USGS
science for a changing world

Bureau Workforce Plan: 2015-2020

U.S. Department of the Interior
U.S. Geological Survey

U.S. Geological Survey Bureau Workforce Plan

Executive Summary

The U.S. Geological Survey (USGS) is the Nation's principal natural science research and information agency. The challenges of meeting the USGS science mission across the Nation and throughout the world are complex, and the USGS is uniquely positioned to conduct scientific research that is objective, highly relevant, cutting edge, and addresses complex and difficult topics. The USGS is funded through annual congressional appropriations and by reimbursable funds: grants, contracts, and agreements with other federal, state, and local agencies and organizations. Over the last five years, annual appropriations have been roughly $1 billion and reimbursable funding approximately $500 million. Specific science efforts can ramp up or phase out relatively quickly due to changing science priorities or funding levels. Most project planning, budgeting, and staffing decisions occur at individual offices or science centers, taking into account guidance at the regional and headquarters levels, as well as local partner needs. This combination of dynamic funding, changing science priorities, balancing of multiple bureau and partner needs, and local science execution makes it impractical to conduct fine-scale workforce planning at a bureau level.

Recognizing these dynamic operational realities, this bureau workforce plan does not specify quantitative targets for particular position types or demographics, nor does it dictate the size, composition, or distribution of the workforce. Instead, it overviews the general strategic directions, summarizes drivers that shape the workforce, describes key aspects of the current workforce, and presents a vision for the future workforce. When effectively implemented, these actions will help provide supervisors, managers, and leaders with strategies and tools to attract, develop, retain, and manage a workforce with the right skill set and characteristics to accomplish the bureau's mission within a complex and changing operational environment.

Moving into the future, it is paramount to maintain USGS scientific capability and reputation and provide skilled and innovative science support. The bureau's workforce will face significant challenges including high turnover through numerous retirements, an uncertain fiscal outlook, shifts in societal and organizational priorities, and the staggering pace of technological change. Because these factors create a great deal of uncertainty, the workforce requires flexibility to expand or contract to deal with changing circumstances; doing so will entail making effective use of a multisector workforce.

In addition, there are key skill sets and capabilities that while currently found in the USGS, will be increasingly needed in the future. Researchers and research managers will need effective communication and entrepreneurship skills. There will be increasing demand for multidiscipline syntheses and landscape-level science, which will require capabilities such as mapping, geospatial data integration, remote sensing, predictive modeling, scenario development, forecasting, simulation, and decision support. These capabilities allow USGS science to effectively inform policy and decision-making, to characterize cost-benefit and trade-offs, and aid in the understanding of the long-term impacts of near-term decisions.

The USGS will also need a workforce that can adapt to new technology and respond quickly, in both quantity and expertise, to changes in science and management priorities. This will require a focus on training and continuing education of current employees to enhance relevant skills and

capabilities. It also requires a multisector workforce that obtains some skill sets and services through the use of contractors, volunteers, and Scientists Emeriti and greater expertise and resource sharing across Centers.

This plan also recognizes that in addition to the action plans presented herein, there are many workforce strategies already successfully integrated into the fabric of the bureau. These strategies include practices that foster work/life balance, encourage frequent and effective communications, and use employee survey feedback to facilitate improvements in our workplace. The workforce plan does not address a range of issues that, although affecting employees, are not directly related to workforce planning (such as work processes, facilities, office space, and safety).

1. Introduction

The U.S. Geological Survey (USGS) is the Nation's principal natural science research and information agency. Its mission is to provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; assist others in assessing, researching, and managing water, geological, biological, and other natural resources; and enhance and protect the quality of life. Organizationally, science planning and alignment are accomplished within seven mission areas: climate and land use change, core science systems, ecosystems, energy and minerals, environmental health, natural hazards, and water. Science studies and activities are conducted principally by science centers managed by regional offices. There are also several science support offices covering science quality and integrity; budget, planning, and integration; communications and publishing; international programs; human capital; office of diversity and equal opportunity; administration; and enterprise information.

The USGS is funded through annual congressional appropriations and by reimbursable funds from other federal, state, and local agencies and organizations. Both appropriated and reimbursable funding varies by year, but recently have been approximately $1B and $500M, respectively. Some science centers are funded primarily through appropriations, others through reimbursable and cooperative agreements. A substantial USGS international research and disaster response component is funded primarily by other federal agencies and international governments.

USGS employees within centers, regions, mission areas, and offices across the Nation work collaboratively with numerous partners and stakeholders to provide reliable, impartial scientific data and information to the Department of the Interior (DOI), other agencies and organizations, the public, and the global community. USGS data and information are used daily by managers, planners, policy makers, and citizens to understand, respond to, and plan for changes in the earth and its environments. USGS research also advances the state of knowledge in a broad array of fields, and the bureau is recognized as a world leader in many scientific and technical arenas.

2. Objectives of this Workforce Plan

This workforce plan was crafted to describe key aspects of the current workforce and to help provide USGS managers and supervisors with strategies and tools to attract, develop, retain, and

manage a workforce with the right skill sets and capabilities to accomplish the bureau's mission within a complex and changing operational environment.

The bureau workforce plan will be used in the same way a strategic plan is used to articulate the vision, mission, and goals for an organization. The goals outline more specific objectives for the organization to meet in order to advance the vision and mission. Similarly, the bureau workforce plan outlines the vision for the USGS workforce and the accompanying actions describe specific steps to be taken from a bureau level to forward that vision. The document will be used internally to guide and coordinate bureau-level actions and externally to educate others about the workforce.

This plan does not deal with issues such as the mergers of various science centers, the size and specific geographic distribution of facilities on the landscape, laboratory consolidations and capabilities, scientific instrumentation strategies, or similar operational topics. These are all important and interface with the workforce, but there are separate efforts underway within the bureau to address these matters.

Developing a bureau-level plan is challenging because of the diversity of USGS science activities, the distributed nature of the workforce, and the array of funding sources. Most project planning, budgeting, and staffing decisions occur at individual offices or science centers driven by local staffing and science needs as directed by Administration and bureau priorities or partner needs. And while many science programs have an essential core capability that is retained over long periods of time, other science efforts can ramp up or phase out relatively quickly due to changing funding levels, scientific advances and issues, and organizational and societal priorities. For all of these reasons, fine-scale workforce planning at a bureau level is not practical.

As a result, workforce planning within the USGS occurs at several levels. At the finest scale, science centers and offices develop specific workforce plans that guide local hiring decisions. Such local workforce plans have long been an integral part of USGS operations. Starting in 2012, the USGS also began working through a broader-level three-phased workforce planning effort. The first phase started with the mission area offices and the science support offices in headquarters. The second phase, conducted in 2013, focused on regional workforce planning. The third phase is this bureau-level plan.

The goal of the overall three-phase workforce planning effort is for the centers, regions, mission areas, and offices to identify the actions they need to take in order to advance their respective goals and for the bureau to coordinate as a whole to identify actions necessary at the bureau level to help ensure that the USGS has the workforce needed to continue to be a leader in earth science. Throughout all of the phases, workforce planning conversations have focused on preparing the USGS workforce for the science and operational needs of the future.

This bureau plan reviews and synthesizes major, recurring themes in current mission area, office, and regional workforce plans and in recently developed Strategic Science Plans (SSPs)[1] for each USGS mission area. This plan, however, is not a comprehensive compilation of all of the issues and actions identified in the other workforce plans, nor is it a review of the specific science directions in each SSP. Instead, it uses those sources to identify overarching workforce needs and

[1] http://www.usgs.gov/start_with_science/

skills gaps, and it defines actions to be undertaken at the bureau level to facilitate the implementation of science center, regional, mission area, and office workforce plans.

The scope of this USGS workforce plan includes an overview of the current workforce, projections for broad future needs, perceived gaps, and strategies to begin addressing the gaps. The action plan section includes tasks that should be initiated or completed in the next two years to address the specific gaps and strategies described, with the goal of setting the stage for significant workforce outcomes over the next 3 to 5 years. This timeframe was chosen in recognition that the changing scientific and technical environment, the evolving needs of our partners and stakeholders, and an uncertain and likely constrained budget environment all work together to challenge longer-term planning. Recognizing that dynamic reality, this workforce plan should be re-evaluated annually and revised as needed due to changing circumstances.

This plan provides recommendations for leaders and managers at all levels, including Center Directors, Regional Directors, and Associate Directors to help shape a workforce designed to meet the objectives of the USGS, its sister bureaus, the Department of the Interior, the Administration, and its many other partners and stakeholders.

3. Strategic Direction

The challenges of meeting the science mission of the USGS across the Nation and throughout the world are complex, requiring an understanding of the interplay between natural and man-made systems. With world-class expertise in biology, geology, geography, hydrology, geospatial information, remote sensing, predictive modeling, socioeconomics and ecosystem services, information technology, and other arenas, the USGS is uniquely positioned to conduct scientific research that is objective, highly relevant, cutting edge, and addresses complex and difficult topics. In 2007, the USGS published a 10-year Science Strategy[2] that identified goals and priorities, representing all bureau capabilities and focused on challenges for the future. Beginning in 2010, the USGS aligned organizationally with the broad science themes identified in the Science Strategy, in order to better address the needs of partners and stakeholders. This was the genesis of the seven science mission areas. In 2013, each mission area developed more detailed Science Strategy Plans[3] (SSPs) that outlined specific actions and directions to strengthen the USGS's role as the premier science agency providing information needed to meet the challenges of the 21st century.

This bureau workforce plan does not detail or summarize all of the specifics within each SSP; however, some general themes arise among the SSPs and other USGS workforce plans, suggesting broad future trends for the USGS. For example, current activities and strengths that will continue to sustain and advance the USGS include monitoring, modeling, mapping, basic and applied research, decision-support tools, data management, assessment, and science support.

Future needs that span the USGS mission areas include enhanced modeling, forecasting, and visualization, development of decision-support tools, and application of interdisciplinary science.

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[2] U.S. Geological Survey, 2007, Facing tomorrow's challenges—U.S. Geological Survey science in the decade 2007-2017: U.S. Geological Survey Circular 1309 (http://pubs.usgs.gov/circ/2007/1309/).

[3] http://www.usgs.gov/start_with_science/

The trends toward big data, big science, landscape-level science, and predictive modeling dictate that research is increasingly being carried out by multidisciplinary teams of scientists and support staff, from within and outside the agency, who often perform their work at different locations. As the USGS moves forward, its ability to address societal issues through data integration and scientific synthesis across the breadth of scales and science disciplines will be critical. Supporting these efforts will require a workforce skilled in business acumen, human capital management, and enterprise infrastructure.

Another common theme related to strategic directions is the changing nature of the research and operational environment. USGS employees will need to adapt to changes and advances in technology, understand and apply new methodologies, and increase scientific and operational collaboration. Information technology, including informatics and data management/integration, will continue to evolve in both the science and science support arenas, providing important new capabilities but also necessitating new skills and training. Overall, there will be increased need for adaptability among scientists and other employees; the ability for employees to receive and assimilate new and diverse information. In addition, the successful communication of USGS science will require knowledge and understanding of current social media and other communication methods.

USGS planning at all levels plays a major role in setting strategic directions, which are influenced by Administration and Department priorities, congressional mandates, and regional and local partner needs.

4. External and Internal Drivers

A variety of external and internal factors shape the future of the USGS, and therefore drive workforce planning and mold the coming workforce of the bureau. Some drivers are both internal and external depending on where key decisions are made. The following list is not exhaustive, but rather highlights conditions or events which could alter the state of the current workforce or the requirements for the future workforce. Bureau managers and supervisors must understand and consider these drivers in order to execute effective workforce planning and provide a dynamic workforce that will meet bureau needs.

a. External Drivers:

External drivers are those which are, to a great extent, beyond the direct control of the bureau. Foremost among these is funding. The level of Congressional appropriations and reimbursable funding by partners directly impacts the USGS mission and its workforce. Funding affects science programs and projects, administrative and science support functions, facilities and infrastructure, training and recruitment, and many other aspects that directly influence workforce planning. Although funding levels are sometimes relatively stable for some science centers, they can be highly variable at others; rapid decreases or shifts are usually extremely challenging to manage. Even flat budgets typically lead to decreased capacity, as salary and other operational costs generally increase each year.

The availability of a qualified labor pool is influenced by the demand for the same human resources from both public and private organizations outside the USGS. Many other organizations

compete for highly skilled and highly qualified labor from a limited pool of candidates, especially within the scientific and technical arenas.

External drivers also come from the Administration or from DOI, in the form of new or revised mandates and strategies, Departmental, Office of Management and Budget (OMB), or Congressional directives, or Office of Personnel Management (OPM) human resources rules and regulations. Other administrative policies, such as Appropriations Laws and changes in information technology (IT) implementation, directly affect science support requirements, workload, and in some cases staffing possibilities. New laws or changing National and State legislative mandates can also affect the USGS mission and therefore its workforce, as can natural and manmade disasters on both a national and global scale.

Other external drivers include areas such as the changing nature of science and shifting societal priorities, which can be driven by the introduction of new technologies or by emerging issues. Changes in environmental regulations can strongly affect the science priorities of the bureau when they deal with issues where USGS science comes into play. Recommendations from expert national advisory bodies such as the National Academy of Sciences can strongly influence the direction of USGS programs. Finally, advances or shifts in technological tools used by scientists, technicians, and support staff will affect the future workforce.

b. Internal Drivers:

Internal drivers are those that are primarily within the control of the bureau as a whole or its constituent parts. Examples include the allocation of financial resources to incorporate technological advancements, including investments in new laboratory or field equipment that may affect skill sets needed by employees. The need for education and skills development for the current workforce is another internal driver. Decisions on the development and execution of bureau science strategies are internal, as are those related to the pursuit of short-term or emerging priorities, and the appropriate level of reliance on reimbursable funding.

Internal decisions also include opportunities to partner with other Federal agencies, universities, and other organizations in areas where science thrusts are complementary. If the bureau decides that it is preferable to obtain science capabilities through grants, cooperative agreements, programs and/or contracts, then components of program activities can be supported with outside staff rather than adding these personnel to the USGS workforce.

Some self-imposed constraints might act as internal drivers. For example, if there are processes or authorities (such as OPM hiring tools) that are available to USGS, but are underutilized or not used at all, it can affect workforce composition, recruitment, and skill sets. Legacy processes, organizational culture, and policies can have much the same effect and inhibit creative ways of meeting workforce needs. This situation underscores the importance of being fully aware of options, creating new ones where possible, and being open to different approaches that might be effective.

5. Current Workforce

At the end of 2014, the USGS workforce was composed of 8,413 federal employees, plus contractors, Scientists Emeriti, interns (primarily students), and volunteers. The employees are geographically dispersed with 13 percent located at the national headquarters building in Reston, Virginia; 10 percent at the Denver Federal Center in Lakewood, Colorado; 5 percent in Menlo Park, California; and the remaining 72 percent distributed among more than 340 duty stations located throughout the United States and around the world. The employees not organizationally assigned to headquarters are organized into seven regions, each with 2 to 20 science centers from which science and technical activities are conducted. There are also a variety of national-level science centers and science support offices that are distributed in the field, many reporting to headquarters.

The number of USGS employees has declined over the last 12 years, from a high of 10,438 in 2002 to 8,413 at the end of 2014. Despite this decline in numbers, the percentages of science employees and science support employees have remained relatively stable over the past 10 years. Science employees have ranged from 70-74 percent of the total workforce, whereas science support employees have ranged from 26-30 percent. The proportion of science employees technically classified as engaging in research has remained fairly steady, ranging between 14-15 percent of the total workforce.[4]

The percentage of employees in roles categorized as professional[5] in the USGS is high compared to most other DOI bureaus. This is reflective of the science mission and the need for specialized experience in multiple science disciplines. Within the DOI, the USGS has the 3rd largest percentage of professional staff (51 percent), behind only the Office of the Solicitor (81 percent) and the Bureau of Ocean Energy Management (55 percent). The USGS also has the 3rd largest technical workforce percentage (24 percent), behind the Bureau of Land Management (34 percent) and Bureau of Indian Affairs (29 percent).

The professional nature of the USGS workforce results in relatively higher salary and benefit costs compared to other agencies. Compounding this, the cost of employee salaries and benefits is increasing, which will place greater strain on the bureau's future fixed costs.

a. Workforce Flexibility

Workforce flexibility is the relative mix of federal employees in permanent appointments and Other Than Permanent (OTP) appointments, plus non-federal employees such as contractors, Scientists Emeriti, non-paid interns, and volunteers[6]. Together, employees and non-federal employees are referred to as the multisector workforce. For the purpose of this plan, one aspect of creating a more flexible workforce is having a higher percentage of OTP appointments and non-

[4] Science employees and science support employees are labels used to categorize two broad segments of the USGS workforce. "Science" includes occupational series under the following: Social Science, Psychology, and Welfare (01xx), Natural Resources/Biological Sciences (04xx), Veterinary Medical Science (07xx), Engineering and Architecture (08xx), and Physical Sciences (13xx). The Science Support group is made up of all the remaining occupational series, including the Blue Collar series.

[5] Based on Functional Classification of Science and Engineering Professionals.

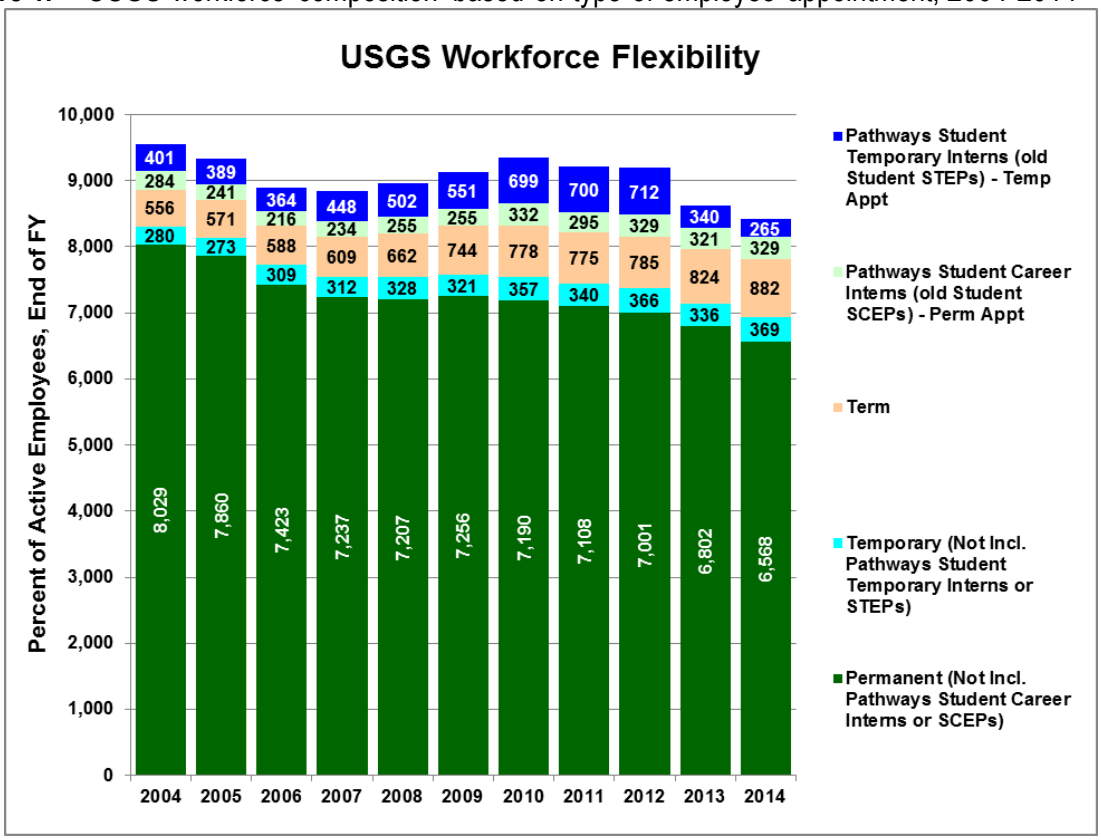
[6] The Federal Payroll and Personnel System (FPPS) can only track Federal employees. Data on contractors, Scientists Emeriti, and volunteers must come from other sources.

federal employees, allowing a multisector workforce to more quickly expand or contract because of changes in program, new science directions, reduced budgets, and changes in reimbursable funding.

The issue of workforce flexibility is of increasing importance within the USGS due to funding uncertainties, potential sequestration-related restrictions, and a generally restrained economic climate in the U.S. that negatively impact the bureau's budget. OTP appointments are one option for reducing the long-term salary burden associated with permanent appointments, while still providing staffing for a variety of science and science support activities. Some centers and offices already make extensive use of OTP appointments but the level of use is not uniform across the bureau.

USGS workforce flexibility (fig. 1) has fluctuated over the last decade. The lowest rate of 16 percent OTP occurred in 2004; more recent rates from 2010 through 2014 have ranged between 21 and 23 percent.

Figure 1. USGS workforce composition–based on type of employee appointment, 2004-2014



Student employees comprise a significant proportion of the USGS workforce: for example, 8 percent in 2013. Pathways[7] Temporary Interns (formerly known as STEPs, or Student Temporary Employment Program participants) accounted for 3 percent of the USGS population in

[7] Pathways Internship Program Information is available at *http://www.usgs.gov/humancapital/sw/studentinterns.html.*

2014; this percentage has decreased from a high of 8 percent in 2012. Pathways Career Interns[8] (formerly SCEPs or Student Career Experience Program participants) accounted for 4 percent of the USGS population in 2013, up from a 10-year low of 2 percent in 2006.

b. Diversity at the USGS

The USGS recognizes the value and business necessity of building and maintaining a highly skilled, diverse workforce that reflects the diversity of our partners and stakeholders and the Nation. The wide array of perspectives that results from robust diversity (race, ethnicity, gender, age, and physical and mental ability) promotes innovation and mission success.

The USGS completes a comprehensive annual review and analysis of employee diversity in terms of race, ethnicity, gender, and disability status (MD-715). The major bureau-wide assessments from the fiscal year 2013 report[9] generally show similar patterns across all centers, regions, mission areas, and offices throughout the organization.

The bureau lacks race/ethnic diversity in both the permanent and temporary workforce for professional Natural Resources/Biological (04XX) and Physical (13XX) Science occupational series. However, it is important to note that over the past two fiscal years the bureau has had some success in attracting and hiring minority students using the Pathways Program (and former youth hiring authorities) in Biology and Physical Science Student Trainee positions.

Within Science Technician positions, the participation rate for female employees remains low compared to the U.S. workforce benchmark[10]. For example, the rate of USGS females in permanent Hydrologic Technician positions at the end of 2014 was 15 percent, much lower than the benchmark of 48 percent.

Another recurring theme in recent diversity assessments is the low participation rate and continued decline of employees with Targeted Disabilities (mental and physical). In 2014, the bureau rate for this group was only 0.9 percent, well below the federal goal of 2.0 percent.

There is substantial grade level disparity between white males and other race, ethnic, and gender groups within the USGS. The percentage of minority and female groups decreases as grade level increases, while the opposite is true for white males. Minority and female employees, particularly in the permanent workforce, tend to be concentrated at lower grade levels. This pattern is likely tied to the low participation rates of these groups in the professional science occupational series that comprise a majority of the positions at the Bureau and tend to have higher full performance levels.

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[8] Pathway Career Interns are technically on permanent appointments but are included in OTP employment counts and percentages because they are fundamentally different from the core permanent USGS workforce.

[9] The full FY 2013 Federal Agency Annual EEO Program Status Report, Management Directive (MD) 715, and supporting data and information can be found on the Office of Diversity and Equal Opportunity (DEO) intranet site. Previous fiscal year MD-715 reports can also be found on the DEO intranet site. Data similar to what is used in the analysis for the annual MD-715 is published quarterly by DEO and can be found at http://internal.usgs.gov/ops/eeo/diversitystats.html. Unlike much of the data for the MD-715 report, the quarterly data are organized by Regions and Headquarters and would be useful for workforce planning at this level.

[10] American Community Survey, 2006–2010 5–Year Estimates

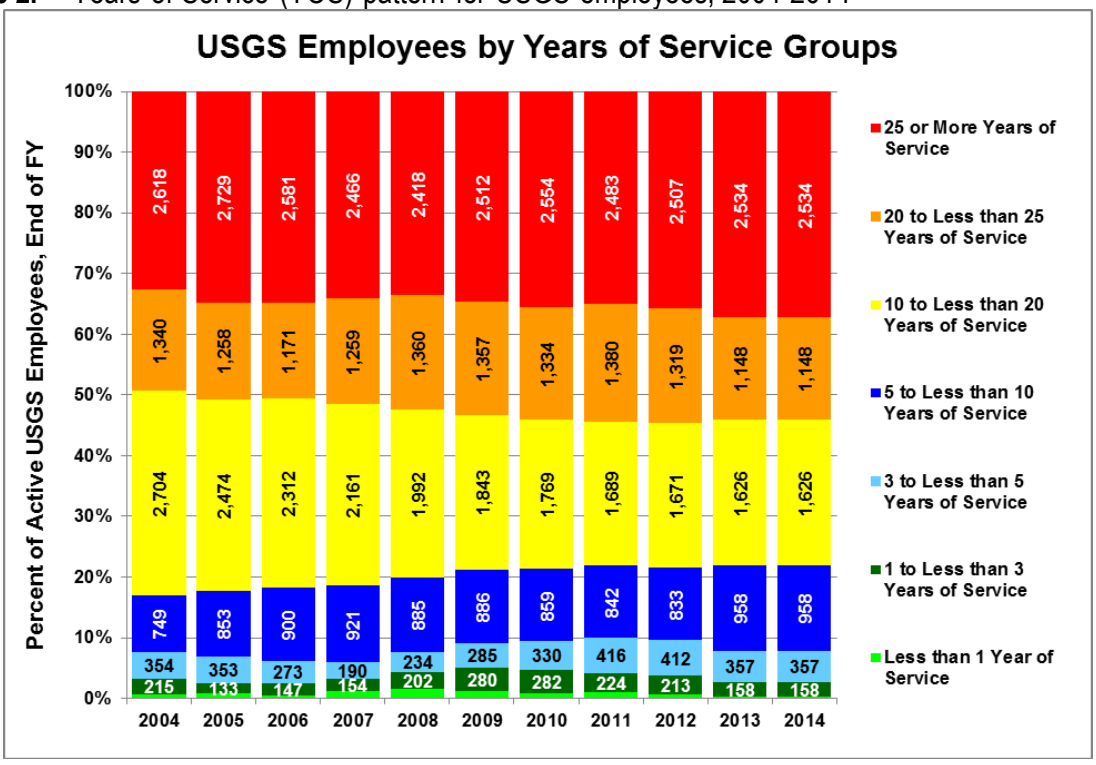
c. Years of Service

Years of Service (YOS) is a gauge of employee longevity in the organization and potentially of the depth of experience, institutional knowledge, and skill level employees possess. YOS patterns that are concentrated at the high end can indicate the potential for upcoming loss of significant skill, experience, and organizational knowledge, and the need for succession planning. Distributions of YOS concentrated at the low end can reflect high turnover levels or rapid personnel growth, and may indicate a workforce with relatively limited knowledge of the organization, policies, and processes, and the need for additional training.

Overall, the USGS workforce has a wide YOS distribution (fig. 2), with a substantial percentage at the high end. In 2014, over half (54 percent) of permanent non-student employees had 20 or more YOS; over 37 percent had 25 or more YOS, which is the highest percentage over the last decade.

Rates of 20 or more YOS are high and have been increasing for Science Professionals (54 percent in 2014, up from 49 percent in 2003). For Science Technicians, 43 percent had 20 or more YOS in 2014, nearly the same as the 44 percent in 2003. The number of separations for employees with 25 or more YOS increased from a low of 177 in 2009 to a high of 372 in 2014.

Figure 2. Years of Service (YOS) pattern for USGS employees, 2004-2014



d. Retirement Eligibility and Projections

Over the last 10 years, the number of voluntary retirements of employees has generally ranged from 200 to 300 per year, but reached a high of 327 in 2014. Given the YOS distributions described in the previous section, it is not surprising that 27 percent of all permanent employees

are eligible to retire by the end of 2015 (table 1); this will likely rise to 35 percent by the end of 2017.

Retirement eligibility figures reflect the maximum number of possible retirements, but it is unlikely that all eligible employees will actually retire in a given year. Retirement projections[11] provide a more realistic estimate. Current projections (table 1) estimate 12 percent of all permanent employees will retire by the end of 2015. That projection rises to 14 percent in 2016 and 17 percent in 2017.

Table 1. Retirement Projections and Eligibility, EOFY 2014-15

Permanent Employees	Number EOFY 2014[1]	Number Eligible to Retire by EOFY 2015	Percent Eligible to Retire by EOFY 2015	Projected Number of Retirements by EOFY 2015	Projected Retirements by EOFY 2015
ALL USGS	6,568	1,740	26.5%	756	11.5%
Science Support Series	1,893	514	27.2%	248	13.1%
Science Series	4,675	1,226	26.2%	508	10.9%

[1]Based on Active Permanent, Non-Student Employees at EOFY 2014.

There is the near-term potential for a high level of retirements within the bureau's leadership levels, defined as SES, SL, ST[12], and GS-14 and GS-15 employees. From 2011 through 2013, 6 SES members retired or left for other positions, and an additional 8 separated in FY 2014. By the EOFY 2015, another 7 of the current 14 SES members will be eligible to retire, with 6 projected to do so. Of the 7 current SL employees, 57 percent (4) will be eligible to retire by the EOFY 2015, although none are projected to do so. Of the 40 ST employees, 93 percent (37) will be eligible to retire by EOFY 2015; 53 percent (21) are projected to do so. Of the approximately 1,250 active GS-14 and -15 employees, 47 percent (595) are eligible are projected to retire by the EOFY 2015; roughly 19 percent (233) are projected to do so.

6. Future Workforce

As the USGS moves into the future, it is paramount to maintain the bureau's scientific capability, reputation, integrity, and advancement, and to provide skilled and innovative science support. To do this, the USGS has to rely on its strongest current asset – its people; they are the key to scientific and operational excellence. The bureau's workforce will face challenges over the next several years like never before. The potential number of retirements, the fiscal outlook, the demand for quick response to global events, and the staggering pace that technology is driving science and operations are all influencing factors. Because these factors create a great deal of uncertainty, the workforce needs to be designed with flexibility to expand or contract in order to deal with changing and currently unknown circumstances.

Based on common themes in the recent center, region, mission area, and office workforce plans, it is apparent that there are a few key aspects of the future workforce that are needed to maintain our strengths and address the future needs.

[11] Based on a three-year average length of eligibility of actual USGS retirees.

[12] SES-Senior Executive Service; SL-Senior Level Position; ST-Scientific and Professional.

a. Core Skills and Capabilities

The scientific and science support work conducted by the USGS is extremely diverse and sometimes evolves rapidly in response to emerging needs and priorities. But a common theme among recent strategic science planning documents is the importance of understanding and retaining core capabilities. Maintaining global expertise in core areas is essential to carrying out our mission:

i. Sustaining our core strengths

The following areas represent our current strengths and are essential to achieving our mission today and into the future.

- Monitoring–To make observations, usually over a period of time, using repeatable methods and measuring devices (equipment) that produce consistent results.
- Assessment–Making a judgment about something based on sound data; an idea or opinion about something; the process of identifying, predicting, evaluating, and mitigating a situation.
- Modeling and Decision Support–To make a part or feature easier to understand; to represent objects, phenomena, and physical processes in a logical and objective way; to help visualize a process; can include predictive models based on a set of assumptions to help facilitate decision-making and manage a resource
- Mapping–Characterizing data and information in a geospatial context to enhance analysis and understanding.
- Research–Basic and applied research, with the focus on moving away from curiosity driven research to mission driven research, to support the future needs of our workforce, our partners and stakeholders, and the general public.
- Data Management–Includes the management and dissemination of the data collected. Data management is the development, execution, and supervision of plans, policies, programs, and practices that control, protect, deliver, and enhance the value of data and information assets. This includes the mining of data, discovering of data, viewing of data, and technical assistance in understanding data.
- Science Support–Includes the administrative, financial, information technology, human capital, publication, science quality, and communication functions that are the vital infrastructure allowing the scientist to conduct and share their science.

ii. Enhancing our Skills and Capabilities

Described below are additional skill sets and capabilities already found within the USGS workforce, but which, due to external and internal drivers, will be increasingly needed as the bureau moves into the future.

- Multidiscipline Synthesis – There is increasing demand to integrate scientific knowledge generated through studies, investigations, reports, and findings from across organizational elements, thereby generating scientific observations and conclusions only achievable through deliberate cross discipline/mission area efforts.

- Entrepreneurship – Focuses on expanding the knowledge about USGS capabilities and actively seeking opportunities to put our science in the spotlight. Entrepreneurship helps ensure that USGS science is brought to bear on important societal issues and advances our role as a leader in earth science.
- Ability to Adapt to New Technology – It is essential within the realms of our science, research, and support services to deliver timely, relevant, and useable information. Some examples include the design and mining of large databases; automated and real-time data collection; more advanced and specialized scientific data management; and embracing technologies to ensure development and testing of new instrumentation. Furthermore, a workforce that is comfortable working in virtual environments and using mobile and social media tools to collect and disseminate science will be essential. Similarly, managers and supervisors will likely see the evolution of new workplace tools that change how they interact with employees.
- Landscape-Level Science – Uses an array of tools to analyze, visualize, translate, and extrapolate science on a landscape scale. Skills and capabilities required include mapping, geospatial data integration, remote sensing, predictive modeling, scenario development, forecasting, simulation, and decision support to inform policy and decision-making, provide a basis for the analysis of cost benefit and trade-offs, and aid in the understanding of the long-term impacts of near-term decisions. As the pressures on land and natural resources increase and are exacerbated by the impacts of climate change, resource managers and policy makers will need science conducted at a landscape-scale to inform a wide range of decisions that affect the following in an increasingly interconnected landscape: public safety, the siting of energy development, water resource allocations, recreation, the conservation of species and habitat, or the identification of transmission line rights-of-way, to name a few.

b. The Need for Flexibility

In addition to sustaining our strengths and enhancing our skills and capabilities, the USGS needs a workforce that can respond quickly, in both quantity and expertise, to changes in science and management priorities resulting from internal and external drivers. An organization and workforce with this type of flexibility and nimbleness generally has the following characteristics:

- individuals with the ability to adapt to changing priorities and demonstrate key skill sets,
- a focus on training and continuing education for relevant skills and capabilities,
- a multisector workforce composition that includes a variety of appointment types and hiring authorities for employees, and that obtains some skill sets and services through the use of contractors, volunteers, and Scientists Emeriti, and
- established mechanisms and a culture promoting resource sharing as needs change.

i. Individual Adaptability

On an individual level, there is a need for employees to be able to adapt to changing priorities and demonstrate related skill sets, such as:

- being technically credible and proficient in one's field,

- possessing good problem-solving and analytical skills,
- proficient in information technology and computer skills,
- working collaboratively within and outside one's organization and possessing diplomacy, negotiation, relationship building skills,
- ability to communicate job-specific knowledge to both technical and non-technical audiences, and
- maintaining relevant and current skills.

There are also some skill sets that are unique and distinct to particular segments of the workforce, such as:

- innovative and entrepreneurial program building, and
- leadership of teams from diverse backgrounds and skill sets.

While many individuals in the current workforce exhibit these skill sets, additional training and mentoring opportunities can spread and enhance these attributes throughout the workforce. It is especially important to consider these skill sets when hiring new employees.

This workforce plan does not attempt to be prescriptive in identifying which skill sets align to specific positions. However, these key skill sets are being called out for their critical importance to success in future science and science support roles. Some skills will require a greater degree of competence depending on the type and level of position.

ii. Training

Training and continuing education are critical components to maintaining a flexible workforce. Unfortunately, as budgets get tight, training is often one of the first activities to suffer because it can be relatively easy to view training as optional and therefore reduce training funds. However, there are very real negative ramifications to this approach. Even in fiscally challenging times it is important to continue training, with a focus on those critical aspects that are needed to meet our mission's needs and partner and stakeholder expectations, and to enhance the future of our employees' careers.

Training within the USGS occurs in many ways. There is a diverse array of internal training and employee developments programs. These range from short on-line administrative and technical courses, to in-person training on science and modeling topics, safety, and leadership. External training is also widely available, including many web-based courses within the DOI Learn system. Professional society meetings and scientific workshops are important venues for continuing education and professional development. Formal Individual Development Plans (IDPs) are not widely used within USGS but can be very useful to spur dialog between employees and their supervisors about training interests and needs. Increased use of IDPs can promote a more strategic approach to professional development for an individual or group.

iii. Increased Resource Sharing

Resource sharing is the ability to deploy agency expertise, either physically or virtually, to address emergency situations, emerging priorities, or disparities between workforce demand and funding at

individual centers or offices, and even across the bureau. The USGS has a history of doing this effectively in response to emergency situations such as earthquakes, tsunamis, volcanic eruptions, wildfires, floods, hurricanes, the World Trade Center catastrophe, the Deepwater Horizon oil spill, and other hazard and emergency responses; however, it occurs less often in normal operations.

Research is increasingly being carried out by multidisciplinary teams of scientists and support staff from within and outside the bureau, who often perform work outside of their assigned organizations. However, there is potential for a much wider use of resource sharing to address emerging science needs, including sharing across agencies as well as within the USGS. In general, the bureau has made limited and ad hoc use of resource sharing to address disparities between workforce demands and funding at individual centers or offices. For example, water science centers sometimes share hydrologic technicians as workloads and funding fluctuate from year to year. Overall, though, there is potential for much wider use of resource sharing.

From a fiscal and human resources perspective, the primary human capital advantages of resource sharing are that it minimizes workforce supply and demand gaps and reduces the need to recruit new staff to address what may be short-term needs. The primary scientific advantage is that it allows the bureau to bring the right mix of expertise together to address an emergency situation or emerging science priority. Resource sharing will be facilitated by advances in technology, allowing employees to collaborate and communicate from multiple locations, so that expertise will not be as office/location centric in the future. There is also a need for better tools to facilitate collaborative team work, for both co-located and virtual teams. Resource sharing should not be limited to just people. The USGS should look to build the tools and capabilities to share laboratories, monitoring networks, and visualization tools and techniques across the bureau.

There are a number of barriers that must be addressed in order to implement increased resource sharing in the USGS. These include differences in business models and overhead rates; questions concerning supervision and performance evaluation when individuals work across centers; poor communication of resource availability and needs; the stigma that individuals with time to share are less skilled or knowledgeable; organizational turf battles and stovepipes; individuals perceiving that their jobs or sphere of influence are threatened; and a mismatch between resources needed (for example, a student bio tech for a summer field crew) and resources available (for example, a GS-13 ecologist). Implementing increased resource sharing in the USGS will require a concerted effort by management, human capital specialists, administrative professionals, and scientists to address the various organizational, cultural, administrative, and other barriers that currently limit a more efficient and effective use of our talented workforce.

iv. Multisector workforce

Multisector workforce refers to all individuals who perform work in support of the USGS mission, whether they are federal employees[13] or not. It considers the total workforce including various types of internal employee appointments as well as Scientists Emeriti, external contractors, volunteers, academia, and other sources of expertise. A multisector workforce provides an agency the ability to change the size and expertise of its workforce to meet current demands, priorities and funding.

[13] As explained in the current workforce section, federal employees are defined as individuals that are hired onto the rolls of the Federal government under various appointment types.

For a multisector workforce approach to succeed, supervisors and managers must understand and recognize the types of work each group (sector) can do, the different ways they are supervised, and the various hiring processes involved. The Office of Management and Budget memorandum on planning and managing a multisector workforce offers guidance on determining whether work should be performed by federal employees or by either federal employees or private sector contractors.[14] The USGS also provides information and guidance on internal processes and considerations for using the different categories of the workforce.

Historically, the USGS has relied heavily on permanent appointments to fill positions; currently almost 80 percent of our Federal workforce is permanent. The strategic use of multisector workforce options will increase the flexibility of the USGS workforce and provide alternative methods to get work done and better meet changing staffing needs.

Although OTP employee appointments and other multisector workforce options provide flexibility, there are also management challenges that must be considered when using these non-permanent alternatives. For example, individuals in these positions may feel disposable or that the work they are doing is not as important. Such challenges can be mitigated through effective supervision and leadership.

Also, OTP employee appointments do not have the stability of permanent positions so those individuals are often looking for permanent jobs. In order to best utilize OTP employee appointments, it is important to find ways to incentivize employees in these positions so OTP appointments are viewed as desirable job options, doing valuable work that also benefits the employee's future employability. The USGS Mendenhall Program is an excellent example of a highly incentivized OTP employee program for new scientists.

While it is clear that a multisector workforce has many advantages, the size of the workforce and the proper mix of appointment types can differ among centers and offices, and sometimes needs to change quickly. Therefore, this workforce plan does not prescribe a goal or a specific desired OTP employee percentage for the bureau. Such decisions are most effectively made within centers, regions, mission areas, and offices.

c. Reflecting the Diversity of our Customers and Nation

Recent and future retirement and hiring patterns will create a future USGS workforce with members that continue to span several generations, from Baby Boomers to Millennials. As the demographic composition (race, ethnicity, and so on) of our Nation evolves, it will be a business necessity to strive for a more diverse workforce within the USGS. As the workforce becomes more heterogeneous, supervisors and project managers will need additional skills and training to be able to lead and integrate this diverse and flexible workforce. The USGS must ensure that leadership has the technical and managerial knowledge and skills needed to manage a diverse and virtual workforce and to accomplish USGS strategic goals and priorities.

[14] http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_fy2009/m-09-26.pdf

7. Workforce Gaps

Workforce gaps are the differences in characteristics between the current workforce and the anticipated or desired future workforce. The goal of identifying and addressing gaps is to proactively deal with key issues to ensure USGS has the workforce needed to meet it's goals and priorities referred to in the Strategic Direction section of this workforce plan.

Among the wide array of potential workforce gaps, some are best evaluated and managed at the local scale whereas others can be effectively considered at broader levels. This plan focuses on workforce gaps appropriate for consideration and action at the bureau level. They were identified from common themes in center, region, mission area, and office workforce plans. The gaps described in this section link closely with or are related to many of the themes addressed in the Future Workforce section; gaps in skill sets, flexibility, diversity, and the future succession planning.

a. Skill Set

Given the nature and complexity of the science and science support activities within the USGS, specific current and future skill sets are almost unimaginably numerous and varied. Therefore, it is impractical to define specific skill set gaps (for example, at the occupational series level) within this bureau workforce plan. However, as described in the Future Workforce section, several skill set themes recur throughout the recent USGS workforce plans and science strategy reports, including multidisciplinary synthesis, entrepreneurship, the ability to adapt to new technology, and landscape-level science. These skill sets are currently found in the bureau; however, the extent to which they will be needed in the future exceeds current workforce capacity, as elaborated below.

Partner and mission demands for traditional USGS skills and research themes remain high. At the same time, there are increasing calls for new, multidisciplinary, and synthetic approaches for solving complex issues. As a result, the USGS needs additional future capability in multidiscipline synthesis, bringing together scientific knowledge generated through studies, investigations, reports, and findings from across organizational elements. This allows the USGS to generate scientific findings that are only possible through deliberate cross-discipline and across mission area efforts.

For example, there is increasing national focus on the issue of ecological flows[15], which requires understanding of how hydrological, geological, chemical, and ecological processes interact to influence the form and dynamics of ecosystems and landscapes, and how ecosystems and landscapes can in turn influence these processes across multiple spatial and temporal scales. Similarly, USGS responses to natural and human-created disasters (such as Deepwater Horizon, Hurricane Sandy, and invasive species) necessitate strong cross-discipline collaboration. There is also a growing expectation by partners and stakeholders for science focused on landscape-level issues.

As a bureau, the USGS has an incredible breadth of science and technical expertise that allows it to address, perhaps uniquely, multiple aspects of these and other important and complex issues. But

[15] River Science at the U.S. Geological Survey. National Research Council, 2007.

while USGS has made progress in multidiscipline synthesis, this capability is still relatively underdeveloped compared to the perceived future demand for integrated science.

Another theme in recent workforce plans is the increasing need for entrepreneurship – that is, the ability to expand partner and public awareness about our capabilities and actively highlight USGS science to audiences outside of the bureau. Entrepreneurship helps ensure that our science is brought to bear on important societal issues, and potentially increases the USGS research and applied science portfolio by increasing reimbursable funding through partners. This strengthens USGS financial solvency and furthers our standing as a leader in earth science. Although this is important at all levels of the organization, having strong institutional knowledge in the field where many partner interactions are cultivated will be an integral part of the USGS's future.

Most regional and mission area workforce plans also forecast a growing need for the future workforce to adapt and integrate new technology into a variety of focal areas, due to the ever increasing role technology is playing in science, research, and support services. Having a future workforce that can adapt to and develop new technologies will be essential for continuing to deliver timely, relevant, and useable information. Some examples include the design and mining of large databases; automated and real-time data collection; more advanced and specialized scientific data management; and embracing technologies to ensure development and testing of new instrumentation. Furthermore, a workforce that is comfortable working in virtual environments, managing and supervising mobile and remote employees, and using mobile and social media tools to collect and disseminate science will be essential.

Modeling is broadly defined as the process of generating a model as a conceptual representation of some phenomenon. Although the USGS already conducts modeling across the organization, anticipated future demand is higher, particularly for modeling that crosses multiple scientific disciplines and needs to be done in the context of landscape-level science. As the scientific questions and resource issues become more complex, partners and stakeholders are increasingly looking for models related to all aspects of USGS science. The ability to quickly model different scenarios and to provide forecasting capabilities is important to inform management decisions and mitigate circumstances. Landscape-level science can also support the rapid deployment of resources during hazards, determine resource demands, and understand ecosystem services. The need for modeling is being driven by the desire for reliable science that can be quickly applied to resource decisions.

b. Flexibility

The flexibility of the bureau workforce can be viewed as having three components. The first is individual adaptability, as it refers to the bureau's ability to adjust to changing priorities or skill set needs. Although there will always be a role in the USGS for specialists in science and science support arenas, there is an increasing need for employees who are willing to go beyond their original or traditional skill set to acquire new and emerging skills. Continuous career learning and education is a necessary component of a successful scientific organization. This leads to a workforce of individuals with broader skill sets and greater exposure to different parts of the organization.

The second component refers to the bureau's ability to share resources across our enterprise. There is a huge depth and breadth of scientific, technical, and operational expertise within the USGS, and

some of it could be shared among different parts of the organizations, either to meet short-term needs or as part of a long-term strategy. Although this currently happens in an informal manner, the USGS lacks a formal infrastructure to readily know the skill sets that are available, or to support resource sharing at a significant scale that would benefit future operations.

The last component refers to the types of employee appointments (such as permanent, term, and temporary) and multisector workforce options (like contractors and volunteers). Currently, the USGS is largely a permanent employee workforce, with approximately 80 percent of our employees in permanent positions, though this varies widely within the organization. Given the very dynamic and potentially challenging environment on the horizon, there is a need to fully embrace the use of multisector options throughout the bureau. This includes term and temporary appointments, use of volunteers and contractors, and partnering with other organizations. This approach can entail some drawbacks, such as long-term employment instability for the employee and lack of continuity in some cases. However, it offers benefits such as extra capacity for short-term needs, opportunities to observe and evaluate potential future employees, and access to cutting edge knowledge and skills. If done strategically and appropriately, the overall benefits of a more flexible workforce outweigh the difficulties.

c. Diversity

Overall, the current USGS workforce does not reflect the diversity of the broader American society when comparing the type of work it does to similar occupational categories identified in the Census Bureaus' American Community Survey, 2006-2010 5-year estimates. For example, the bureau does not attract and hire diverse candidates for its major occupations in the Professional Natural Resources/Biological and Physical Sciences, or in the supporting Technician positions, at a rate commensurate with their participation rate in the U.S. workforce[16]. However, this gap is not unique to the USGS and extends beyond its recruiting and hiring practices. The federal earth science workforce and the academic programs that produce graduates do not yet mirror the ethnic, racial, and gender diversity of the U.S. population[17]. For example, underrepresented minorities (African American, American Indian, and Hispanic or Latino of any race) comprised 30 percent of the U.S. population in the 2010 Census but received only 7 percent of earth science bachelor's degrees awarded in 2009. To help address that challenge, the USGS engages minority and diverse students in science and outreach activities at the middle, high school, and college levels; however, recruitment of those groups remains low. In addition, the USGS continues to have a low participation rate for employees with targeted disabilities (mental and physical) compared to the targeted benchmark for Federal organizations; the cause of this disparity is not clear.

d. Succession Planning

There are many issues associated with future workforce recruitment and succession planning that warrant including this topic as a bureau-wide gap. For the purposes of this discussion, succession planning refers to finding or developing a group of qualified candidates who are ready for career opportunities and enhanced roles based on their educational attainment, work experience, or training.

[16] American Community Survey, 2006-2010 5-Year Estimate

[17] Preparing the Next Generation of Earth Scientists. National Research Council, 2013

From an external perspective, the potential earth and natural science workforce available to the USGS is shrinking[18]. For example, the Bureau of Labor Statistics projects that job growth (2010–2020) will increase for geoscientists and hydrologists, but the number of graduates in earth science fields has not fully recovered from a sharp decline in the early 1980s. There will also be increased competition from state and local governments and the private sector, where job growth rates are expected to exceed the federal government. The highly competitive job market, particularly when coupled with the smaller number of college graduates pursuing earth science graduate degrees, makes the external workforce pipeline a bureau-wide gap. Although many of these factors causing the gap are beyond the control of the USGS, there are actions that can be taken to promote the USGS as a world-class research organization and attract talent to our organization.

From the internal succession planning perspective, the USGS is facing an increase in the number of retirement eligible employees, in a wide array of positions and roles. These employees represent a reservoir of leadership and management skills, scientific expertise, and institutional knowledge that has a direct bearing on the future success of the USGS. As they leave their positions, it will be important to have a cadre of employees with the knowledge, skills, and willingness to step into these key roles. Given the large number of potential retirements on the near-term horizon, particularly among the leadership levels (defined as SES, SL, ST, GS-14 & -15) of our workforce, the bureau needs to ensure that programs and opportunities are in place to deal with this challenge.

The bureau currently offers leadership and supervisory training opportunities through courses such as the USGS Supervisory Challenge Course, Leadership Intensive, Leadership 101, and Leadership 201. These programs offer effective leadership experiences and assist employees to determine whether they choose to exercise leadership in the technical or administrative arenas, or whether they choose to further leadership opportunities in a management position.

8. Action Planning

As noted earlier, fine-scale workforce planning in the USGS generally occurs at the local level and is done in response to near-term needs and longer-term strategies as determined by local management, taking into account guidance at the regional and headquarters levels, as well as local partner needs. Thus, the vast majority of recruitment, hiring, training, and retention activities occur at centers and offices, with generally only broad oversight at the regional and headquarters level. This is an operational reality of the USGS business model, where numerous factors interact to determine local workforce needs.

At the same time, there are a number of actions that can done at the bureau level to make this locally-based system more strategic and effective, and to address broader challenges that may not be evident to, or solvable by, any one center or office. In particular, the bureau can provide broad workforce goals and strategies and make sure that managers and supervisors understand what is needed to accomplish and implement them. Local managers are not always aware of the range of workforce management tools, or how to effectively implement a particular approach. The bureau can investigate these options, and provide clear direction for implementation and work to remove barriers to effective action. Furthermore, bureau leaders and offices can pursue new authorities and tools and convey these to front-line managers and supervisors.

[18] Preparing the Next Generation of Earth Scientists. National Research Council, 2013

The actions that follow are not simply a compilation from the center, region, mission area, and office workforce plans; many of those actions are best done at different organizational levels. Nor will these actions immediately solve the many workforce challenges facing the USGS. However, the workforce action plan targets key areas where bureau leadership and activities can help make meaningful progress over the next 3 to 5 years. Actions are presented to address significant gaps and challenges in workforce skills, flexibility, diversity, succession planning, recruitment, and retention. There are also actions targeted at effective plan implementation and follow through.

Some actions are exploratory to determine the feasibility of concepts or ideas, or to investigate how other organizations are addressing challenges. Such actions set the stage for possible next steps. Others involve synthesizing and reporting key information to improve our understanding and increase awareness of an issue. Several actions focus on evaluating and making workforce management tools more readily available to hiring officials, supervisors, and managers.

9. Implementation, Monitoring, and Evaluation

Implementing this bureau workforce plan will require staging the various actions over time, incorporating them into ongoing management and human resource processes that occur throughout the year, and ensuring follow up and accountability for specific activities whenever appropriate. The Director's Office will have overall responsibility for the plan and will identify executives to oversee and implement Action Plan items. In doing so, the executive lead(s) will evaluate accomplishments and determine if actions need to be added, revised, or removed. In addition, this workforce plan will be evaluated annually to ensure that its content is still relevant to current and foreseeable science, fiscal, and operational conditions. Current and projected workforce characteristics (including demography, diversity, retirements, and others) will be reported to the ELT each year. The plan will be updated in 2020, or earlier if deemed necessary by the Director.

The composition, skills, and success of our future workforce are crucially important; these will determine whether the USGS can continue to be the Nation's premiere earth science agency in an era of more complex societal resource issues, faster paced technological change, and greater fiscal uncertainty. Employees throughout the USGS have a role and stake in shaping our future workforce and setting the stage for our success despite the many challenges ahead.

Bureau leadership must help clearly frame the workforce challenges and opportunities, and provide knowledge, tools, and resources to deal with these. Regional Directors and Associate Directors can ensure that their centers and mission area offices actively apply effective workforce planning concepts and actions, and encourage creative workforce solutions across centers, regions, mission areas, and offices. Hiring managers and supervisors should consider key workforce drivers at bureau and local levels, and be strategic in how they recruit new staff and train and retain skilled employees. All employees can become informed on the concepts and philosophies described in this bureau plan and be open to new approaches to our workforce issues. Success will ultimately require joint ownership and follow up on the workforce plan principles and actions.

10. Existing Workforce Strategies and 2015-2020 Action Plans

It is important to keep in mind that in addition to the action plans that follow, there are many workforce strategies already successfully integrated into the fabric of the bureau. These strategies include practices that foster work/life balance, encourage frequent and effective communications, and use employee survey feedback to facilitate improvements in our workplace.

The USGS has long recognized that motivating and engaging employees is essential. In FY 2002, the USGS developed a program to build a Rewarding Environment as an essential part of a strategy for ensuring that the bureau attracts, recruits, and retains a highly-qualified and motivated workforce that is aligned with the science mission, and values and recognizes employees' contributions. This Rewarding Environment concept encompasses everything in the work environment that employees value and find meaningful and rewarding, which are major drivers of employee job satisfaction, retention, engagement, and performance.

The USGS uses various employee-friendly policies and programs, such as telework and alternative work schedules. Employees indicate a high level of satisfaction with their supervisors' support of these programs. In fact, the vast majority (83 percent for 2014) of respondents to the Federal Employee Viewpoint Survey responded, "my supervisor supports my need to balance work and other life issues."

According to human resources literature, actions of direct supervisors have the greatest potential impact on employee engagement and therefore have the greatest potential for creating and leveraging sustainable employee engagement and commitment. For example, clarifying the link between an individual employee's work and organizational goals can substantially improve employee discretionary effort (up to 33 percent) and employee intent to stay (up to 36 percent).[19]

Overall, a culture characterized by frequent and effective communication between peers and the steady flow of information, up, down, and across the organization contributes to maintaining employee engagement and productivity. Communication forums such as Town Halls, the IdeaLab, and the Leaders Blog are bureau-level methods for fostering internal communication and innovation. Practices carried out at the local level, such as walk-around management, informal get-togethers, and all employee meetings also contribute to effective communication. These practices that serve to keep employees motivated and engaged should be sustained and fostered to the greatest degree possible throughout the bureau to support employee job satisfaction, retention, and productivity.

There are a host of resources available to keep supervisors informed about topics that are relevant to recruiting, hiring, developing, and retaining employees. These resources are found at the Office of Human Capital website[20] and at the Supervisory Information page[21].

There are also resources related to supervisory and management tools that are available in the event of challenging circumstances or organizational change. One is the Voluntary Early

[19] Corporate Leadership Council, Managing for High Performance andRetention: An HR Toolkit for Supporting theLine Manager, Washington: Corporate Executive Board. © 2005. Catalog Number: CLC14MSCMX. Page 17

[20] http://www.usgs.gov/humancapital/

[21] http://www.usgs.gov/humancapital/hr/supervisorinformation.html

Retirement Authority (VERA) authority. The VERA is a workforce reshaping tool that expands the pool of employees able to retire by opening up their retirement option earlier than their regular retirement eligibility dates. Another tool is the Voluntary Incentive Separation Payment (VSIP), which is a buy-out authority in which employees in identified positions for restructuring are offered a pre-tax payment of $25,000 for accepting a VSIP offer. Both VERA and VSIP require approval from the Office of Personnel Management. Furloughs, directed reassignments, office closures, and Reductions-In-Force (RIF) are other management actions that may be used to address fiscal, program, or personnel challenges. Although the use of these latter tools are generally considered as measures-of-last-resort, and often signal unfavorable circumstances, it is important to be aware of these options and to consult with the Office of Human Capital about using them appropriately.

The next section presents action plans that the bureau will initiate and implement over the next two years. The various actions address significant USGS human capital challenges, specifically in the areas of key skill sets, flexibility, diversity, and succession planning. The plans identify the appropriate strategies that will be used, expected outcomes, measures of success, and persons responsible for accomplishing the objectives.

The action plan section begins with a summary table that lists each goal and brief descriptions of associated actions. This is followed by detailed action tables that provide specifics on the challenges, strategy, expected outcomes, measures of success, action items, responsible person or office, and anticipated completion date.

Abbreviations used in the Action Plans:

DEO – Office of Diversity and Equal Opportunity
EI – Office of Enterprise Information
FEVS – Federal Employee Viewpoint Survey
HR – Office of Human Resources
OAG – Office of Acquisitions and Grants
OED – Office of Organizational and Employee Development
OSQI – Office of Science Quality and Integrity
OTP – Other than Permanent

Goal and Action Item Summary

Goal 1: Skill Set Gap
Provide guidance to managers on ways to screen for identified key skill sets and develop, evaluate, and retain current employees with these key skills.
Evaluate current employee development programs and propose changes as needed for key skills sets.
Require Individual Development Plans (IDPs) for all permanent and term employees.
Identify programs and best practices used at other agencies to increase recruitment and retention of key future skill sets.
Goal 2a: Flexibility – Multisector Workforce
Provide report on Federal appointment types and hiring authorities at the bureau, mission area, region, and center levels.
Provide fact sheets that managers can use to answer key questions about each appointment type.
Develop guidance on the appropriate use of federal and non-federal employment.
Develop a report with demographics (numbers and expertise) containing information on onsite contractors.
Determine USGS hiring authority gaps. Investigate full range of Federal hiring; develop strategy to pursue new hiring authorities.
Goal 2b: Flexibility – Resource Sharing
Catalog best practices for the supervision and performance evaluation of shared staff.
Develop tools (such as USGS want ads, SharePoint, etc.) to better enable sharing of employee skills. Test and modify the tools based on feedback.
Goal 3: Diversity
Develop a list of current and potential recruiting sources for generating a highly-qualified diverse applicant pool.
Provide training for hiring managers and supervisors that highlight best practices and effective ways to target diversity.
Track the race and ethnicity of Pathways program participants to determine if targeted recruiting is working.
Develop a bureau outreach strategy and plan to promote earth sciences at middle and high schools with diverse student populations.
Identify a bureau Selective Placement Program Coordinator and Disability Program Coordinator; analyze factors affecting rate of targeted disabilities.
Conduct a formal evaluation of USGS youth programs to gauge effectiveness at increasing diversity.
Goal 4: Succession Planning
Evaluate the potential to implement a USGS leadership mentoring program.
Conduct a formal succession planning process for the leadership ranks (GS-14 and above); develop methodology that could be applied more widely.
Develop a USGS succession planning desk guide; conduct pilot planning efforts at multiple levels in bureau.
Goal 5: Plan Implementation and Follow Up
Appoint executive-level lead(s) for plan implementation, monitoring, and evaluation.
Require that all centers and offices have updated (2012 or later) workforce plans consistent with the bureau plan.

Detailed Action Tables

Goal 1: Skill Set Gap	
Challenges	USGS needs a workforce that can respond quickly, in both quantity and expertise, to changes in science and management priorities resulting from internal and external drivers. This requires individual flexibility, multidisciplinary research and collaboration, extensive entrepreneurial skills, and technology and technical skills. Advances in technology should allow employees to collaborate and communicate from different places, even remote locations, so that expertise will not be as office/location dependent in the future. There is also a need for better tools to facilitate collaborative team work, for both co-located and virtual teams.
Strategy	Work with HR to develop processes and tools to recruit, evaluate, and retain candidates with key skill sets. Ensure USGS employee development programs maintain or increase these skills in existing employees by evaluating current development programs. Encourage opportunities to develop these skills in new employees.
Expected Outcome	Development and use of USGS Human Resources tools (such as interview questions, performance plans, individual development plans) that will assist in the hiring and retention of the future workforce. Incorporation of these key skill sets in USGS employee development programs.
Measure of Success	Release of guidance documents by the Office of Human Capital on ways to better consider key skills and characteristics in job interviews and through the performance process. Workforce will demonstrate an increased capacity for the key skills. Increased use of IDPs.

Action Items	Person(s) Responsible	Anticipated Completion Date
Identify programs and best practices at other agencies that USGS can work with or participate in to increase recruitment and retention of key future skill sets.	HR and OED	June 1, 2015
Require IDPs for all permanent and term employees; hold supervisors and managers accountable for plan development and progress.	Center and Office Directors, Regional Directors, and Associate Directors	Oct 30, 2015
Provide guidance to managers on ways to screen for identified key skill sets and develop, evaluate, and retain current employees with these key skills.	HR and OED	Dec. 1, 2015
Evaluate current USGS employee development programs, and propose changes if needed, to include these key skill sets.	OED	June 30, 2016

Goal 2a: Flexibility – Multisector Workforce	
Challenges	When the large majority of an organization's workforce is composed of employees on permanent appointments, it is more difficult to change the size and expertise of the workforce to meet evolving demands, priorities, and funding. Although the USGS has many Federal appointment types (for example, permanent, term, temporary, 180-day) and hiring authorities (for example, Mendenhall, Pathways), they do not always provide the level of flexibility and specificity that would help hiring managers and supervisors meet key local needs. The use of OTP positions can entail some practical drawbacks, such as long-term employment instability for the employee and lack of continuity in some cases. However, if done strategically and appropriately, the overall benefits of a more scalable workforce outweigh the risks. Similarly, hiring contractors has both benefits and constraints.
Strategy	Focus on increasing workforce flexibility via a multisector workforce. Multisector workforce refers to all individuals who perform work in support of the organization's mission, including Federal employees, both permanent and OTP, as well as individuals who are not hired onto the rolls of the Federal government such as contractors, Scientists Emeriti, and volunteers. Provide information to USGS managers about the full range of multisector workforce options. Create a centralized/common method for tracking the onsite contractor population. Investigate current and potential hiring authorities that help attract and retain qualified candidates.
Expected Outcome	Increased and effective use of non-permanent employment (both federal and non-federal) within the Bureau to gain greater flexibility. A broader range of appointment types and hiring authorities that USGS can use to develop and retain a flexible workforce. Ability to track trends in the use of contractors within the Bureau.
Measure of Success	Number of new appointment types and hiring authorities used within the Bureau. Increased awareness of OTP options, and a greater number and ratio of OTP to permanent employees in suitable positions and roles.

Goal 2a: Flexibility – Multisector Workforce (con't)		
Action Items	**Person(s) Responsible**	**Anticipated Completion Date**
Provide report on federal appointment types and hiring authorities at all organizational levels and make available to bureau managers.	HR	May 30, 2015
Provide fact sheets that managers can use to answer key questions about each appointment and authority type.	HR	May 30, 2015
Develop a report with demographics (numbers and expertise) containing information on onsite contractors by organization unit.	OAG	June 30, 2015
Develop guidance on the appropriate use of federal and non-federal employment options (such as a human resources toolbox).	OAG, Ethics, and HR	Sept. 30, 2015
Determine what needs are not being fulfilled by current appointment types and hiring authorities. Investigate options of federal appointments and hiring authorities that might be made available to the USGS to meet those needs. Develop strategy to pursue new hiring authorities and appointment types.	HR and team made up of a cross-section of hiring managers	Nov. 30, 2015

Goal 2b: Flexibility – Resource Sharing	
Challenges	Sharing staff resources (both physically and virtually) across centers and offices within USGS can be challenging due to the following: differences in business models and local overhead rates; questions concerning supervision and performance evaluation; poor communication of human resource availability and needs; the stigmas about individuals with time to share; individuals perceiving their jobs or sphere of influence threatened; and a mismatch between resources needed and resources available.
Strategy	Develop and implement a bureau-wide mechanism that facilitates sharing staff and expertise across organizations.
Expected Outcome	More flexible and effective use of available staff expertise and time.
Measure of Success	Quantified data on the number of shared employees and success rate of these types of efforts.

Action Items	Person(s) Responsible	Anticipated Completion Date
Catalog best practices for supervision and performance evaluation of shared staff.	HR	Dec. 30, 2015
Develop tools (for example, USGS want ads, SharePoint) to enable sharing of employee skills. Test and modify tools based on feedback, include human resources aspects as appropriate.	EI	March 30, 2016

Goal 3: Diversity	
Challenges	The USGS is challenged with attracting and hiring diverse (race, ethnic, gender) candidates for Technicians and Professionals in the Natural Resources/Biological and Physical Sciences occupational series at a rate commensurate with the rate in the U.S. workforce as identified by the Census Bureau (American Community Survey, 2006-2010 5-Year Estimates). In addition, the USGS is challenged with hiring and retaining employees with mental and physical disabilities (targeted). There are several possible explanations for the low participation rate and decline; however, it is unclear what specific factor(s) contribute to this condition.
Strategy	Identify current Bureau recruiting strategies and candidate sources that produce a pool of highly-qualified diverse candidates for the occupations identified above. In addition, identify and explore potential candidate recruiting sources not currently being used that could increase the diversity of the applicant pool and the number of diverse applicants. Identify the specific factor(s) that contribute to the low participation rate and decline of employees with mental and physical disabilities (targeted).
Expected Outcome	A comprehensive list of recruiting and outreach sources is available and used by hiring managers/officials, Bureau leadership, and HR, DEO, and OSQI staff. The Bureau Selective Placement Program Coordinator and Disability Program Coordinator identify the potential factor(s) that contribute to low participation rates for employees with mental and physical disabilities (targeted).
Measure of Success	Highly-qualified diverse candidates are applying for Technician and Professional positions in the Natural Resources/Biological and Physical Sciences occupational series at a rate commensurate with the rate the U.S. workforce as identified the Census Bureau. The participation rate for diverse students in the Pathways Program, occupational series 0499 (Biology Student Trainee), and 1399 (Physical Science Student Trainee) is commensurate with the rate of U.S. citizens receiving degrees in comparable academic fields. Completion of a report that identifies the factor(s) contributing to low participation rate of employees with mental and physical disabilities (targeted).

Goal 3: Diversity (con't)		
Action Items	**Person(s) Responsible**	**Anticipated Completion Date**
Develop a list of current and potential recruiting sources for generating a highly-qualified diverse applicant pool for Technicians and Professionals in Natural Resources/Biological and Physical Sciences occupational series	HR, DEO, and OSQI	June 1, 2015
Identify a Bureau Selective Placement Program Coordinator and Disability Program Coordinator to conduct a joint analysis of the factors effecting the low participation rate and decline of employees with mental and physical disabilities (targeted).	HR and DEO	June 1, 2015
Track the race and ethnicity of Pathways program participants to determine if targeted recruiting efforts are resulting in increased diversity, and if minority students are being retained after completion of their academic program. Institute annual review and analysis.	DEO, OSQI. and HR	Starting November 2015
Provide recurring training to hiring managers and supervisors that highlight best practices and effective ways to target diversity	HR, DEO, and Hiring Managers	Starting December 2015
Conduct a formal evaluation of USGS youth programs to gauge effectiveness at increasing applicant and workforce diversity.	OSQI and HR	March 1, 2016
Develop a Bureau outreach strategy and plan to promote earth sciences at middle and high schools with diverse student populations, minority-serving institutions, and other educational institutions with diverse student populations.	OSQI, HR, and OHC	Sept. 1, 2016

Goal 4: Succession Planning	
Challenges	Approximately 31 percent of current USGS employees are eligible for retirement by 2016, increasing to 41 percent by 2019. This may lead to a loss of substantial technical, leadership, and management expertise, especially within the senior ranks (GS-14 and -15, SL. ST and SES).
Strategy	Evaluate and establish processes and practices to develop and enhance employees' capabilities to ensure a smooth transition of duties and responsibilities.
Expected Outcome	Development of tools for succession planning. An increase in the number of employees with sufficient leadership and management skills to assume key positions identified for succession planning (as determined by individual organizations within the USGS).
Measure of Success	USGS FEVS results indicate an improvement in the Talent Index. The Talent Index assesses to what degree the organization has the talent necessary to achieve its goals. Recruitments result in competitive certs of highly qualified candidates.

Action Items	Person(s) Responsible	Anticipated Completion Date
Conduct a formal succession planning process for the leadership ranks (GS-14 and above) from which to develop a succession planning methodology that could be applied more widely. Possibly acquire the services of a contractor to assist in this process.	HR	Sept. 1, 2015
Develop a USGS succession planning desk guide; conduct pilot planning efforts at the center, region, mission area, and office levels.	HR and Senior Managers	Nov. 1, 2015
Evaluate the potential to implement a USGS *leadership* mentoring program, to include mentorship by senior leaders and opportunities for special assignments and high-level details [on-the-job training]	OED and Senior Managers	Dec. 1, 2015

Goal 5: Implementation, Monitoring and Evaluation	
Challenges	The ultimate value and success of a bureau workforce plan depends on the degree to which it is effectively implemented and whether it is actually used to shape the current and future workforce. Without effective implementation, monitoring of progress, and evaluation of outcomes, the probability of success is low and the value of the plan will be limited.
Strategy	Establish explicit executive-level responsibility for workforce planning, and tracking progress and impact of the bureau plan and associated actions. Ensure that workforce planning occurs at local levels (centers, regions, mission areas, and offices).
Expected Outcome	Improved awareness of the plan throughout the bureau, and more certain and effective implementation of the proposed actions. Increased use of local workforce plans, reflecting concepts and strategies consistent with the bureau plan.
Measure of Success	Track the number of bureau workforce plan actions are completed. Degree to which local-level workforce plans are developed and used in workforce decision.

Action Items	Person(s) Responsible	Anticipated Completion Date
Appoint executive-level lead(s) for bureau workforce plan implementation, monitoring, and evaluation.	USGS Director, Deputy Director	March 1, 2015
Require all centers and offices to have current (2012 or later) local workforce plans that are consistent with bureau workforce principles and use them to help guide workforce decisions.	Regional Directors and Associate Directors	Announce requirement by March 30, 2015 Ensure current plans are in place by March 30, 2016