



April 2017

# STRATEGIC HUMAN CAPITAL MANAGEMENT

## NRC Could Better Manage the Size and Composition of Its Workforce by Further Incorporating Leading Practices

## Why GAO Did This Study

After the passage of the Energy Policy Act of 2005, which included tax incentives for nuclear energy, NRC significantly expanded its workforce to meet the demands of an anticipated increase in workload that ultimately did not occur. More recently, a forecast for reduced growth in the nuclear industry prompted NRC to develop plans for changing its structure and workforce to better respond to changes in the nuclear industry. Strategic human capital planning is one of several actions the agency is taking.

The explanatory statement accompanying the Consolidated Appropriations Act for fiscal year 2016 included a provision for GAO to report on NRC's workforce management. GAO examined NRC's strategic human capital management efforts and the extent to which these efforts incorporate leading practices.

GAO reviewed NRC's strategic workforce plan and other related documents and interviewed knowledgeable NRC officials.

## What GAO Recommends

GAO recommends that NRC (1) set agencywide goals for workforce size and skills composition to meet workload demands that extend beyond the 2-year budget cycle, (2) establish a systematic approach for tracking employee skills, and (3) consistently train managers and supervisors in strategic human capital management and assessing employee skillsets. NRC generally agreed with these recommendations.

View [GAO-17-233](#). For more information, contact Frank Rusco at (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov).

# STRATEGIC HUMAN CAPITAL MANAGEMENT

## NRC Could Better Manage the Size and Composition of Its Workforce by Further Incorporating Leading Practices

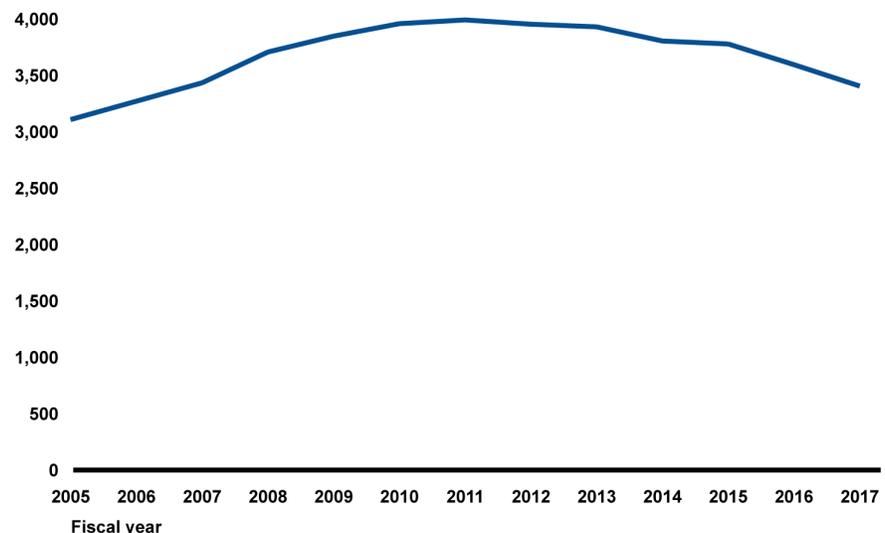
### What GAO Found

The Nuclear Regulatory Commission (NRC) has made efforts to enhance its strategic human capital management to ensure the agency has the right number and composition of staff; however, these efforts do not incorporate some leading practices. Leading practices—identified by GAO and others—indicate that using forward-looking strategies, setting goals, using data-driven planning and accountability systems, and ensuring that employees have relevant knowledge to carry out their responsibilities are essential for strategic human capital management. NRC has taken steps through Project Aim—an effort to help the agency respond more strategically to changes in the nuclear industry—and other efforts to manage its human capital, such as developing a strategic workforce plan, conducting workload forecasting, and cross-training employees.

However, GAO identified three areas where NRC's efforts do not fully incorporate leading practices. First, NRC has not established agencywide goals for its workforce size or composition—that is, goals for the number of people with specific skillsets and levels of expertise—beyond a 2-year budget cycle. Second, NRC does not have comprehensive employee skills information because it currently does not have a systematic approach or system to track this information. Third, in some cases, NRC has not consistently trained managers or supervisors on strategic human capital management or assessing employees' skillsets. Without incorporating these practices, NRC cannot determine the most appropriate size and composition of the agency's workforce, and it risks being unable to respond to changes in the nuclear industry. NRC has reduced its staff by 587 FTEs since its peak in 2011 (see figure), but if not carefully managed, imprecise reductions could lead NRC to miss efficiencies in matching its workforce with expected demand for services.

**Total Allocated Nuclear Regulatory Commission Full-Time Equivalent Employees, Fiscal Years 2005 through 2017**

Total full-time equivalent employees



Source: GAO analysis of Nuclear Regulatory Commission data. | GAO-17-233

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## Abbreviations

FTE	Full-time-equivalent
GPRA	Government Performance and Results Act
NRC	Nuclear Regulatory Commission

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April 27, 2017

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

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

From fiscal years 2005 to 2011, the Nuclear Regulatory Commission (NRC)—an independent agency established to regulate civilian uses of nuclear materials for commercial, industrial, medical, and academic purposes in the United States—increased its budget and workforce by about 57 percent and about 28 percent, respectively. This increase occurred largely in response to the anticipated growth of the commercial nuclear industry, referred to as the “nuclear renaissance,” and was aided by the passage of the Energy Policy Act of 2005 that included tax incentives that would favor additional nuclear energy development. As the agency responsible for regulating the commercial nuclear industry—including nuclear power plants and other civilian uses of radioactive material, through licensing, inspection, and enforcement of its regulations—NRC expected a substantial increase in workload due to a projected large number of applications for new nuclear power plants and interest in new reactor designs, among other things. In preparation for the anticipated workload, NRC’s budget authority grew from \$669 million in fiscal year 2005 to over \$1 billion in fiscal year 2011. Similarly, NRC’s workforce grew from about 3,100 full-time-equivalent (FTE) employees to

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about 4,000 FTEs over the same period.<sup>1</sup> By 2011, however, it became clear that the nuclear renaissance had not materialized for a variety of reasons, including low prices of natural gas and concerns about the safety of nuclear power plants. Additionally, concerns have been raised about the storage of nuclear waste generated by nuclear power plants.

The forecast of reduced growth in the nuclear industry prompted NRC to establish Project Aim in June 2014. Through Project Aim, NRC sought to develop plans to establish clearer agencywide priorities, align the agency's budget and workforce with its workload, streamline agency processes, and better position the agency to respond to changes in external conditions in an agile and flexible manner. NRC's January 2015 report on Project Aim estimated that NRC could meet projected industry demand in 2020 with its workforce and budget reduced by 10 percent and with a workforce composition similar to the agency's composition in 2005.<sup>2</sup> The explanatory statement accompanying the Consolidated Appropriations Act for fiscal year 2016 stated that the appropriations committees were not satisfied with NRC's explanation of the basis on which it developed workload projections, nor with its plans for the execution of Project Aim.<sup>3</sup> The explanatory statement also highlighted that NRC must be able to effectively and efficiently forecast its future workforce and resource needs and adapt its workforce and resource allocations accordingly so that the agency has the right number of staff with the right skills at the right time. The explanatory statement also included a provision that GAO report on NRC's workload forecasting, workforce management, and Project Aim. This report examines NRC's strategic human capital management efforts and the extent to which these efforts incorporate leading practices.

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<sup>1</sup>FTEs reflect the total number of regular straight-time hours (i.e., not including overtime or holiday hours) worked by employees divided by the number of compensable hours applicable to each fiscal year. For a glossary of federal budgeting terms and definitions, see GAO, *A Glossary of Terms Used in the Federal Budget Process*, [GAO-05-734SP](#) (Washington, D.C.: Sept. 1, 2005).

<sup>2</sup>Nuclear Regulatory Commission, *Achieving Exemplary Nuclear Regulation in the 21st Century, Report on Project Aim 2020* (Rockville, MD: January 2015).

<sup>3</sup>Section 4 of the Consolidated Appropriations Act, 2016, Pub. L. No. 114-113 (2015), provides that the explanatory statement accompanying the act and printed in the Congressional Record shall have the same effect as if it were a joint explanatory statement of a committee of conference.

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We have found that addressing complex challenges, such as national security and rapidly evolving technologies, requires a high-quality federal workforce achieved by following leading practices for strategic human capital management.<sup>4</sup> In 2001, GAO designated strategic human capital management as a government-wide high-risk area, and it remains a high-risk area because agencies need to address current and emerging critical skills gaps that could undermine their ability to meet vital missions.<sup>5</sup> Strategic human capital management involves undertaking workforce planning activities to develop long-term strategies and can include, for example, selecting, developing, training, and managing staff to create a high-quality productive workforce.

To determine the key efforts NRC has taken as part of its strategic human capital management efforts and the extent to which these efforts incorporate leading practices, we reviewed agency documents, including the agency's strategic workforce plan, management directives, and documentation of recommendations to the Commission and Commission decisions. We also analyzed agency-level budget information for staffing and appropriations levels. We combined and analyzed FTE requested and allocated data from NRC's budget justifications from fiscal years 2010 through 2017, as well as actual FTE data that NRC provided us from fiscal years 2010 through 2015, the last completed fiscal year at the time of our data request. Due to the limited scope of the available actual FTE data, we supplemented it with allocated FTE data from fiscal years 2005 through 2009. Where possible, we discuss actual FTE levels but made comparisons outside of fiscal years 2010 through 2015 using allocated FTE levels. To assess the reliability of the data systems and the calculations used to develop actual obligations and FTE levels, we reviewed documentation about the systems used to develop the information in the budget justification, interviewed NRC staff with knowledge of the systems, and reviewed NRC staff responses to written questions about the systems and calculations.<sup>6</sup> Based on this

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<sup>4</sup>GAO, *High-Risk Series: An Update*, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015).

<sup>5</sup>GAO, *High-Risk Series: An Update*, [GAO-01-263](#) (Washington, D.C.: Jan. 1, 2001), and *High Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, [GAO-17-317](#) (Washington D.C., Feb.15, 2017).

<sup>6</sup>These systems include NRC's Budget Formulation System, which NRC uses to manage budget formulation data; the Financial Accounting and Integrated Management Information System, which NRC uses to manage its budget execution data, among other things; and the Human Resources Management System, which NRC uses to manage its time and attendance data.

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assessment, we determined these data to be sufficiently reliable for the purposes of determining trends in NRC's FTE and budget levels.

We also analyzed forecasting data from three of NRC's five major offices—the Office of New Reactors, the Office of Nuclear Material Safety and Safeguards, and the Office of Nuclear Reactor Regulation.<sup>7</sup> We selected these three offices because, combined, they lead the business lines that house a majority of NRC staff, are allocated the majority of NRC's budget, and perform core programmatic functions of the agency. We also reviewed the Project Aim report and related materials, such as monthly progress updates. In addition, we interviewed officials knowledgeable about Project Aim and NRC's strategic human capital management efforts—including officials from NRC's Office of the Executive Director for Operations, Office of the Chief Human Capital Officer, and Office of the Chief Financial Officer, and a representative from NRC's union—about topics such as Project Aim's implementation, goals, recommendations, and outcomes. We also interviewed these officials about the agency's strategic workforce plan, workload forecasting, human capital management, strategic planning, and employee skills tracking, among other topics. To gain further insight into NRC's workload forecasting methods, strategic human capital management, and Project Aim implementation at the office level, we interviewed officials from the three selected major offices, two regions (Regions II and IV), the Office of Administration, and the Office of Nuclear Security and Incident Response. We selected these additional officials to interview to provide more diverse insights into NRC's efforts. We selected Region II because it contains the states in which most of NRC's new reactor work occurs, and Region IV oversees many state materials programs and several decommissioning reactors. We selected the Office of Administration because it includes several agency support functions. We selected the Office of Nuclear Security and Incident Response because it is involved in, but does not lead, many NRC programs. Information gathered from interviews from these offices cannot be generalized to all of NRC. To identify criteria for evaluating the extent to which NRC's strategic human capital efforts incorporate leading practices, we reviewed our prior work on key features and issues for federal agencies to consider in strategically managing their human capital.<sup>8</sup> We

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<sup>7</sup>NRC's two other major offices are the Office of Nuclear Security and Incident Response, and the Office of Nuclear Regulatory Research.

<sup>8</sup>For additional information on our work on strategic human capital management, see [http://www.gao.gov/key\\_issues/strategic\\_human\\_capital\\_management/issue\\_summary](http://www.gao.gov/key_issues/strategic_human_capital_management/issue_summary).

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also reviewed government-wide guidance on strategic human capital management topics, such as the standards for internal control in the federal government;<sup>9</sup> the Office of Personnel Management's Human Capital Assessment and Accountability Framework;<sup>10</sup> the Office of Management and Budget's Circular A-11;<sup>11</sup> and the Government Performance and Results Act (GPRA), as updated by the GPRA Modernization Act.<sup>12</sup> Using these sources, we selected six key practices that can help an agency strategically manage its human capital.<sup>13</sup> We compared these practices to NRC's strategic human capital efforts.

We conducted this performance audit from March 2016 to April 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.

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## Background

This section discusses NRC's organizational structure, the nuclear renaissance, and Project Aim.

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<sup>9</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

<sup>10</sup>Office of Personnel Management, *The Human Capital Assessment and Accountability Framework: Systems, Standards and Metrics* (Washington, D.C.: March 2006). The Office of Personnel Management has issued a final rule establishing a new Human Capital Framework, which will replace the Human Capital Assessment and Accountability Framework, effective April 11, 2017. This rule is intended to align human capital management practices to broader agency strategic planning activities and better align human capital activities with an agency's mission and strategic goals to enable agency leadership to better leverage the workforce to achieve results.

<sup>11</sup>Office of Management and Budget, *Circular No. A-11 - Preparation, Submission, and Execution of the Budget*, (Washington, D.C.: June 2015).

<sup>12</sup>The Government Performance and Results Act of 1993, Pub. L. No. 103-62 (1993); GPRA Modernization Act of 2010, Pub. L. No. 111-352 (2011).

<sup>13</sup>These six practices are: forecasting workload, setting workforce size and composition goals, identifying and tracking employee skills, aligning workforce with workload, training managers and supervisors on strategic human capital management, and assessing employees' skills. We selected these practices because they were applicable to NRC planning efforts given the status of Project Aim implementation and were consistently identified in the reports and guidance we reviewed.

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## NRC's Organizational Structure

NRC is an independent agency established by the Energy Reorganization Act of 1974 to license and regulate civilian uses of nuclear materials in the United States for commercial, industrial, medical, and academic purposes.<sup>14</sup> NRC is responsible for issuing licenses to commercial nuclear reactors and conducting oversight under such licenses to protect the health and safety of the public, among other things.<sup>15</sup> NRC is authorized to conduct inspections and investigations and enforce regulatory requirements by, among other things, issuing orders, imposing civil (monetary) penalties, and revoking licenses.

NRC is headed by a five-member Commission, with members appointed by the President and confirmed by the Senate, and one Commissioner is designated by the President to serve as the Chair and official spokesperson. NRC is comprised of 28 offices located in headquarters and the regions, including 5 major program offices, 4 regional offices, and 19 smaller offices. NRC staff from headquarters and the 4 regional offices conduct the agency's regulatory development, licensing, operational experience, inspection, enforcement, and emergency response programs, among other responsibilities. The Commission as a whole formulates policies and regulations governing nuclear reactor and materials safety, issues orders to licensees, and adjudicates matters brought before it. The Executive Director for Operations carries out the policies and decisions of the Commission and is responsible for directing the activities of 15 offices to ensure that the commercial use of nuclear materials in the United States is safely conducted. In addition, NRC has an Office of the Inspector General, which is managed separately from the rest of the agency.

For budget formulation purposes,<sup>16</sup> NRC is organized by activity into seven programmatic business lines related to key regulatory groups of licensees. NRC's seven programmatic business lines are:

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<sup>14</sup>Pub. L. No. 93-438 (1974).

<sup>15</sup>Pub. L. No. 83-703 (1975).

<sup>16</sup>For additional information on NRC's budget see GAO, *Nuclear Regulatory Commission: Changes Planned to Budget Structure and Justification*, [GAO-17-294](#) (Washington, D.C.: Mar. 8, 2017).

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- *Operating reactors*, which regulates the nation's civilian nuclear power reactors, as well as its research and test reactors, that create radiation for experiments in a wide variety of scientific fields.
  - *New reactors*, which performs technical reviews and provides oversight for the nuclear power plants currently under construction in the United States, and develops strategies to review applications for advanced reactor technologies that may be submitted in the future.
  - *Fuel facilities*, which licenses and regulates facilities that convert, enrich, and fabricate uranium to be used as fuel for nuclear reactors, and provides oversight for certain users of special nuclear material.<sup>17</sup>
  - *Nuclear material users*, which maintains the regulatory safety and security infrastructure needed to process and handle nuclear materials. It also oversees the Agreement State Program, under which NRC relinquishes some of its authority to license and regulate certain kinds of nuclear materials to the states.
  - *Spent fuel storage and transportation*, which performs technical reviews and inspections of storage, transportation, and shipments of spent nuclear fuel and other radioactive materials.
  - *Decommissioning and low-level waste*, which oversees the process by which a nuclear facility is safely removed from service, uranium recovery, and disposal of low-level radioactive waste, which are materials that either have become radioactive or have been contaminated with radioactive material.
  - *High-level waste repository*, which oversees activities associated with Department of Energy's application to build an underground facility at Yucca Mountain to store spent nuclear fuel and high-level radioactive waste from the nation's nuclear weapons program.<sup>18</sup>

NRC also has an agency-wide business line, Corporate Support, which includes support activities for the agency's programmatic business lines, including acquisitions, administrative services, financial management, human resource management, information management, information technology, outreach, policy support, and associated training and travel. Corporate Support costs are allocated across the other business lines in

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<sup>17</sup>Special nuclear material includes plutonium and types of uranium that are typically only mildly radioactive on their own, but that in concentrated form can be used as the primary ingredients of nuclear explosives.

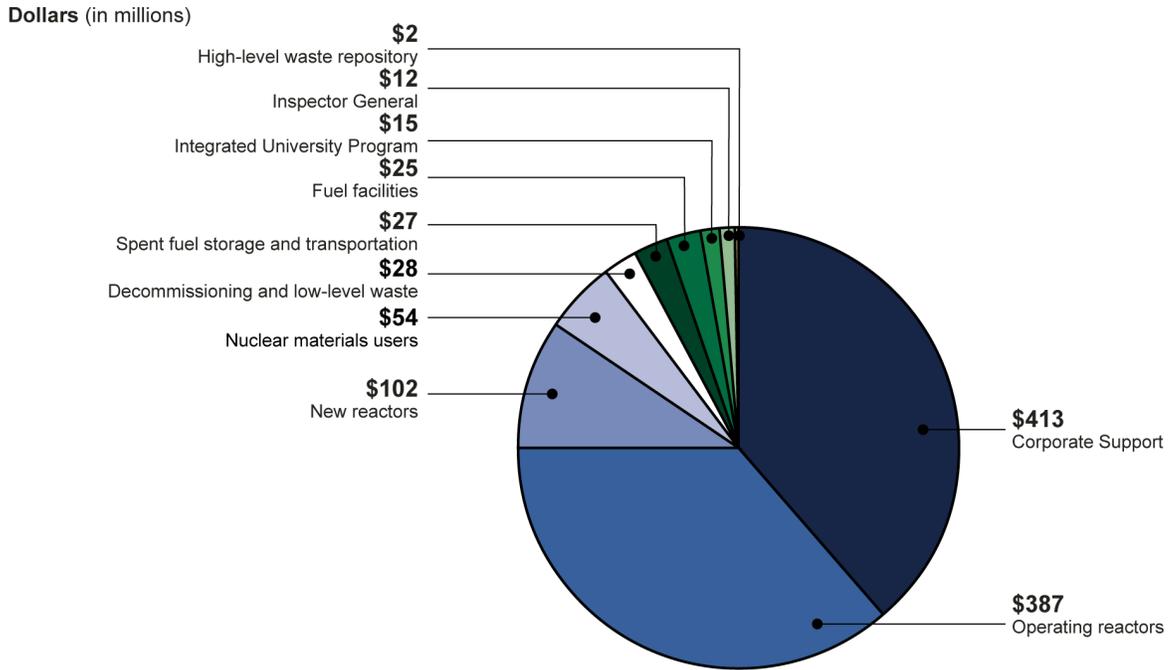
<sup>18</sup>NRC stopped requesting funds to support this activity after 2011 but spent funds remaining from prior years after 2011.

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NRC's budget. In addition to the business lines discussed above, NRC also has an Integrated University Program that supports university research and development in areas relevant to NRC's mission and provides grants to support research projects that do not align with programmatic missions but are critical to maintaining the discipline of nuclear science and engineering. NRC also has an Office of the Inspector General.

Each business line has an assigned lead office, which is the program office responsible for accomplishing a key component of NRC's safety mission and its associated activities. For example, the Office of Nuclear Reactor Regulation is the lead office for the operating reactor business line; the Office of New Reactors is the lead office for the new reactors business line; and the Office of Nuclear Material Safety and Safeguards is the lead office for the fuel facilities, high-level waste, and decommissioning and low-level waste business lines, among others. In fiscal year 2015, NRC obligated about \$1 billion across the seven programmatic business lines, the Corporate Support business line, the Integrated University Program, and the Office of the Inspector General (see fig. 1).

**Figure 1: Distribution of the Nuclear Regulatory Commission's (NRC) Fiscal Year 2015 Obligations by Business Line**

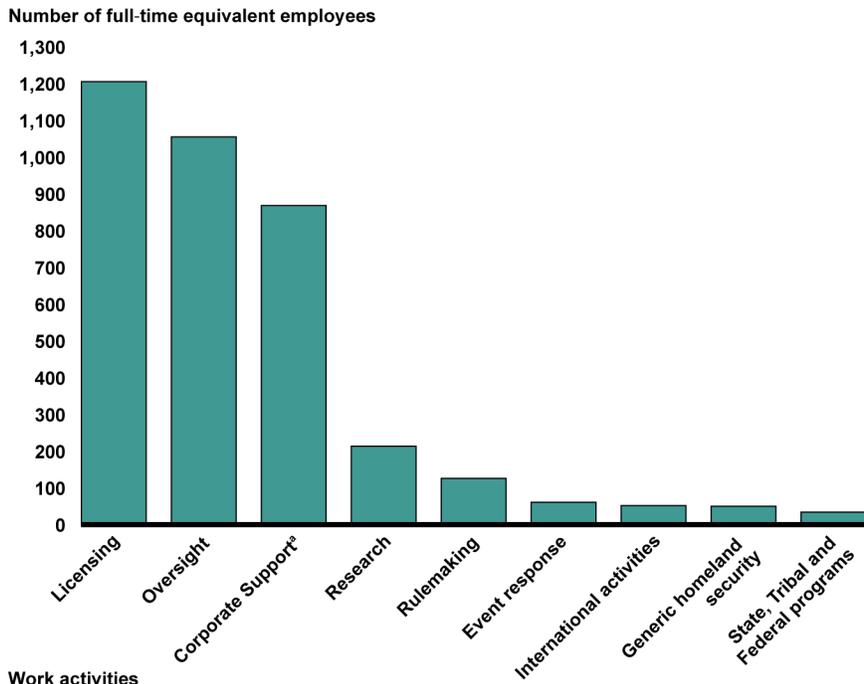


Source: GAO analysis of Nuclear Regulatory Commission data. | GAO-17-233

Note: NRC's business lines manage the agency's activities with respect to key regulatory groups of licensees, as well as agencywide Corporate Support. In addition, the agency obligates money for its Integrated University Program and Office of the Inspector General.

Each of the seven business lines, plus the Corporate Support business line, includes several broad product lines, or work activities, such as licensing, oversight, and rulemaking. Figure 2 shows the number of FTEs allocated to each of the product lines in fiscal year 2015.

**Figure 2: Number of Actual Full-Time Equivalent Employees for the Nuclear Regulatory Commission’s Work Activities, Fiscal Year 2015**



Source: GAO analysis of Nuclear Regulatory Commission data. | GAO-17-233

Note: For the purposes of this figure, we refer to categories of agency work performed under a business line as work activities.

<sup>a</sup>Corporate Support is a business line that encompasses several activities: administrative services, financial management, human resource management, information management, information technology, outreach, policy support, training, travel, and acquisitions. For the purposes of this figure, these activities are consolidated and presented as the Corporate Support work activity.

## The Nuclear Renaissance

According to NRC documents, licensing and oversight of nuclear power reactors have been prominent activities of the NRC since its creation in 1975. The intervening years have included periods of increased and decreased interest in the deployment and operation of commercial nuclear power reactors. Starting in 2001, there was increased interest in nuclear energy, due to the increased cost of fossil fuel energy and concerns about emissions from these energy sources.

The passage of the Energy Policy Act of 2005, with its tax incentives favoring additional nuclear energy development, contributed to increased interest in nuclear construction, among other things. Based on the nuclear power industry’s expressed intentions, NRC documents state that the

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agency was anticipating a large number of applications for new nuclear power plants, as well as facilities that create and process nuclear fuel and other new work. Beginning in 2005, the agency was authorized to considerably expand its budget and staff. In 2006, the anticipated increase in new reactor licensing workload led to the creation of a new office to manage the workload. Ultimately, NRC's budget increased from \$669.3 million in fiscal year 2005 to \$1.1 billion in fiscal year 2011, while its workforce increased from 3,108 FTEs to 3,992 FTEs during the same time frame. However, changes in the economy—particularly a decline in natural gas prices—reduced the cost-effectiveness of constructing and operating nuclear power plants. In addition, the Fukushima Daiichi accident in March 2011 further eroded interest in pursuing construction and operation of new nuclear facilities in the United States and abroad.<sup>19</sup> Further, some new reactor applicants suspended or withdrew their applications, and licensees for several operating reactors began or announced plans for decommissioning before the expiration of their operating licenses.

NRC's workforce increased in anticipation of the increased workload and has been decreasing since 2011 (see fig. 3). Between 2005 and 2011, NRC increased its workforce by 884 FTEs, or about 28 percent, to a peak of about 3,992 FTEs. After it became clear that there would not be a proportional increase in workload, NRC began to reduce its workforce. According to an NRC official, NRC ended fiscal year 2016 with 3,549 FTEs.<sup>20</sup> For fiscal year 2017, NRC requested 3,525 FTEs, a decrease of 75 FTEs from the target the Commission established for fiscal year 2016.<sup>21</sup>

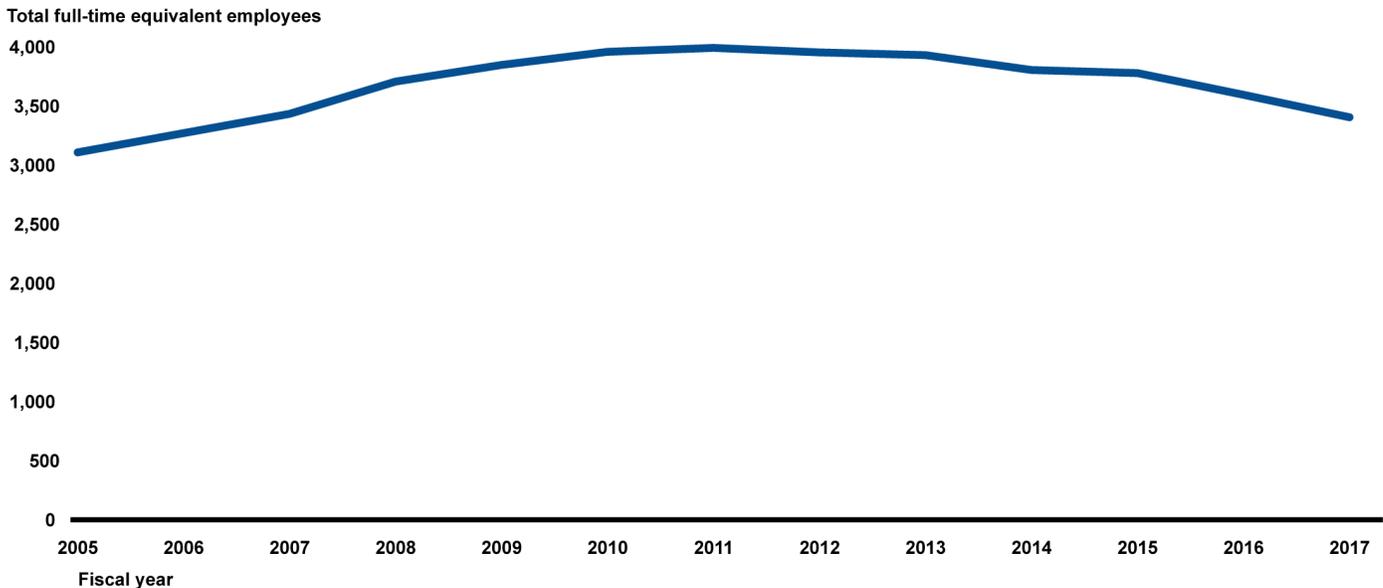
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<sup>19</sup>The Fukushima Daiichi accident resulted from a prolonged loss of electrical power when a powerful earthquake triggered a tsunami wave that exceeded the plant's seawall and flooded the site.

<sup>20</sup>This FTE figure also includes reimbursable allocations, which are the number of FTEs funded by fees charged to other organizations for services provided by NRC, as well as those used by NRC's Office of the Inspector General. For additional information on NRC's fees see GAO, *Nuclear Regulatory Commission: Regulatory Fee-Setting Calculations Need Greater Transparency*, [GAO-17-232](#) (Washington, D.C.: Feb. 2, 2017).

<sup>21</sup>The proposed staffing level in the fiscal year 2017 budget request does not incorporate additional reductions for 2016 and 2017 from NRC's efforts to assess whether activities could be done later, with fewer resources, or not done at all, which NRC calls "rebaselining." Including additional reductions from rebaselining would further reduce NRC's FTE request for fiscal year 2017 to 3,405 FTEs—a decrease of 195 compared with the fiscal year 2016 target.

**Figure 3: Total Allocated Nuclear Regulatory Commission (NRC) Full-Time Equivalent (FTE) Employees, Fiscal Years 2005 through 2017**



Source: GAO analysis of Nuclear Regulatory Commission data. | GAO-17-233

Note: FTE data for fiscal year 2017 are the estimated levels from NRC's Congressional budget justification, adjusted to reflect planned reductions in response to Project Aim.

According to NRC budget documents, FTE levels varied within business lines from fiscal year 2005 to fiscal year 2017, increasing in some business lines, and decreasing or staying flat in others (see fig. 4).<sup>22</sup> Increased FTE levels in the new reactors business line and, to a lesser extent, Corporate Support drove increases in NRC's overall FTE levels. Specifically:

- *New reactors:* In response to an anticipated increase in workload, the New Reactors business line was created in fiscal year 2006 with an FTE allocation of 156 and reached its peak size in fiscal year 2011 with 758 FTEs. As it became clear that the nuclear renaissance that drove the office's creation would not materialize, NRC decreased FTE

<sup>22</sup>We discuss NRC's allocated FTE levels to allow for comparisons of data prior to fiscal year 2010 and after fiscal year 2015. Actual FTE levels for each business line during this period may differ, reflecting fact-of-life changes in workload. FTE data for fiscal year 2017 are the estimated levels from NRC's congressional budget justification, adjusted to reflect changes made in response to Project Aim.

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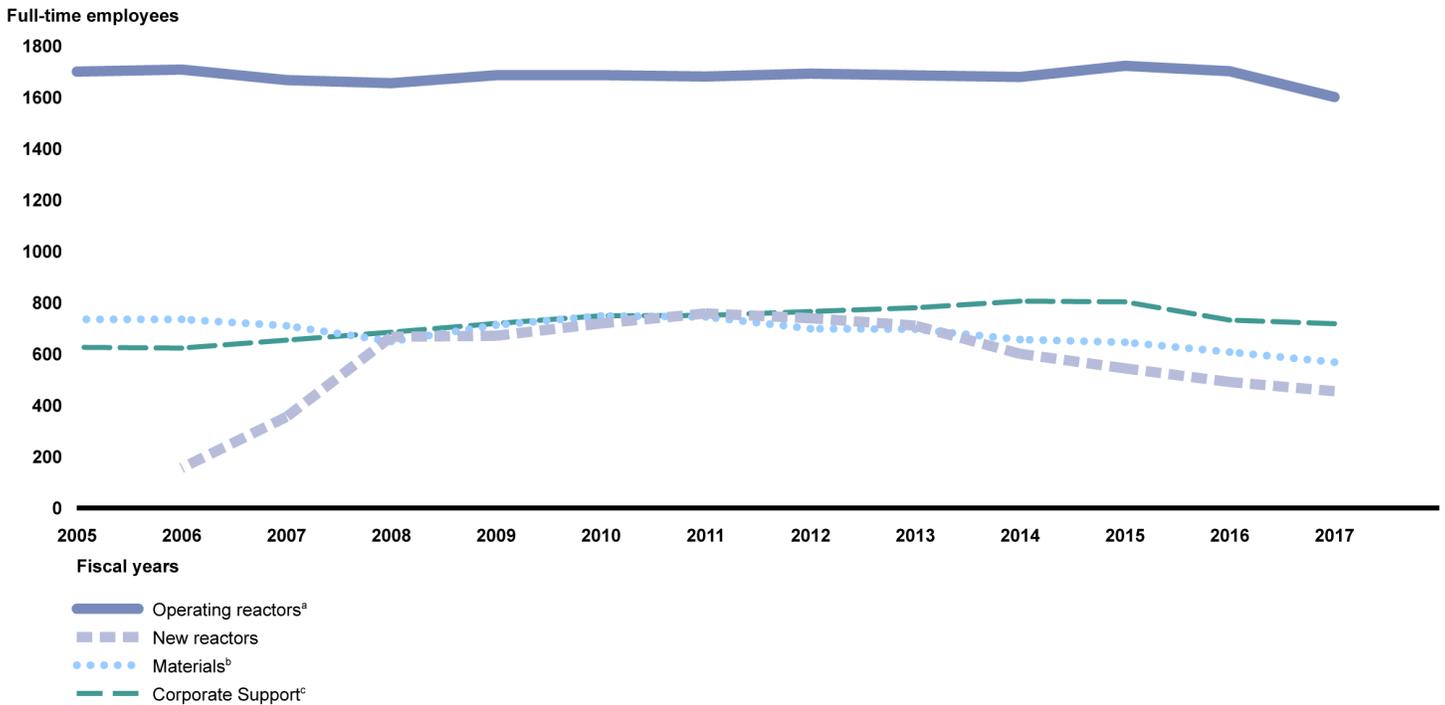
allocations for the new reactors business line to 455 by fiscal year 2017.

- *Corporate Support:* FTE allocations for Corporate Support also increased during this period, from 626 FTEs in fiscal year 2005 to its peak of about 806 FTEs in fiscal year 2014, an increase of about 29 percent. However, NRC began reducing FTEs for Corporate Support in fiscal year 2015. By fiscal year 2017, NRC had reduced its FTE allocations for Corporate Support to 718, 15 percent larger than its initial allocation in fiscal year 2005.
- *Operating reactors:* FTE allocations for operating reactors were largely flat from fiscal year 2005 to 2016, at about 1,700 FTEs. However, these levels decreased to 1,601 FTEs in fiscal year 2017, or about 6 percent less than the business line's allocation in fiscal year 2005.
- *Materials:* FTE levels for the five business lines that address materials and waste safety trended downward from their overall allocation of 735 FTEs in fiscal year 2005 to 568 FTEs in fiscal year 2017, a reduction of about 23 percent.<sup>23</sup> This reflects, among other things, the elimination of FTEs allocated to the high-level waste repository business line after the Department of Energy made a motion to withdraw its application for the Yucca Mountain facility in fiscal year 2010.

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<sup>23</sup>These five business lines are: fuel facilities, nuclear materials users, spent fuel storage and transportation, decommissioning and low-level waste, and the high-level waste repository.

**Figure 4: Nuclear Regulatory Commission Full-Time Equivalent (FTE) Employees by Business Line, Fiscal Years 2005 through 2017**



Source: GAO analysis of Nuclear Regulatory Commission data. | GAO-17-233

Note: FTE data for fiscal year 2017 are the estimated levels from NRC’s Congressional budget justification, adjusted to reflect changes made in response to Project Aim. This figure does not include NRC’s Inspector General Program, which was allocated 47 FTEs in fiscal year 2005 and 63 FTEs in fiscal year 2017

<sup>a</sup>Prior to the fiscal year 2011 budget justification, activities that are now classified under the operating reactor business line were classified under the Nuclear Reactor Safety Program as licensing tasks, licensing renewal, reactor oversight, and incident response programs.

<sup>b</sup>Materials represents all activities that fall under the Nuclear Materials and Waste Safety Program, which includes the fuel facilities, nuclear materials users, decommissioning and low-level waste, spent fuel storage and transportation, and high-level waste repository business lines.

<sup>c</sup>Prior to fiscal year 2011, activities that are now classified as Corporate Support were labeled as “infrastructure and support.”

NRC has made plans to combine the Office of New Reactors and the Office of Nuclear Reactor Regulation by 2020, reflecting the decreased workload for the new and operating reactors business lines. However, the

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combined FTE level for these two business lines is 356 FTEs higher in fiscal year 2017 than it was in 2005, an increase of about 21 percent.<sup>24</sup>

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## Project Aim

Project Aim, which began in June 2014, was intended to identify ways in which NRC could improve efficiency, effectiveness, and agility and align its resources and workload in response to changes in the nuclear industry. According to the NRC staff's February 2017 presentation to the Commission, NRC has completed all 19 of the major tasks from Project Aim. Completing several of the project's tasks means that NRC has written plans or conducted evaluations, but the agency has not fully implemented the plans or recommendations stemming from these tasks. NRC has taken steps to implement the plans and recommendations, and in some cases implementation is ongoing.

According to NRC's 2015 Project Aim report, Project Aim focused on addressing four broad areas: (1) right-sizing the agency to have the right people with the right skills to accomplish the agency's mission, (2) streamlining agency processes, (3) increasing timeliness of regulatory functions, and (4) establishing clearer agencywide priorities. NRC solicited recommendations from stakeholders and staff on how the agency might improve its effectiveness, efficiency, and agility in addressing these four broad areas. NRC's Project Aim team analyzed recommendations from NRC staff and external stakeholders from other federal agencies and industry groups, among others, and provided a consolidated set of recommendations to the Commission for consideration. The recommendations approved by the Commission resulted in the creation of 19 Project Aim implementation tasks, which in some cases resulted in additional follow-on tasks, NRC officials said.

The 19 Project Aim implementation tasks represent a broad array of activities. Examples of these tasks include business process improvements to the agency's workflow and evaluations of certain agency functions, including consolidating some of NRC's administrative operations, such as relocation, repairs, and computer support. In addition, several of Project Aim's tasks were to create plans such as a transition plan for merging the Office of Nuclear Reactor Regulation and the Office of New Reactors. Steps taken to implement the improvements and plans

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<sup>24</sup>These figures include planned reductions in FTEs due to NRC's rebaselining efforts.

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were not included within the scope of Project Aim, but according to NRC officials, the agency tracks the steps separately.

Several of the Project Aim tasks provided a basis for the agency's strategic human capital management that was not previously in place. For example, Project Aim called upon NRC to develop a strategic workforce plan that identified core mission-critical skills and competencies and outlined plans to match the agency's people with those competencies. Project Aim further called on NRC to incorporate strategic workforce planning principles into the agency's annual budgeting and planning processes. Other Project Aim implementation tasks focused on identifying mission-critical positions, creating a plan for developing competency models to assess the agency's skill needs, and developing or enhancing existing training to meet those needs.

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## **NRC Has Taken Steps that Support Strategic Human Capital Management but Has Not Incorporated Some Leading Practices in Its Efforts**

NRC has taken steps to strategically manage its human capital, but some of these efforts have not incorporated some leading practices. First, NRC has not established long-term, agencywide goals for its workforce size or composition—the number of people with specific skillsets and levels of expertise—beyond the budget cycle. Second, NRC does not have information on employees' skills, nor a system for tracking those skills. Third, NRC has provided limited training to managers and supervisors on strategic human capital management and assessing employees' skillsets.

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## **NRC Has Taken Steps to Strategically Manage Its Human Capital**

NRC has taken steps through Project Aim and other efforts to strategically manage its human capital that support the agency's ability to ensure it has the right size and composition of its workforce—that is, the number of people with specific skillsets and levels of expertise. Our prior work on strategic human capital management has identified certain activities or practices that can help an agency strategically manage its human capital, such as forecasting the agency's incoming workload, aligning agency staff and skills with workload projections, identifying gaps and surpluses in agency staff and skill sets, conducting systematic assessments of current and future human capital, and aligning its

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workforce with current and future needs.<sup>25</sup> Key steps that NRC has taken to strategically manage its human capital are summarized below; additional information is in appendix I.

**Developing a strategic workforce plan.** In February 2016, as part of Project Aim, NRC issued its first strategic workforce plan. The strategic workforce plan contains high-level information about the current workforce, the alignment between the workforce and future workload, and areas of the agency’s work where additional skills needs exist, among other topics. In January 2017, NRC issued a memorandum to establish a working group to enhance its strategic workforce planning process. According to the memorandum, this working group is expected to focus on improving NRC’s workload projection, skills identification, staffing, employee development, and other human capital planning tools.

**Conducting workload forecasting.** Officials at the three major offices we interviewed conduct workload forecasting primarily to meet the needs of the 2-year federal budget cycle, but in some cases they forecast beyond this timeframe.<sup>26</sup> While the specific methodologies for assessing the nuclear industry environment and forecasting workload differ across NRC offices, the methodologies typically incorporate several common data elements, including (1) historical workload and resource utilization data, (2) information from informal discussions with licensees and industry groups, and (3) data gathered from formal requests for information and letters of intent from licensees.

Officials we interviewed from NRC’s three major offices said that their forecasting is typically limited to the 2-year budget cycle, and in some cases not more than a year, in part because licensees cannot predict the type or quantity of application submissions any further into the future. For example, Office of Nuclear Reactor Regulation officials said that their

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<sup>25</sup>See, for example, GAO, *Human Capital: Strategies to Help Agencies Meet Their Missions in an Era of Highly Constrained Resources*, [GAO-14-168](#) (Washington, D.C.: May 7, 2014), and GAO, *Human Capital: Key Principles for Effective Strategic Workforce Planning*, [GAO-04-39](#) (Washington, D.C.: Dec. 11, 2003)

<sup>26</sup>The federal government assembles an annual budget through an administrative process of budget preparation and review. This process may take place several years before the budget for a particular fiscal year is ready to be submitted to Congress. This process typically starts in the spring of the year prior to the year the budget is submitted, and 2 years prior to that budget being executed by the agency. For the purposes of this report we refer to this 2-year timeframe as the budget cycle. For additional information on NRC’s budget, see [GAO-17-294](#).

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workload for routine inspections is generally predictable since inspections require a predetermined number of samples to be taken, which takes a known number of hours to complete, thereby allowing the office to effectively forecast its workload of this type. However, these officials said that smaller projects, such as licensing amendments, cannot be predicted more than 1 year in advance.

Despite the challenges of a sometimes unpredictable workload, in some cases offices have taken steps to forecast beyond the 2-year budget cycle, and have made associated workforce adjustments to accommodate the incoming workload. For example, since 2008, the Office of New Reactors has performed annual assessments of incoming workload that forecast 5 years into the future. In 2014, the Office of New Reactors used one of these 5-year assessments to identify an expected decrease in incoming workload that led to an anticipated decrease of about 26 percent of the FTEs needed for certain work activities. To adjust to the change in workload, officials decided not to backfill positions as staff left the division, among other strategies, and reduced the division's staffing level by 20 percent, according to NRC officials.

***Developing and analyzing staffing plans.*** According to NRC officials, office-level managers are responsible for creating annual staffing plans that identify where they have too many or not enough FTEs—referred to as surpluses and vacancies—in relation to the office's estimated incoming workload.<sup>27</sup> NRC collected its first set of surplus and vacancy data in 2015. However, according to the strategic workforce plan, the data could not be used to determine whether the skills of NRC's workforce would meet mission demands due to the low quality of the data. Additionally, as a result of Project Aim's task to create a strategic workforce plan, in 2015 the Office of the Chief Human Capital Officer requested that all NRC offices submit supplementary workforce planning narratives annually with their staffing plans to provide insight into workload changes and corresponding workforce needs 3 to 5 years into the future.

***Developing competency models.*** In 2016, NRC began a pilot project to develop competency models that articulate the skills employees need to fulfill the functions of their positions. These models could provide information on the skills needed to perform each position's functions, and

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<sup>27</sup>NRC defines surpluses as positions that currently are, or are expected to be, no longer needed to meet work demands of the agency, and vacancies as positions that are open and need employees with specific skillsets to meet current or future work demands.

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the training needed to develop those skills. NRC officials said that the agency has additional qualifications for many positions that are specific to office-level work, and they said that many managers and supervisors are generally knowledgeable regarding the skillsets and qualifications required to perform the work in their work units.<sup>28</sup> NRC officials said the competency modeling project includes piloting a system that can include employee skills. As of July 2016, NRC had completed 4 of the 30 to 50 competency models that officials estimate they will need to account for all of the agency's positions. If the pilot project shows that competency models are a viable alternative to the current process for training employees in new skills, officials said that expansion to the wider NRC workforce would begin in late fiscal year 2018 at the earliest.

**Reprioritizing work activities.** To reduce resources allocated to low-priority workload areas, NRC performed a one-time agencywide prioritization and rebaselining effort under Project Aim. Within this effort, NRC developed an agencywide framework to assess all NRC activities with more than 10 FTEs to determine if, for example, these activities could be done later, done with fewer resources, or not done at all. Rebaselining resulted in a plan to cut 150 low-priority activities, thereby reducing NRC's contractor support by \$18 million and agency staff by 185 FTEs. As of February 2017, NRC had made 138 of the 150 proposed cuts to low-priority activities, resulting in a reduction of 147 FTEs.

**Cross-training employees.** To manage the size and composition of the agency's workforce, NRC is training existing staff in new skill areas, which NRC refers to as cross-training. NRC's strategic workforce plan states that retraining existing staff in new skill areas can be an especially useful strategy to develop individuals occupying surplus positions.

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## NRC Has Not Established Longer Term Agencywide Workforce Size or Composition Goals

NRC has not established longer term agencywide goals for its workforce size or composition because NRC's efforts have generally focused in the 2-year budget cycle. In general, NRC determines the workforce size through the budgeting process, and it determines the workforce composition—that is, the number of people with specific skillsets and levels of expertise—for offices through the staffing planning process. Federal guidance and leading practices emphasize the importance of

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<sup>28</sup>NRC could not provide information on how many positions or employees are covered by these office-level qualifications because this information is not tracked at the agency level.

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forward-thinking planning to, among other things, help identify and close skill gaps. Without workforce size and composition goals that extend beyond the 2-year budget cycle, NRC is at risk of not having the right size and mix of skills needed to meet the demand for its services, nor the time needed to develop or obtain employees with the skills needed to complete future workloads.

NRC determines its workforce size goals 1 fiscal year in advance as part of the agency's annual budgeting process. However, NRC does not have goals for agency size beyond the 2-year budget cycle. NRC's Project Aim report presented a target of a 10 percent reduction in FTEs and budget by fiscal year 2020, which would have led to a staff size of about 3,400. However, NRC officials stated on several occasions that the target cited in the Project Aim report was not a planned reduction, but a general level intended to assist in planning and to act as a driver to improve the efficiency mindset of staff.

As mentioned previously, individual offices have taken some steps to gather data to forecast future workload to inform decisions about future workforce needs through each office's staffing plan.<sup>29</sup> Office-level officials develop their staffing plans to identify the composition of their office's workforce, within the limits of staffing level allocations set by the Office of the Chief Financial Officer based on the agency's budget. In fiscal year 2015, the Office of the Chief Human Capital Officer began requesting information from offices on surpluses and vacancies, among other information, in an attempt to enhance its staffing planning process. However, according to the strategic workforce plan, differences in how the offices defined key terms led to low-quality data for fiscal year 2015 that could not be used for analysis. To correct this, the Office of the Chief Human Capital Officer updated the definitions for key terms for the fiscal year 2016 staffing plans. According to an NRC official, an analysis of the fiscal year 2017 staffing plan data was presented in November 2016. This analysis described certain NRC staffing and attrition trends and the agency's current efforts to identify and reduce overage positions. This

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<sup>29</sup>NRC has not performed workload forecasts for its Corporate Support business line, a business line for agencywide support activities, which include acquisitions, administrative services, financial management, human resource management, information management, information technology, outreach, policy support, and associated training and travel. These support activities account for about one-third of NRC's budget. According to an NRC official, NRC has not performed workload forecasting for Corporate Support because this business line depends on the other offices to work with industry to forecast licensing activities.

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analysis also identified some next steps for NRC's strategic workforce planning efforts, including refining NRC's ability to accurately identify overage positions and identifying positions where future vacancies may exist to redeploy overages based on historical attrition, among other things.

NRC's future workload can be difficult to forecast, according to NRC officials, because variations in the type and amount of incoming workload could change the size and composition of the workforce needed to address it. For example, NRC documents state that workload is shifting from the operating reactors business line towards decommissioned reactors after an increase in the number of reactors decommissioning before the end of their licenses. According to NRC officials, decommissioning a power reactor typically leads to a reduction of 4 FTEs in the Office of Nuclear Reactor Regulation and an increase of 1 FTE in the Office of Nuclear Material Safety and Safeguards' Division of Decommissioning, Uranium Recovery, and Waste Programs, leading to a net reduction of 3 FTEs for the agency as a whole. Furthermore, NRC documents acknowledge that NRC is operating in a budgetary environment that will continue to place downward pressure on staffing, making the agency smaller in the future, and lead to continued reductions in Corporate Support and overages in staff. However, when workloads shift, it can take a considerable amount of resources to identify, hire, and train employees, which can make it difficult for an agency to respond. For example, NRC's program for training probabilistic risk assessment analysts—a mission-critical occupation required in several of NRC's offices—takes 3 years to complete. This indicates that the budget cycle, which typically covers 2 years, may be too short a timeframe to adapt the workforce to the incoming workload, which puts NRC at risk of not having the right workforce size and mix of skills needed to meet the demand for its services or the time needed to develop or obtain employees with the skills needed to complete future workloads. NRC officials we interviewed told us that improved forecasting methods need to be incorporated into agency decision-making processes in order to determine how many employees with specific skill sets NRC needs for future agency operations.

Further, NRC has not developed agencywide goals for the composition of its workforce. The Project Aim report includes statements that indicate that in 2020, the composition of the agency's workforce in its program offices is expected to be fairly similar to the numbers, grades, and

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competencies of the NRC employees in 2005 because NRC's work will be similar to that of 2005.<sup>30</sup> NRC officials said that this information is not being used as a goal and that there is no plan in place to achieve this workforce composition. Even if this were to be used as a goal, several other factors differentiate NRC's current and anticipated workload from what it was in 2005. For example, in 2005, NRC regulated 104 operating and 35 research and test reactors; in 2016, this number had been reduced to 100 operating and 31 research and test reactors. Since 2005, NRC has also experienced a similar decline in other areas of the agency's workload, such as decommissioning of research and test reactors and complex materials sites. As a result, the composition of the workforce needed in 2020 may well be different than it was in 2005.

Federal guidance emphasizes the importance of forward-thinking planning. According to NRC officials and the Project Aim report, NRC agrees with this concept, and NRC's strategic workforce plan states that early forecasting of the nuclear environment and taking early action to prepare for it are the keys to ensuring staff are adequately prepared for the future workload.<sup>31</sup> The Office of Management and Budget states in its guidance for preparing agency budgets that the agency's Chief Human Capital Officer is responsible for overseeing forward-thinking workforce planning and analysis within fiscal restraints, including identifying and continuously working to close skill gaps in mission-critical occupations, among others, and using effective hiring and workforce development strategies.<sup>32</sup> Office of Personnel Management guidance states that agencies should have documented evidence of a current agency human capital plan that includes human capital goals, performance measures, and milestones, among other components.<sup>33</sup> Finally, principles we identified for effective strategic workforce planning state that agencies

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<sup>30</sup>The Office of Personnel Management, which is responsible for administering and overseeing the federal government's classification system for defining and organizing federal positions, organized the work of the government into 15 grades, which are the numerical designations based on the complexity of the work and knowledge required to do the job. Generally, grades are assigned by using a point system based on the position's degree of difficulty, responsibility, and qualifications.

<sup>31</sup>Nuclear Regulatory Commission, *Strategic Workforce Plan*, (Rockville, MD: Feb. 4, 2016).

<sup>32</sup>Office of Management and Budget, *Circular No. A-11 - Preparation, Submission, and Execution of the Budget*, (Washington, D.C.: June 2015).

<sup>33</sup>Office of Personnel Management, *The Human Capital Assessment and Accountability Framework: Systems, Standards and Metrics* (Washington, D.C.: March 2006).

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should develop long-term strategies for acquiring, developing, and retaining staff to achieve programmatic goals, and monitor and evaluate the agency's progress toward its human capital goals.<sup>34</sup> Setting forward-thinking workforce goals early is particularly important for NRC since the specialized skills needed to do the agency's work can take years of training to learn. Setting exact targets for overall workforce size and skills composition into the future can be complicated, but if NRC is not able to develop specific numbers for these goals, identifying goals as a range could help NRC better ensure that it has the right mix of skills needed to complete future workloads.

Without agency-wide workforce size or composition goals beyond the 2-year budget cycle, NRC risks not being prepared for its future workload and cannot ensure that it has the right number of people, with the right skills, at the right time to meet future workforce demands. NRC's recent focus has been on reducing the size of its workforce. However, without goals for future workforce and composition needs—either in exact numbers or as a range—NRC could reach a point at which it is reducing the number of staff when it needs to be increasing the numbers either in specific skill areas, as an agency, or both.

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### NRC Does Not Currently Have Information on Employees' Skills or a System for Tracking Them

NRC does not currently have comprehensive employee skills information because it does not have a systematic approach or system to track this information. According to NRC's Project Aim report, "The agency does not have an automated strategic workforce planning tool to manage the talent pipeline. Consequently, supervisors rely on past experience and the grapevine to be aware of employees with the skills and talents necessary to accomplish the work."<sup>35</sup> Furthermore, the strategic workforce plan states that it was evident that competency and skill information for staff was not readily available during NRC's effort to identify strategies for managing its workforce and minimizing staff overages and skill gaps. The plan further notes that NRC needs this

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<sup>34</sup>GAO-04-39.

<sup>35</sup>Nuclear Regulatory Commission, *Achieving Exemplary Nuclear Regulation in the 21st Century, Report on Project Aim 2020* (Rockville, MD: Jan. 30, 2015).

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information in order to align the workforce with the agency's current and projected needs.<sup>36</sup>

NRC had a system to track employee skills that it largely abandoned in 2008 due to difficulties with the system. According to NRC officials, the system was difficult for users and managers to navigate, allowed employees to embellish their skills, and did not include tools for managers to verify information submitted by employees.<sup>37</sup> The agency's strategic workforce plan included a task to reassess whether the previous skills tracking system could be used again on a more limited basis to house skill and competency information. NRC completed the assessment and concluded that the resources required to restore the system were greater than the benefit the system would provide. NRC officials we interviewed also said that the agency's management understood agency staffing surpluses and vacancies well enough that having a system is not necessary.<sup>38</sup> However, NRC is testing a new skills tracking system to measure progress of those trained under the new competency model pilot project, which began in 2016. NRC officials said that the new system could be used to enhance NRC's ability to track employee skills if the pilot project for expanding the competency models proves successful and the officials can make a business case for expanding the pilot. Even if NRC decides to adopt competency models for the entire agency after the pilot concludes in 2018, the project timeline indicates that it will be several years before the agency is able to develop and use the new skills tracking system across the agency.

The limited availability of employee skills data at NRC may affect the agency's ability to make informed decisions about a variety of human capital management strategies that could help the agency strategically manage its size and composition and better align agency staff with projected workload. One NRC senior official we interviewed said that without a comprehensive tool with a reliable and up-to-date employee skills database, the agency's ability to identify and mitigate critical skills gaps could become disjointed and cumbersome to navigate. Furthermore,

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<sup>36</sup>Nuclear Regulatory Commission, *Strategic Workforce Plan* (Rockville, MD: Feb.4, 2016).

<sup>37</sup>NRC's technical training center continues to use the system on a limited basis.

<sup>38</sup>NRC defines surpluses as positions that currently are, or are expected to be, no longer needed to meet work demands of the agency, and it defines vacancies as positions that are open and need employees with specific skillsets.

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an NRC union representative expressed concern that NRC is making staffing reductions that are not informed by information about employees' skills. As stated in NRC's strategic workforce plan, "With the decline in budget and staffing levels, as well as other ongoing initiatives, the future workforce challenge is to enhance the NRC's capability to reshape and redeploy staff where and when they are needed. In the short-term we will have more permanent staff on-board than the budget or workload would support."

One key principle we identified for effective strategic workforce planning emphasizes that it is essential for agencies to determine the critical skills and competencies that will be needed to achieve current and future programmatic results, particularly as changes in national security, technology, and the budget occur.<sup>39</sup> If an agency knows what skills its employees have, it can more readily ensure it can identify staff in need of additional training, as well as which employees have the skillsets needed for specialized or highly technical work. Additionally, according to leading practices for government human capital management, such as the Office of Personnel Management's Human Capital Assessment and Accountability Framework, agency human capital decisions regarding recruitment, retention, development, and aligning workforce competencies with current and future agency needs should be guided by data-driven, results-oriented planning and accountability systems.<sup>40</sup> The skills tracking system that NRC is developing as part of the agencywide competency modeling pilot project could improve the availability of employee skills information for the agency. However, implementation of this system is several years away and is contingent on the approval of the business case in favor of expanding the project. According to officials, NRC does not currently have plans to develop a system to capture employee skills information if the business case is not approved.

Without a systematic, comprehensive approach to tracking employee skills information, the agency cannot ensure that the right personnel for the job are on board or will be in the future, or that it is making informed, data-driven strategic human capital management decisions about its workforce. This information is particularly important because many human capital decisions are already being made within the context of NRC's

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<sup>39</sup>[GAO-04-39](#).

<sup>40</sup>Office of Personnel Management, *The Human Capital Assessment and Accountability Framework: Systems, Standards and Metrics* (Washington, D.C.: March, 2006).

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organizational changes of reducing staff by hundreds of people. If not carefully managed, imprecise reductions could cause NRC to miss efficiencies in matching staff skills with expected workload. NRC established a working group for strategic workforce planning in January 2017 that is expected to address some of these topics; however, NRC established the group as we were completing our review, and it is too soon to tell what recommendations, if any, the group will make to help the agency address the need to identify employee skills and match them with expected workload.

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### Managers and Supervisors Have Received Limited Training on Strategic Human Capital Management

In some cases, managers and supervisors are not familiar with strategic human capital management or assessing employees' skillsets because NRC has not provided managers or supervisors with consistent training. According to NRC officials, strategic human capital management is new to NRC since Project Aim was undertaken in 2014, and in some cases those in charge of executing it are not trained on how to implement it. The strategic workforce plan was the first of its kind for the agency. NRC officials said that until recently, strategic workforce planning had not been done at an agency level; rather, it has been done in isolation by offices, with the exception of a Quarterly Performance Review meeting during which NRC's leadership discusses agency priorities. Other NRC officials said that prior to the rebaselining project, individual office leads knew what the priorities were for their own offices, but the agency as a whole did not set priorities. NRC human capital officials said that NRC managers are responsible for skills management and rely on branch chiefs—who typically supervise 6 to 16 employees—to assess staff competencies and workforce composition and to identify critical skill gaps. NRC human capital officials said that workforce planning is a new concept to some of the agency's branch chiefs, who are typically trained in technical areas, but receive training only at a high level on how to do strategic human capital management. Officials said that NRC provides supervisory training that includes high-level information on components of workforce planning, succession planning, employee development, and position management during a one-week course taken by new supervisors through the Office of Personnel Management, and NRC is in the process of developing a refresher course on related topics. The course for new supervisors covers human capital management, among other topics, but officials said that not all supervisors are fully comfortable with these responsibilities, and the application of these strategic human capital management approaches is inconsistent. Furthermore, this training is limited to new supervisors and is not tailored to NRC's

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specialized skills needs or its current environment of organizational change.

Senior human capital officials confirmed that the agency has an inconsistent approach to training managers and supervisors on strategic human capital management. They said that some supervisors spend a lot of time with the staff and know their skills, while others do not. They also said that NRC's workforce management panel has been an effective tool for identifying people to move to other positions on an informal basis,<sup>41</sup> but that the agency is beginning to focus on equipping supervisors to have conversations with staff about moving to new areas of work within the organization. NRC officials said this new focus could contribute to more consistent application of strategic human capital management approaches.

Federal internal control standards specify that for employees to be considered competent they must be qualified to carry out their assigned responsibilities.<sup>42</sup> Competence requires relevant knowledge, skills, and abilities, which are gained largely from professional experience, training, and certifications. However, some managers and supervisors may not be able to fully carry out their strategic human capital management responsibilities because they have not been trained in depth on strategic human capital management or assessing employee skillsets. NRC's strategic human capital management approach relies heavily on the agency's ability to identify employees' skills, train them in new areas, and move them to new positions if needed. If all managers and supervisors do not consistently perform these functions well, NRC may be unable to adjust its workforce appropriately and efficiently or ensure that the agency has people with the skillsets it needs. If some managers and supervisors have limited knowledge of their employees' skillsets, they will not be able to properly identify those best fit for additional training and movement within the agency.

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## Conclusions

Starting in 2005, the anticipation of a nuclear renaissance led to a large increase in NRC's budget and staff levels, as well as changes to the

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<sup>41</sup>In 2015, NRC created a panel to assist in workforce management, particularly with regard to external hiring; this panel includes deputy office directors and a deputy regional administrator. For more information on the workforce management panel, see appendix I.

<sup>42</sup>[GAO-14-704G](#).

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relative sizes of different NRC offices; these changes were intended to meet expected growth and changes to the domestic nuclear power sector. When it became clear that the nuclear renaissance was not unfolding as expected and that, in fact, some nuclear power plants were unexpectedly being retired, NRC began to take some steps to actively reduce the size and change the composition of its workforce. After growing by 884 FTEs (28 percent) from 2005 to 2011, NRC has reduced its workforce by 587 FTEs as of 2017, leaving it about 10 percent larger than it was in 2005. NRC has stated that it expects to shrink further, but it does not have clear goals with respect to its appropriate workforce size or composition. Trends in the nuclear power sector will likely continue to change the ideal size and composition of the agency's workforce. In the future, workloads could increase, decrease, or shift to new areas that could require a different mix of skills and number of staff. However, without effective strategic human capital management, NRC cannot determine the appropriate size and composition of the agency's workforce now or in the future.

We identified three areas where NRC's efforts do not fully incorporate leading practices that could help NRC be better prepared to respond to future workload changes and manage its human capital more strategically. First, NRC has not developed agencywide workforce size or composition goals to meet its future workload beyond the 2-year budget cycle. NRC has been reducing its staffing levels in recent years, but without goals for future workforce and composition needs—in exact numbers or as a range—NRC may be reducing the number of staff when it needs to be increasing their numbers either in specific skill areas, as an agency, or both. Also, the budget cycle may be too short a timeframe to adapt the workforce to changes in the nuclear environment and incoming workload, putting NRC at risk of not having the right workforce size and mix of skills needed to meet the demand for its services or not having the time needed to develop or obtain employees with the skills needed to complete future workloads. Second, NRC has started to make decisions about moving or retraining employees to fill vacant positions, but it has not established a systematic, comprehensive approach to track information on employees' skills. NRC is undertaking a pilot program through 2018 that, if successful, could lead to such a tracking system. However, NRC does not have a plan to establish a tracking system for employee skills outside of the pilot program. Without such a system to track employee skills, NRC cannot ensure that it is making data-driven decisions that ensure the agency has the right personnel on board and that make the best use of its workforce. Further, if not carefully managed, imprecise reductions could cause NRC to miss efficiencies in matching

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staff skills with expected workload. Third, NRC is relying on managers and supervisors to, for example, properly identify employees to transfer or retrain from surplus to vacancy positions, but they have not been fully trained or may not be comfortable implementing NRC's strategic human capital management efforts and assessing employees' skillsets. If NRC does not provide managers and supervisors with the appropriate training, NRC may not be able to adjust its workforce appropriately or efficiently.

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## Recommendations for Executive Action

To improve NRC's ability to strategically manage the size and composition of its workforce and respond to changes in the nuclear industry, we recommend that the Chairman of the Nuclear Regulatory Commission take the following three actions:

- Set agencywide goals, which could be ranges, for overall workforce size and skills composition that extend beyond the 2-year budget cycle.
- Establish a systematic, comprehensive approach for tracking employee skills information, either through the system developed through the competency modeling pilot program or some other system.
- Consistently train managers and supervisors in strategic human capital management and assessing employee skillsets.

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## Agency Comments

We provided a draft of this report to NRC for review and comment. NRC provided written comments, which are reproduced in appendix II. In its written comment, NRC generally agreed with our recommendations. NRC also provided technical comments, which we incorporated as appropriate.

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We are sending copies of this report to the appropriate congressional committees, the Chairman of the Nuclear Regulatory Commission, and other interested parties. In addition, the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff members have any questions about this report, please contact me at (202) 512-3841 or [ruscof@gao.gov](mailto: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

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# Appendix I: Information on Steps Taken by the Nuclear Regulatory Commission to Strategically Manage its Human Capital

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The Nuclear Regulatory Commission (NRC) has taken steps through Project Aim and other efforts to strategically manage its human capital that support the agency's ability to have the right size and composition of its workforce—that is, the number of people with specific skillsets and levels of expertise. These steps include:

***Developing a strategic workforce plan.*** In February 2016, as part of Project Aim, NRC issued its first strategic workforce plan (the plan). The official with primary responsibility for developing the plan said that the new planning process is intended to ensure that the agency responds more conservatively than it did in 2005, when it hired an additional 500 full-time-equivalent (FTE) employees per year in response to a nuclear renaissance that never materialized. The plan contains high-level information about the current workforce, the alignment between the workforce and future workload, and areas of the agency's work where additional skills needs exist, among other topics. The official also said that the plan's purposes are (1) to be a one-time plan to identify core mission-critical skills and competencies and match the agency's people with those competencies, and (2) to develop a process for incorporating strategic workforce planning principles into management's annual budgeting and planning. According to the official, the strategic workforce planning team determined that NRC has most of the mission-critical skills it needs. However, the team identified six areas where the agency lacks either the breadth or depth of skills needed for future workload. In addition, the official said, strategic workforce planning will be institutionalized through the use of templates used to guide annual staffing plans. The plan acknowledges that the agency's strategic workforce planning is limited in its sophistication but that NRC intends to use an iterative approach to systematically advance the level of sophistication of its strategic workforce planning commensurate with the needs of the agency.

***Conducting workload forecasting.*** Officials at the three major offices we interviewed—the Office of Nuclear Reactor Regulation, the Office of New Reactors, and the Office of Nuclear Material Safety and Safeguards—conduct workload forecasting primarily to meet the needs of the 2-year federal budget cycle, but in some cases they forecast beyond

this timeframe.<sup>1</sup> While the specific methodologies for assessing the nuclear industry environment and forecasting workload differ across NRC offices, the methodologies typically incorporate common data elements, which are used to develop workload forecasts:

- *Historical workload and resource utilization data.* NRC offices use several kinds of historical workload and resource utilization data to develop workload forecasts, including data on the average number of new license and license amendment applications received per year; the amount and distribution of staff time needed to process those applications; and the number of actions proposed, but not applied for by licensees in a year. For example, the Office of New Reactors uses historical data to estimate its staffing and contract needs per project by month for the design phase of licensing a nuclear reactor. NRC officials we interviewed said that this establishes a baseline resource estimate that they use for budget formulation, though the actual resources used during a licensing review vary based on the quality and timeliness of information that the applicant submits to the Office of New Reactors, as well as any requests by the applicant to suspend or slow down the review for business reasons.
- *Information from informal discussions with licensees and industry groups.* According to NRC officials, offices frequently gather information from current and prospective licensees on their business plans and anticipated requests for licensing actions through informal discussions between NRC project managers and licensees, working groups, and conference attendance, among other sources. For example, officials said NRC project managers make annual requests for information about licensees' business plans and routinely conduct informal discussions with the vice presidents of licensee companies regarding potential changes to their business plans.
- *Data gathered from formal requests for information and letters of intent from licensees.* NRC officials said that offices make formal requests for information from licensees to help the offices fine tune their baseline workload forecasts made using historical data. Specifically, some offices within NRC conduct surveys of licensees

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<sup>1</sup>The federal government assembles an annual budget through an administrative process of budget preparation and review. This process may take place several years before the budget for a particular fiscal year is ready to be submitted to Congress. This process typically starts in the spring of the year prior to the year the budget is submitted, and 2 years prior to that budget being executed by the agency. For the purposes of this report we refer to this 2 year timeframe as the budget cycle.

about their business plans and licensing actions that they plan to submit to the agency for review. For example, every 2 years, the Office of New Reactors sends out a survey to licensees requesting information on new reactors. NRC officials then work with business development staff of the potential licensee to develop a schedule for the associated licensing work. NRC officials said NRC uses this schedule to make sure it has people with the correct skillsets on hand to complete the work. In addition, licensees sometimes submit to NRC courtesy letters of intent, for example, when they plan to undertake new construction or amend their licenses.

Officials we interviewed from NRC's three major offices said that their forecasting is typically limited to the 2-year budget cycle, and in some cases not more than a year, in part because licensees cannot predict the type or quantity of application submissions any further into the future. For example, Office of Nuclear Reactor Regulation officials said that their workload for routine inspections is generally predictable since inspections require a predetermined number of samples to be taken, which takes a known number of hours to complete, thereby allowing the office to effectively forecast its workload of this type. However, these officials said that smaller projects, such as licensing amendments, cannot be predicted more than 1 year in advance. Similarly, NRC officials we interviewed told us that the nuclear materials workload can be unpredictable because these business lines work with large numbers of small licensees that may or may not apply for licenses depending on market conditions. For example, the officials said that uranium recovery firms are highly sensitive to the price of uranium; if the price of uranium increases, uranium recovery becomes more lucrative and may prompt additional firms to enter the market, increasing the likelihood that NRC will receive additional uranium recovery work. Conversely, the officials said that if the price of uranium decreases, NRC will likely see a decrease in its uranium recovery workload. In contrast, officials from the Office of New Reactors told us that because some projects have long timeframes, require extensive planning, and can cost millions of dollars to build, licensees know up to 4 years in advance that they plan to submit an application to NRC.

NRC's Project Aim report included an implementation task to develop a process for conducting workload forecasting in support of the budgeting process and 4-year strategic plan revisions. However, the Commission did not approve the task because, according to NRC officials, (1) they were not comfortable nor familiar with workload forecasting techniques; (2) they considered forecasting to be too hypothetical and chose to focus

resources on concrete and near-term objectives, particularly those that may occur during the 2-year budget cycle; and (3) they considered the budget formulation process to be sound, though they had reservations about individual components of the process. The Commission instead recommended that offices incorporate the lessons of Project Aim into existing workload forecasting efforts. NRC officials we interviewed told us that improved forecasting methods need to be incorporated into agency decision-making processes in order to determine how many employees with specific skill sets are needed for future agency operations. NRC officials also said that they need to know future workload demands in order to properly coordinate and train contractors and supplement staff from the national labs for work in which NRC's existing expertise is limited.

Despite the challenges of a sometimes unpredictable workload, in some cases offices have taken steps to forecast beyond the 2-year budget cycle, and have made associated workforce adjustments to accommodate the incoming workload. For example, since 2008, the Office of New Reactors has conducted annual assessments of incoming workload that forecast 5 years into the future. These assessments allow a company to tell NRC that it plans to either submit an application for a new reactor design in the near future, identify a site to be considered for a new reactor, or notify NRC of an anticipated application for combining a license. NRC officials said that they then consider the impacts of this information on their workload, using it to identify future technical needs—such as resident inspectors, geologists, or seismologists—and prepare for those needs. For example, in 2014, the Office of New Reactors used one of these 5-year assessments to anticipate a 26 percent FTE reduction primarily in flood and seismic work activities. NRC officials said they adjusted to the change in workload by using strategies such as not backfilling positions as staff left the division in order to reduce the division's staffing level by 20 percent. Similarly, from 2003 to 2009, the Office of Nuclear Material Safety and Safeguards received many letters of intent from prospective licensees to apply for new uranium enrichment facilities several years before the planned submittal dates. Officials said that they increased staffing levels in the office and partner offices during the subsequent 3 to 5 years by using NRC staff and contractors to assist with these new licensing application reviews. As the number of new applications and operating licensees later decreased, NRC officials allowed the staff levels within the office and partner offices to decrease.

***Developing and analyzing staffing plans.*** According to NRC officials, office-level managers are responsible for creating annual staffing plans

that identify where they have too many or not enough FTEs—referred to as surpluses and vacancies—in relation to the office’s estimated incoming workload. This process is conducted about a year after the budget for the office has been determined and after FTE allocations for the year have been made. For example, an office could include in its staffing plan that it has a surplus of reactor inspectors or project managers in a specific area, such as environmental reviews. These 26 office-level staffing plans are submitted to the Office of the Chief Human Capital Officer, which is responsible for reviewing, aggregating, and analyzing them. The Office of the Chief Human Capital Officer then conducts a comprehensive assessment that focuses on several human capital indicators, including surpluses and vacancies, the supervisor-to-staff ratio, and grade levels. NRC conducted its first collection of surplus and vacancy data in 2015. However, according to the strategic workforce plan, the Office of the Chief Human Capital Officer could not use the data to determine whether the skills of NRC’s workforce would meet mission demands due to differences in how offices had defined surpluses and vacancies, which resulted in low-quality data. NRC has since created standardized definitions to be used agencywide to promote a more consistent approach. According to an NRC official, an analysis of the 2017 staffing plan data was presented in November 2016. This analysis described certain NRC staffing and attrition trends and NRC’s current efforts to quickly identify and reduce overage positions. This analysis also identified some next steps for NRC’s strategic workforce planning efforts, including refining NRC’s ability to accurately identify overage positions and identifying positions where future vacancies may exist to redeploy overages based on historical attrition, among other things.

Additionally, as a result of Project Aim’s task to create a strategic workforce plan, in 2015 the Office of the Chief Human Capital Officer requested that all NRC offices submit a supplementary workforce planning narrative annually with their staffing plans to provide insight into future workload changes and corresponding workforce needs 3 to 5 years into the future. These narratives required each office to update workload assumptions discussed in Project Aim, provide information on how these changes might impact the office’s ability to meet the workload, and describe any internal workforce needs that may result in changes to the office’s staff and resource needs. NRC documents state that these narratives are used to help NRC proactively identify and mitigate potential critical skill gaps before they happen and inform future iterations of the strategic workforce plan.

***Developing competency models.*** In 2016, NRC began a pilot project to develop competency models that articulate the skills employees need to fulfill the functions of their positions. These models could provide information on the positions the agency has, the skills needed to perform each position's functions, and the training needed to develop those skills. These models are in addition to the agency-level qualifications, which include educational requirements, that NRC has developed for 37 of its positions and that cover about 500 NRC employees. In addition, NRC officials said that the agency has additional qualifications for many positions that are specific to office-level work, and that many managers and supervisors are generally knowledgeable regarding the skillsets and qualifications required to perform the work in their work units.<sup>2</sup> NRC officials said the competency modeling project includes piloting a system that can include employee skills. As of July 2016, NRC had completed 4 of the 30 to 50 competency models officials estimate they will need to account for all of the agency's positions, and officials said they do not know how many additional models they intend to complete in the future. Each of the 4 competency models that have already been developed contain 23 associated skills, and each skill specifies 5 levels of proficiency (see fig. 5). NRC officials said that they plan to finish the pilot project in the summer of fiscal year 2018, and if a business case for developing additional competency models is approved, NRC can develop about 10 competency models per year. If the pilot project shows that competency models are a viable alternative to the current process for training employees in new skills, expansion to the wider NRC workforce, including the development of additional competency models, would begin in late fiscal year 2018 at the earliest.

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<sup>2</sup>NRC could not provide information on how many positions or employees are covered by these office-level qualifications because this information is not tracked at the agency level.

Figure 5: Nuclear Regulatory Commission (NRC) Competency Model for Health Physicist

NRC health physicist competency model skills			
<b>Inspection activities</b> <ul style="list-style-type: none"> <li>• Prepare for inspections</li> <li>• Perform inspections</li> <li>• Perform post-inspection activities</li> </ul>	<b>Regulatory analysis</b> <ul style="list-style-type: none"> <li>• Review licensee reports</li> <li>• Respond to licensing actions</li> <li>• Ensure compliance with the decommissioning timeline rules</li> <li>• Review work performed by licensee contractors</li> </ul>	<b>Interact with and inform relevant stakeholders</b> <ul style="list-style-type: none"> <li>• Interact with the press</li> <li>• Interact with the public</li> <li>• Interact with regulatory bodies</li> <li>• Interact with internal stakeholders</li> <li>• Interact with licensees</li> </ul>	<b>Fundamental skills</b> <ul style="list-style-type: none"> <li>• Support team</li> <li>• Coach and mentor peers</li> <li>• Coordinate and align cross-function teams</li> <li>• Run effective meetings</li> <li>• Demonstrate leadership</li> <li>• Establish a culture of safety and regulatory significance</li> <li>• Demonstrate effective communication</li> <li>• Demonstrate ability to learn quickly and willingly</li> <li>• Obtain knowledge to do job effectively</li> <li>• Prepare technical documents</li> <li>• Demonstrate effective project management skills and accountability</li> </ul>
<p>Proficiency in each task is rated from 1 to 5:</p> <ol style="list-style-type: none"> <li>1. <b>Learning:</b> requires development and training.</li> <li>2. <b>Basic:</b> has basic knowledge and ability to perform the task.</li> <li>3. <b>Applied:</b> performs task consistently, and independently.</li> <li>4. <b>Skilled:</b> demonstrates advanced knowledge and ability to perform the task, and may coach others.</li> <li>5. <b>Expert:</b> develops and applies tasks in innovative ways and can create and share expertise and best practices.</li> </ol>			

Source: GAO analysis of Nuclear Regulatory Commission competency model document. | GAO-17-233

**Establishing a workforce management panel.** In 2015, NRC created a workforce management panel to assist in workforce management, particularly with regard to external hiring; this panel includes deputy office directors and a deputy regional administrator.<sup>3</sup> The workforce management panel was charged with, among other things, reviewing requests from offices for new hires and merit promotions and overseeing transfers from surplus positions to vacancies, within the context of NRC’s resource constraints. The panel uses a set process to move staff out of surplus positions into positions where there is a vacancy and demand for work, and it provides advice to the Office of the Chief Human Capital Officer in support of workforce management decisions.

**Offering voluntary early retirement incentives.** To reduce the number of surplus positions, encourage attrition, and prepare for potential downsizing of the agency in the future, NRC has provided two rounds of

<sup>3</sup>The panel’s official name is the Strategic Workforce Oversight and Utilization Panel, which for the purposes of this report we refer to as the workforce management panel.

incentives for voluntary early retirement. These incentives included lump sum payments and temporary decreases in age and service requirements for retirement eligibility to increase the number of employees who were eligible for retirement. NRC officials said that in 2015 and 2016, a total of 135 individuals were approved for early retirement incentives, and that the agency has the authority from the Office of Personnel Management to offer 126 more through June 2018. However, these officials said that as of November 2016, the agency had not yet determined whether it will offer additional incentives before the authority expires.<sup>4</sup> Human capital officials said that part of the justification for early retirement incentives was for them to be offered to employees in positions that would be restructured or eliminated, and thereby reduce the number of employees in surplus positions. NRC has also used early retirement incentives to manage skill levels within its workforce. For example, NRC officials said the agency may have a person with a high grade level working in one area but a lower grade level position in another area that needs to be filled. In this case, NRC cannot shift the high grade level employee without downgrading the employee, but the agency could use early retirement incentives to reduce the number of high grade level employees in that area.

**Reprioritizing work activities.** To reduce resources allocated to low-priority workload areas, NRC performed a one-time agencywide prioritization and rebaselining effort under Project Aim. Within this effort, NRC developed an agencywide framework to assess all NRC activities with more than 10 FTEs to determine if they (1) required minimum effort to achieve statutory mandates; (2) required prudent effort above the minimum needed to achieve statutory mandates; or (3) were activities that could be shed, deferred, or done with fewer resources without materially compromising the agency's safety and security mission. After sorting the activities into these three categories, NRC's rebaselining team developed a one-time plan to reduce the agency's workload by eliminating activities in the third category during fiscal years 2016 through 2018. Rebaselining resulted in a plan to cut 150 low-priority activities, thereby reducing NRC's contractor support by \$18 million and agency staff by 185 FTEs. As of February 2017, NRC had made 138 of the 150 proposed cuts to low-priority activities, resulting in a reduction of 147 FTEs.

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<sup>4</sup>Federal agencies receive authority to offer early retirement incentives by the Office of Personnel Management, which consults with the Office of Management and Budget.

**Cross-training employees.** To manage the size and composition of the agency's workforce, NRC is training existing staff in new skill areas, which NRC refers to as cross-training. NRC's strategic workforce plan says that retraining existing staff in new skill areas can be an especially useful strategy to develop individuals occupying surplus positions. NRC human capital officials said that all employees are encouraged to incorporate training in new skill areas into their individual development plans and to move to different parts of the agency as part of their career development; these officials said this is particularly true for staff in surplus positions. They also said that because cross-training and reassignment of employees is voluntary, the agency does not have specific statistics available on the number of employees who have been cross-trained or reassigned and placed into a new position.

# Appendix II: Comments from the Nuclear Regulatory Commission



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

April 10, 2017

Mr. Frank Rusco, Director  
Natural Resources and Environment  
U.S. Government Accountability Office  
441 G Street, NW  
Washington, DC 20226

Dear Mr. Rusco:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your e-mail dated March 10, 2017, which provided the NRC an opportunity to review and comment on the U.S. Government Accountability Office (GAO) draft report GAO-17-233, "Strategic Human Capital Management: NRC Could Better Manage the Size and Composition of its Workforce by Further Incorporating Leading Practices."

The NRC staff appreciates the opportunity to review the draft report as well as the GAO staff's professionalism and constructive interactions during this GAO engagement. Overall, the NRC agrees with the draft report and its findings. The draft report provides an accurate perspective of strategic workforce planning at the NRC. In January I formed a working group whose purpose is to develop a plan for a comprehensive, integrated, and systematic Strategic Workforce Planning (SWP) process. The expected outcome, once implemented, is to enhance the existing SWP process by better integrating the agency's workload projection, skills identification, human capital management, individual development, and workforce management activities. In the enclosure to this letter, we have provided some minor comments and clarifications for your consideration.

Thank you again for the opportunity to provide comments on the GAO report. Please feel free to contact Mr. John Jolicoeur at (301) 415-1642 or [John.Jolicoeur@nrc.gov](mailto:John.Jolicoeur@nrc.gov) if you have questions or need additional information.

Sincerely,

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

Victor M. McCree  
Executive Director  
for Operations

Enclosure:  
NRC Comments on Draft Report  
GAO-17-233

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Frank Rusco, (202) 512-3841 or [ruscof@gao.gov](mailto:ruscof@gao.gov)

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## Staff Acknowledgments

In addition to the individual named above, Hilary Benedict (Assistant Director); Emily E. Eischen; and Perry Lusk, Jr. made key contributions to this report. Also contributing to this report were Richard Burkard, John Delicath, Cindy Gilbert, Wyatt R. Hundrup, Douglas G. Hunker, Benjamin Licht, Steven Lozano, Brian Shaw, and Sara Sullivan.

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