United States Government Accountability Office

Report to Congressional Requesters

December 2022

FEDERAL ENERGY AND WATER MANAGEMENT

Agencies Report Mixed Success in Meeting Efficiency Requirements, and Additional Data Are Needed

GAO-23-105673

GAO Highlights

Highlights of GAO-23-105673, a report to congressional requesters

December 2022

FEDERAL ENERGY AND WATER MANAGEMENT

Agencies Report Mixed Success in Meeting Efficiency Requirements, and Additional Data Are Needed

Why GAO Did This Study

The federal government is the single largest energy consumer in the United States. In fiscal year 2021, its roughly 350,000 buildings used more than 344 trillion Btu of energy and 119 billion gallons of water, according to DOE data. For decades, the federal government has taken steps to improve energy and water efficiency at federal facilities, including through laws and executive orders. In particular, six requirements from section 432 of the Energy Independence and Security Act of 2007, as amended, relate to the use of energy and water efficiency measures in federal facilities.

GAO was asked to review issues related to agency compliance with these energy and water efficiency requirements. This report examines (1) the extent to which agencies are complying with the six energy and water efficiency requirements and (2) the successes and challenges that selected agencies have encountered in their efforts toward meeting these requirements.

GAO reviewed DOE data on agency performance in meeting requirements; interviewed officials from six federal agencies, selected in part for facility size and energy use; and conducted a literature review.

What GAO Recommends

GAO recommends that DOE track performance toward meeting the requirements from DOE guidance to (1) enter water use data into a benchmarking system and (2) follow up on implemented energy and water efficiency and conservation measures within 4 years. DOE concurred with GAO's recommendations.

View GAO-23-105673. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

According to data from fiscal year 2021, federal agencies have a mixed record meeting the six energy and water efficiency requirements that GAO reviewed. There are 27 agencies that use the Department of Energy (DOE) Compliance Tracking System to report data on their performance in meeting these requirements. These data show that most agencies met, or almost met, two of the requirements and did not meet one requirement. GAO could not determine whether agencies fully met the other three requirements due to a lack of data, either because the implementation deadline had not passed and there were not yet available data, or because DOE does not track performance (see table).

Specifically, DOE does not track whether agencies entered water use data into a benchmarking system or followed up on implemented energy and water efficiency and conservation measures (ECM) within 4 years, as called for by DOE guidance. As a result, decision makers cannot be certain that agency officials are benchmarking water use data and measuring energy and water savings from implemented ECMs. Without tracking performance on these requirements, Congress cannot know the extent to which agencies have the data they need to make effective decisions to improve energy and water efficiency.

Agencies' Performance in Meeting Six Energy and Water Efficiency Requirements, Fiscal Year 2021

Requirement	Number of agencies that met requirement	Percent of agencies that met requirement
Identify covered facilities constituting at least 75 percent of facility energy or water use	24 of 27	88.9
Designate energy managers for covered facilities	24 of 27	88.9
Conduct evaluations at covered facilities every 4 years, subject to exception	1 of 27	3.7
Enter data into a benchmarking system	--	--
Enter energy use data into a benchmarking system	7 of 27	25.9
Enter water use data into a benchmarking system	Agency performance not tracked	
Implement energy and water conservation measures	Agency performance not yet available	
Follow up on energy and water conservation measures	Agency performance not tracked	

Source: GAO analysis of Department of Energy (DOE) Compliance Tracking System data. | GAO-23-105673

Note: Data are as of August 24, 2022. This table summarizes relevant requirements from 42 U.S.C. § 8253(f) and DOE guidance. For more details, see table 1 in this report.

Officials GAO interviewed from selected agencies cited varied successes and challenges to meeting each of the six requirements, but the two most frequently cited were the success of using automated or centralized data and the challenge of insufficient resources. For example, agency officials told GAO that automated data allowed them to automatically upload data into a benchmarking system, rather than entering the data manually. Conversely, officials told GAO that insufficient funding or staffing made meeting the requirements challenging. Officials from one agency explained that they must conduct evaluations at agency facilities in remote locations. This makes evaluations more resource-intensive because of the time and expense of sending staff to those locations.

Contents

Abbreviations

BLM	Bureau of Land Management
Btu	British thermal unit
CTS	Compliance Tracking System
DOE	Department of Energy
ECM	energy and water efficiency and conservation measure
ESPC	energy savings performance contract

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

December 15, 2022

The Honorable Frank Pallone, Jr.
Chairman
Committee on Energy and Commerce
House of Representatives

The Honorable Carolyn B. Maloney
Chairwoman
Committee on Oversight and Reform
House of Representatives

The Honorable Kathy Castor
Chair
Select Committee on the Climate Crisis
House of Representatives

The Honorable Bobby L. Rush
Chairman
Subcommittee on Energy
Committee on Energy and Commerce
House of Representatives

The federal government, with its more than 350,000 buildings, is the largest energy consumer in the United States. These buildings used about 344 trillion Btu of energy and 119 billion gallons of water in fiscal year 2021, according to Department of Energy (DOE) data. For decades, the federal government has taken steps to improve energy and water efficiency at federal facilities, including steps called for in laws and executive orders. The federal government has made progress in reducing its facility energy use, which has declined by more than 40 percent since 1975, according to DOE data, and there are continuing efforts to reduce energy use. For example, the Energy Independence and Security Act of 2007, as amended, requires agencies to take steps to manage federal facility energy and water efficiency.[1] Specifically, agencies are to, among other things:

[1]Pub. L. No. 110-140, § 432, 121 Stat. 1492, 1607 (codified as amended at 42 U.S.C. § 8253(f)). Section 432 of the act has been amended several times, including by the Energy Act of 2020. Pub. L. No. 116-260, Div. Z, § 1002(g), 134 Stat. 2418, 2423.

1. identify, using criteria developed by DOE, covered facilities that constitute at least 75 percent of facility energy or water use at each agency;[2]
2. designate an energy manager responsible for implementing the requirements and reducing energy and water use at each covered facility;
3. complete, subject to exception, a comprehensive energy and water evaluation of approximately 25 percent of the agency's covered facilities annually, so that an evaluation of each facility is completed not less frequently than once every 4 years;
4. enter energy use data for each metered building that is, or is a part of, a covered facility into an energy use benchmarking system;[3]
5. implement, not later than 2 years after the date of completion of each evaluation, any energy- or water-saving measure, or energy and water efficiency and conservation measure (ECM), that the federal agency identified in the evaluation and that is life cycle cost-effective[4]

[2]Facility is defined by statute as any building, installation, structure, or other property (including any applicable fixtures) owned or operated by, or constructed or manufactured and leased to, the federal government. The term "facility" includes a group of facilities at a single location or multiple locations managed as an integrated operation, and contractor-operated facilities owned by the federal government. It does not include any land or site for which the cost of utilities is not paid by the federal government. 42 U.S.C. § 8253(f)(1)(C).

[3]DOE guidance defines "benchmarking" as the practice of accounting for and comparing a metered building's current energy performance with its energy baseline or historical performance, or comparing a metered building's energy performance with the energy performance of similar types of buildings. Department of Energy, Federal Building Energy Use Benchmarking Guidance: Use of Energy and Water Efficiency Measures in Federal Buildings (42 U.S.C. § 8253(f)) (Washington, D.C.: 2014). In order to meet the federal building benchmarking requirement, in addition to entering energy use, DOE guidance states that agencies are to report building water consumption data for buildings that are metered for water use. DOE issued this guidance in response to statutory requirements and a Presidential Memorandum entitled Federal Leadership on Energy Management, issued on December 5, 2013, which, among other things, directed agencies to ensure that for any agency building metered for energy and water performance, the associated monthly performance data are entered into a specified system to better manage energy performance and allow for benchmarking.

[4]Specifically, by statute, an ECM is determined to be life cycle cost-effective by evaluating an individual measure or a bundle of measures with varying paybacks. 42 U.S.C. § 8253(f)(4)(A)(ii). The term life cycle cost-effective, with respect to a measure, is defined by statute as a measure, the estimated savings of which exceed the estimated costs over the lifespan of the measure as determined in accordance with certain methods and procedures. Id. § 8253(f)(1)(D).

and, in implementing such measures, agencies are to use performance contracting[5] to address at least 50 percent of these ECMs;[6] and

6. follow up on each ECM implemented, ensuring, among other things, that energy and water savings are measured and verified.

Agencies are to certify their compliance with most of these requirements in a publicly available web-based tracking system; DOE developed its Compliance Tracking System (CTS) for this purpose.[7] The public may view agency-reported data on agencies' performance toward meeting the six requirements in CTS. Other data are also available, such as the total facility energy and water use at covered facilities for each of the 27 agencies that use the system to report.[8] By statute, at the request of an agency, DOE may exempt specific data for specific facilities from public disclosure for national security purposes.

Several federal agencies have roles related to these requirements. Specifically:

- DOE's Federal Energy Management Program collects and maintains data reported by 27 agencies on their compliance with the requirements in DOE's CTS and provides guidance to agencies on meeting the requirements.

[5]Generally, performance contracting is an alternative financing method in which an agency contracts with an energy services company or a utility to install ECMs that the agency then pays for over time out of the savings from the reduction in energy use and from reduced operations and maintenance costs.

[6]The requirement to implement ECMs, as well as to use performance contracting to address at least 50 percent of the ECMs, applies to evaluations completed on or after December 27, 2020, when the 2020 amendments were enacted, making the first implementation deadline for this requirement December 27, 2022, at the earliest.

[7]The Compliance Tracking System may be accessed at https://ctsedwweb.ee.doe.gov/CTSDataAnalysis/ComplianceOverview.aspx.

[8]These agencies are the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Justice, Labor, State, the Interior, the Treasury, Transportation, and Veterans Affairs, as well as the Environmental Protection Agency, the Federal Deposit Insurance Corporation, the General Services Administration, the National Aeronautics and Space Administration, the National Archives and Records Administration, the Nuclear Regulatory Commission, the Office of Personnel Management, the Railroad Retirement Board, the Smithsonian Institution, the Social Security Administration, the Tennessee Valley Authority, the U.S. Army Corps of Engineers, and the U.S. Postal Service.

- The Environmental Protection Agency runs Energy Star Portfolio Manager, the program designated for agencies to use to benchmark their building energy use.[9]
- The General Services Administration works closely with DOE and other agencies to pilot and promote energy- and water-saving practices.

You asked us to review issues related to agency compliance with the six energy and water efficiency requirements.[10] This report examines (1) the extent to which agencies are complying with relevant energy and water efficiency requirements and (2) the successes and challenges that selected agencies have encountered in their efforts to meet relevant energy and water efficiency requirements.

To determine the extent to which agencies are complying with the relevant energy and water efficiency requirements, we reviewed and analyzed data reported by all 27 agencies for fiscal year 2021 in DOE's CTS. The data also include information on agencies' use of exemptions from public reporting and the source of funding for ECMs. See appendix I for more information on exemptions. To assess the reliability of these data, we (1) conducted manual testing for outliers and missing data, (2) reviewed related documentation, and (3) interviewed knowledgeable agency officials. We found the data to be sufficiently reliable for understanding agency-reported performance related to four of the six requirements and agency use of exemptions. Due to incomplete data entered by agencies, we did not find the data to be sufficiently reliable to report on two of the requirements—to implement certain ECMs identified in evaluations and to follow up on these implemented ECMs—as well as the funding for these ECMs. We discuss this further in the report.

We also reviewed data on the source of funding for ECMs in DOE's Federal Comprehensive Annual Energy Performance database. To

[9]The Presidential Memorandum—Federal Leadership on Energy Management, issued on December 5, 2013, called for federal agencies to, among other things, ensure that for any agency buildings metered for energy and water performance, the associated monthly performance data are entered into Energy Star Portfolio Manager. According to DOE guidance, DOE selected Energy Star Portfolio Manager as the building energy use benchmarking system under 42 U.S.C. § 8253(f)(8) for metered buildings that are, or are part of, covered facilities, because of several characteristics, including, among others, that it was designed for benchmarking and is capable of storing energy consumption data.

[10]Specifically, the six requirements, under 42 U.S.C. § 8253(f), are related to the use of energy and water efficiency in federal buildings. For the purposes of our report, we refer to those requirements as "energy and water efficiency requirements."

assess the reliability of these data we (1) conducted manual testing for anomalies and obvious errors, (2) reviewed related documentation, and (3) interviewed knowledgeable agency officials. We found the data to be sufficiently reliable for reporting on the source of funding for ECMs.

To describe the challenges and successes that agencies have encountered in their efforts toward meeting relevant energy and water efficiency requirements, we interviewed officials from six federal agencies and conducted a literature review. We selected six agencies to interview—the Department of Defense, the Department of Energy, the Department of the Interior, the Environmental Protection Agency, the General Services Administration, and the U.S. Postal Service.[11] We selected these agencies because together they account for at least 75 percent of covered facility square footage and energy use across the government and because some provide guidance or other support to agencies on implementing the relevant requirements.

We conducted semi-structured interviews with officials who coordinate energy and water efficiency efforts at each of the six agencies. We asked about the successes and challenges that they have encountered in implementing each of the relevant energy and water efficiency requirements. We then analyzed their responses. One analyst independently categorized each success or challenge, and another analyst reviewed those categories, with both analysts agreeing on both the categories and the coding of the responses. We report on the successes and challenges that agencies most frequently cited for each requirement and across all requirements.

In addition, we conducted a literature search and review that included scholarly and peer-reviewed material, government reports, books, trade or industry articles, and working reports that address successes and challenges in energy and water efficiency at federal facilities. We reviewed 76 articles that we found were relevant to our work. Two analysts independently read the articles to identify challenges and successes and coded each success or challenge. The two analysts then came together to agree on the category for each and summarized the results. We use the information from the literature throughout the report as examples.

[11]There are 27 agencies that report to DOE on their compliance with these requirements. Findings from our sample of agencies cannot be generalized to those we did not include in our review.

We conducted this performance audit from January 2022 to December 2022 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.

Background

Relevant Federal Action

In addition to the Energy Independence and Security Act of 2007, as amended, several laws, agreements, and executive orders have addressed energy and water efficiency over the years.[12] For example:

- **Executive Order 13123, Greening the Government through Efficient Energy Management**, issued in 1999, established new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performance and accountability. The order directed all federal agencies to reduce energy consumption per gross square foot of most facilities by 30 percent by 2005 and 35 percent by 2010, relative to 1985.
- **The Energy Policy Act of 2005** set energy reduction and efficiency requirements for federal facilities. Specifically, for federal buildings, the act included new energy efficiency measure requirements to reduce energy costs and promote energy savings. It also revised energy efficiency standards for new federal buildings to achieve energy consumption levels at least 30 percent stricter than certain industry or international standards.
- **The Federal Leadership in High-Performance and Sustainable Buildings Memorandum of Understanding**, signed by a number of federal agencies in 2006, established guiding principles and goals to improve energy efficiency and water conservation in federal buildings. The guiding principles have been updated periodically in the years since they were established.
- **Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management**, issued in 2007, directed agencies to ensure that new construction and major renovations of federal agency buildings comply with the guiding principles established in the 2006 memorandum of understanding described

[12]All of the listed executive orders, except Executive Order 14057, have been revoked.

above. Additionally, the executive order increased energy intensity reduction goals to (1) 3 percent annually through the end of fiscal year 2015; or (2) 30 percent by the end of fiscal year 2015, relative to the baseline of the agency's energy use in fiscal year 2003. The order also called for agencies to, beginning in fiscal year 2008, reduce water consumption intensity (water consumption per square foot), relative to the baseline of their water consumption in fiscal year 2007, by 2 percent annually through the end of fiscal year 2015, or by 16 percent by the end of fiscal year 2015.

- **Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance**, issued in 2009, established key goals for federal buildings. It directed agencies, beginning in 2020 and thereafter, to ensure that all new federal buildings that enter the planning process are designed to achieve zero-net-energy by 2030. It also directed agencies to ensure that all new construction, major renovation, or repair and alteration of federal buildings complies with the *Guiding Principles for Federal Leadership in High-Performance and Sustainable Buildings*, and that at least 15 percent of the agency's existing buildings and leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015.
- **Executive Order 13693, Planning for Federal Sustainability in the Next Decade,** issued in 2015, expanded upon the sustainability goals of the previous orders and set new targets for federal agencies to achieve by fiscal year 2025. Specifically, it directed each agency to reduce building energy intensity by 2.5 percent annually through the end of fiscal year 2025, relative to fiscal year 2015; reduce potable water consumption intensity by 36 percent by fiscal year 2025 relative to fiscal year 2007; and produce, at a minimum, 25 percent of total building electric energy from clean sources, such as solar, wind, and landfill gas.
- **Executive Order 13834, Efficient Federal Operations**, issued in 2018, revoked Executive Order 13693 and its specific targets for federal agencies. The order provided that it is the policy of the United States that agencies are to meet statutory requirements in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment, but contained no specific energy intensity reduction targets for federal facilities.
- **Executive Order 14057, Catalyzing Clean Energy Industries and Jobs through Federal Sustainability**, issued in 2021, aims to have the federal government lead by example to achieve a carbon pollution-free electricity sector by 2035 and net-zero emissions

economy-wide by no later than 2050. Implementing instructions for Executive Order 14057, issued by the White House Council on Environmental Quality in August 2022, provide instructions to federal agencies on agency planning, reporting requirements, and accountability. The instructions direct the head of each agency to propose agency-specific targets for energy and water efficiency.

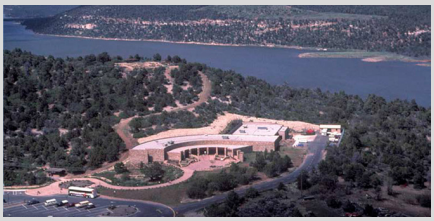
Agency Processes and Procedures

As described in DOE guidance, to improve energy and water efficiency, agencies are to systematically evaluate and improve their facilities by: first, evaluating their facilities to identify potential ECMs as described more below; second, implementing ECMs; and third, following up on and maintaining efficiency measures as part of the reevaluation process. According to guidance, this should occur on a 4-year cycle. Additionally, agencies are to annually benchmark their buildings. This enables agencies to track building energy and water use over time and compare them with similar buildings, according to DOE guidance. Agencies are to designate an energy manager responsible for implementing the requirements in this cycle and for reducing energy and water use. Each facility must have a designated energy manager, and the same energy manager may be designated at multiple facilities.

Evaluating facilities to identify potential ECMs. According to DOE guidance, evaluations should consist of two components: (1) a commissioning assessment component and (2) an audit component.[13] Commissioning, in this case, includes ensuring that all facility systems perform as intended and can be properly operated and maintained over the life of a facility. The level of detail needed to commission a building depends on an initial assessment of whether the facility's systems are operating according to specifications.

[13]Department of Energy, *Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities* (November 2008). This guidance may be found at https://www.energy.gov/sites/default/files/2013/10/f3/eisa_s432_guidelines.pdf.

Example of Performance Contracting at a Federal Agency



According to officials from the Department of the Interior's Bureau of Land Management (BLM), the agency entered into an energy savings performance contract (ESPC) with Johnson Controls, Inc., in 2006. The first phase covered the implementation of energy conservation measures at two sites in Idaho, at a cost of $2.0 million. The second phase prescribed energy conservation measures, such as efficient lighting and programmable thermostats, at 83 other facilities, at a cost of $7.2 million. The third and final phase was completed in 2011. It consisted of energy conservation work at approximately 160 facilities in 11 states, at a cost of $17.8 million. This work included installing energy efficient lighting; new heating, ventilation, and air conditioning systems; and the construction of several renewable energy projects, including a large photovoltaic array at the Canyons of the Ancients Visitor Center in Dolores, Colorado, shown in the photo above.

According to BLM staff, by using an ESPC, the agency benefited from rebates and tax credits from utilities and state governments, thereby reducing the initial payment. In addition, BLM officials noted that the agency has reduced its overall energy consumption (e.g., electricity, natural gas) by 30 percent from its 2003 baseline and had annual estimated savings of over $1.2 million.

Sources: GAO analysis of Department of the Interior information; photo from BLM. | GAO-23-105673

The audit component of the evaluation should provide agencies with the information they need to make sound decisions about the ECMs to implement at a facility. Examples of ECMs include lighting improvements, such as occupancy sensors; water improvements, such as low flow faucets; and heating, ventilation, and air conditioning improvements, such as replacing air conditioning units with high-efficiency ones, or the installation of a new boiler or chiller. The audit should include detailed descriptions of the ECMs identified and their expected cost and savings. The audit should also identify whether the ECMs will save the agency money over the life of the improvement—in other words, whether they will be life cycle cost-effective.[14]

Implementing ECMs. Once an agency identifies possible ECMs at a facility, the next step is for an agency to implement the ECMs.[15] An agency may implement ECMs using direct funding through appropriations; or authorized private financing, such as performance contracting, which is an alternative financing method in which a federal agency contracts with an energy service company or a utility to do the work. (For an example of a project financed using performance contracting, see the sidebar.) The energy service company or local utility provides upfront project financing for ECMs, allowing agencies to pay for the ECM over time—up to 25 years—from the savings that the projects generate.

Following up on ECMs. After implementing ECMs, agencies are also to follow up to ensure, among other things, that energy and water savings from the ECMs are measured and verified. According to DOE guidance, the key reasons for follow-up include ensuring that the ECM performs in accordance with equipment and system specifications and agency and occupant needs, measuring savings, justifying future investment, and replicating savings efforts throughout the agency.[16] This follow-up is required to occur within 4 years, or at the time of the next facility

[14]The term "life cycle cost-effective," with respect to an ECM, means that the estimated savings of which exceed the estimated costs over the lifespan of the ECM, as determined in accordance with specified statutory requirements. *See* 42 U.S.C. § 8253(f)(1)(D).

[15]Department of Energy, *Guidance for the Implementation and Follow-up of Identified Energy and Water Efficiency Measures in Covered Facilities* (Washington, D.C.: September 2012). This guidance may be found at https://www.energy.gov/sites/default/files/2013/10/f4/eisa_project_guidance.pdf.

[16]Department of Energy, *Guidance for the Implementation and Follow-up of Identified Energy and Water Efficiency Measures in Covered Facilities.*

evaluation, which will, in turn, begin this cycle again, according to the guidance.

In addition to this cycle of evaluation, ECM implementation, and follow-up, agencies are to annually track changes in their building energy and water efficiency over time to benchmark their buildings. Benchmarking is the practice of accounting for and comparing a metered building's current energy and water use performance with its energy and water use baseline or historical performance, or comparing a metered building's energy and water performance with the energy and water performance of similar types of buildings.[17] DOE guidance requires agencies to enter data annually for their metered buildings that are, or are a part of, covered facilities into Energy Star Portfolio Manager.[18] Energy Star Portfolio Manager can track the energy use intensity of buildings. It can also indicate how a building performs against similar facilities nationwide, using weather-normalized energy data.

Agencies Met Some Energy and Water Efficiency Requirements; Additional Data Are Needed to Assess Other Requirements

Federal agencies have a mixed performance in meeting the six energy and water efficiency requirements. According to DOE fiscal year 2021 CTS data for all 27 agencies that use the system to report on their implementation of these requirements, most agencies met, or almost met, two of the requirements and did not meet one requirement.[19] We could not determine if agencies fully met the three remaining requirements due to a lack of data, either because the implementation deadline had not passed, or there were not yet available data, or because DOE does not track performance. See table 1.

[17]Subject to certain exceptions, federal agencies are required to meter the energy use of their buildings. 42 U.S.C. 8253(e). As of October 1, 2022, agencies are also required to meter their water use. Energy Act of 2020. Pub. L. No. 116-260, Div. Z., 1002(g)(5), 134 Stat. 1182, 2423 (amending 42 U.S.C. § 8253 to, among other things, require federal agency metering of water use in addition to energy use).

[18]Department of Energy, *Federal Building Energy Use Benchmarking Guidance* (Washington, D.C.: August 2014). This guidance may be found at https://energy.gov/sites/prod/files/2014/09/f18/benchmarking_guidance08-2014.pdf.

[19]DOE CTS data for all requirements are as of August 24, 2022. We are reporting summary level data in part because DOE CTS data are updated daily and, therefore, may change frequently.

Table 1: Agencies' Performance in Meeting Six Energy and Water Efficiency Requirements, Fiscal Year 2021

Requirement	Number of agencies that met requirement	Percent of agencies that met requirement
Identify covered facilities constituting at least 75 percent of facility energy or water use	24 of 27	88.9
Designate energy managers for covered facilities[a]	24 of 27	88.9
Conduct evaluations at covered facilities every 4 years, subject to exception[b]	1 of 27	3.7
Enter data into a benchmarking system[c]	—	—
Enter energy use data into a benchmarking system	7 of 27	25.9
Enter water use data into a benchmarking system[d]	Agency performance not tracked	
Implement energy and water conservation measures	Agency performance not yet available	
Follow up on energy and water conservation measures[e]	Agency performance not tracked	

Source: GAO analysis of Department of Energy (DOE) Compliance Tracking System data. | GAO-23-105673

Note: Data are as of August 24, 2022. This table summarizes relevant requirements from 42 U.S.C. § 8253(f) and DOE guidance.

[a]We corrected these data based on an interview with an agency.

[b]By statute, an evaluation is not required with respect to a facility that, as of the date on which the evaluation would occur, meets one of multiple specified exceptions. *See* 42 U.S.C. § 8253(f)(3)(B).

[c]The requirement applies to metered buildings that are, or are a part of, a covered facility.

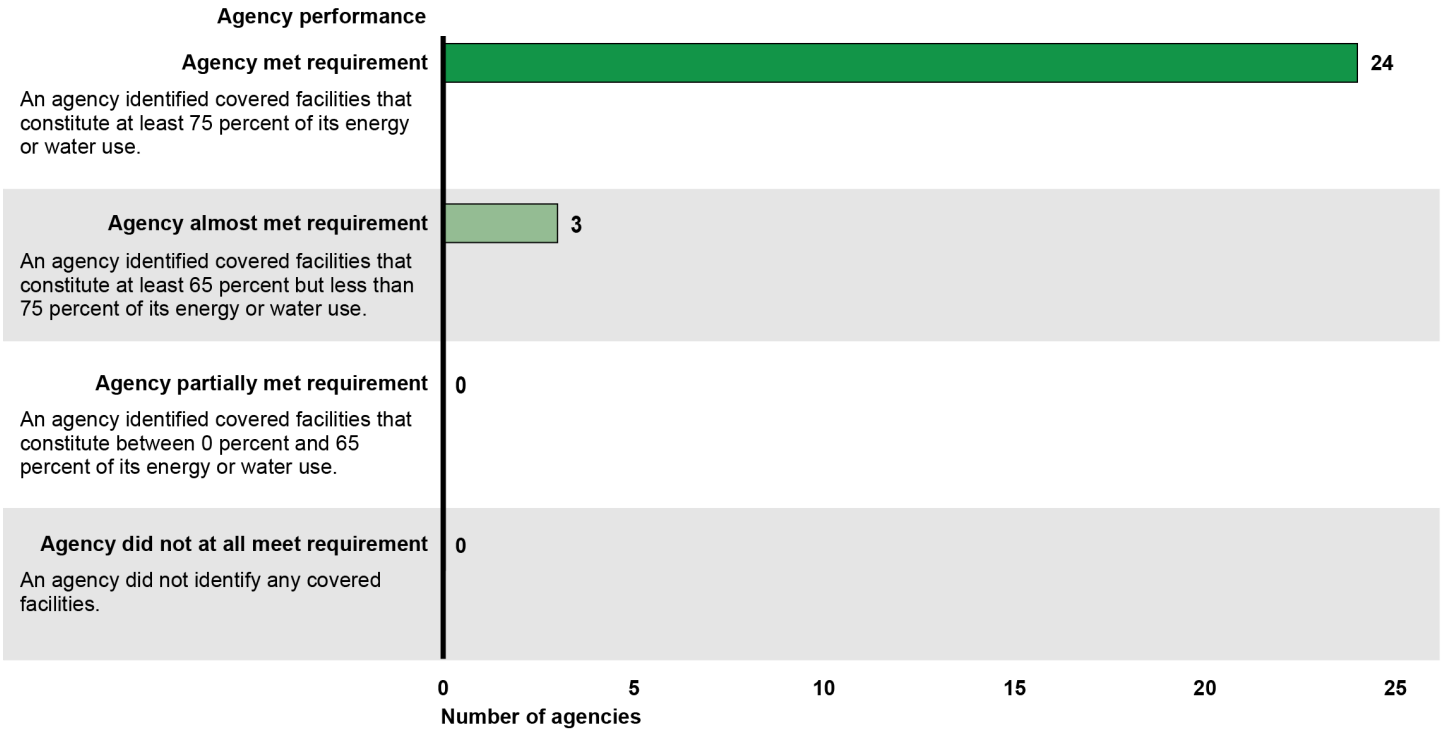
[d]By statute, each energy manager is to enter energy use data for metered buildings into the benchmarking system. The statute also calls for DOE to issue guidance for use of the benchmarking system. 42 U.S.C. § 8253(f)(8). In that guidance, DOE further provides that reporting building water consumption data is required to meet the federal building benchmarking requirement for buildings that are metered for water use and notes that when a building is metered for water consumption, water use must also be tracked and disclosed.

[e]We are evaluating agency performance toward this goal using the 4-year time frame required by DOE guidance.

Almost All Agencies Identified Covered Facilities and Designated Energy Managers for Covered Facilities

Identify covered facilities. Our review of DOE CTS data found that in fiscal year 2021, almost all agencies met the requirement to identify covered facilities—those that will be subject to the other five requirements we reviewed—that constituted at least 75 percent of facility energy or water use at each agency. Specifically, 24 of 27 agencies (88.9 percent) reported that they met the 75 percent threshold. The three remaining agencies were close to meeting the requirement—all three had designated covered facilities that constituted over 70 percent of energy or water use. See figure 1.

Figure 1: Twenty-Seven Agencies' Performance in Meeting the Requirement to Identify Covered Facilities, Fiscal Year 2021



Source: GAO analysis of Department of Energy Compliance Tracking System data. | GAO-23-105673

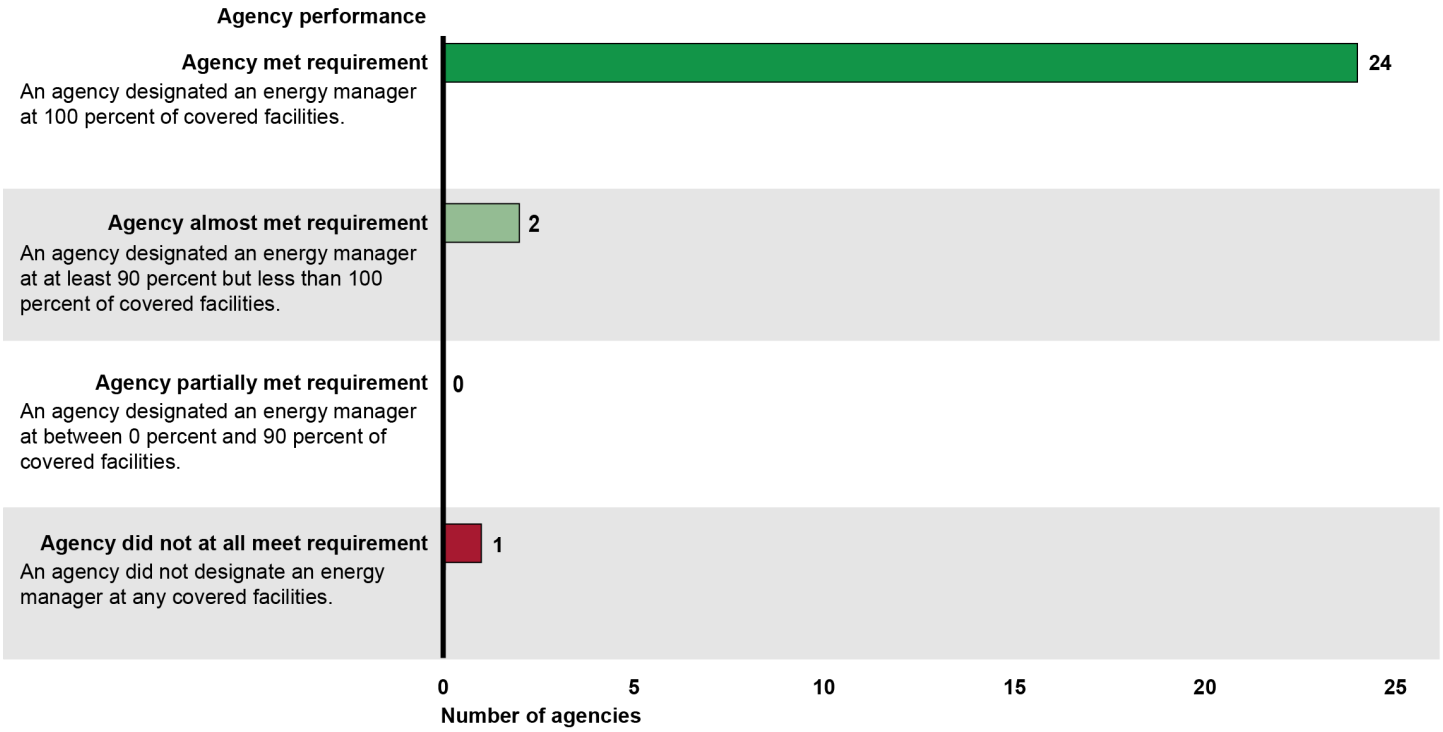
Note: Data are as of August 24, 2022.

Designate an energy manager. Our review of DOE CTS data found that in fiscal year 2021, almost all agencies met the requirement to designate, for each of their covered facilities, an energy manager responsible for reducing energy and water use and implementing efficiency requirements.[20] Specifically, 24 of 27 agencies (88.9 percent) reported that they had designated an energy manager for 100 percent of their covered facilities. Two agencies were close to meeting the requirement—both had designated energy managers for over 98 percent of their

[20]An energy manager may be an individual who is responsible for multiple facilities.

covered facilities. One agency did not designate energy managers for any of its covered facilities.[21] See figure 2.

Figure 2: Twenty-Seven Agencies' Performance in Meeting the Requirement to Designate an Energy Manager, Fiscal Year 2021



Source: GAO analysis of Department of Energy Compliance Tracking System data. | GAO-23-105673

Note: Data are as of August 24, 2022. We corrected these data based on an interview with an agency.

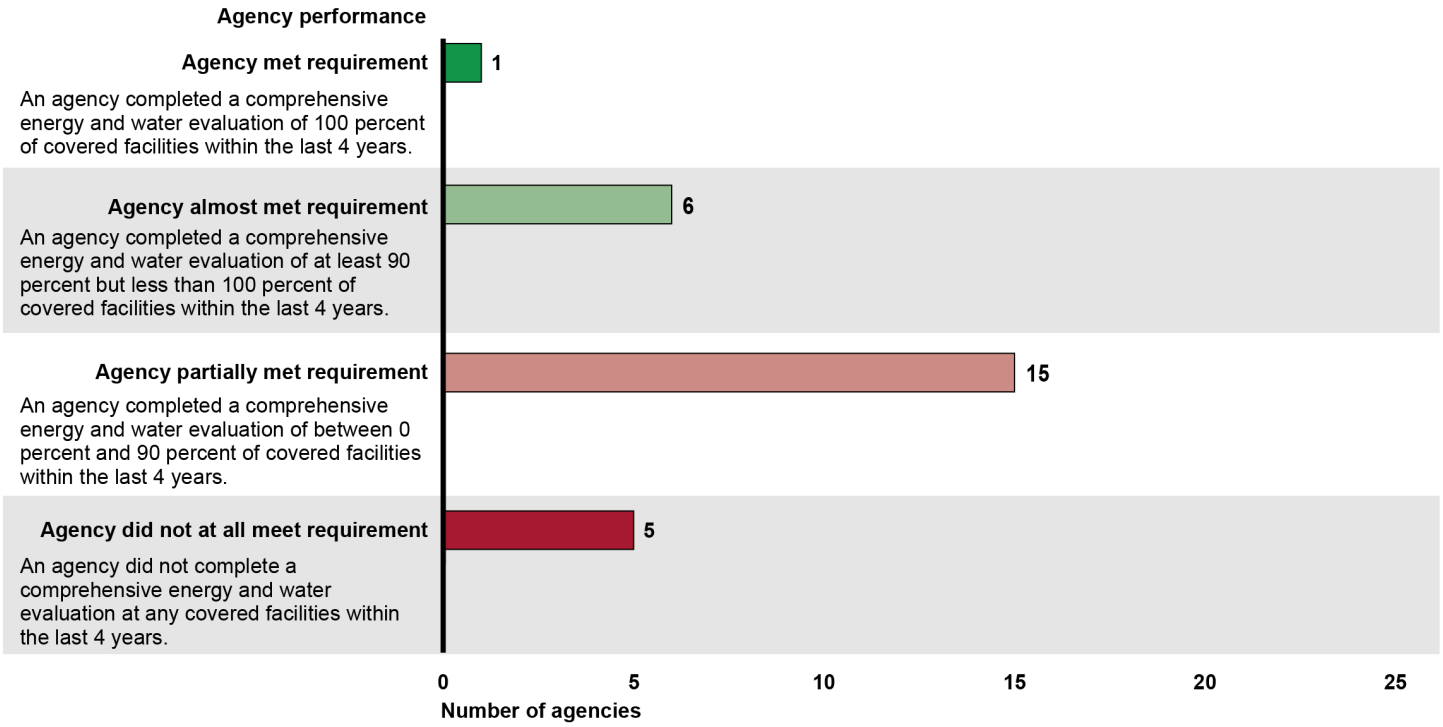
Most Agencies Did Not Complete Comprehensive Facility Evaluations Every 4 Years

Facility energy and water evaluations. Our review of DOE CTS data found that in fiscal year 2021, almost all agencies did not meet the requirement to complete a comprehensive energy and water evaluation

[21]According to DOE's CTS data, 25 of 27 agencies met the requirement to designate energy managers at covered facilities in fiscal year 2021. However, we corrected this number to 24 of 27 after one agency we spoke with stated that they had no energy managers in fiscal year 2021 due to an agency reorganization.

for each covered facility at least once every 4 years.[22] One agency of 27 (3.7 percent) completed evaluations for 100 percent of its covered facilities within the past 4 years, with another six agencies (22.2 percent) completing evaluations at over 90 percent of covered facilities. Five agencies (18.5 percent) had not evaluated any facilities in the last 4 years. The rest of the agencies fell somewhere in between. See figure 3.

Figure 3: Twenty-Seven Agencies' Performance in Meeting the Requirement to Complete Energy and Water Evaluations, Fiscal Year 2021



Source: GAO analysis of Department of Energy Compliance Tracking System data. | GAO-23-105673

Note: Data are as of August 24, 2022. By statute, an evaluation is not required with respect to a facility that, as of the date on which the evaluation would occur, meets one of multiple specified exceptions. *See* 42 U.S.C. § 8253(f)(3)(B).

[22]By statute, an evaluation is not required with respect to a facility that, as of the date on which the evaluation would occur, meets one of multiple specified exceptions. 42 U.S.C. § 8253(f)(3)(B). According to a DOE official, DOE is working to add a way for agencies to document their eligibility for these exceptions in CTS, but CTS currently does not account for any exceptions. However, the official does not believe that any facilities would yet qualify for an exception.

DOE also tracks evaluations by the square footage of evaluated facilities and the energy and water usage of evaluated facilities. According to DOE, some agencies may be making more progress evaluating facilities in terms of square footage or energy use than by the number of facilities. In that regard, agencies reported evaluating a greater percentage of their facilities when measured by square footage and energy usage, suggesting that they have focused evaluations on larger facilities or facilities that use the most energy. About 62 percent of agencies (13 of 21) that had evaluated some, but not all, of their facilities had a higher percentage of evaluations in terms of facility square footage or energy use than the number of facilities.[23]

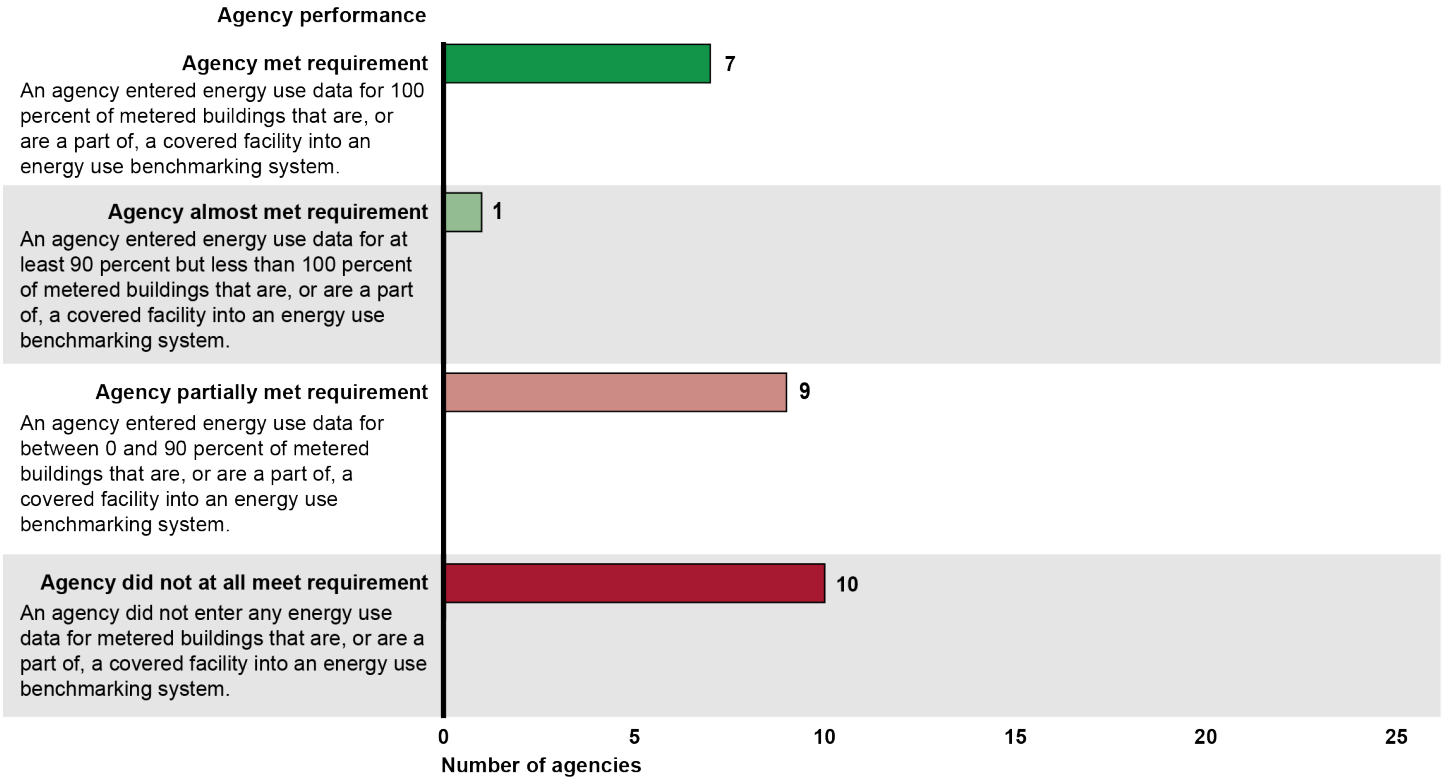
Due to Lack of Data, It Is Unknown if Agencies Fully Benchmarked Buildings or Implemented and Followed Up on ECMs

Benchmarking buildings. Our review of DOE CTS data showed that in fiscal year 2021, most agencies did not meet the requirement to enter energy use data for all metered buildings that are, or are a part of, a covered facility into a benchmarking system. Specifically, seven of 27 agencies (25.9 percent) entered energy use benchmarking data for 100 percent of their covered metered buildings.[24] One other agency was close to meeting the requirement, with energy use data entered for over 93 percent of its covered metered buildings. Ten agencies (37.0 percent) had not entered any energy use data to benchmark buildings. The rest of the agencies fell somewhere in between. See figure 4.

[23]Six agencies had evaluated all or none of their facilities and were, therefore, not included in this calculation.

[24]Two of the seven agencies reported over 100 percent for entering energy data into a benchmarking system. According to one agency, this is because they entered data for all metered buildings that are, or are a part of, covered facilities into the system, as required, as well as for some non-covered facilities.

Figure 4: Twenty-Seven Agencies' Performance in Meeting the Requirement to Enter Energy Use Data into a Benchmarking System, Fiscal Year 2021



Source: GAO analysis of Department of Energy Compliance Tracking System data. | GAO-23-105673

Note: Data are as of August 24, 2022.

According to DOE guidance, to meet the benchmarking requirement, agencies are also required to enter water consumption data into a benchmarking system for buildings that are metered for water use. We could not assess whether agencies met this requirement because, unlike DOE's tracking of energy use data, DOE does not track agency performance on this DOE guidance requirement regarding water use data. According to DOE officials, CTS does collect and maintain the data needed to track agency performance within its system, but DOE has not compiled these data to track agency performance. Therefore, CTS does not have readily accessible information on agency performance on the requirement from DOE guidance to enter water use data into a benchmarking system. Because DOE does not track performance, decision makers, including Congress, cannot be certain that agencies are benchmarking water use, as they have been directed by DOE. Without

water use benchmarking, agencies may be missing information that would help them make effective decisions to improve water efficiency.

Implementing ECMs. It is too early to assess whether agencies met the requirement, after 2020 amendments, to implement ECMs within 2 years because agencies had not yet reported data while we were conducting this review.[25] Starting with evaluations completed on or after December 27, 2020, energy managers are required to implement any ECMs identified by the agency in evaluations and that are life cycle cost-effective[26] within 2 years and address at least 50 percent of these measures using performance contracting. This makes the first implementation deadline December 27, 2022, at the earliest.[27]

Furthermore, we could not assess how many ECMs agencies have implemented because we could not confirm whether all of the ECMs they implemented were entered into CTS. According to a DOE official who is responsible for managing CTS, some agencies do not report all ECMs into CTS, which leads to an underreporting of the number of measures implemented. CTS tracks data on ECMs at the project level because agencies often bundle multiple ECMs together into a project. According to the DOE official, although there is no way to know exactly how many ECMs were not reported into CTS, DOE can estimate by comparing ECM

[25]*See* Energy Act of 2020. Pub. L. No. 116-260, Div. Z, § 1002(g), 134 Stat. 2418, 2423. The act amended the statutory language to require, rather than permit, energy managers to implement the relevant ECMs identified by the agency in its evaluation. Because implementation of ECMs was not required until the enactment of the Energy Act of 2020 in December 2020, and the deadline for implementation of ECMs is 2 years after the completion of an evaluation, the first ECMs required to be implemented after the amendment will not reach their deadline until December 27, 2022, at the earliest.

[26]Specifically, the act provides that not later than 2 years after the date of completion of each evaluation, each energy manager shall implement any energy- or water-saving measure that the federal agency identified in the evaluation, and is life cycle cost-effective, as determined by evaluating an individual measure or a bundle of measures with varying paybacks. Pub. L. No. 116-260, § 1002(g)(6)(C), 134 Stat. at 2426 (codified as amended at 42 U.S.C. § 8253(f)(4)(A)).

[27]DOE issued interim guidance in July 2022 regarding frequently asked questions on provisions of the 2020 act addressing federal energy savings performance contracts, including the requirement under 42 U.S.C. § 8253(f)(4) to use such contracts to address at least 50 percent of ECMs required to be implemented. The guidance, among other things, details how DOE will track the new requirements, and it states that agency progress will be measured in terms of the implementation cost of projects awarded by each agency in its covered facilities during the fiscal year, with percentages noted for performance contracting and direct funding. DOE's guidance on the new requirement can be found at https://www.energy.gov/sites/default/files/2022-07/espc_faq_42-usc-8287-0622.pdf.

funding data in CTS with another data system, the Federal Comprehensive Annual Energy Performance Data. Our comparison of such funding data confirmed that ECMs are likely underreported because the total funding reported in CTS was lower than in the Comprehensive Annual Energy Performance Data system.

Additionally, because ECM implementation data in CTS were not reliable in that they were underreported, we also could not assess how agencies paid for ECMs, including the amount paid for with direct funding versus funding provided through performance contracts. However, using a separate DOE dataset that covers more facilities than CTS, we found that from fiscal years 2018 through 2021, the federal government's total investment in energy efficiency and renewable energy measures was about $6.57 billion, with $2.52 billion from direct funding (38 percent) and about $4.05 billion from performance contracting (62 percent).[28] During these years, 16 of the 27 agencies used at least some performance contracting. Specifically, of the $4.05 billion in funding from performance contracting, two agencies accounted for about 85 percent of this total—the Department of Defense accounted for about $2.67 billion (66 percent), and the Department of Veterans Affairs accounted for about $755 million (19 percent).

Follow up on ECMs. We could not assess whether agencies met the requirement to follow up on implemented ECMs because DOE does not track agency performance of this requirement. For each implemented ECM, agencies are required to ensure that energy and water savings are measured and verified.[29] Further, DOE guidance states that this follow-up should be conducted every 4 years, and during the next scheduled facility comprehensive evaluation.[30] According to DOE CTS data, agencies have followed up on about 22 percent of implemented ECMs at some time since the ECMs were first implemented, but DOE does not track agency performance on following up within the 4-year timeline specified by its guidance.

[28]These data come from DOE's Federal Comprehensive Annual Energy Performance Data and are as of June 2022. This dataset differs from the Compliance Tracking System in that it includes all federal buildings, not just covered facilities.

[29]42 U.S.C. § 8253(f)(5)(D).

[30]DOE's guidance on project follow-up can be found at https://www.energy.gov/sites/default/files/2013/10/f4/eisa_project_guidance.pdf.

According to a DOE official, CTS does collect and maintain the data needed to track agency performance within its system, but DOE has not compiled these data to track agency performance. Therefore, CTS does not have readily accessible information on agency performance on the requirement to follow up on implemented ECMs within 4 years. Because DOE does not track performance, decision makers, including Congress, cannot be certain that agency officials are measuring energy or water savings from implemented ECMs, as they have been directed to. Without information on how these measures have been performing, Congress cannot know the extent to which agencies are making effective decisions to improve energy and water efficiency.

Agencies Cited Varied Successes and Challenges in Their Efforts to Meet Energy and Water Efficiency Requirements

In our interviews with officials from six selected agencies about their experiences in implementing the six relevant energy and water efficiency requirements, two topics were cited most frequently: (1) the success of using automated or centralized data and (2) the challenge of insufficient financial and staff resources.

Success of automated or centralized data. Officials from five of the six selected agencies that we interviewed cited this success for at least one of the requirements, with some agencies citing it for multiple requirements. According to agency officials, the practice of using automated or centralized data in some instances originated from agency-led efforts, while in other instances it came from using third-party products or contractor support. For example, DOE's Sustainability Performance Division developed an internal dashboard for DOE energy managers to use to gather and share energy and water use data and information on ECMs. According to agency officials, they enter data into the dashboard, which automatically gathers, sorts, and categorizes the data, then uploads it to Energy Star Portfolio Manager for benchmarking. This makes the benchmarking requirement easier to meet, according to officials. Before DOE had the dashboard, staff manually entered data into multiple spreadsheets.

Further, officials told us that because the dashboard can be used to document the expected costs and savings from potential ECMs, officials can use it to identify life cycle cost-effective ECMs. According to officials, this will help them meet the requirement to implement life cycle cost-effective ECMs within 2 years of the completion of the evaluation in which the agency identified the ECMs. The data can also be used to determine the savings from an ECM because the dashboard captures data from before and after an ECM has been implemented.

Officials from the Department of the Interior told us that some of their bureaus have found success using energy management software developed by private companies to meet the benchmarking and follow-up requirements. This software captures utility data and, like DOE's dashboard, uploads the data automatically to Energy Star Portfolio Manager for easy benchmarking. Like DOE's dashboard, the software automatically captures utility data over time—both before and after an ECM has been implemented. The data captured by this software may also be used by agencies to determine savings from ECMs.

As an additional benefit, officials told us that the software has saved staff time because they no longer enter data manually. They also said that it has saved the agency money by identifying utility charges that the agency should not pay, inaccuracies in utility billing statements, and locations with no electricity use and where meters can be shut off. Similarly, the General Services Administration told us that they use smart meters that automatically collect utility data in 15-minute intervals and upload the data to a database that they can analyze and use for internal benchmarking.

Challenge of insufficient resources. Officials from all six agencies we interviewed cited this as a challenge to meeting at least one of the requirements, with some agencies citing it for multiple requirements. For example, agency officials told us that insufficient financial resources posed a challenge to meeting energy and water efficiency requirements. Officials from three agencies said that their budgets do not specify a funding source—or line item—for energy and water efficiency improvements. In the absence of specific funding for energy and water efficiency improvements, agencies told us that they must use funds from other parts of their budgets, such as maintenance or real property budgets, to pay for these improvements.

Furthermore, officials from three agencies told us that budget constraints left them with competing priorities, with one saying that it can be a challenge for managers to choose between implementing energy conservation measures and other priorities, such as fixing a leaking roof. Officials from one agency explained that they need more resources to conduct evaluations because their facilities are in remote locations, which makes evaluations more costly because of the time and expense of sending agency or contractor staff to those locations.

We also heard from officials at four of the six agencies that insufficient staffing resources were a challenge in meeting the energy- and water-efficiency requirements. In particular, agency officials told us that

insufficient staffing was a challenge in designating energy managers. Although, as we mentioned above, agencies are generally meeting the requirement to designate an energy manager at every covered facility, we heard that energy managers are stretched thin. Officials told us that being an energy manager often requires “other duties as assigned” and that staff have competing responsibilities, making it difficult to spend sufficient time on energy management issues.

Officials at two agencies told us that insufficient staff was also a challenge when conducting facility evaluations. Officials at one agency, for example, told us that after a restructuring, they do not have any staff to manage evaluations. In addition, in a technical report on energy efficiency at Forest Service facilities, an agency that we did not interview for this report noted the importance of adequate staffing to the success of energy projects.[31] Officials in the report said that staffing can be especially important in multiyear projects, because the continued presence of a person familiar with a specific project is essential to the success or failure of projects. This agency cited several cases where projects stalled and important work remained incomplete because someone left the agency, and no other staff took over.

In addition to these most frequently cited topics, agency officials we interviewed cited successes and challenges that were specific to each of the six requirements. For example:

Identifying covered facilities. Officials from selected agencies cited two successes and one challenge for this requirement. Two agencies cited the success of using automated or centralized data. Additionally, officials from two agencies explained that they found success by identifying covered facilities that account for more than 75 percent of their total facility energy use so that if there is any fluctuation in their energy use, they are likely to still meet the 75 percent threshold. The challenge, which was cited by officials from one agency, was that their building portfolio changes over time, which can make it hard to ensure that they are meeting this requirement.

Designating energy managers. Officials from selected agencies cited two successes and three challenges for this requirement. Each success was cited by one agency. For example, officials from one agency told us

[31]Rachelle S. Meyer et al., Energy Efficiency in U.S. Forest Service Facilities: A Multi-Region Review, Technical Report (Portland, OR: Pacific Northwest Region Station, 2013).

that they found success through complementary internal guidance that calls for assigning an energy manager for each facility. Officials from another agency told us that they found success by assigning one energy manager to multiple facilities, because it would be cost-prohibitive to assign a separate energy manager for each facility.

The most frequently cited challenge was insufficient resources. While officials from one agency cited assigning an energy manager to multiple facilities as a success, four agencies told us that this results in energy managers being stretched thin because they may be responsible for multiple covered facilities or face competing priorities from other job duties. Officials from one agency that has designated an energy manager for each of its covered facilities told us that the agency has increased the number of energy managers it has hired. However, they said that if they could hire even more energy managers, they believe that they would be able to implement more energy conservation measures at their facilities. The other two challenges were cited by one agency each. One agency told us that it can be difficult to hire an energy manager because the position is program- and site-specific. Another agency told us that it can be difficult to hire qualified staff, especially at remote sites.

Facility energy and water evaluations. Officials from selected agencies cited nine successes and nine challenges for this requirement. The most frequently cited success was using desk or remote audits. Officials from four of the six agencies cited this success. Officials told us that desk or remote audits—audits using data on building systems and utility use that do not need someone on site—helped agencies address resource constraints or pandemic-related restrictions on travel to perform evaluations. However, officials from one agency said that although desk or remote audits helped them during the pandemic, they were also a challenge because the quality of these evaluations was not as good as in-person evaluations. In addition, officials from three agencies cited using a variety of techniques to perform evaluations as a success. We heard that tailoring the type of evaluation to the facility's needs was helpful. For example, an official from one agency said that if a facility is a poor performer, it may need an expert contractor to travel to the facility. On the other hand, if a facility is performing consistently well, a desk audit may be the right fit.

In addition to desk or remote audits, other evaluation techniques we heard about include

- incorporating evaluations for energy efficiency into an agency's existing construction master planning assessments;
- partnering with a DOE national laboratory on audits to improve operational performance and reduce energy use;
- taking advantage of low- or no-cost audits offered by utility companies;
- leveraging audits by energy service companies that can analyze potential costs and savings and result in a proposal for a bundle of ECMs with a financing, implementation, and follow-up plan; and
- conducting data center audits in conjunction with DOE's Lawrence Berkeley National Laboratory, with the goal of identifying ways to reduce energy use at high-energy data centers.

Some of the other successes resulted because of good internal communication, such as internal alerts for when an evaluation is due, and because an agency had few facilities to evaluate, we were told.

The most frequently cited challenge was insufficient resources, which was cited by officials from five of the six agencies. For example, we heard that agencies lacked the staff to conduct evaluations themselves, as described above. One agency told us that they addressed this challenge by seeking help from a national laboratory to conduct facility evaluations. The other challenges were cited by one agency each and included the challenge of conducting evaluations during the pandemic because of travel restrictions and the challenge of entering data for many facilities into DOE's CTS.

Benchmarking buildings. Officials from selected agencies cited four successes and six challenges for this requirement. The most frequently cited success for this requirement was the success of using automated or centralized data for benchmarking, which was cited by officials from four agencies. As described above, some agencies have systems that automatically upload energy use data to Energy Star Portfolio Manager, which streamlines the data entry process. The other three successes were each cited by one agency and included, for example, that one agency had few buildings to benchmark.

The most frequently cited challenge was the lack of comparable buildings to benchmark against in Energy Star Portfolio Manager. This challenge was cited by officials from three agencies. Although these agencies might be meeting the requirement by simply entering building data into Energy

Star Portfolio Manager, these officials were looking for the opportunity to compare their buildings' performances with those of other similar buildings. As described above, Energy Star Portfolio Manager can compare the efficiency of buildings with similar functions and conditions. But some officials told us that Energy Star Portfolio Manager cannot do this for specialized facilities, such as laboratories or multiuse facilities (e.g., a visitor center that also houses offices, a museum, and a theater).

In addition, two agencies cited the challenge of a lack of automated or centralized data. For example, officials from one agency explained that some of their facilities require energy managers to walk to individual meters and write down readings, then enter the data by hand, which is time-consuming.

Implementing projects. Officials from selected agencies cited five successes—each only one time—and 20 challenges for this requirement. For example, one agency told us that they had success in identifying projects through their agency's master planning process, which results in a list of priority projects for both maintenance and energy and water efficiency. Another agency told us that bundling together different ECMs has helped them find cost-efficient ways to implement projects.

The most frequently cited challenge to the requirement to implement projects was that the 2-year time frame may be too short to implement a performance contract. This challenge was cited by five agencies. For example, officials from one agency explained that a performance contract takes lead time to design and award, and 2 years is short for this process. These officials also told us that they prefer to bundle multiple ECMs in a single performance contract, in part because that achieves the best value. However, we were told that such complex contracts are more time-consuming to execute.

We also heard from two agencies that a 2-year implementation timeline is too short, even without performance contracting. For example, officials from one agency said that it can take a long time to plan large projects, particularly in locations where construction can only take place during certain seasons. An official at another agency told us that recent supply chain issues meant that the lead time for getting new equipment had been as long as 300 days, delaying project completion.

Another frequently cited challenge was that the federal budget cycle is too long or not well aligned with this requirement. This challenge was cited by three agencies. Even the use of direct funding within the 2-year window is

a challenge, we were told. For example, according to officials from one agency, depending on the timing of the facility evaluation during which ECMs are identified, the agency may have already finalized its budget for the following year, pushing out the project funding timeline. Similarly, officials from another agency told us that it can take 2 years to get funding for a project after identifying the need, and the agency would need additional time to implement the project.

We also heard from three agencies that it is a challenge to use performance contracts for smaller projects and, therefore, performance contracting is not well suited to all projects. An official from one agency told us that performance contracts at small facilities did not have high enough payback to appeal to energy service companies. An official from another agency told us that their relatively small, spread-out facilities made bundling ECMs less cost-effective and, therefore, less attractive for a performance contract.

The final frequently cited challenges were the challenge of insufficient resources, which was cited by officials from four agencies, and insufficient funding specifically, which was cited by officials from three agencies. As described above, we heard that agencies need additional staff and funding. One agency simply said that limited staff and competing priorities are the biggest challenges in this area. Additionally, officials from one agency told us that while they save money by implementing ECMs because of reduced operations and maintenance cost, the savings are not available for reinvestment in additional ECMs, as the agency would like.

Follow up on ECMs. Officials from selected agencies cited two successes and two challenges for this requirement. The most frequently cited success was the use of automated or centralized data. This success was cited by four agencies. As described above, automated data made it easier for agencies to track energy and water use from before and after an energy or water savings measure has been implemented, which made it easier to determine savings from the measures. In addition, three agencies told us that they found success by using performance contracting. According to agency officials, in many performance contracts the energy and water savings are measured as part of the contract, so agency staff do not need to do this.

The most frequently cited challenge was attributing energy savings to any particular ECM. This challenge was cited by three agencies. For example, officials from one agency told us that without detailed metering that can

identify energy use by system, they use calculations to determine the energy or water savings that can be attributed to a particular measure and sometimes need to make estimates.[32] In addition, other factors, such as temperature variations, could cause their overall building energy use to change, and those changes could make it difficult to determine from the data the effects of a particular ECM. Similarly, a journal article discussing the challenges faced by building operators in meeting federal guidelines for energy efficiency identified a lack of real-time performance data as a challenge for attributing energy savings on a national scale.[33] Because of uncertainties such as how to measure various aspects of energy use, computer modeling in energy audits may be substituted for measurements. The other challenge from our interviews, cited by one agency, was the lack of automated data, which made it hard for the agency to identify energy and water savings.

Conclusions

The federal government has been working to improve its energy and water efficiency for decades and has succeeded in reducing its energy use by more than 40 percent since 1975. However, work remains to be done. A December 2021 executive order calls for agencies to propose new targets for increasing facility energy and water efficiency. In addition, the Energy Act of 2020 amended the Energy Independence and Security Act of 2007 to require energy managers to implement any ECMs that the agency identified and that are life cycle cost-effective. This is likely to increase the number of ECMs that agencies implement in the future. To effectively reduce energy and water use, agencies need quality information on how the steps they have taken to date are working, which they get through project follow-up that includes the analysis of performance data.

DOE's Compliance Tracking System tracks agency performance in meeting some of the six relevant requirements that we reviewed. However, it does not track agency performance of two of the requirements: (1) to enter water consumption data into a benchmarking system; and (2) to follow up on implemented ECMs within 4 years, both of

[32]DOE's guidance on project follow-up can be found at https://www.energy.gov/sites/default/files/2013/10/f4/eisa_project_guidance.pdf. This guidance addresses, among other things, follow-up issues such as the need to estimate savings and to account for other changes unrelated to the project—such as weather, occupancy, or hours of operation—that may affect savings.

[33]Reinhard Seidl, "A Scalable Approach to Energy Improvements Using Energy Management and Control Systems," Strategic Planning for Energy and the Environment (2010): 37-55.

which are required by DOE guidance. By not tracking performance, decision makers, including Congress, cannot be certain that agency officials are benchmarking water use or are measuring annual energy and water savings from implemented ECMs. Without knowing if agencies are meeting these requirements, Congress cannot know the extent to which agencies have the data they need to make effective decisions to improve energy and water efficiency.

Recommendations for Executive Action

We are making the following two recommendations to DOE:

The Secretary of Energy should update the Compliance Tracking System to track performance toward meeting the requirement in DOE's guidance to enter water use data into a benchmarking system for buildings that are metered for water use. (Recommendation 1)

The Secretary of Energy should update the Compliance Tracking System to track performance toward meeting the requirement in DOE's guidance to follow up on implemented energy and water efficiency and conservation measures within DOE's required 4-year time frame. (Recommendation 2)

Agency Comments

We provided a draft of this report to the Departments of Defense, Energy, and the Interior; the Environmental Protection Agency; the General Services Administration; and the U.S. Postal Service for review and comment.

We received written comments from the Department of Energy that are reprinted in appendix II and summarized below. We also received technical comments from the Department of Energy, which we incorporated as appropriate. The Department of the Interior did not comment on the draft report as a whole, but provided us with technical comments, which we incorporated as appropriate. The Department of Defense, the Environmental Protection Agency, the General Services Administration, and the U.S. Postal Service told us that they had no comments on the draft report.

DOE concurred with our recommendations and noted it intends to implement our recommendations in fiscal year 2023 by developing compliance reports for water benchmarking and 4-year project follow-up reporting, and posting the information to the public website of DOE's Compliance Tracking System.

We are sending copies of this report to the appropriate congressional committees; the Secretaries of Defense, Energy, and the Interior; the Administrators of the Environmental Protection Agency and the General Services Administration; the Postmaster General; and other interested parties. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at 202-512-3841 or ruscof@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 key contributions to this report are listed in appendix III.

Frank Rusco
Director, Natural Resources and Environment

Appendix I: Facilities Exempt from Public Reporting due to National Security Reasons

Under 42 U.S.C. § 8253(f), at the request of a federal agency, the Department of Energy (DOE) may exempt specific data for specific facilities from disclosure for national security purposes. Such exemptions are only for the disclosure of that specific data on DOE's Compliance Tracking System and do not extend to exempting agencies or facilities from meeting other requirements, including the six requirements in 42 U.S.C. § 8253(f) addressed in this report. According to DOE's Compliance Tracking System data as of July 2022, DOE granted exemptions for 641 of 7,992—or about 8 percent—of covered facilities, which can each be made up of multiple buildings. For example, each Department of Defense base is counted as a single facility, even though it may comprise dozens of individual buildings. Of the 641 total facilities granted exemptions, the Department of Defense accounts for 582 (90.1 percent). The Department of Defense was granted a blanket exemption from public reporting for all facilities. In addition, nine other agencies have been granted exemptions from reporting data for certain facilities.

Appendix II: Comments from the Department of Energy

Department of Energy
Washington, DC 20585

Mr. Frank Rusco
Director
Natural Resources and Environment
U.S. Government Accountability Office
441 G Street N.W.
Washington, DC 20548

Dear Mr. Rusco,

The Department of Energy (DOE or Department) appreciates the opportunity to comment on the Government Accountability Office's (GAO) draft report titled, "*Federal Energy and Water Management: Agencies Report Mixed Success in Meeting Efficiency Requirements, and Additional Data Are Needed (GAO-23-105673).*"

The draft report contained a total two recommendations, of which GAO directed both recommendations to DOE. DOE concurs with GAO's recommendations. The Department's Federal Energy Management Program (FEMP) intends to act upon GAO's recommendations in fiscal year 2023 by developing compliance reports for water benchmarking and four-year project follow-up reporting and posting the information to the public website of DOE's Compliance Tracking System.

GAO should direct any questions to Christopher Tremper, Federal Energy Management Program, 202-247-6501, chris.tremper@hq.doe.gov.

Sincerely,

MARY SOTOS

Digitally signed by MARY SOTOS
Date: 2022.12.06 13:48:41 -05'00'

Mary Sotos
Director
Office Of Federal Energy Management Programs

Enclosure

Enclosure

Management Response
GAO Draft Report:
"Federal Energy and Water Management: Agencies Report Mixed Success in Meeting Efficiency Requirements, and Additional Data Are Needed (GAO-23-105673)

Recommendation 1: The Secretary of Energy should update its Compliance Tracking System to track performance towards meeting the requirement on DOE's guidance to enter water use data into a benchmarking system for buildings that are metered for water use.

DOE Response: Concur

FEMP will add a field in the Compliance Tracking System's Annual Footprint Module to capture the number of covered facilities by agency that meter water usage. Additionally, FEMP will develop a compliance report to be posted on the public website that shows the number and percentage of metered facilities that annually benchmark water use.

Estimated Completion Date: March 31, 2023

Recommendation 2: The Secretary of Energy should update its Compliance Tracking System to track performance towards meeting the requirement on DOE's guidance to follow up on implemented energy and water efficiency and conservation measures within DOE's required 4-year timeframe.

DOE Response: Concur

The Compliance Tracking System already captures the necessary data from agencies to implement this enhancement. FEMP will enhance the Project Follow-up Report on the public website to track to the progress of agencies in conducting measurement and verification follow-up and reporting of savings for implemented projects within four years of project completion.

Estimated Completion Date: March 31, 2023

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Frank Rusco, (202) 512-3841or ruscof@gao.gov

Staff Acknowledgments

In addition to the contact named above, Karla Springer (Assistant Director), Marietta Mayfield Revesz (Analyst-in-Charge), Maggie Childs, Cindy Gilbert, Michael Kendix, Patricia Moye, Corinna Nicolaou, Josie Ostrander, Colson Campbell Ricciardi, Sara Sullivan, Blake Walker, and Shelby Zangari made key contributions to this report.

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