Human Services	77	18	23%	147	61	41%
Department of Homeland Security	33	15	45%	68	32	47%
Department of Housing and Urban Development	3	2	67%	0	0	n/a
Department of the Interior	93	22	24%	326	154	47%
Department of Justice	40	34	85%	70	70	100%
Department of Labor	11	11	100%	76	76	100%
Department of State	24	8	33%	366	0	0%
Department of Transportation	217	8	4%	245	159	65%
Department of the Treasury	57	23	40%	815	555	68%
Department of Veterans Affairs	275	23	8%	110	22	20%
Environmental Protection Agency	4	1	25%	79	32	41%
General Services Administration	43	27	63%	82	80	98%
National Aeronautics and Space Administration	55	35	64%	4	4	100%
National Science Foundation	0	0	n/a	1	0	0%
Nuclear Regulatory Commission	5	3	60%	11	4	36%
Office of Personnel Management	4	0	0%	0	0	n/a
Small Business Administration	4	1	25%	11	11	100%
Social Security Administration	3	1	33%	0	0	n/a
U.S. Agency for International Development	3	2	67%	7	1	14%
Totals	2,673	676	25%	7,322	4,819	66%

Source: GAO analysis of agency data.

Key: n/a = Not applicable ^aThe Department of Agriculture plans to close 99.8 percent of its non-tiered data centers; due to rounding, this appears as 100 percent.

Agencies' Progress in Achieving Consolidation Savings Has Slowed and Planned Goals Have Been Reduced

As mentioned earlier, FITARA contains a series of requirements for OMB and agencies related to reporting on cost savings. For example, according to the law, agencies are to submit a multi-year strategy for achieving the consolidation and optimization of data centers that includes year-by-year calculations of investment and cost savings through fiscal year 2018.

OMB guidance also provides additional information regarding how agencies should report cost savings and avoidances. Specifically, while FITARA requires agencies to report on cost savings, since 2013, OMB has required agencies to report both their data center consolidation cost savings and avoidances,⁵⁶ among other areas, as part of OMB's quarterly data collection process known as the integrated data collection.⁵⁷ More recently, OMB M-16-19 provided information regarding how agencies should implement the requirements of FITARA, including establishing a strategic plan that includes information on historical cost savings and avoidances due to data center consolidation and optimization through fiscal year 2015. In addition, OMB's guidance states that agency strategic plans are to include year-by-year calculations of target and actual agency-wide spending and cost savings on data centers from fiscal years 2016 through 2018.

⁵⁶OMB defines cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defines cost avoidances as results from an action taken in the immediate time frame that will decrease costs in the future.

⁵⁷OMB, Memorandum M-13-09.

In total, 18 of the 24 agencies collectively reported in their quarterly data submission to OMB that they had achieved approximately \$2.3 billion in cost savings and avoidances from their data center consolidation and optimization efforts from fiscal year 2012 through August 2016.⁵⁸ The Departments of Commerce, Defense, Homeland Security, and Treasury accounted for approximately \$2.0 billion (or 88 percent).

Six agencies that did not report any savings—the Departments of Housing and Urban Development, Labor, State, the Office of Personnel Management, the Small Business Administration, and the Social Security Administration—provided various reasons for not being able to do so. For example, the Department of Housing and Urban Development stated that it does not expect to experience any increase or decrease in its operational costs, but will continue to work within existing infrastructure services budget levels as it migrates two of its four data centers to inter-agency shared services or co-located data centers. As another example, the Small Business Administration stated that the agency has not yet achieved quantifiable cost savings that can be calculated or reported, but plans to identify possible savings as it moves forward with the development of its data center optimization plan.

Table 4 lists cost savings and avoidances as reported to OMB by the agencies from fiscal years 2012 through August 2016.

⁵⁸We previously reported in March 2016 that agencies had achieved approximately \$191 million in fiscal year 2011 cost savings and avoidances; however, agencies' quarterly data submissions to OMB only require reporting of fiscal year 2012 through 2016 savings and avoidances. Therefore, these savings are not accounted for in the total savings reported by agencies in their quarterly submission to OMB.

Table 4: Agency-reported Data Center Consolidation Cost Savings and Avoidances from Fiscal year 2012 through August 2016 (dollars in millions)

Agency	Fiscal year 2012	Fiscal year 2013	Fiscal year 2014	Fiscal year 2015	Fiscal year 2016^a	Total^b
Department of Agriculture	\$11.57	\$5.18	\$2.92	\$1.97	\$0.02	\$21.66
Department of Commerce	5.73	55.50	215.08	241.43	0.00	517.74
Department of Defense	6.10	125.37	34.03	127.77	566.06	859.33
Department of Education	0.25	0.24	0.24	0.24	0.24	1.19
Department of Energy	10.59	3.21	1.58	3.12	1.07	19.57
Department of Health and Human Services	0.00	0.62	6.02	0.00	0.00	6.64
Department of Homeland Security	43.19	93.11	58.38	53.68	0.00	248.36
Department of Housing and Urban Development	0.00	0.00	0.00	0.00	0.00	0.00
Department of the Interior	0.33	2.33	2.52	4.05	4.39	16.81
Department of Justice	3.19	6.31	35.34	18.85	9.01	72.70
Department of Labor	0.00	0.00	0.00	0.00	0.00	0.00
Department of State	0.00	0.00	0.00	0.00	0.00	0.00
Department of Transportation	0.00	0.00	1.70	1.88	1.31	4.89
Department of the Treasury	113.39	296.32	0.00	0.00	0.00	409.71
Department of Veterans Affairs	5.59	5.22	4.50	4.00	0.00	19.31
Environmental Protection Agency	17.78	13.09	1.12	4.07	0.00	36.06
General Services Administration	3.38	0.00	7.02	7.38	1.18	18.96
National Aeronautics and Space Administration	5.38	8.88	0.00	6.48	20.81	41.55
National Science Foundation	1.18	2.89	3.13	0.09	0.00	7.29
Nuclear Regulatory Commission	0.09	0.00	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	0.00	0.00	0.00
U.S. Agency for International Development	0.00	3.73	0.00	0.00	0.00	3.73
Total^a	227.74	622.00	373.57	475.00	604.09	2,302.39

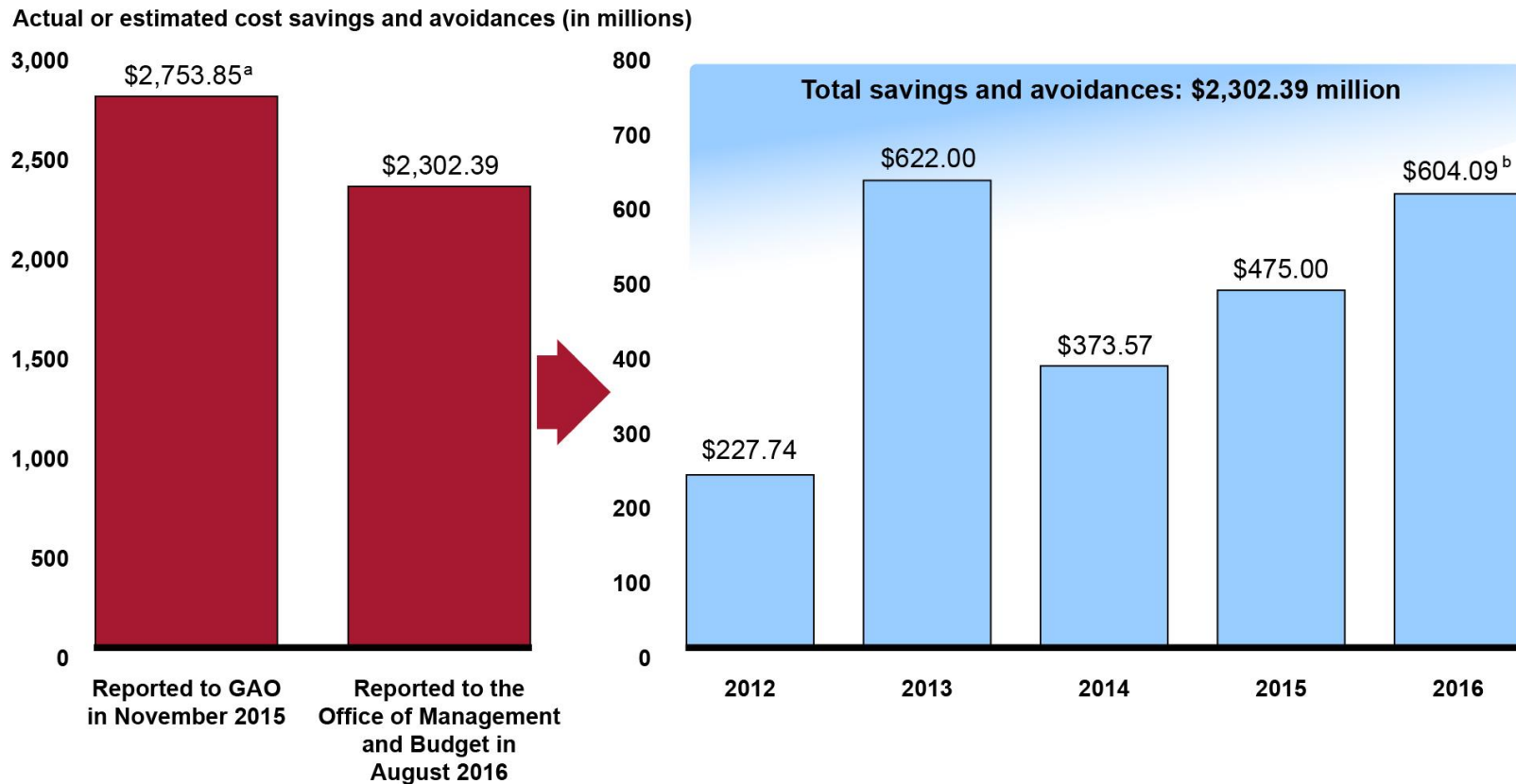
Source: GAO analysis of agency data.

^aReflects cost savings and avoidances achieved and reported through August 2016

^bTotals may not add up due to rounding.

The approximately \$2.3 billion in cost savings and avoidances reported to OMB are about \$451 million less than the total amount of achieved cost savings and avoidances that agencies reported to us in November 2015, even though agencies had 9 additional months to accrue additional savings. Figure 8 provides a comparison of the total cost savings and avoidances agencies reported to us in November 2015 with the achieved cost savings and avoidances that agencies reported to OMB in August 2016.

Figure 8: Comparison of the Total Data Center Consolidation Cost Savings and Avoidances Reported to GAO in November 2015 with the Amount Reported to OMB in August 2016



Source: GAO analysis of agency data.

^aThis figure includes approximately \$191 million in fiscal year 2011 savings; however, OMB only requires the reporting of fiscal year 2012 through 2016 savings and avoidances. Therefore, these savings are not accounted for in the total reported to OMB.

^bReflects cost savings and avoidances achieved through August 2016.

This difference in the amount of cost savings and avoidances reflects agencies reducing their total achieved savings reported to OMB for fiscal years 2012 through 2015 by about \$865 million, compared to the amount of savings they previously reported to us in November 2015.⁵⁹ Specifically, while 8 agencies had collectively increased their reported fiscal year 2012 through 2015 cost savings and avoidances by \$372.90 million compared to their prior reporting to us, 7 other agencies are reporting a total of nearly \$1.2 billion less in cost savings and avoidances over this time period in their quarterly reporting to OMB.

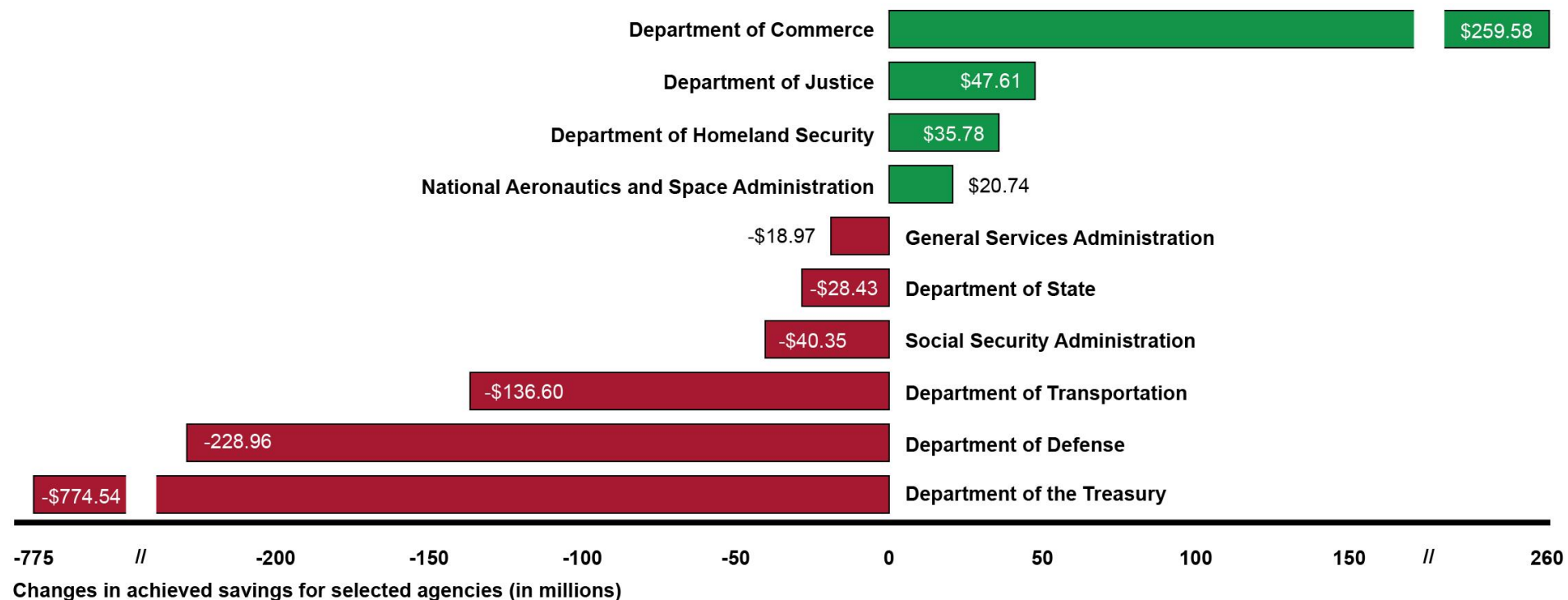
For example, the Department of Commerce increased its reported savings by approximately \$259.58 million in its August 2016 quarterly data submission to OMB, while the Department of Justice increased its reported savings by approximately \$48 million. In contrast, the Department of the Treasury reduced its fiscal year 2012 through 2015 reported savings by \$774.54 million. Our analysis determined that this was due to the department not including its fiscal year 2014 and 2015 cost savings and avoidances in its August 2016 quarterly submission to OMB, even though it previously reported this information to us in November 2015. According to officials from the Department of the Treasury's Office of the CIO, the department did not fully report its cost savings because it was reevaluating its approach to measuring data center-related savings to better align with the reporting expectations of OMB's quarterly data submissions, including improving the association of savings with more specific initiatives.

⁵⁹[GAO-16-323](#).

Six other agencies—the Departments of Defense, Interior, State, and Transportation, the General Services Administration, and the Social Security Administration—also had reductions in their fiscal year 2012 through 2015 reported savings. Reasons cited by these agencies included, among others, improved accounting for implementation costs and a better understanding of actual savings versus previously estimated savings.

Figure 9 summarizes the significant changes in selected agencies' fiscal year 2012 through 2015 cost savings and avoidances as reported to us in November 2015, compared to agencies' quarterly submissions to OMB in August 2016.

Figure 9: Summary of Significant Changes in Selected Agencies' Fiscal Years 2012 through 2015 Cost Savings and Avoidances as Reported to GAO in November 2015 Compared to Agency Quarterly Submissions to OMB in August 2016



Source: GAO analysis of agency data.

In addition to reported achieved savings through August 2016, our analysis of planned savings shows that many agencies have reduced their planned savings goals. Specifically, as of December 2016, 20 agencies collectively reported in their DCOI strategic plan a total of approximately \$378 million planned cost savings and avoidances from fiscal year 2016 through 2018. This is about \$3.6 billion less than the approximately \$4.0 billion in planned cost savings and avoidances over this same time period that agencies reported to us as of November 2015.⁶⁰ This is also about \$2.3 billion less than OMB's \$2.7 billion cost savings goal for agencies to achieve by the end of fiscal year 2018, as required by OMB M-16-19.⁶¹

As noted earlier, agencies were required to include in their DCOI strategic plan year-by-year targets of data center cost savings for fiscal years 2016 through 2018 and to make the plan publicly available by September 30, 2016. As of December 2016, 20 agencies had submitted their plan, while the remaining 4 agencies had not. (Additional discussion of the plans that had not been submitted is provided later in the briefing slides.)

⁶⁰[GAO-16-323](#).

⁶¹OMB, Memorandum M-16-19.

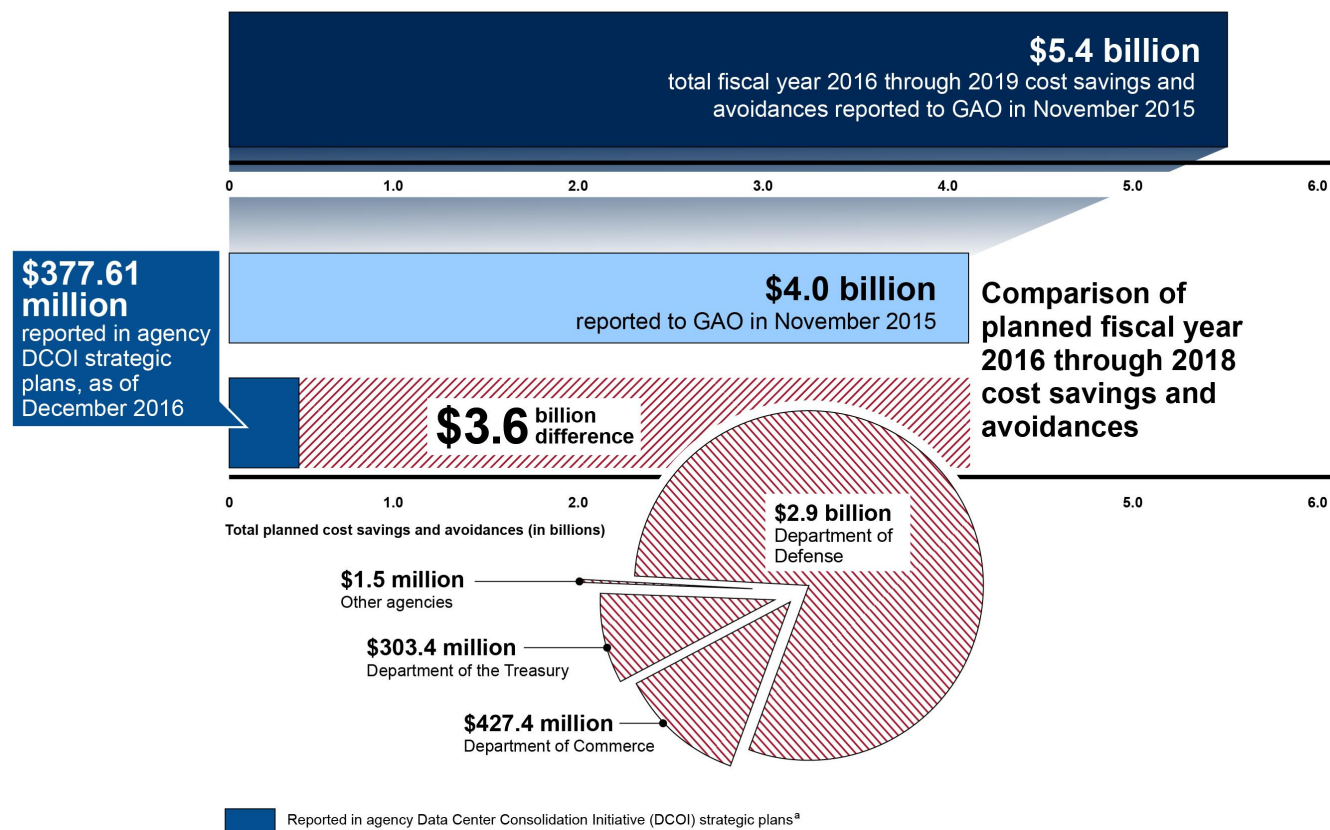
Of the 20 agencies that provided planned cost savings information in their DCOI strategic plan, 9 had increased their planned savings for fiscal year 2016 through 2018; 7 had decreased their planned savings; and 4 agencies' planned savings were the same as the amounts previously reported to us in November 2015. Among the agencies, the National Aeronautics and Space Administration increased its planned savings from zero to approximately \$75 million. In contrast, the Department of Commerce did not report any of its previously reported \$427 million planned savings in its DCOI strategic plan. Further, the Department of the Treasury had reduced its planned savings by about \$303 million.

The remaining 4 agencies that had not yet submitted their DCOI strategic plan account for about \$2.9 billion of the approximately \$3.6 billion reduction in planned savings, with the majority of the planned reduction expected to result from the Department of Defense.⁶²

Figure 10 summarizes the changes to planned fiscal year 2016 through 2018 cost savings, as reported by agencies to us in November 2015, compared to information in agencies' DCOI strategic plan.

⁶²According to the Department of Defense, it is planning to achieve a total of approximately \$1.0 billion in cost savings from fiscal year 2017 through 2018; however, the department has not yet completed and submitted a DCOI strategic plan that contains this information. According to the department, it plans to finalize its DCOI strategic plan by April 14, 2017.

Figure 10: Comparison of Planned Cost Savings and Avoidances Reported to GAO in November 2015 to Agency DCOI Strategic Plans, as of December 2016



Source: GAO analysis of agency data.

^aOMB does not require the reporting of fiscal year 2019 cost savings and avoidances in agency data center optimization strategic plans.

Table 5 provides a comparison of planned fiscal year 2016 through 2018 cost savings and avoidances reported in agency DCOI strategic plans and cost savings information that agencies reported to us in November 2015.

Table 5: Comparison of Planned Fiscal Year 2016 through 2018 Cost Savings and Avoidances Reported to GAO in November 2015 to Agency DCOI Strategic Plans, as of December 2016 (Dollars in millions)

Total planned fiscal year 2016 through 2018 cost savings and avoidances

	Reported to GAO in November 2015	Reported to OMB via the DCOI strategic plan	Difference
Department of Agriculture	\$16.43	\$23.62	\$7.19
Department of Commerce	427.38	0.00	(427.38)
Department of Defense	2,890.43	No plan submitted	(2,890.43)
Department of Education	0.71	1.00	0.29
Department of Energy	0.18	No plan submitted	(0.18)
Department of Health and Human Services	22.80	11.67	(11.13)
Department of Homeland Security	11.35	No plan submitted ^a	(11.35)
Department of Housing and Urban Development	3.00	0.00	(3.00)
Department of the Interior	0.00	13.20	13.20
Department of Justice	16.83	28.56	11.73
Department of Labor	9.97	0.00 ^b	(9.97)
Department of State	0.00	6.80	6.80
Department of Transportation	88.95	0.00	(88.95)
Department of the Treasury	506.14	202.71	(303.43)
Department of Veterans Affairs	3.70	0.00	(3.70)
Environmental Protection Agency	0.00	0.00	0.00
General Services Administration	2.51	2.58	0.07
National Aeronautics and Space Administration	0.00	75.21	75.21
National Science Foundation	0.00	0.00	0.00
Nuclear Regulatory Commission	0.00	0.00	0.00
Office of Personnel Management	0.00	No plan submitted	0.00
Small Business Administration	0.00	0.00	0.00
Social Security Administration	0.00	1.08	1.08
U.S. Agency for International Development	0.00	11.19	11.19
Total	4,000.37	377.61	(3,622.76)

Source: GAO analysis of agency data. ^aThe Department of Homeland Security submitted a draft strategic plan; however, according to the department, it was not expected to be finalized until December 30, 2016. ^bThe Department of Labor submitted anomalous figures for its planned savings, which have been omitted.

As previously mentioned, in March 2016 we reported⁶³ that 10 agencies had not established planned cost savings goals for fiscal years 2016 through 2018 even though they had closures planned during that time period. We concluded that, until agencies complete their savings goals, total planned savings amounts may be understated and agencies will not be able to satisfy the federal requirements regarding data center consolidation. Accordingly, we recommended that these agencies complete their planned data center cost savings targets for fiscal year 2016 through 2018. Most agencies agreed with the recommendations or had no comments. Nonetheless, agencies continue to be challenged in identifying and reporting their cost savings. In the absence of consistent and full reporting of fiscal year 2016 through 2018 planned savings in agencies' DCOI strategic plans, as required by FITARA and OMB, agencies' total planned savings will likely continue to be understated. Therefore, we are re-emphasizing the need for agencies to implement our prior recommendation to complete their planned data center cost savings targets.

⁶³[GAO-16-323](#).

Agency Optimization Strategic Plans are Not Consistent

As noted earlier, FITARA required agencies to submit a multi-year strategy to achieve the consolidation and optimization of their data centers no later than the end of fiscal year 2016. Among other things, this strategy was to include

- performance metrics that are consistent with the government-wide data center consolidation and optimization metrics;
- year-by-year calculations of investment and cost savings through October 1, 2018, broken down by each year and the amount of specific cost savings achieved each fiscal year;
- a timeline for agency activities to be completed, with an emphasis on benchmarks the agency can achieve by specific dates; and
- a statement to OMB indicating whether the agency's strategic plan has complied with the requirements of the law.

Further, OMB M-16-19 contains additional guidance for how agencies are to implement the strategic plan requirements of FITARA. Specifically, the guidance states that agency DCOI strategic plans are to include

- planned and achieved performance levels for each optimization metric, by year;
- planned and achieved closures, by year;
- year-by-year calculations of target and actual agency-wide spending and cost savings on data centers from fiscal years 2016 through 2018;
- historical cost savings and cost avoidances due to data center consolidation and optimization through fiscal year 2015; and
- a statement from the agency CIO indicating whether the agency complied with all reporting requirements in OMB M-16-19 and the data center requirements of FITARA.

Table 6 describes in more detail the key elements to be addressed in agencies' DCOI strategic plans.

Table 6: Requirements of Agencies' DCOI Strategic Plans, according to FITARA and OMB M-16-19

Key element	FITARA requirements	OMB requirements
Data center optimization metrics	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.	Planned and achieved performance levels for each optimization metric, by year.
Data center closure metrics	Timeline for agency activities to be completed under FDCCI, with an emphasis on benchmarks the agency can achieve by specific dates.	Planned and achieved closures, by year.
Cost savings metrics (fiscal years 2016 through 2018)	Year-by-year calculations of investment and cost savings through October 1, 2018, broken down by each year, including the amount of specific cost savings achieved each fiscal year through FDCCI.	Year-by-year calculations of target and actual agency-wide spending and cost savings on data centers from fiscal years 2016 through 2018, including (1) a description of any initial costs for data center consolidation and optimization and (2) life cycle cost savings and other improvements (including those beyond fiscal year 2018, if applicable).
Historical cost savings (through fiscal year 2015)	Amount of specific cost savings achieved each fiscal year through FDCCI.	Historical cost savings and cost avoidances due to data center consolidation and optimization through fiscal year 2015
CIO statement	Statement to OMB on whether the agency's strategic plan has complied with the requirements of the law; the submitted statement is to be made publicly available.	A statement from the agency CIO stating whether the agency has complied with all reporting requirements in OMB's memorandum and the data center requirements of FITARA. If the agency has not complied with all reporting requirements, the agency must provide a statement describing the reasons for not complying.

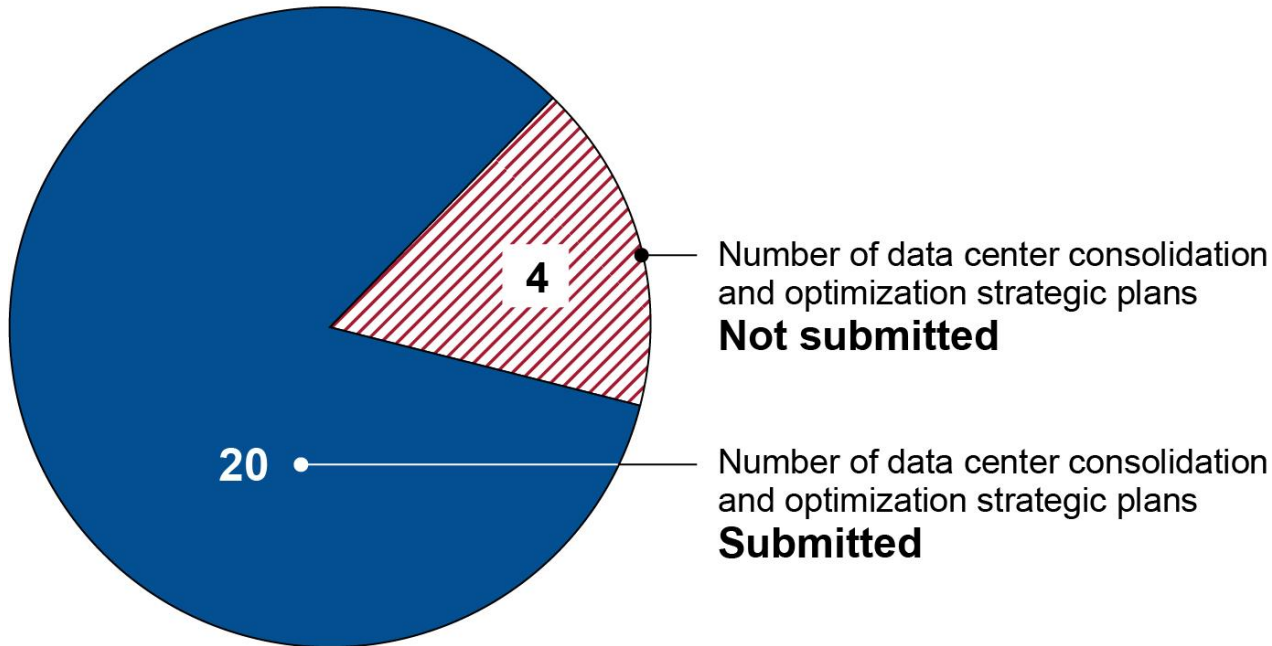
Source: FITARA and OMB.

According to OMB M-16-19, agencies were required to publicly post their DCOI strategic plan to their agency-owned digital strategy website by September 30, 2016, and post subsequent strategic plan updates by April 14, 2017 and April 13, 2018.

As of December 2016, 20 of the 24 agencies had publicly posted their DCOI strategic plan to their agency-owned digital strategy website. The remaining 4 agencies—the Departments of Defense, Energy, and Homeland Security, and the Office of Personnel Management—had not publicly posted their plan.⁶⁴ Figure 11 depicts the status of agencies' DCOI strategic plan submissions.

⁶⁴The Department of Homeland Security submitted a draft of its DCOI strategic plan; however, according to officials from the department's Office of the CIO, it is not expected to be finalized until December 30, 2016.

Figure 11: Status of Agency Submission of their DCOI Strategic Plan, as of December 2016



Source: GAO analysis of agency data.

The 4 agencies that had not yet posted their strategic plan provided several reasons for not doing so, such as facing challenges in obtaining all the required information needed to complete the plan. For example, while the Department of Homeland Security had completed a draft strategic plan, officials in the department's Office of the CIO stated that the department is currently working with its component agencies to get updated data on actual and planned data center spending, closures, and optimization progress, and intends to finalize its plan by December 30, 2016. As another example, officials in the Office of Personnel Management's Office of the CIO stated that the agency was still in the process of completing its strategic plan and ensuring that it reflects the most current progress of the agency's consolidation effort. Finally, officials in the Department of Defense's Office of the CIO stated that the department needed additional time to assess the impact of OMB M-16-19 on its data center inventory, optimization strategy, implementation plans, and investments. The officials stated that the department intends to submit its DCOI strategic plan by April 2017.

Further, of the 20 agencies that submitted their DCOI strategic plan, only 1—the National Science Foundation—fully met all five key elements required by the OMB memorandum implementing FITARA, while the remaining 19 either partially met or did not meet the requirements. For example, of those 19 agencies, 16 partially met the requirement for submitting cost savings metrics information. Table 7 provides an assessment of the completeness of agencies’ plans by key element.

Table 7: Agencies’ Completion of Required Information for DCOI Strategic Plan Elements, as of December 2016

Element	Number of agencies			Comments
	Fully met	Partially met	Not met	
Optimization metrics	9	11	4	Of the plans providing partial information, most provided planned metrics, but did not provide fiscal year 2016 achieved values for this element.
Data center closure metrics	10	10	4	Of the plans providing partial information, most provided planned metrics, but did not provide fiscal year 2016 achieved values for this element.
Cost savings metrics (fiscal years 2016 through 2018)	4	16	4	Of the plans providing partial information, most provided some planned metrics, but did not provide achieved fiscal year 2016 information.
Historical cost savings (through 2015)	7	8	9	Of the plans providing partial information, most provided historical cost savings, but did not provide historical costs and cost avoidances for this element.
CIO statement	1	16	7	For the agencies that partially met this element, the CIO certified their DCOI strategic plan as meeting all requirements; however, our evaluation indicated that the plans were incomplete. Further, all but two of the agencies did not publicly post their CIO statements.

Key:
 Fully met—the agency’s strategic plan addressed all of the requirements of FITARA and OMB’s M-16-19.
 Partially met—the agency’s strategic plan addressed some of the requirements of FITARA and OMB’s M-16-19.
 Not met—the agency’s strategic plan did not address any of the requirements of FITARA and OMB’s M-16-19.

Source: GAO analysis of agency data.

Note: The four agencies that did not submit a plan were rated as not met for each element.

Table 8 identifies the extent to which the agencies included the required key elements in their DCOI strategic plan.

Table 8: Completion of Key DCOI Strategic Plan Elements, by agency, as of December 2016

Agency	Data center optimization metrics	Data center closure metrics	Cost savings metrics (fiscal years 2016 through 2018)	Historical cost savings (through fiscal year 2015)	CIO statement
Department of Agriculture	Partially Met	Partially Met	Partially Met	Partially Met	Partially Met
Department of Commerce	Fully Met	Fully Met	Partially Met	Partially Met	Partially Met
Department of Defense	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted
Department of Education	Fully Met	Fully Met	Fully Met	Not Met	Partially Met
Department of Energy	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted
Department of Health and Human Services	Partially Met	Partially Met	Partially Met	Not Met	Partially Met
Department of Homeland Security ^a	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted
Department of Housing and Urban Development	Partially Met	Fully Met	Partially Met	Fully Met	Partially Met
Department of the Interior	Fully Met	Fully Met	Partially Met	Not Met	Partially Met
Department of Justice	Partially Met	Partially Met	Partially Met	Fully Met	Partially Met
Department of Labor	Partially Met	Fully Met	Fully Met	Partially Met	Partially Met
Department of State	Partially Met	Partially Met	Fully Met	Partially Met	Partially Met
Department of Transportation	Partially Met	Partially Met	Partially Met	Partially Met	Not Met
Department of the Treasury	Fully Met	Fully Met	Partially Met	Fully Met	Partially Met
Department of Veterans Affairs	Partially Met	Partially Met	Partially Met	Partially Met	Partially Met
Environmental Protection Agency	Fully Met	Fully Met	Partially Met	Partially Met	Not Met
General Services Administration	Partially Met	Partially Met	Partially Met	Fully Met	Partially Met
National Aeronautics and Space Administration	Partially Met	Partially Met	Partially Met	Partially Met	Partially Met
National Science Foundation	Fully Met	Fully Met	Fully Met	Fully Met	Fully Met
Nuclear Regulatory Commission	Fully Met	Fully Met	Partially Met	Fully Met	Partially Met
Office of Personnel Management	Not submitted	Not submitted	Not submitted	Not submitted	Not submitted
Small Business Administration	Partially Met	Partially Met	Partially Met	Fully Met	Not Met
Social Security Administration	Fully Met	Partially Met	Partially Met	Not Met	Partially Met
U.S. Agency for International Development	Fully Met	Fully Met	Partially Met	Not Met	Partially Met

Key: ● = fully met—the agency’s strategic plan addressed all of the requirements of FITARA and OMB’s M-16-19. ◐ = partially met—the agency’s strategic plan addressed some of the requirements of FITARA and OMB’s M-16-19. ○ = not met—the agency’s strategic plan did not address any of the requirements of FITARA and OMB’s M-16-19.

Source: GAO analysis of agency data.

^aThe Department of Homeland Security submitted a draft strategic plan; however, according to the department, it was not expected to be finalized until December 30, 2016.

According to our analysis of agencies' DCOI strategic plans, most of the agencies that submitted their plan met OMB's requirements for providing planned data center optimization, closure, and savings goals, but did not provide information on progress achieved for fiscal year 2016 in these areas. According to OMB M-16-19, agencies' DCOI strategic plans are required to include achieved performance levels for each OMB optimization metric, closures, and actual cost savings. Although the DCOI strategic plans were due to OMB on September 30, 2016 (before the fiscal year ended), agencies could still have reported achieved progress information in their plan. For example, agencies report data related to fiscal year 2016 achieved optimization progress, closures, and cost savings through other OMB reporting mechanisms, such as the quarterly data submissions, which could have been included in their DCOI strategic plan.

The 19 agencies provided a variety of reasons for why their plan did not address all the elements required by FITARA and OMB. These reasons include the difficulty of reporting on fiscal year 2016 actual savings and closures when the data are not yet finalized and the receipt of incomplete data from some agency components. For example, six agencies stated that they were in the process of collecting information regarding fiscal year 2016 achieved closures, savings, and optimization progress and planned to include the information in a future strategic plan. The reasons provided by the other agencies varied. For example, the Department of Commerce's Director of the Office of IT Policy and Planning noted that the department did not have complete data from its components, but expected that the data quality would improve during subsequent reporting and would be included in a future update of its strategic plan. In addition, officials in the Department of the Interior's Office of the CIO stated that the department was still in the process of producing a comprehensive estimate of all costs associated with data center closures and optimization to include in its plan.

We also found inconsistencies in the reporting on historical savings through fiscal year 2015 between agencies' DCOI strategic plans and their quarterly reports to OMB. For example, of the 20 agencies that had submitted their DCOI strategic plan as of December 2016, 9 agencies—the Departments of Agriculture, Housing and Urban Development, Justice, and Veterans Affairs, the National Aeronautics and Space Administration, the National Science Foundation, the Nuclear Regulatory Commission, the Small Business Administration, and the Social Security Administration—consistently reported savings information in their DCOI strategic plan and their August 2016 quarterly report to OMB.

The remaining 11 agencies did not consistently report achieved cost savings information through fiscal year 2015. When combined with the 4 agencies that did not submit their DCOI strategic plan to OMB, these inconsistencies result in a difference of approximately \$1.5 billion in the achieved savings through fiscal year 2015 that agencies are reporting to OMB in their quarterly data submission compared to their DCOI strategic plan.

Table 9 provides a comparison of agency cost savings and avoidances reported to OMB in their August 2016 quarterly data submission and their DCOI strategic plan.

Table 9: Comparison of Agency Cost Savings and Avoidances Reported to OMB in the August 2016 Quarterly Data Submission to their DCOI Strategic Plan, as of December 2016 (Dollars in millions)

Agency	Total cost savings and avoidances through fiscal year 2015		
	Reported to OMB via the August 2016 quarterly data submission to OMB	Reported to OMB via the DCOI strategic plan	Consistent information?
Department of Agriculture	\$21.64	\$21.63	yes ^a
Department of Commerce	517.74	0.00	no
Department of Defense	293.27	No plan submitted	no
Department of Education	0.95	0.00	no
Department of Energy	18.50	No plan submitted	no
Department of Health and Human Services	6.64	0.00	no
Department of Homeland Security	248.36	No plan submitted	no
Department of Housing and Urban Development	0.00	0.00	yes
Department of the Interior	9.23	0.00	no
Department of Justice	63.69	63.69	yes
Department of Labor	0.00	4.85	no
Department of State	0.00	34.90	no
Department of Transportation	3.58	0.00	no
Department of the Treasury	409.71	20.95	no
Department of Veterans Affairs	19.31	19.31	yes
Environmental Protection Agency	36.06	0.00	no
General Services Administration	17.78	0.00	no
National Aeronautics and Space Administration	20.74	20.70	yes ^a
National Science Foundation	7.29	7.29	yes
Nuclear Regulatory Commission	0.09	0.09	yes
Office of Personnel Management	0.00	No plan submitted	no
Small Business Administration	0.00	0.00	yes
Social Security Administration	0.00	0.00	yes
U.S. Agency for International Development	3.73	0.00	no
Total	1,698.30	193.41	

Source: GAO analysis of agency data. ^aDue to rounding during reporting, these figures can be considered consistent.

The inconsistent reporting of historical cost savings is due primarily to weaknesses in the quality of agencies' strategic plans. As previously stated, 19 of the strategic plans we reviewed did not contain all key elements required by OMB M-16-19. In particular, 17 agencies had partially addressed or did not address the requirement to include historical cost savings in their strategic plan.

The lack of consistency between the agencies' reporting of achieved savings is also due, in part, to weaknesses in OMB's oversight of agencies' savings information and their DCOI strategic plan. According to staff in OMB's Office of the Federal Chief Information Officer, the OMB staff who review agency budget submissions also worked with the agencies to ensure that they provided complete savings information in their DCOI strategic plan. However, as previously noted, several agencies' DCOI strategic plans did not include the fiscal year 2012 through 2015 savings that were reported in their August 2016 quarterly cost savings update. Further, we identified several instances in which agencies' plans had underreported their planned cost savings and avoidances. We also found other errors in agencies' quarterly data reporting, such as incorrectly categorized data center savings due to initiatives that were incorrectly marked as being data center-related.

Addressing these inconsistencies and completing these plans is increasingly important in light of the enactment of FITARA, which requires agencies to establish a multi-year strategy to consolidate and optimize their data centers that includes performance metrics and cost savings goals. Moreover, as OMB's data center consolidation and other related initiatives have been underway since 2010, agencies should have all the information necessary to complete their plan. Until agencies address the missing elements in their DCOI strategic plan, they will be at risk of not realizing anticipated savings, improved infrastructure utilization, and energy efficiency; furthermore, they may not be able to satisfy the federal requirements regarding data center consolidation and optimization. In addition, until OMB improves its oversight of agencies' reporting of cost savings and agencies ensure that their savings information is consistent across all reporting mechanisms, the likelihood of further reporting errors is increased. Finally, until OMB ensures that agencies' DCOI strategic plans are complete, it may be challenged in demonstrating that DCOI is meeting its established objectives.

Continuing to build on progress made under FDCCI, agencies have reported significant data center closures—totaling more than 4,300 through August 2016—with the Departments of Agriculture, Defense, Interior, and Treasury accounting for 84 percent of the total. Current plans identify more than 1,200 additional centers planned for closure through fiscal year 2019. If executed as planned, such closures will help agencies continue to increase their operational efficiency and achieve savings.

Agencies have also reported significant consolidation and optimization cost savings and avoidances, which totaled about \$2.3 billion through August 2016. However, reductions in the amount of achieved savings reported to OMB—particularly by the Department of the Treasury—have resulted in a net decrease of more than \$400 million in these savings, compared to amounts we previously reported in 2015. Further, as of December 2016, agencies' total planned cost savings of about \$378 million were more than \$3.6 billion less, compared to the amounts that we reported in 2015, and more than \$2.3 billion less than OMB's fiscal year 2018 cost savings goal of \$2.7 billion. In the absence of planned savings that remain consistent and fully reported, total planned savings are likely to continue to be understated. As a result, we are re-emphasizing the need for agencies to implement our prior recommendation to complete their planned data center cost savings targets.⁶⁵

⁶⁵[GAO-16-323](#).

OMB M-16-19 was a considerable step forward in providing agencies with the detailed guidance to establish a strategic plan to optimize their data centers and achieve cost savings. However, four agencies have not yet submitted the required strategic plan even though these were due by the end of fiscal year 2016. Further, nearly all of the agency strategic plans that were submitted did not fully address all the key elements required by FITARA and OMB's memorandum. Moreover, inconsistencies in the reporting of achieved savings in agencies' plans and their quarterly reporting to OMB—totaling almost \$1.5 billion—raise further questions regarding the accuracy of agency reporting and OMB's oversight. Addressing these inconsistencies and expeditiously completing these plans is increasingly important in order to meet the requirements of FITARA and implementing guidance, which requires agencies to establish a multi-year strategy to consolidate and optimize their data centers. Until OMB improves its oversight of the information in agencies' DCOI strategic plans, and agencies complete the missing elements, they may be challenged in implementing the data center consolidation and optimization provisions of FITARA intended to increase operational efficiency and achieve cost savings. Further, until OMB improves its oversight of agencies' reporting of cost savings and agencies address inconsistencies in their reporting, savings will continue to be underreported.

Recommendations for Executive Action

To better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, we are making two recommendations to OMB. Specifically, we recommend that the Director of OMB direct the Federal CIO to provide the necessary oversight to

- ensure that agencies complete their DCOI strategic plan in accordance with OMB's guidance implementing FITARA and
- ensure that agency reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans.

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, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, Small Business 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 complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Recommendations for Executive Action

Finally, we recommend that the Secretaries of the Departments of Commerce, Education, Health and Human Services, Interior, Labor, State, Transportation, and Treasury; the Administrators of the Environmental Protection Agency, General Services Administration, and the U.S. Agency for International Development take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Agency Comments and Our Evaluation

We received comments on a draft of our briefing from OMB and 17 of the 24 agencies to which we made recommendations. In its comments, OMB neither agreed nor disagreed with our recommendations, but noted the state of agencies' strategic plans and its work with agencies to complete their plans.

Among the responding agencies, 4 stated that they agreed with our recommendations, 1 (Agriculture) indicated that it did not agree with our recommendation, 3 commented on our findings but did not provide a position on the recommendations, and 8 stated that they had no comments. In addition, 1 provided only technical comments, while 2 agencies provided technical comments along with their other comments. All technical comments were incorporated as appropriate. We did not receive a response from 7 agencies.

The following summarizes the comments that we received.

- In an e-mail received on December 13, 2016, from staff in its Office of the General Counsel and Office of the Federal CIO, OMB neither agreed nor disagreed with our recommendations. However, OMB acknowledged that not all agencies' strategic plans had been submitted, that some plans were incomplete, and that it continued to work with agencies to complete their plans. Specifically, OMB stated that oversight of agency compliance with DCOI is a priority of the Federal CIO. It added that DCOI strategic plans were first due on September 30, 2016 and that since that time, desk officers within the Office of the Federal CIO have communicated frequently with agency points of contact to clarify requirements, answer questions, and press agencies to ensure their strategic plans are publicly posted, complete, and accompanied by a CIO certification statement.

Agency Comments and Our Evaluation

- In an e-mail received on December 7, 2016, a senior advisor from the Department of Agriculture's Office of the CIO disagreed with our finding that the department had not fully complied with the requirement for the department's CIO to provide a statement certifying whether the Agriculture DCOI strategic plan fully complied with FITARA; the official asserted that the CIO's statement was delivered to OMB on time. While we agree that the statement was provided to OMB in a timely manner, the department did not make the statement publicly available, as required by FITARA. As such, we continue to believe that our finding is correct.

Agriculture also did not agree with our recommendation to complete the missing elements in its DCOI strategic plan, stating that the information for all plan elements was provided, and that the elements were correctly formatted and validated. However, OMB's guidance required agencies to include fiscal year 2016 achieved results for the three performance metrics discussed earlier in this briefing. Our assessment of Agriculture's plan determined that the department did not include achieved fiscal year 2016 results for any of the three metrics, as required. As noted earlier, such information plays an important role in agencies' ability to realize anticipated savings, improved infrastructure utilization, and energy efficiency. Because Agriculture's plan did not include this information, we maintain that our recommendation is appropriate.

- In an e-mail received on December 8, 2016, an audit liaison in the Department of Commerce's Office of Acquisition Management stated that the department had no comments on the draft briefing.
- In an e-mail received on December 8, 2016, an audit liaison in the Department of Defense's Office of the CIO stated that the department had no comments on the draft briefing.

Agency Comments and Our Evaluation

- In an e-mail received on December 8, 2016, an audit coordinator in the Department of Energy's Office of the CIO stated that the department had no comments on the draft briefing.
- In an e-mail received on December 8, 2016, a program analyst from the Department of Homeland Security's GAO-Office of the Inspector General Audit Liaison Office provided technical comments, which we incorporated as appropriate. In these comments, the department stated that it generally agreed with our recommendation.
- In an e-mail received on December 8, 2016, an audit liaison in the Department of the Interior's Office of the CIO stated that the department agreed with our recommendations. The department also provided technical comments which we have incorporated as appropriate.
- In an e-mail received on December 8, 2016, an audit liaison from the Department of Labor stated that the department agreed with our recommendations.
- In an e-mail received on December 8, 2016, a senior management analyst from the Department of State's Bureau of the Comptroller and Global Financial Services stated that the department had no comments on the draft briefing.
- In an e-mail received on December 8, 2016, the Department of Transportation's Director of Audit Relations and Program Improvement stated that the department concurred with our recommendations.

Agency Comments and Our Evaluation

- In an e-mail received on December 8, 2016, an audit liaison in the Department of the Treasury's Office of the CIO commented on three of our findings. Specifically, the comments noted that the differences we identified in Treasury's reported savings were due to a change in calculation methodology and that the department would look to synchronize the savings reported in its quarterly update with the numbers reported in their DCOI strategic plan.

The department also noted that it had submitted what it believed to be a complete strategic plan that addressed all of OMB's requirements. However, our assessment of the plan found that Treasury did not break down consolidation costs on an annual basis, or include the cost of optimization, both required elements. As such, we maintain that our finding is correct.

Finally, the department noted that Treasury's November 2016 quarterly update contained more actual and planned data center closures than expected, due to a clarification on the definition of "closed." While we acknowledge the department's statement, the scope of our review was limited to information reported in August 2016.

- In an e-mail received on December 8, 2016, a program analyst from the Department of Veterans Affairs' Office of Information and Technology stated that the department had no comments on the draft briefing.
- In an e-mail received on December 8, 2016, GSA's Associate CIO of Enterprise Planning and Governance described actions taken to improve the completeness of the required content in the agency's published DCOI strategic plan. Based on the revised plan, we updated our assessment of the plan's contents and made appropriate changes in the briefing to reflect the updated information.

Agency Comments and Our Evaluation

- In an e-mail received on December 9, 2016, the National Science Foundation's audit liaison noted actions taken to address missing information in the agency's DCOI strategic plan. Our draft briefing provided to the agency for comment included a recommendation that the agency take action to complete the missing elements in its strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB. Thus, based upon the information provided to us, which included the cost savings metrics and historical cost savings information that was previously missing from the strategic plan, we have removed the recommendation and made appropriate changes in the briefing to reflect the updated information.
- In an e-mail received on December 8, 2016, a senior analyst in the Office of Personnel Management's Office of Internal Oversight and Compliance provided technical comments which we incorporated as appropriate.
- In an e-mail received on December 8, 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 draft briefing.
- In an e-mail received on December 12, 2016, the Social Security Administration's audit liaison stated that the agency had no comments on the draft briefing.
- In an e-mail received on December 7, 2016, an audit analyst in 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.

Agency Comments and Our Evaluation

The Departments of Education, Health and Human Services, Housing and Urban Development, and Justice; the Environmental Protection Agency; the National Aeronautics and Space Administration; and the Nuclear Regulatory Commission did not provide comments on the draft briefing.

Appendix II: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE
Office of the Secretary
Washington, D.C. 20230

March 30, 2017

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 review and comment on the Government Accountability Office (GAO) draft report titled *Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings* (GAO-17-388, April 2017).

The Department of Commerce agrees with the two recommendations provided by GAO and will provide an updated Data Center Optimization Initiative (DCOI) strategic plan by the required Office of Management and Budget (OMB) April 17, 2017, submission deadline. Additionally, the Department will continue its cost savings and avoidance aggregation efforts through the OMB-established process, which has a submission deadline of May 31, 2017. On behalf of the Department of Commerce, I have enclosed our detailed comments on the draft report.

If you have any questions, please contact Rod Turk, Acting Chief Information Officer, at (202) 482-4797.

Sincerely,

A handwritten signature in blue ink that reads "Ellen Herbst".

Ellen Herbst

Enclosure

Department of Commerce
Formal Comments on the Draft GAO Report Titled
*Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in
Reported Savings (GAO-17-388, April 2017)*

The Office of the Chief Information Officer has reviewed the draft report and we offer the following comments for GAO's consideration.

General Comments

The GAO made two recommendations in the report. The first recommendation was made to 23 agencies, including the Department of Commerce, while the second was directed to 11 agencies, including Commerce.

Comments on Recommendations

The Government Accountability Office made two recommendations to the Department of Commerce in the report.

Recommendation 1:

"Commerce should take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB."

Commerce Response: The Department of Commerce agrees with this recommendation. Commerce was credited, along with the Departments of Defense, Homeland Security, and Treasury, with generating an estimated \$2 billion (87% of the total) cost savings and avoidances from data center consolidation and optimization efforts for fiscal years 2012 through August 2016.

Further, Commerce met two of the five key DCOI strategic plan elements, and partially met the additional three key elements. Per OMB and FITARA guidance, Commerce will continue to aggregate its data center inventory and update its DCOI strategic plan by the OMB April 17, 2017, submission deadline.

Recommendation 2:

"Commerce should take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans."

Commerce Response: The Department of Commerce agrees with this recommendation. As part of its integrated data collection (IDC) submission to OMB, Commerce will continue to collect and report all initiatives resulting in cost savings and avoidances to ensure IT savings are being captured and realized.

Appendix III: Comments from the Department of Education



UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE CHIEF INFORMATION OFFICER

THE CHIEF INFORMATION OFFICER

March 24, 2017

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

Dear Mr. Powner:

I am writing to respond to recommendations made in the Government Accountability Office (GAO) draft report, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings, (GAO-17-388)." The U.S. Department of Education (Department) appreciates the opportunity to respond to the GAO report. Below is our response to GAO's specific recommendations to the agencies:

Recommendation 1: Take action to complete the missing elements in their respective Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit their completed strategic plan to the Office of Management and Budget (OMB).

Recommendation 2: Take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response: The Department is committed to ensuring that the data center consolidation and optimization information we report is complete and consistent across all reports, including quarterly data submissions and DCOI strategic plans. The lack of Historical Cost Savings referenced in Table 8 along with inconsistencies described in Table 9 between the August 2016 Quarterly Data Submission and the DCOI Strategic Plan area are the result of following the DCOI Strategic Plan Schema at <https://policy.cio.gov/fitara-resources/schema>. The site provides guidance for submitting data associated with a "lifecycleCostSavingsEstimated" field instead of a "historicalCostSavings" field required for the submission. As a result, the Department did not include historical cost savings and avoidance information through fiscal year 2015 in the DCOI Strategic Plan, which is a requirement for both metrics.

400 MARYLAND AVE. S.W., WASHINGTON, DC 20202
www.ed.gov

The Department of Education's mission is to promote student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access.

Attached is an updated version of the JSON file that includes historical cost savings information. I ask that you consider reflecting this information in your report and revising your associated metrics accordingly. Upon authorization of this change, I will ensure that the revised JSON file is posted publicly at <https://www.ed.gov/digitalstrategy/datacenteroptimizationstrategicplan.json> under the heading "Data Center Optimization Initiative Strategic Plans" in accordance with previous guidelines.

Again, I appreciate the opportunity to respond to the GAO report. If you or your staff members have any questions regarding our response, please contact me at (202) 245-6252 or e-mail (Jason.Gray@ed.gov).

Sincerely,



Jason K. Gray
Chief Information Officer

Appendix IV: Comments from the Department of Energy



Department of Energy
Washington, DC 20585

March 29, 2017

Mr. David A. Powner
Director, Information Technology Management Issues
Government Accountability Office

Dear Mr. Powner:

The Department of Energy (DOE) Office of the Chief Information Officer (OCIO) appreciates the opportunity to provide comments to the Government Accountability Office's (GAO) draft report, *DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*. The Department of Energy reviewed the report and concurs with the one recommendation identified for the Department: ***Take action to complete the missing elements in the Department's Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.***

Management Response: On February 10, 2017, the Department of Energy submitted the FY16 DCOI Strategic Plan to OMB and posted a copy on the Energy.Gov website (<https://energy.gov/downloads/federal-information-technology-acquisition-reform-act-fitara-data-resources>). As reported in the DCOI Strategic Plan, DOE met or exceeded all FY16 goals and established performance targets for FY17 and FY18. DOE also reported all past and present cost savings and avoidance achieved. DOE expects to complete a comprehensive inventory of its data centers by April 14, 2017, the release date for the FY17 DCOI Strategic Plan.

If you have any questions, please feel free to contact Mr. Jake Wooley at 301-903-0992.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Green".

Robert Green
Acting Chief Information Officer



Appendix V: Comments from the Department of Homeland Security

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



**Homeland
Security**

March 28, 2017

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

Re: Management's Response to Draft Report GAO-17-388, "DATA CENTER
OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in
Reported Savings"

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 recognition of DHS's completion of a draft strategic plan and work with its component agencies to obtain updated data on actual and planned data center spending, closures, and optimization progress. Earlier this month, we finalized this plan and submitted it to the Office Management and Budget (OMB). GAO also acknowledged our reported data center consolidation costs savings and avoidances of more than \$248 million. The Department remains committed to the successful implementation of the Data Center Optimization Initiative (DCOI) and further improvements in the performance of federal data centers.

The draft report contained one recommendation for DHS with which the Department concurs. Attached find our detailed response to the recommendation.

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 again in the future.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim H. Crumpacker".

JIM H. CRUMPACKER, CIA, CFE
Director
Departmental GAO-OIG Liaison Office

Attachment

**Attachment: DHS Management Response to the Recommendation
Contained in GAO-17-388**

GAO recommended that the Secretary of Homeland Security:

Recommendation: Take action to complete the missing elements in the DHS DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

Response: Concur. On March 10, 2017, the DHS Office of the Chief Information Officer finalized the DCOI strategic plan and uploaded it onto the DHS Digital Strategy webpage, as directed by OMB. The DHS DCOI strategic plan contains all five of the required elements and addresses challenges identified by the agency. The two other OMB DCOI requirements – the DCOI metrics and the OCIO Certification – were uploaded to the DHS Digital Strategy webpage on February 24, 2017 and February 28, 2017, respectively.

Supporting documentation corroborating these actions were provided to GAO under separate cover. We request that GAO consider this recommendation resolved and closed as implemented.

**OCIO Comments for
Draft Report GAO-17-388
Data Center Optimization: Agencies Need to Complete Plans to Address
Inconsistencies in Reported Savings**

Section / Page of Document Referenced	Comments
What GAO Found Section, Recommendations for Executive Action, Page 14, 2nd Paragraph: “We also recommend that the following 23 Agencies (The Secretaries of . . . Housing and Urban Development (HUD) . . .), . . . each take action to complete the missing elements in their respective DCOI strategic plan, challenges, and submit their complete strategic plan to OMB.	<p>HUD requests that GAO remove HUD from the list of Agencies that still have not completed elements in their Data Center Consolidation strategic plan.</p> <p>HUD’s <u>Federal Data Center Consolidation Initiative (FDCCI) Strategic Plan</u> (09/30/2011) confirmed data center consolidation requirements had been met. To address the Data Center Optimization Initiative (DCOI) requirements, HUD committed to migrating its two contractor owned / contractor operated (CO/CO) data centers to two DCOI compliant collocated, shared multitenant data centers. Therefore, since HUD’s migration efforts will result in a net increase/decrease of zero (0), OMB identified a <i>\$0 targeted cost savings for HUD</i> (https://datacenters.cio.gov/agency-strategic-plan/) and approved the <i>N/A option for our estimated savings sections of our “Data Center Optimization Initiative Strategic Plan (FY2016-FY2018)”</i>.</p>
General Comment	HUD respectfully requests that GAO review their statistics/numbers and remove HUD from all counts that identify agencies that are not compliant.
Results Objective 1, Table 1, Page 36	Throughout 2016, HUD was actively migrating one of the CO/CO data centers and at the time of GAO review, HUD had successfully implemented the new collocated multitenant data center for non-production and Disaster Recovery requirements and was in the process of migrating the production environment to the new shared multitenant data center. Consequently, in the report that GAO reviewed, HUD identified the two CO/CO data centers and the one collocated data center. HUD is now in the process of migrating its remaining CO/CO and associated non-tiered data centers to HUD’s two new DCOI compliant data centers. At the end of this data center migration project that is target for completion in 2017, HUD will be fully operational in 2 DCOI compliant data centers. Consequently, HUD will have a net increase/decrease of zero (0).
Results Objective 1, Table 3, Page 42	To address the DCOI requirements, HUD committed to migrating its two CO/CO data centers to two DCOI compliant

**Appendix VI: Comments from the Department
of Housing and Urban Development**

	collocated, shared multitenant data centers. Therefore, HUD’s migration efforts will result in a net increase/decrease of zero (0)
Results Objective 2, Page 44, 2 nd paragraph, “For example, the Department of Housing and Urban Development does not expect to experience any increase or decrease in its operational costs, but will continue to work within existing infrastructure services budget levels as it migrates two of its four data centers to inter-agency shared services or co-located data centers.	HUD requests that GAO remove the identified example for HUD due to inaccuracies in the reported information. HUD’s DCOI strategic plan identifies migration efforts, not consolidation efforts. HUD is migrating two CO/CO data centers to two DCOI compliant data centers with no increase in staff or operational costs. As documented in HUD’s Strategic Plan, HUD’s data center consolidation is complete and any cost savings are already realized. Any further savings will come from adjustments to current Data Center operations in order to achieve improved performance or efficiencies.
Results Objective 2, Table 5, Page 54	HUD requests that GAO use N/A, in place of dollar figures when portraying HUD’s cost savings and avoidance. OMB agreed that HUD could report N/A, to most accurately reflect HUD’s cost savings and avoidance given that the Department has already consolidated data centers. The \$3M that had been identified to GAO is considered out of scope for this effort since it was not costs due to data center consolidation efforts, but instead based on performance and operational efficiencies and identified prior to the OMB’s issuance of DCOI guidance.
Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; Data center optimization metrics column	HUD requests that GAO use a “Fully Met” symbol to reflect that HUD provided input for Metrics 1 and 2. Cost savings and avoidance were realized prior to FY 2016. Metrics 3-7 reporting shows N/A because HUD is a tenant in an Inter-Agency Shared Services Provider (ISSP) facility, therefore the ISSP of the facility (NASA/Stennis) assumes the OMB DCOI data submission requirement.
Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; Cost savings metrics (fiscal years 2016 through 2018) column	<p>HUD’s <u>FDCCI Strategic Plan (09/30/2011)</u> confirmed data center consolidation requirements had been met. OMB identified <i>a \$0 targeted cost savings for HUD (https://datacenters.cio.gov/agency-strategic-plan/) and approved the N/A option for our estimated savings sections of our “Data Center Optimization Initiative Strategic Plan (FY2016-FY2018)”</i>.</p> <p>Therefore, HUD requests that GAO use a “Fully Met” symbol to reflect that HUD has already realized its cost savings and avoidance since HUD’s Data Center Consolidation is complete. This is measured against the Strategic Plan that was submitted in JavaScript Object Notation (JSON).</p>

**Appendix VI: Comments from the Department
of Housing and Urban Development**

<p>Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; CIO statement column</p>	<p>HUD requests that GAO use a "Fully Met" symbol to reflect that HUD submitted a CIO Statement on October 27, 2016, that accurately certified that all elements of HUD's Data Center Consolidation are fully met. This is measured against the Strategic Plan that was submitted in JSON.</p>
<p>Recommendations for Executive Action, Page 72, 2nd Paragraph, "We also recommend that the Secretaries of Departments of . . . Housing and Urban Development . . . take action to complete the missing elements in their respective DCOI strategic plan . . ."</p>	<p>HUD requests that GAO remove HUD from the list of Agencies that still have not completed elements in their Data Center Consolidation strategic plan. HUD's <u>FDCCI Strategic Plan</u> (09/30/2011) confirmed data center consolidation requirements had been met. Therefore, when OMB issued M16-09, HUD's Data Center consolidation efforts were complete and associated cost savings realized at least 10 years prior. As a result, <i>OMB provided the N/A option when asked for our estimated savings sections of our "Data Center Optimization Initiative Strategic Plan (FY2016-FY2018)".</i></p> <p>HUD reconfirms that all the elements identified by OMB were addressed in HUD's September 2016 DCOI Strategic Plan.</p>

Appendix VII: Comments from the Department of the Interior



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

APR 06 2017

Mr. David 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 Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings* (GAO-17-388). We appreciate GAO's review of the Chief Financial Officers (CFO) Act agencies' progress in achieving consolidation savings and avoidances from their data center consolidation efforts.

The Department concurs with the two recommendations and will take action to complete the missing elements in the Department's *Data Center Optimization Initiative (DCOI) Strategy and Plans for 2016-2018*, including addressing any identified challenges, submitting the completed strategic plan to the Office of Management and Budget, and ensuring that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

We look forward to the final report. If you have any questions or need additional information, please contact Sylvia Burns, Chief Information Officer, at Sylvia_Burns@ios.doi.gov.

Sincerely,

Sylvia Burns
Chief Information Officer

Appendix VIII: Comments from the Department of State



United States Department of State

Comptroller

Washington, DC 20520

Charles M. Johnson, Jr.
Managing Director
International Affairs and Trade
Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548-0001

MAR 31 2017

Dear Mr. Johnson:

We appreciate the opportunity to review your draft report, "DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" GAO Job Code 101420

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 Alison Bowling, Lead Information Security Specialist, or Colleen Hinton, IT Policy Analyst, Bureau of Information Resource Management at (202) 634-0292 or (202) 634-0320.

Sincerely,


Christopher H. Flaggs

Enclosure:
As stated

cc: GAO – David A. Powner
IRM– Robert Adams (Acting)
State/OIG - Norman Brown

Department of State Comments on GAO Draft Report

DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings
(GAO-17-388, GAO Code 101420)

The Department of State appreciates the opportunity to respond to the GAO draft report *"Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings."* State concurs with the recommendations below:

Recommendation: Take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Response: The Department has established a data center optimization strategic plan that defines our optimization targets relative to the Department's current inventory of enterprise tiered data centers and provides metrics where we have the existing capability to capture them. Those metric target values were reported to OMB in the Department's DCOI strategic plan in November 2016. The Department's DCOI strategic plan submission included a response for every element except Automated Monitoring and Non-Tiered Data Center closures. The Department has significant challenges with responding to the two aforementioned elements.

Currently, the Department does not have an enterprise-wide monitoring tool capable of reaching all tiered devices in its enterprise data centers. As the Department completes the analysis of alternatives and identifies the appropriate tools, subject to the availability of funds, we will acquire the product(s) necessary to implement automated monitoring in the Department's enterprise data centers. The Department's non-tiered data center closure target, as mandated by OMB's DCOI, includes 220 data centers, the majority of which are located overseas. Due to command and control mission requirements, the Department has identified challenges to meeting the current OMB target. As a result, the Department is working with OMB to re-baseline the Department's non-tiered data center closure target.

Lastly, the Department is in the process of completing an in-depth discovery effort to determine the number of CONUS server rooms deemed a "data center", based on the updated DCOI definition. As we discover and validate the Department's

-2-

inventory, we will continue to refine and update our DCOI strategic plan, including data center closures and cost savings.

Recommendation: Take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response: The Department is committed to ensuring consistent reporting of data center cost savings and avoidance across all reporting mechanisms. To that end, the Department has established a data collection and stakeholder coordination process that aligns to the multiple data calls in OMB's DCOI reporting schedule. The newly established process will ensure consistent reporting across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Additionally, the Department is in the process of completing an in-depth discovery and validation of data centers agency-wide. As we discover and validate the Department's inventory and expand collection of data center costs, we will continue to refine and update agency-wide data center cost savings.

Appendix IX: Comments from the Department of Veterans Affairs



DEPARTMENT OF VETERANS AFFAIRS
Washington DC 20420

March 31, 2017

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

Dear Mr. Powner:

The Department of Veterans Affairs (VA) has reviewed the Government Accountability Office's (GAO) draft report, ***DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*** (GAO-17-388).

The enclosure provides information on action taken to address the GAO draft report recommendation.

VA appreciates the opportunity to comment on your draft report.

Sincerely,

A handwritten signature in black ink that reads "Gina S. Farrissee".

Gina S. Farrissee
Deputy Chief of Staff

Enclosure

Enclosure

Department of Veterans Affairs (VA) Response to
Government Accountability Office (GAO) Draft Report
**“DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address
Inconsistencies in Reported Savings”**
(GAO-17-388)

GAO Recommendation: To better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, GAO recommends that the Secretary of Veterans Affairs take action to complete the missing elements in the Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

VA Comment: Concur. The report recommends the Department of Veterans Affairs (VA) take action to complete the missing elements in the VA Data Center Optimization Initiative (DCOI) Strategic Plan, including addressing any identified challenges, and submit the completed strategic plan to the Office of Management and Budget (OMB). VA Office of Information and Technology completed and re-submitted the Strategic Plan to OMB in December 2016. The updated DCOI Strategic Plan is published on <https://www.va.gov/digitalstrategy>, and the Excel version is attached (Attachment A). VA requests closure of this recommendation.

Appendix X: Comments from the Environmental Protection Agency



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

MAR 30 2017

OFFICE OF
ENVIRONMENTAL INFORMATION

MEMORANDUM

SUBJECT: EPA's Response to GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (101014)"

FROM: Steven Fine, Acting Assistant Administrator *Steve Fine*
for Environmental Information

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

Justin Booth, Senior IT Analyst
Information Technology Management Issues (GAO)

The Office of Environmental Information (OEI) reviewed the Draft Report, GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (101014)". The purpose of this memorandum is to provide EPA's response to the report.

In the Draft Report, GAO states "to better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, we [GAO] are making two recommendations to OMB":

Recommendation 1:

That the Director of OMB direct the Federal CIO to provide the necessary oversight to:

- Ensure that each agency completes their DCOI strategic plan in accordance with OMB's guidance implementing FITARA; and,
- Ensure that agency reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans.

Response: (EPA Response)

EPA would like to propose that in working with the Agencies in completing their DCOI strategic plans, OMB allows for necessary adjustments resulting from realized resource cuts to the FY18 budget.

Also, GAO makes two recommendations specifically to the Agencies and Departments. GAO recommends:

Recommendation 2:

Take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Response: (EPA Response)

EPA's updated plan will include elements not reflected in the 2016 submission. The agency will complete the plan to the extent feasible.

Recommendation 3:

Take action to ensure that their amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response: (EPA Response)

EPA is working to ensure consistent reporting on the cost savings and avoidance in future reporting submissions. We are finalizing the official cost analysis methodology to be applied to our DCOI strategy and will ensure consistent use of the process for all reporting queries.

cc: Mark T. Howard, OCFO
Bob Trent, OCFO
Patricia Randolph Williams, OEI
Elena Larsen, OEI
Tim Thorpe, OEI
Juanita Standifer, OEI

Appendix XI: Comments from the General Services Administration



The Administrator

March 27, 2017

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 Office (GAO) draft report entitled *Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings* (GAO-17-388).

GAO recommends that the Administrator of GSA take action to:

1. Complete the missing elements in GSA's DCOI (Data Center Optimization Initiative) strategic plan, including addressing any identified challenges, and submit its completed strategic plan to OMB [Office of Management and Budget]; and
2. Ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

GSA agrees with the findings and recommendations. GSA has already updated its DCOI Strategic Plan to complete all missing elements. GSA posted the revised DCOI Strategic Plan on the agency's Digital Strategy web page.

For the second recommendation, GSA will take the following actions:

- (a) To better understand inconsistencies in OMB's cost model guidance, GSA will conduct a variance analysis of the data center cost savings between what is reported in the DCOI Strategic Plan and the February 28, 2017, Integrated Data Call (IDC) submission; and
- (b) GSA will determine the most accurate representation of realized savings and, in consultation with GSA's OMB Desk Officer, adjust the DCOI Strategic plan and IDC accordingly, making corrections in prior year projections and actual savings, as appropriate.

1800 F Street, NW
Washington, DC 20405-0002
www.gsa.gov

2

If you have any additional questions or concerns, please contact me at (202) 501-0800 or Mr. Saul Japson, Acting Associate Administrator, Office of Congressional and Intergovernmental Affairs, at (202) 501-0563. Staff inquiries may be directed to Mr. Michael Harris at (703) 605-9376 or michael.harris@gsa.gov.

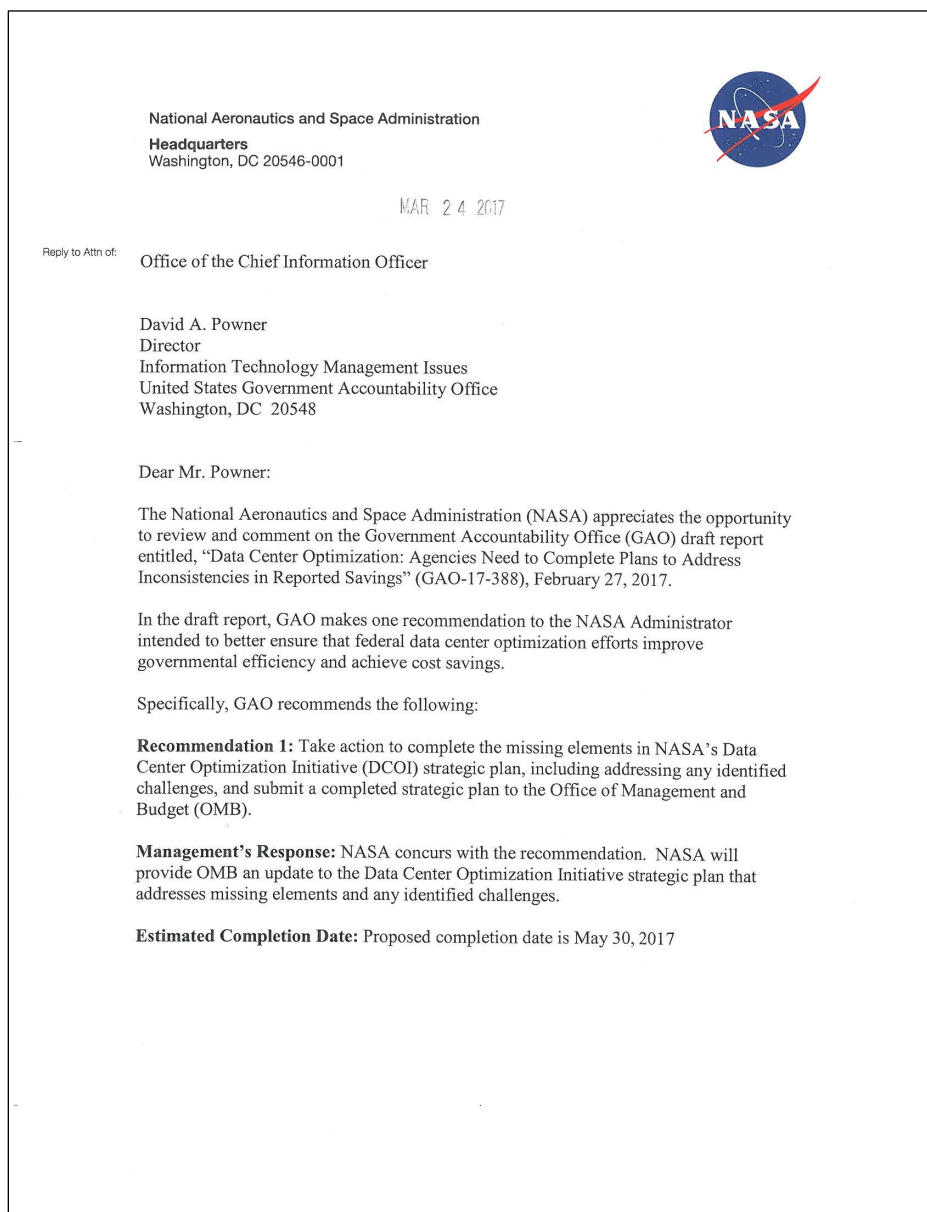
Sincerely,



Timothy O. Horne
Acting Administrator

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

Appendix XII: Comments from the National Aeronautics and Space Administration



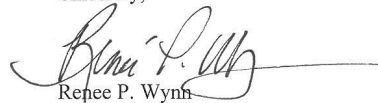
**Appendix XII: Comments from the National
Aeronautics and Space Administration**

2

2

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

Sincerely,


Repee P. Wynn
Chief Information Officer

Appendix XIII: Comments from the Nuclear Regulatory Commission



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

March 29, 2017

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) draft report GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings." The NRC has reviewed the draft report and is in general agreement with its findings. The NRC is not in agreement with the recommendation for NRC as explained in the enclosure. In addition, NRC has a few minor comments to the report and Appendix I for GAO consideration. Please see these comments in the enclosure to this letter.

If you have any questions regarding the NRC's response, please contact John Jolicoeur by phone at (301) 415-1642 or by e-mail at John.Jolicoeur@nrc.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Victor M. McCree".

Victor M. McCree
Executive Director
for Operations

Enclosure:
As stated

U.S. Nuclear Regulatory Commission Comments on GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings," Draft Report

The U.S. Nuclear Regulatory Commission's (NRC's) comment on the draft report, for the Government Accounting Office (GAO) consideration, is as follows:

1. Page 14, paragraph 2, in part states:

We also recommend that the following 23 agencies (the Secretaries of the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; and the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, Small Business 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) each take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

The NRC did complete the Data Center Optimization Initiative (DCOI) strategic plan following the process requested. The NRC's Strategic Plan JavaScript Object Notation (JSON) file was created following directions and the schema provided by the Office of Management and Budget (OMB) located at <https://management.cio.gov/schema/#DCOI>. The plan that was submitted to OMB was considered complete by the NRC's OMB desk officer and the DCOI analyst. Additionally, the NRC prepared a supplemental document that can be found at <http://www.nrc.gov/public-involve/open/digital-government/september2016.html>. This document contains some information beyond the strategic plan JSON file that was not required in the OMB defined strategic plan schema.

The NRC reached out to OMB after they submitted the draft report entitled Data Center Optimization Update for Congress, which stated that the NRC was only partially complete with the DCOI strategic plan. OMB agreed that the NRC had met all the requirements and that OMB would update the final report accordingly.

The NRC recognizes that GAO has no intention to publish updates to the Appendix I, Briefing for Staff Members of Congressional Committees, of the report. However, the NRC believes that it is important to include the following clarification comments to Appendix I:

1. Page 72, paragraph 2, in part states:

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, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, Small Business 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 complete the missing elements in their respective DCOI

Enclosure

strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Page 63, Table 8:

Table 8 shows NRC partially meeting both the Cost Savings Metric (FY2016 through FY2018) and the CIO Statement.

The NRC did complete the Data Center Optimization Initiative (DCOI) strategic plan following the process requested. The NRC's Strategic Plan JSON file was created following directions and the schema provided by OMB located at <https://management.cio.gov/schema/#DCOI>. The plan that was submitted to OMB was considered complete by the NRC's OMB desk officer and the DCOI analyst. Additionally, the NRC prepared a supplemental document that can be found at <http://www.nrc.gov/public-involve/open/digital-government/september2016.html>. This document contains some information beyond the strategic plan JSON file that was not required in the OMB defined strategic plan schema.

The NRC reached out to OMB after they submitted the report, stating that the NRC was only partially complete with the DCOI strategic plan. OMB agreed that the NRC had met all the requirements and that OMB would update the final report accordingly.

The NRC met with GAO via teleconference on December 5, 2016, regarding the Chief Information Officer (CIO) statement. GAO explained that the rating was only "partially met" because the CIO statement was not publicly available. The CIO statement was posted to the NRC's public Web site, and the NRC sent a follow-up e-mail to GAO on December 6, 2016, providing the location of the Web site.

2. Page 32, Paragraph 1, in part states:

Finally, in March 2016, we reported³¹ that agencies had continued to make progress in their data center consolidation efforts. Specifically, we noted that agencies had reported closing 3,125 of the 10,584 total data centers as of November 2015. We further noted that 19 of the 24 agencies had 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. Agencies were also planning an additional \$5.4 billion in cost savings and avoidances, for a total of approximately \$8.2 billion, through fiscal year 2019. However, we stated that planned savings may be higher because 10 agencies³² that reported planned closures from fiscal years 2016 through 2018 had not fully developed their cost savings goals for these fiscal years. In addition, agencies had made limited progress against OMB's fiscal year 2015 data center optimization performance metrics, such as the utilization of data center facilities. Accordingly, we recommended that the agencies take actions to complete their cost savings targets and improve optimization progress. Most agencies agreed with the recommendations or had no comments.

Legacy NRC data centers were created in existing spaces that were converted to automation spaces without the benefit of being designed to support information technology equipment. Although spaces were fitted with uninterruptible power supplies and computer room air handler units, the spaces did not have sufficient cooling and backup generator power, nor did they have metering and monitoring capability. The NRC has been working

toward the DCOI goals of achieving optimization by virtualization and reducing the number of old, nontiered data centers that cannot be metered, monitored, or measured. Determining cost savings in legacy data centers by adding metering and monitoring capabilities is not practical, as it would require spending funds to enhance data centers that will be closed in the future. Early potential savings estimates were calculated based on the likelihood of savings from virtualization and are not truly quantifiable based on the lack of metering and monitoring capabilities in place. For the data centers that the NRC plans to keep going forward, the NRC has included requests in the fiscal year 2019 budget for funds to implement the metering and monitoring capabilities needed to start collecting metrics that could be used to show future cost savings.

3. Page 74, paragraphs 1-2, in part state:

We received comments on a draft of our briefing from OMB and 17 of the 24 agencies to which we made recommendations. In its comments, OMB neither agreed nor disagreed with our recommendations, but noted the state of agencies' strategic plans and its work with agencies to complete their plans.

Among the responding agencies, 4 stated that they agreed with our recommendations, 1 (Agriculture) indicated that it did not agree with our recommendation, 3 commented on our findings but did not provide a position on the recommendations, and 8 stated that they had no comments. In addition, 1 provided only technical comments, while 2 agencies provided technical comments along with their other comments. All technical comments were incorporated as appropriate. We did not receive a response from 7 agencies...

Page 79, paragraph 1, in part states:

The Departments of Education, Health and Human Services, Housing and Urban Development, and Justice; the Environmental Protection Agency; the National Aeronautics and Space Administration; and the Nuclear Regulatory Commission did not provide comments on the draft briefing.

After reviewing the GAO draft, the NRC provided written comments to GAO via e-mail on November 30, 2016.

Appendix XIV: Comments from the Office of Personnel Management



Chief Information
Officer

UNITED STATES OFFICE OF PERSONNEL MANAGEMENT
Washington, DC 20415

MAR 20 2017

Mr. David 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 Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*, GAO-17-388, GAO job code number 100984.

A response to your recommendation is provided below.

Recommendation: We also recommend that the following 23 agencies (...; the Director of the Office of Personnel Management; ...) each take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Management Response:

We concur. Management agrees with and intends to address the recommendation. We are in the process of updating our DCOI strategic plan and intend to submit to OMB once it is finalized.

I appreciate the opportunity to respond to this draft report. If you have any questions regarding our response, please contact Dovarius Peoples, Associate CIO for Enterprise Infrastructure Services, at 202-606-1129, or via email at dovarius.peoples@opm.gov.

Sincerely,

A handwritten signature in black ink that reads "David DeVries".

David DeVries
Chief Information Officer
Office of Personnel Management

Appendix XV: Comments from the Social Security Administration



SOCIAL SECURITY
Office of the Commissioner

March 22, 2017

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 OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" (GAO-17-388). Please see our attached comments.

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

Sincerely,

A handwritten signature in blue ink that reads "Stephanie Hall".

Stephanie Hall
Acting Deputy Chief of Staff

SOCIAL SECURITY ADMINISTRATION BALTIMORE, MD 21235-0001

COMMENTS ON THE GOVERNMENT ACCOUNTABILITY OFFICE DRAFT REPORT, "DATA CENTER OPTIMIZATION: AGENCIES NEED TO COMPLETE PLANS TO ADDRESS INCONSISTENCIES IN REPORTED SAVINGS" (GAO-17-388)

General Comment

We have two enterprise level co-processing production data centers that process casework for millions of citizens and beneficiaries. We will continue to economize and evolve our data center optimization management through internal teamwork, our participation in the Department of Energy's Council on Environmental Quality Better Buildings Challenge, as well as through leadership exhibited in the Data Center Optimization Initiative (DCOI) Community of Practice. Working closely with the DCOI Project Management Officer, we continue to encourage open dialog and information exchange between agencies that will result in efficiencies and enhanced data center operations government-wide.

Recommendation

The Social Security Administration (along with 22 other agencies) should take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit its completed strategic plan to OMB.

Response

We agree.

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



MAR 27 2017

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

Re: DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address
Inconsistencies in Reported Savings (GAO-17-388)

Dear Mr. Powner:

I am pleased to provide the United States Agency for International Development's (USAID) formal response to the U. S. Government Accountability Office (GAO) draft report entitled, "*DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*" (GAO-17-388).

This letter and the enclosed USAID comments are 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 GAO engagement.

Sincerely,

A handwritten signature in blue ink, appearing to read "Angelique M. Crumbly". The signature is fluid and cursive, with a large loop at the end.

Angelique M. Crumbly
Acting Assistant Administrator
Bureau for Management

Enclosure: a/s

- 2 -

USAID COMMENTS ON GAO DRAFT REPORT

**DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address
Inconsistencies in Reported Savings (GAO-17-388)**

This report has the following two recommendations for USAID, as shown on page 14 of the draft report:

Recommendation 1: We recommend that the following 23 agencies (...and the Administrators of the... and U.S. Agency for International Development...) each take action to complete the missing elements in their respective DCOI [Data Center Optimization Initiative] strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

- **Response:** USAID/Bureau for Management's Office of the Chief Information Officer (USAID/M/CIO) will, in accordance with OMB direction, take action to complete the missing elements in our DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

Recommendation 2: We recommend that the following 11 agencies (...and the Administrators of the... and U.S. Agency for International Development...) also each take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

- **Response:** USAID/M/CIO will, in accordance with OMB direction, take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Appendix XVII: 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 (Analyst-in-Charge), Gerard Aflague, Chris Businsky, Nancy Glover, Linda Kochersberger, Carlo Mozo, Jon Ticehurst, and Jonathan Wall.

Appendix XVIII: Accessible Data

Data Tables

Data Table for Figure 1: Reported Number of Data Centers and Completed and Planned Closures for the 24 Agencies (fiscal years 2010 through 2019), as of August 2016

- Total number of federal data centers = 9,995
- Total data centers planned for closure through fiscal year 2019 = 5,597
- Data centers closed as of Aug. 2016 = 4,388
- Data centers closed as of Nov. 2015 = 3,125

Data Table for Figure 2: Comparison of the Total Data Center Consolidation Cost Savings and Avoidances Reported to GAO in November 2015 with the Amount Reported to OMB in August 2016

Actual or estimated cost savings and avoidances (in millions)

Reported to GAO in November 2015	\$2,753.85
Reported to the Office of Management and Budget in August 2016	\$2,302.39

Of the total savings and avoidances amount, \$2,302.39, reported to the Office of Management and Budget in August 2016, (in millions)

Fiscal Year	Total savings and avoidances
2012	\$227.74
2013	\$622.00
2014	\$373.57
2015	\$475
2016	\$604.09

Data Table for Figure 3: Comparison of Planned Cost Savings and Avoidances Reported to GAO in November 2015 to Agency DCOI Strategic Plans, as of April 2017

- Total fiscal year 2016 through 2019 cost savings and avoidances reported to GAO in Nov. 2015 = \$5.4 billion
- \$4 billion reported to GAO in Nov. 2015.

- \$656.28 million reported in agency DCOI strategic plans as of April 2017.
- \$3.3 billion difference.

Data Table for Figure 4: Agencies' Completion of Required Information for Data Center Optimization Plan Elements, as of April 2017

Strategic Plan Elements	Fully Met	Partially Met	Not Met
Data center optimization metrics	9	11	4
Data center closure metrics	10	10	4
Cost savings metrics (fiscal years 2016 through 2018)	4	16	4
Historical cost savings (through fiscal year 2015)	7	8	9
CIO statement	1	16	7

Agency Comment Letters

Text of Appendix II: Comments from the Department of Commerce

Page 1

March 30, 2017

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 review and comment on the Government Accountability Office (GAO) draft report titled Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17 -388, April 2017).

The Department of Commerce agrees with the two recommendations provided by GAO and will provide an updated Data Center Optimization Initiative (DCOI) strategic plan by the required Office of Management and Budget (OMB) April 17, 2017, submission deadline.

Additionally, the Department will continue its cost savings and avoidance aggregation efforts through the OMB-established process, which has a submission deadline of May 31, 2017.

On behalf of the Department of Commerce, I have enclosed our detailed comments on the draft report.

If you have any questions, please contact Rod Turk, Acting Chief Information Officer, at (202) 482-4797.

Sincerely,

Ellen Herbst

Page 2

Department of Commerce

Formal Comments on the Draft GAO Report Titled

Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17-388, April 2017)

The Office of the Chief Information Officer has reviewed the draft report and we offer the following comments for GAO's consideration.

General Comments

The GAO made two recommendations in the report. The first recommendation was made to 23 agencies, including the Department of Commerce, while the second was directed to 11 agencies, including Commerce.

Comments on Recommendations

The Government Accountability Office made two recommendations to the Department of Commerce in the report.

Recommendation 1:

"Commerce should take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB."

Commerce Response: The Department of Commerce agrees with this recommendation. Commerce was credited, along with the Departments of Defense, Homeland Security, and Treasury, with generating an estimated \$2 billion (870/0 of the total) cost savings and avoidances from data center consolidation and optimization efforts for fiscal years 2012 through August 2016.

Further, Commerce met two of the five key DCOI strategic plan elements, and partially met the additional three key elements. Per OMB and FITARA guidance, Commerce will continue to aggregate its data center inventory and update its DCOI strategic plan by the OMB April 17, 2017, submission deadline.

Recommendation 2:

"Commerce should take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans."

Commerce Response: The Department of Commerce agrees with this recommendation. As part of its integrated data collection (IDC) submission to OMB, Commerce will continue to collect and report all initiatives resulting in cost savings and avoidances to ensure IT savings are being captured and realized.

Text of Appendix III: Comments from the Department of Education

Page 1

March 28, 2017

David A. Powner

Director, Information Technology Management Issues

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

Washington, DC 20548

Re: Management's Response to Draft Report GA0-17-388, "DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings"

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 recognition of DHS's completion of a draft strategic plan and work with its component agencies to obtain updated data on actual and planned data center spending, closures, and optimization progress. Earlier this month, we finalized this plan and submitted it to the Office Management and Budget (OMB). GAO also acknowledged our reported data center consolidation costs savings and avoidances of more than \$248 million. The Department remains committed to the successful implementation of the Data Center Optimization Initiative (DCOI) and further improvements in the performance of federal data centers.

The draft report contained one recommendation for DHS with which the Department concurs. Attached find our detailed response to the recommendation.

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 again in the future.

Sincerely,

Jim CRUMPACKER, CIA, CFE

Director

Departmental GAO-OIG Liaison Office

Attachment

Page 2

Attachment: DHS Management Response to the Recommendation Contained in GA0-17-388

GAO recommended that the Secretary of Homeland Security:

Recommendation:

Take action to complete the missing elements in the DHS DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

Response: Concur.

On March 10, 2017, the DHS Office of the Chief Information Officer finalized the DCOI strategic plan and uploaded it onto the DHS Digital Strategy webpage, as directed by OMB. The DHS DCOI strategic plan contains all five of the required elements and addresses challenges identified by the agency. The two other OMB DCOI requirements - the DCOI metrics and the OCIO Certification - were uploaded to the DHS Digital Strategy webpage on February 24, 2017 and February 28, 2017, respectively.

Supporting documentation corroborating these actions were provided to GAO under separate cover. We request that GAO consider this recommendation resolved and closed as implemented.

Text of Appendix IV: Comments from the Department of Energy

Page 1

March 24, 20 17

Mr. David Powner Director

Information Technology Management Issues

Government Accountability Office 441 G Street. N W

Washington, DC 20548

Dear Mr. Powner:

I am writing to respond to recommendations made in the Government Accountability Office (GAO) draft report, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings, (GAO-17-388)." The U.S. Department of Education (Department) appreciates the opportunity to respond to the GAO report. Below is our response to GAO's specific recommendations to the agencies:

Recommendation 1:

Take action to complete the missing elements in their respective Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit their completed strategic plan to the Office of Management and Budget (OMB).

Recommendation 2:

Take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response:

The Department is committed to ensuring that the data center consolidation and optimization information we report is complete and consistent across all reports, including quarterly data submissions and DCOI strategic plans. The lack of Historical Cost Savings referenced in Table 8 along with inconsistencies described in Table 9 between the August 2016 Quarterly Data Submission and the DCOI Strategic Plan area are the result of following the DCOI Strategic Plan Schema at <https://policy.cio.gov/fitara-resources/schema>. The site provides guidance for submitting data associated with a 'Lifecycle Cost Savings Estimated' field instead of a "historical Cost Savings" field required for the submission. As a result, the Department did not include historical cost savings and avoidance information through fiscal year 2015 in the DCOI Strategic Plan, which is a requirement for both metrics.

Page 2

Attached is an updated version of the JSON file that includes historical cost savings information.

I ask that you consider reflecting this information in your report and revising your associated metrics accordingly. Upon authorization of this change, I will ensure that the revised JSON file is posted publicly at <https://www.ed.gov/digitalstrategy/datacenteroptimizationstrategicplan.json> under the heading "Data Center Optimization Initiative Strategic Plans" in accordance with previous guidelines.

Again, I appreciate the opportunity to respond to the GAO report. If you or your staff members have any questions regarding our response, please contact me at (202) 245-6252 or e-mail (Jason.Gray@ed.gov).

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

March 29, 2017

Mr. David A. Powner

Director, Information Technology Management Issues Government Accountability Office

Dear Mr. Powner:

The Department of Energy (DOE) Office of the Chief Information Officer (OCIO) appreciates the opportunity to provide comments to the Government Accountability Office's (GAO) draft report, DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings. The Department of Energy reviewed the report and concurs with the one recommendation identified for the Department: Take action to complete the missing elements in the Department's Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

Management Response:

On February 10, 2017, the Department of Energy submitted the FY16 DCOI Strategic Plan to OMB and posted a copy on the Energy.Gov website (<https://energy.gov/downloads/federal-information-technology-acquisition-reform-act-fitara-data-resources>). As reported in the DCOI Strategic Plan, DOE met or exceeded all FY16 goals and established performance targets for FY17 and FY18. DOE also reported all past and present cost savings and avoidance achieved. DOE expects to complete a comprehensive inventory of its data centers by April 14, 2017, the release date for the FY17 DCOI Strategic Plan.

If you have any questions, please feel free to contact Mr. Jake Wooley at 301-903-0992.

Sincerely,

Robert Green

Acting Chief Information Officer

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

Page 1

Mr. Justin J. Booth Senior IT Analyst

U.S. Government Accountability Office 441 G Street NW

Washington, DC 20548 Dear Mr. Booth:

Thank you for the opportunity to comment on the Government Accountability Office (GAO) draft report entitled, Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17-388). The Department of Housing and Urban Development reviewed the draft report and enclosed are the Department's comments.

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).

Kevin Cook Jr,

Acting Chief Information Officer

Page 2 through 4

Section Page of Document Referenced	Comments
<p>What GAO Found Section, Recommendations/or Executive Action, Page 14, 2nd Paragraph: "We also recommend that the following 23 Agencies (The Secretaries of . . . Housing and Urban Development (HUD) . . .), . . . each take action to complete the missing elements in their respective DCOI strategic plan, challenges, and submit their complete strategic plan to OMB.</p>	<p>HUD requests that GAO remove HUD from the list of Agencies that still have not completed elements in their Data Center Consolidation strategic plan.</p> <p>HUD's Federal Data Center Consolidation Initiative (FDCCI) Strategic Plan (09/30/2011) confirmed data center consolidation requirements had been met. To address the Data Center Optimization Initiative (DCOI) requirements, HUD committed to migrating its two contractor owned contractor operated (CO/CO) data centers to two DCOI compliant collocated, shared multitenant data centers. Therefore, since HUD's migration efforts will result in a net increase/decrease of zero (0), OMB identified a \$0 targeted cost savings for HUD (https://datacenters.cio.gov/agency-strategic-plan/) and approved the NIA optionfor our estimated savings sections of our "Data Center Optimization Initiative Strategic Plan (FY2016-FY2018) ".</p>
<p>General Comment</p>	<p>HUD respectfully requests that GAO review their statistics/numbers and remove HUD from all counts that identify agencies that are not compliant.</p>

Section Page of Document Referenced	Comments
Results Objective 1, Table 1, Page 36	Throughout 2016, HUD was actively migrating one of the CO/CO data centers and at the time of GAO review, HUD had successfully implemented the new collocated multitenant data center for non-production and Disaster Recovery requirements and was in the process of migrating the production environment to the new shared multitenant data center. Consequently, in the report that GAO reviewed, HUD identified the two CO/CO data centers and the one collocated data center. HUD is now in the process of migrating its remaining CO/CO and associated non-tiered data centers to HUD's two new DCOI compliant data centers. At the end of this data center migration project that is target for completion in 2017, HUD will be fully operational in 2 DCOI compliant data centers. Consequently, HUD will have a net increase/decrease of zero (0).
Results Objective 1, Table 3, Page 42	To address the DCOI requirements, HUD committed to migrating its two CO/CO data centers to two DCOI compliant collocated, shared multitenant data centers. Therefore, HUD's migration efforts will result in a net increase/decrease of zero (0)
Results Objective 2, Page 44, 2nd paragraph, "For example, the Department of Housing and Urban Development does not expect to experience any increase or decrease in its operational costs, but will continue to work within existing infrastructure services budget levels as it migrates two of its four data centers to inter-agency shared services or co-located data centers.	HUD requests that GAO remove the identified example for HUD due to inaccuracies in the reported information. HUD's DCOI strategic plan identifies migration efforts, not consolidation efforts. HUD is migrating two CO/CO data centers to two DCOI compliant data centers with no increase in staff or operational costs. As documented in HUD's Strategic Plan, HUD's data center consolidation is complete and any cost savings are already realized. Any further savings will come from adjustments to current Data Center operations in order to achieve improved performance or efficiencies.
Results Objective 2, Table 5, Page 54	HUD requests that GAO use N/A, in place of dollar figures when portraying HUD's cost savings and avoidance. OMB agreed that HUD could report N/A, to most accurately reflect HUD's cost savings and avoidance given that the Department has already consolidated data centers. The \$3M that had been identified to GAO is considered out of scope for this effort since it was not costs due to data center consolidation efforts, but instead based on performance and operational efficiencies and identified prior to the OMB's issuance of DCOI guidance.

Section Page of Document Referenced	Comments
Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; Data center optimization metrics column	<p>HUD requests that GAO use a "Fully Met" symbol to reflect that HUD provided input for Metrics 1 and 2. Cost savings and avoidance were realized prior to FY 2016. Metrics 3-7 reporting shows NIA because HUD is a tenant in an Inter- Agency Shared Services Provider (ISSP) facility, therefore the ISSP of the facility (NASA/Stennis) assumes the OMB DCOI data submission requirement.</p>
Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; Cost savings metrics (fiscal years 2016 through 2018) column	<p>HUD's FDCCI Strategic Plan (09/30/2011) confirmed data center consolidation requirements had been met. OMB identified a \$0 targeted cost savings /or HUD (https://datacenters.cio.gov/agency-strategic-plan/) and approved the NIA option/or our estimated savings sections of our "Data Center Optimization Initiative Strategic Plan (FY2016-FY2018) ".</p> <p>Therefore, H U D requests that GAO use a "Fully Met" symbol to reflect that HUD has already realized its cost savings and avoidance since HUD's Data Center Consolidation is complete. This is measured against the Strategic Plan that was submitted in JavaScript Object Notation (JSON).</p>
Results Objective 3, Table 8, Page 63, Completion of Key DCOI Strategic Plan Elements; CIO statement column	<p>HUD requests that GAO use a "Fully Met" symbol to reflect that HUD submitted a CIO Statement on October 27, 2016, that accurately certified that all elements of HUD's Data Center Consolidation are fully met. This is measured against the Strategic Plan that was submitted in JSON.</p>
Recommendations for Executive Action, Page 72, 2nd Paragraph, "We also recommend that the Secretaries of Departments of . . . Housing and Urban Development . . . take action to complete the missing elements in their respective DCOI strategic plan . . .	<p>HUD requests that GAO remove HUD from the list of Agencies that still have not completed elements in their Data Center Consolidation strategic plan. HUD's FDCCI Strategic Plan (091301201 1) confirmed data center consolidation requirements had been met. Therefore, when OMB issued M16-09, HUD's Data Center consolidation efforts were complete and associated cost savings realized at least 10 years prior. As a result, OMB provided the NIA option when asked for our estimated savings sections of our "Data Center Optimization Initiative Strategic Plan (FY2016-FY2018)".</p> <p>HUD reconfirms that all the elements identified by OMB were addressed in HUD's September 2016 DCOI Strategic Plan.</p>

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

Mr. David 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 Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings* (GAO-17-388). We appreciate GAO's review of the Chief Financial Officers (CFO) Act agencies' progress in achieving consolidation savings and avoidances from their data center consolidation efforts.

The Department concurs with the two recommendations and will take action to complete the missing elements in the Department's Data Center Optimization Initiative (DCOI) Strategy and Plans for 2016-2018, including addressing any identified challenges, submitting the completed strategic plan to the Office of Management and Budget, and ensuring that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

We look forward to the final report. If you have any questions or need additional information, please contact Sylvia Burns, Chief Information Officer, at Sylvia_Burns@ios.doi.gov.

Sincerely,

Sylvia Burns

Chief Information Officer

Text of Appendix VIII: Comments from the Department of State

Page 1

Charles M. Johnson, Jr. Managing Director International Affairs and Trade

Government Accountability Office 441 G Street, N.W.

Washington, D.C. 20548-0001

MAR 31 2017

Dear Mr. Johnson:

We appreciate the opportunity to review your draft report,

"DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" GAO Job Code 101420

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 Alison Bowling, Lead Information Security Specialist, or Colleen Hinton, IT Policy Analyst, Bureau of Information Resource Management at (202) 634- 0292 or (202) 634-0320.

Sincerely,

Christopher H. Flaggs

Enclosure:

As stated

cc: GAO -David A. Powner

IRM- Robert Adams (Acting) State/OIG - Norman Brown

Page 2

Department of State Comments on GAO Draft Report

DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings

(GAO-17-388, GAO Code 101420)

The Department of State appreciates the opportunity to respond to the GAO draft report “Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Saving.” State concurs with the recommendations below:

Recommendation:

Take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Response:

The Department has established a data center optimization strategic plan that defines our optimization targets relative to the Department’s current inventory of enterprise tiered data centers and provides metrics where we have the existing capability to capture them. Those metric target values were reported to OMB in the Department’s DCOI strategic plan in November 2016. The Department’s DCOI strategic plan submission included a response for every element except Automated Monitoring and Non-Tiered Data Center closures. The Department has significant challenges with responding to the two aforementioned elements.

Currently, the Department does not have an enterprise-wide monitoring tool capable of reaching all tiered devices in its enterprise data centers. As the Department completes the analysis of alternatives and identifies the appropriate tools, subject to the availability of funds, we will acquire the product(s) necessary to implement automated monitoring in the Department’s enterprise data centers. The Department’s non-tiered data center closure target, as mandated by OMB’s DCOI, includes 220 data centers, the majority of which are located overseas. Due to command and control mission requirements, the Department has identified challenges to meeting the current OMB target. As a result, the Department is working

with OMB to re-baseline the Department's non-tiered data center closure target.

Lastly, the Department is in the process of completing an in-depth discovery effort to determine the number of CONUS server rooms deemed a "data center", based on the updated DCOI definition. As we discover and validate the Department's

Page 3

inventory, we will continue to refine and update our DCOI strategic plan, including data center closures and cost savings.

Recommendation:

Take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response:

The Department is committed to ensuring consistent reporting of data center cost savings and avoidance across all reporting mechanisms. To that end, the Department has established a data collection and stakeholder coordination process that aligns to the multiple data calls in OMB's DCOI reporting schedule. The newly established process will ensure consistent reporting across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Additionally, the Department is in the process of completing an in-depth discovery and validation of data centers agency-wide. As we discover and validate the Department's inventory and expand collection of data center costs, we will continue to refine and update agency-wide data center cost savings.

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

Page 1

March 31, 2017

Mr. David A. Pawner

Director, Information Technology

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

Washington, DC 20548

Dear Mr. Pawner:

The Department of Veterans Affairs (VA) has reviewed the Government Accountability Office's (GAO) draft report, DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" (GAO- 17-388).

The enclosure provides information on action taken to address the GAO draft report recommendation.

VA appreciates the opportunity to comment on your draft report.

Sincerely,

Gina S. Farrisee Deputy Chief of Staff

Enclosure

Page 2

Department of Veterans Affairs (VA) Response to Government Accountability Office (GAO) Draft Report

"DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings"

(GAO-17-388)

GAO Recommendation:

To better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, GAO recommends that the Secretary of Veterans Affairs take action to complete the missing elements in the Data Center Optimization Initiative (DCOI) strategic plan,

including addressing any identified challenges, and submit the completed strategic plan to OMB.

VA Comment: Concur.

The report recommends the Department of Veterans Affairs (VA) take action to complete the missing elements in the VA Data Center Optimization Initiative (DCOI) Strategic Plan, including addressing any identified challenges, and submit the completed strategic plan to the Office of Management and Budget (OMB).

VA Office of Information and Technology completed and re-submitted the Strategic Plan to OMB in December 2016. The updated DCOI Strategic Plan is published on <https://www.va.gov/digitalstrategy>, and the Excel version is attached (Attachment A).

VA requests closure of this recommendation.

Text of Appendix X: Comments from the Environmental Protection Agency

Page 1

MEMORANDUM

SUBJECT: EPA's Response to GA0-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (101014)"

FROM: Steven Fine, Acting Assistant Administrator for Environmental Information

TO: David Powner, Director

Information Technology Management Issues (GAO)

Justin Booth, Senior IT Analyst

Information Technology Management Issues (GAO)

The Office of Environmental Information (OEI) reviewed the Draft Report, GA0-17-388 , "Data Center Optimization: Agencies Need to Complete

Plans to Address Inconsistencies in Reported Savings (101014)". The purpose of this memorandum is to provide EPA's response to the report.

In the Draft Report, GAO states "to better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings, we [GAO] are making two recommendations to OMB":

Recommendation 1:

That the Director of OMB direct the Federal CIO to provide the necessary oversight to:

- Ensure that each agency completes their DCOI strategic plan in accordance with OMB's guidance implementing FITARA; and,
- Ensure that agency reporting of achieved data center consolidation and optimization cost savings and avoidances is consistent across all reporting mechanisms, including quarterly data submissions and agency DCOI strategic plans.

Page 2

Response: (EPA Response)

EPA would like to propose that in working with the Agencies in completing their DCOI strategic plans, OMB allows for necessary adjustments resulting from realized resource cuts to the FY18 budget.

Also, GAO makes two recommendations specifically to the Agencies and Departments. GAO recommends:

Recommendation 2:

Take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Response: (EPA Response)

EPA's updated plan will include elements not reflected in the 2016 submission. The agency will complete the plan to the extent feasible.

Recommendation 3:

Take action to ensure that their amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

Response: (EPA Response)

EPA is working to ensure consistent reporting on the cost savings and avoidance in future reporting submissions. We are finalizing the official cost analysis methodology to be applied to our DCOI strategy and will ensure consistent use of the process for all reporting queries.

cc: Mark T. Howard, OCFO Bob Trent, OCFO

Patricia Randolph Williams, OEI Elena Larsen, OEI

Tim Thorpe, OEI Juanita Standifer, OEI

Text of Appendix XI: Comments from the General Services Administration

Page 1

March 27, 2017

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 Office (GAO) draft report entitled Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17-388).

GAO recommends that the Administrator of GSA take action to:

1. Complete the missing elements in GSA's DCOJ (Data Center Optimization Initiative) strategic plan, including addressing any identified challenges, and submit its completed strategic plan to OMB [Office of Management and Budget]; and
2. Ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

GSA agrees with the findings and recommendations.

GSA has already updated its DCOI Strategic Plan to complete all missing elements. GSA posted the revised DCOI Strategic Plan on the agency's Digital Strategy web page.

For the second recommendation, GSA will take the following actions:

- a) To better understand inconsistencies in OMB's cost model guidance, GSA will conduct a variance analysis of the data center cost savings between what is reported in the DCOI Strategic Plan and the February 28, 2017, Integrated Data Call (IDC) submission; and
- b) GSA will determine the most accurate representation of realized savings and, in consultation with GSA's OMB Desk Officer, adjust the DCOI Strategic plan and IDC accordingly, making corrections to prior year projections and actual savings, as appropriate.

Page 2

If you have any additional questions or concerns, please contact me at (202) 501-0800 or Mr. Saul Japson, Acting Associate Administrator, Office of Congressional and Intergovernmental Affairs, at (202) 501-0563. Staff inquiries may be directed to Mr.

Michael Harris at (703) 605-9376 or michael.harris@gsa.gov.

Sincerely,

Timothy Horne

Acting Administrator

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

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

Page 1

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 Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" (GAO-17-388), February 27, 2017.

In the draft report, GAO makes one recommendation to the NASA Administrator intended to better ensure that federal data center optimization efforts improve governmental efficiency and achieve cost savings.

Specifically, GAO recommends the following:

Recommendation 1:

Take action to complete the missing elements in NASA's Data Center Optimization Initiative (DCOI) strategic plan, including addressing any identified challenges, and submit a completed strategic plan to the Office of Management and Budget (OMB).

Management's Response:

NASA concurs with the recommendation. NASA will provide OMB an update to the Data Center Optimization Initiative strategic plan that addresses missing elements and any identified challenges.

Estimated Completion Date: Proposed completion date is May 30, 2017

Page 2

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

Sylvia Burns

Chief Information Officer

Text of Appendix XIII: Comments from the Nuclear
Regulatory Commission

Page 1

March 29, 2017

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) draft report

GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings." The NRC has reviewed the draft report and is in general agreement with its findings. The NRC is not in agreement with the recommendation for NRC as explained in the enclosure. In addition, NRC has a few minor comments to the report and Appendix I for GAO consideration. Please see these comments in the enclosure to this letter.

If you have any questions regarding the NRC's response, please contact John Jolicoeur by phone at (301) 415-1642 or by e-mail at John.Jolicoeur@nrc.gov.

Victor McCee

Executive Director for Operations

Enclosure: As stated

Page 2

U.S. Nuclear Regulatory Commission Comments on GAO-17-388, "Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings," Draft Report

The U.S. Nuclear Regulatory Commission's (NRC's) comment on the draft report, for the Government Accounting Office (GAO) consideration, is as follows:

1. Page 14, paragraph 2, in part states:

We also recommend that the following 23 agencies (the Secretaries of the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; and the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, Small Business 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) each take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

The NRC did complete the Data Center Optimization Initiative (DCOI) strategic plan following the process requested. The NRC's Strategic Plan JavaScript Object Notation (JSON) file was created following directions and the schema provided by the Office of Management and Budget (OMB) located at <https://management.cio.gov/schema/#DCOI>. The plan that was submitted to OMB was considered complete by the

NRC's OMB desk officer and the DCOI analyst. Additionally, the NRC prepared a supplemental document that can be found at <http://www.nrc.gov/public-involve/open/digital-government/september2016.html>. This document contains some information beyond the strategic plan JSON file that was not required in the OMB defined strategic plan schema.

The NRC reached out to OMB after they submitted the draft report entitled Data Center Optimization Update for Congress, which stated that the NRC was only partially complete with the DCOI strategic plan. OMB agreed that the NRC had met all the requirements and that OMB would update the final report accordingly.

The NRC recognizes that GAO has no intention to publish updates to the Appendix I, Briefing for Staff Members of Congressional Committees, of the report. However, the NRC believes that it is important to include the following clarification comments to Appendix I:

Page 72, paragraph 2, in part states:

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, Interior, Labor, State, Transportation, Treasury, and Veterans Affairs; the Attorney General; the Administrators of the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, Small Business 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 complete the missing elements in their respective DCOI

Page 3

strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Page 63, Table 8:

Table 8 shows NRC partially meeting both the Cost Savings Metric (FY2016 through FY2018) and the CIO Statement.

The NRC did complete the Data Center Optimization Initiative (DCOI) strategic plan following the process requested. The NRC's Strategic Plan JSON file was created following directions and the schema provided by OMB located at <https://management.cio.gov/schema/#DCOI>. The plan that was submitted to OMB was considered complete by the NRC's OMB desk officer and the DCOI analyst. Additionally, the NRC prepared a supplemental document that can be found at <http://www.nrc.gov/public-involve/open/digital-government/september2016.html>. This document contains some information beyond the strategic plan JSON file that was not required in the OMB defined strategic plan schema.

The NRC reached out to OMB after they submitted the report, stating that the NRC was only partially complete with the DCOI strategic plan. OMB agreed that the NRC had met all the requirements and that OMB would update the final report accordingly.

The NRC met with GAO via teleconference on December 5, 2016, regarding the Chief Information Officer (CIO) statement. GAO explained that the rating was only "partially met" because the CIO statement was not publicly available. The CIO statement was posted to the NRC's public Web site, and the NRC sent a follow-up e-mail to GAO on December 6, 2016, providing the location of the Web site.

3. Page 32, Paragraph 1, in part states:

Finally, in March 2016, we reported³¹ that agencies had continued to make progress in their data center consolidation efforts. Specifically, we noted that agencies had reported closing 3,125 of the 10,584 total data centers as of November 2015. We further noted that 19 of the 24 agencies had 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. Agencies were also planning an additional \$5.4 billion in cost savings and avoidances, for a total of approximately \$8.2 billion, through fiscal year 2019. However, we stated that planned savings may be higher because 10 agencies³² that reported planned closures from fiscal years 2016 through 2018 had not fully developed their cost savings goals for these fiscal years. In addition, agencies had made limited progress against OMB's fiscal year 2015 data center optimization performance metrics, such as the utilization of data center facilities. Accordingly, we recommended that the agencies take actions to complete their cost savings targets and improve optimization progress. Most agencies agreed with the recommendations or had no comments.

Legacy NRC data centers were created in existing spaces that were converted to automation spaces without the benefit of being designed to support information technology equipment. Although spaces were fitted with uninterruptible power supplies and computer room air handler units, the spaces did not have sufficient cooling and backup generator power, nor did they have metering and monitoring capability. The NRC has been working

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toward the DCOI goals of achieving optimization by virtualization and reducing the number of old, nontiered data centers that cannot be metered, monitored, or measured.

Determining cost savings in legacy data centers by adding metering and monitoring capabilities is not practical, as it would require spending funds to enhance data centers that will be closed in the future. Early potential savings estimates were calculated based on the likelihood of savings from virtualization and are not truly quantifiable based on the lack of metering and monitoring capabilities in place. For the data centers that the NRC plans to keep going forward, the NRC has included requests in the fiscal year 2019 budget for funds to implement the metering and monitoring capabilities needed to start collecting metrics that could be used to show future cost savings.

1. Page 74, paragraphs 1-2, in part state:

We received comments on a draft of our briefing from OMB and 17 of the 24 agencies to which we made recommendations. In its comments, OMB neither agreed nor disagreed with our recommendations, but noted the state of agencies' strategic plans and its work with agencies to complete their plans.

Among the responding agencies, 4 stated that they agreed with our recommendations, 1 (Agriculture) indicated that it did not agree with our recommendation, 3 commented on our findings but did not provide a position on the recommendations, and 8 stated that they had no comments. In addition, 1 provided only technical comments, while 2 agencies provided technical comments along with their other comments. All technical comments were incorporated as appropriate. We did not receive a response from 7 agencies...

Page 79, paragraph 1, in part states:

The Departments of Education, Health and Human Services, Housing and Urban Development, and Justice; the Environmental Protection Agency; the National Aeronautics and Space Administration; and the Nuclear Regulatory Commission did not provide comments on the draft briefing.

After reviewing the GAO draft, the NRC provided written comments to GAO via e-mail on November 30, 2016.

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

Mr. David 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 Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*, GA0-17-388, GAO job code number 100984.

A response to your recommendation is provided below.

Recommendation : We also recommend that the following 23 agencies (...; the Director of the Office of Personnel Management; . . .) each take action to complete the missing elements in their respective DCOI strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

Management Response:

We concur. Management agrees with and intends to address the recommendation. We are in the process of updating our DCOI strategic plan and intend to submit to OMB once it is finalized.

I appreciate the opportunity to respond to this draft report. If you have any questions regarding our response, please contact Dovarius Peoples, Associate CIO for Enterprise Infrastructure Services, at 202-606-1129, or via email at dovarius.peoples@opm.gov.

Sincerely,

David DeVries

Chief Information Officer

Office of Personnel Management

Text of Appendix XV: Comments from the Social Security Administration

Page 1

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 OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings"

(GAO-17-388). Please see our attached comments.

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

Sincerely,

Stephanie Hall

Acting Deputy Chief of Staff

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COMMENTS ON THE GOVERNMENT ACCOUNTABILITY OFFICE DRAFT REPORT, "DATA CENTER OPTIMIZATION: AGENCIES NEED TO COMPLETE PLANS TO ADDRESS INCONSISTENCIES IN REPORTED SAVINGS" (GAO-17-388)

General Comment

We have two enterprise level co-processing production data centers that process casework for millions of citizens and beneficiaries. We will continue to economize and evolve our data center optimization management through internal teamwork, our participation in the Department of

Energy's Council on Environmental Quality Better Buildings Challenge, as well as through leadership exhibited in the Data Center Optimization Initiative (DCOI) Community of Practice. Working closely with the DCOI Project Management Officer, we continue to encourage open dialog and information exchange between agencies that will result in efficiencies and enhanced data center operations government-wide.

Recommendation

The Social Security Administration (along with 22 other agencies) should take action to complete the missing elements in its DCOI strategic plan, including addressing any identified challenges, and submit its completed strategic plan to OMB.

Response

We agree.

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

Page 1

Mr. David A. Powner

Director, Information Technology Management Issues

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

Washington, DC 20548

Re: DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17-388)

Dear Mr. Powner:

I am pleased to provide the United States Agency for International Development's (USAID) formal response to the U. S. Government Accountability Office (GAO) draft report entitled, "DATA CENTER OPTIMIZATION: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings" (GAO-17-388).

This letter and the enclosed USAID comments are 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 GAO engagement.

Angelique Crumley

Acting Assistant Manager

Enclosure: a/s

Page 2

USAID COMMENTS ON GAO DRAFT REPORT

DATA CENTER OPTIMIZATION : Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings (GAO-17-388)

This report has the following two recommendations for USAID, as shown on page 14 of the draft report:

Recommendation 1:

We recommend that the following 23 agencies (...and the Administrators of the... and U.S. Agency for International Development ...) each take action to complete the missing elements in their respective DCOI [Data Center Optimization Initiative] strategic plan, including addressing any identified challenges, and submit their completed strategic plan to OMB.

-
- Response: USAID/Bureau for Management's Office of the Chief Information Officer (USAID/M/CIO) will, in accordance with OMB direction, take action to complete the missing elements in our DCOI strategic plan, including addressing any identified challenges, and submit the completed strategic plan to OMB.

Recommendation 2:

We recommend that the following 11 agencies (...and the Administrators of the... and U.S. Agency for International Development ...) also each take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans.

- Response: USAID/M/CIO will, in accordance with OMB direction, take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms, including the quarterly data submissions and DCOI strategic plans .

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