

EPA Learning Agenda

March 28, 2022

Overview

The Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act)¹ provides a framework to promote a culture of evaluation, continuous learning, and decision making using the best available evidence. EPA's Strategic Plan incorporates learning priority areas for the first time as required by the Evidence Act, which is a significant part of developing this culture. EPA has identified four learning priority areas:

1. **Expanding EPA's Toolkit of Air Benefits Assessment Methodologies and Practices** – How can EPA more comprehensively characterize the health benefits associated with improved air quality and improve approaches for quantifying and valuing air pollution effects among populations most susceptible and vulnerable to poor air quality?
2. **Drinking Water Systems Out of Compliance** – What EPA/state drinking water program policies (tools, guidance, training, funding mechanisms) are most effective in increasing system compliance?
3. **Workforce** – How can EPA ensure it has employees with the competencies needed to achieve its mission now and in the future, including identifying or developing leading practices in recruitment, retention, succession planning and knowledge management?
4. **Grant Commitments Met** – How can EPA assess the extent to which commitments achieve the intended environmental and/or human health results and identify possible next steps in establishing a comprehensive grant reporting system?

EPA continues to engage with relevant internal staff and external experts and stakeholders on these learning priority areas. Stakeholder engagement, as described further in each learning priority area, helps EPA to formulate and refine priority questions, identify relevant past evidence development, and to plan and implement the activities designed to answer them. EPA's Learning Agenda will be updated with evaluation and other evidence-building plans as the learning priority areas progress.

Learning Priority Area: Expanding EPA's Toolkit of Air Benefits Assessment Methodologies and Practices

EPA, and especially the Office of Air and Radiation (OAR), has long been a leader in the science of estimating the benefits to human health from reducing exposures to air pollutants. This work provides a crucial basis for understanding the likely impacts of proposed air quality regulations and placing the costs of meeting those regulations in context in a benefit-cost analysis. Still, there are important benefits from reducing pollutants that are not yet fully incorporated into EPA's analyses, making current benefits analyses incomplete.

EPA uses well-established methods for estimating the health benefits associated with reductions in some pollutants. However, as noted by scientific bodies including the National Academy of Sciences

¹ Full-text of the Foundations for Evidence-Based Policymaking Act of 2018 <https://www.congress.gov/bill/115th-congress/house-bill/4174/text>.

(NAS) and EPA's Science Advisory Board (SAB)², there are areas where the science of air pollution effects continues to advance and benefits that are currently not quantified and monetized, specifically:

- Benefits of reduced exposures to pollutants that we do not currently quantify, such as many health endpoints related to exposure to hazardous air pollutants (HAPs);
- Benefits of reduced risk of health endpoints where there may be uncertainty in the causal relationship, but that nonetheless may be important to those exposed;
- Benefits from health endpoints that cannot yet be valued using willingness-to-pay (WTP) or other measures of economic value;
- Benefits that account for interrelated endpoints and co-pollutant interactive effects;
- Benefits that account for sequelae and the progression of disease; and,
- Benefits accounting for the cumulative impact of multiple pollutants over time, including intrinsic or extrinsic factors that can affect who develops air pollution-related illnesses.

Understanding who is most vulnerable to poor air quality, and where these individuals live, is key to informing policies that promote a more equitable distribution of air pollution-related risk. Myriad factors contribute to vulnerability and susceptibility. These factors can be extrinsic (e.g., nonchemical stressor exposure) and intrinsic (e.g., biological and life-stage differences) and can each contribute to cumulative burden these populations experience. Interactions among factors can lead to an increase in exposure and/or an increase in the response. The epidemiologic literature continues to elucidate the level and distribution of risk among some populations, for example finding that non-white populations experience a greater risk of premature death from exposure to particulate matter (PM)_{2.5}. Applying these findings in EPA benefits assessments requires spatially resolved estimates of population counts and baseline rates of death and disease that are each more refined than currently used. Accounting for factors that alter individual exposure among these groups, including time-activity patterns, characteristics of the housing stock, and presence or absence of air conditioning, may also help better characterize differences in exposure and risk among these same populations. In addition, the concentrated risks among susceptible and vulnerable groups may also affect WTP across the whole population to reduce such risks, something generally not currently accounted for in benefits analysis.

Recognizing both the Agency's leadership role, and the importance of rigorous health benefits assessment to EPA's regulatory efforts under not only the Clean Air Act but other regulatory requirements, EPA will pursue developing a Learning Priority that helps the Agency more comprehensively assess the health benefits of pollution reductions. This Learning Priority will:

- Provide a framework for EPA to resolve questions of enduring importance while also meeting timely regulatory deadlines;
- Create a transparent process for identifying priority questions and for addressing them in appropriate sequence, promoting continual learning; and

² National Research Council. 2002. *Estimating the Public Health Benefits of Proposed Air Pollution Regulations*. Washington, DC: The National Academies Press, <https://doi.org/10.17226/10511>. National Research Council. 2008. *Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/12198>.

- Enable EPA to strategically engage with knowledgeable external stakeholders, including through respected multidisciplinary bodies such as the National Academy of Sciences.

This Learning Priority will focus on specific benefits assessment questions that contribute to more comprehensive benefits analysis and that can be meaningfully explored in a timely manner for incorporation into Office of Air and Radiation (OAR) benefits assessments, as well as inform benefits assessments elsewhere in the Agency that face similar challenges. Given the significant funding and attention that risk and benefits assessments for fine particulate and ozone pollution already receive, this Learning Priority will focus on other priority learning questions related to benefits of reducing exposures to other toxic pollutants and for people who are particularly vulnerable or exposed to multiple types of pollution. Next steps will reflect the best available science and advance best practices that can be used throughout EPA for incorporating additional benefits impacts and valuation approaches into benefits analyses.

This Learning Priority is consistent with the requirements laid out in the January 20, 2021 Presidential Memorandum on Modernizing Regulatory Review to “identify ways to modernize and improve the regulatory review process.” Several parts of the memorandum are particularly applicable to this work, including a request for improvements that “promote policies that reflect new developments in scientific and economic understanding [and that] fully account for regulatory benefits that are difficult or impossible to quantify” and that “take into account distributional consequences of regulations.”³

This learning priority area supports Goal 4: Ensure Clean and Healthy Air for All Communities.

Stakeholder Engagement

OAR has consulted with numerous stakeholders within the Agency, including the Office of Policy’s National Center for Environmental Economics, Office of Research and Development, Office of Water, and the Office of Pollution Prevention and Toxic Substances.

During October-November 2021, OAR consulted with 17 stakeholders or stakeholder groups from outside the Agency, including several research institutions, a state government, peer federal agencies and a non-governmental organization. These stakeholders work in areas related to measuring the health impacts of air pollution and the benefits of reducing exposures to different types of pollutants. The work of these experts includes investigating impacts on people exposed to multiple types of pollutants, impacts on vulnerable populations, impacts of exposures at low concentrations, and approaches for valuing reductions in different types of exposures and for valuing the full range of human health effects caused by air pollution exposures. Each stakeholder was familiar with EPA’s methods for characterizing the benefits of improved air quality and able to address one or more features of these analyses that could be further improved.

We asked each stakeholder to identify areas that they believe would benefit from additional investment and those that might not. These conversations provided extensive and detailed feedback on EPA’s methods for quantifying and reporting the benefits of improved air quality. Stakeholders identified several research topics where additional Agency investment would be useful and would lead

³ <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/modernizing-regulatory-review/>

to more comprehensive benefits analysis. These included improved environmental justice (EJ) analyses that quantified impacts at fine spatial scales; accounting for “jointness” in health effects across endpoints/pollutants; and an accounting for the role of air pollution in making people more frail (and thus more susceptible to chronic and acute illnesses). Stakeholders noted specifically that investing additional resources in characterizing PM-attributable risks at low concentrations would not be their priority given the already-significant recent investments in this area.

OAR plans to continue engaging with stakeholders throughout the process of answering the priority learning agenda questions. Within EPA, this includes other program offices, facilitated by the Office of Policy. It also includes appropriate consultations with the Office of Management and Budget Office of Information and Regulatory Affairs and with other agency and federal government stakeholders. It will also include consultations with the NAS or other suitable peer review mechanisms to recommend meaningful significant advancements in specific methods and best practices.

Priority Questions

EPA is focusing on three priority questions:

1. How can EPA more comprehensively characterize the health benefits associated with improved air quality?
2. How can EPA improve our approach for quantifying and valuing air pollution effects among populations most susceptible and vulnerable to poor air quality?
3. How can EPA better account for disproportionate impacts and distribution of disease burden within the exposed population?

Strategy for Addressing the Priority Questions and Accomplishments to Date

To address these questions EPA will review the economics, epidemiology, exposure and biostatistics literature to identify available tools and methods to address the priority questions, as well as identify key gaps where data sets, tools and methods are not available but may be developed. Specific inquiries will include:

- How to more completely estimate the value of avoided air toxics-related cancer and non-cancer effects using new methods for quantifying risks of these effects, willingness to pay research, or other approaches;
- How to appropriately factor uncertainty about health risks, including uncertainty on causality, into benefits analysis;
- Available data and methods for estimating the dollar value of these impacts while relaxing the assumption that each outcome is independent of other outcomes;
- The role air pollution plays in promoting frailty, which makes individuals more susceptible to developing chronic disease attributable both to poor air quality and other causes; and
- How to account in our benefits analyses for time-activity patterns, air conditioning use, and other factors that influence individual exposures for vulnerable and susceptible populations.

OAR will then establish priorities among specific analyses that will contribute to answering the Learning Agenda questions and lead to more comprehensive benefits estimates. Prioritization will be based on whether other efforts are already underway to address the issue or implement methods, any likely upcoming applications for the results, and the level of effort needed. We anticipate our initial efforts will address questions: (1) where there is not already significant Agency investment, (2) we are likely to successfully address and that are relevant to ongoing Agency work, such as actions identified in the Agency Regulatory Agenda, within the expected time and resources available, and (3) substantially improve the Agency's ability to more completely quantify benefits. The end product of this effort may be a series of case studies illustrating how EPA would apply these new methods.

Anticipated Challenges and Proposed Solutions

Key challenges include:

- The air program is currently operating at full capacity to meet its regulatory priorities. As a result, there are no available resources (either contract funds or FTE) to develop the needed draft documents as well as funding engagement with the NAS. EPA is addressing this challenge by requesting additional funds under the Learning Agenda initiative.
- EPA lacks the detailed (and often proprietary) health and economic data needed to perform the analyses described above. For example, some data use agreements may inhibit the ability of EPA to use the type of individual-level data needed to address the above questions, or increase the cost of doing so. Additionally, the development of approved survey instruments to address data gaps can be challenging along several different dimensions: timing, internal expertise, meeting regulatory requirements (e.g., Information Collection Requests, Institutional Review Boards, the Privacy Act, human subject approval), and cost of survey deployment. EPA would address these challenges by exploring whether Lean tools and methods can be used when they are fit for purpose.
- EPA's benefits methodologies are closely inspected by many parties in both the United States and around the world. New approaches, tools, and methods, as well as substantial changes to existing ones, will face significant public scrutiny and the need for detailed peer review. EPA would address this challenge through convening one or more NAS panels or other suitable peer review mechanisms.
- EPA's key decision-support tools used to perform regulatory analyses may need to be reconfigured to incorporate the above evidence. EPA is addressing this challenge by continuing to provide sufficient funding to develop and maintain critical regulatory decision support tools.

Learning Priority Area: Drinking Water Systems out of Compliance

The likelihood of a public water system (PWS) complying with Safe Drinking Water Act (SDWA) regulations is a function of water system characteristics such as infrastructure, operator expertise, and financial sustainability. These characteristics directly affect a water system's ability to comply with SDWA standards. EPA and states, territories and tribes with approval to implement SDWA (primacy agencies) aim to increase the probability of compliance by influencing system characteristics through

program policy, tools, guidance, training, and funding (program components). Learning Agenda evidence-building activities, including evaluations, will guide Agency decisions on policies to improve system compliance with existing regulations and provide the foundation for effective analysis in support of future policies and regulations.

Whether a program component improves compliance (or performance) ultimately depends on (1) its ability to affect on-the-ground system characteristics and (2) how these characteristics impact the likelihood of compliance. EPA will evaluate these dependencies and develop a “theory of change” for characteristics deemed high priority for addressing noncompliance and ultimately improving compliance.

For each system characteristic identified as important to study, EPA will identify:

- The program component(s) intended to impact the characteristic;
- Whether evidence exists that shows the program component is implemented correctly; and
- What evidence exists to estimate the effect of the characteristic on the likelihood of compliance.

Connecting program components to their associated system characteristics, and then identifying how these characteristics are assumed to impact the system operations, will help to focus data collection activities, assess how successfully program components are implemented, and define measurement of outcomes related to compliance. Research questions guiding this learning priority area must consider:

- *Program monitoring*: whether regulator efforts intended to impact a characteristic are implemented as intended; and
- *Program evaluation*: (i) how a program component affects the targeted system characteristic and (ii) how the characteristic change impacts the likelihood of improving compliance/performance.

Together, these elements represent a theory of change for how regulatory efforts work to achieve improved compliance. For each system characteristic, EPA can map the specific theory of change for the characteristic and its associated program components. This allows EPA to identify the assumptions and risks for each connection and key measurements for each. Differentiating program components from the characteristics they are intended to modify will allow the Agency to map more clearly existing empirical evidence and identify which characteristics are the most promising to target for improving compliance.

Specifically, the drinking water learning priority area focuses on evaluating ways to effectively improve community water system compliance by: (1) assessing drinking water data reported to EPA to determine how accurately it measures national compliance and if the data sufficiently substantiates EPA policy decisions; (2) examining root causes of system compliance and non-compliance and corresponding technical, managerial, financial factors; and (3) testing efficacy of technical assistance, enforcement, and state oversight. Evaluations will rely on existing data and generating new data, where needed. Studies to collect new, statistically valid data will be designed based on sample size, variability, and other relevant conditions. Randomized control trials (RCT) could be one strategy used to answer some of the questions for this learning priority. Each of the questions in this priority area will consider communities with concerns about environmental justice.

This learning priority area supports Goal 2, Objective 2.1, Promote Environmental Justice Efforts at the Federal, Tribal, State, and Local Levels and Objective 2.2, Embed Environmental Justice into EPA’s

Programs, Policies, and Activities; Goal 3, Objective 3.2, Detect Violations and Promote Compliance; and Goal 5, Objective 5.1, Ensure Safe Drinking Water and Reliable Water Infrastructure. This learning priority area is also aligned with Cross-Agency Strategy 1: Ensure Scientific Integrity and Science-Based Decision Making, and Cross-Agency Strategy 4: Strengthen Tribal, State, and Local Partnerships and Enhance Engagement.

Stakeholder Engagement

To develop the priority questions, EPA consulted with internal and external stakeholders listed below including state and water system associations, small-system technical assistance providers, the U.S. Department of Agriculture, nongovernmental organizations (NGOs), and academia. Based on those consultations, EPA generated more than 30 potential questions covering about 10 categories before narrowing the focus to five. Hearing from a broad range of stakeholders helped identify important questions that were either common among most of the stakeholders or that address recalcitrant and environmental justice-related problems. External stakeholders EPA consulted with include:

- Associations and Technical Assistance Providers
 - Association of State Drinking Water Administrators (ASDWA)
 - American Water Works Association (AWWA)
 - National Rural Water Association (NRWA)
 - Rural Community Assistance Partnership (RCAP)
 - USDA's Rural Development-Rural Utilities Service (RUS)
- Non-Governmental Organizations
 - Natural Resources Defense Council (NRDC)
 - Environmental Defense Fund (EDF)
 - Earth Justice
 - Clean Water Action
- Academic Programs
 - University of North Carolina Environmental Finance Center
 - Harvard Law, Energy and Environment Law Program
 - Berkeley Dept. of Agriculture and Resource Economics

EPA has delegated primary enforcement responsibility (primacy) for public water system supervision programs to 49 states, five territories, and the Navajo Nation. EPA has established a work group to help advise evaluation of the drinking water learning priority area questions. The work group includes EPA regional representatives and state drinking water program staff. EPA will work closely with individual states on specific aspects of the evaluations through the ASDWA (which includes in its membership territories and the Navajo Nation).

At key points in plan development, study design and implementation, and product drafting, EPA will consult with associations that represent public water systems, Tribal coordinators, technical assistance providers, and drinking water NGOs. EPA will continue to seek and include perspectives for communities with environmental justice concerns as it answers the priority questions. EPA is engaging academia to assist with identifying relevant existing study results and to design and conduct studies.

Priority Questions

1. To what extent does EPA have ready access to data to measure drinking water compliance reliably and accurately?
2. What factors determine system noncompliance and continuous compliance?
3. How can we determine if a system has the technical, managerial, and financial capacity to provide safe water on a continuous basis to its customers?
4. Does increased use of compliance assurance tools (inspections and enforcement) improve system compliance, and if so, under what circumstances?
5. What EPA oversight activities are effective at assessing and improving state programs' ability to drive compliance?

Strategy for Addressing the Priority Questions and Accomplishments to Date

1. To what extent does EPA have ready access to data to measure drinking water compliance reliably and accurately and to make policy decisions?

EPA is carrying out the following activities to answer this priority question:

- Gathering and reviewing existing Government Accountability Office (GAO) and Inspector General (IG) reports, data verification audits, annual program file reviews, and published studies that analyze data quality of the Safe Drinking Water Information System (SDWIS) and creating a table that summarizes findings.
- Developing a method for assessing SDWIS data quality impact on compliance rate calculations (for instance rule-by-rule compliance rates as well as national, overall compliance rate) and use for policy decisions.
 - Reviewing other programs' use of compliance monitoring data to inform this analysis.
- Seeking compliance monitoring data that exist in state databases to use for SDWIS data quality checks and for trend analysis in the evaluations described in Questions 2 through 4.
- Using statistical techniques to identify anomalies in sampling data.
- Reviewing data accuracy through a statistical lens with the goal of quantifying the uncertainty of calculated rates.

2. What factors determine system noncompliance and continuous compliance?

- Identifying, gathering, and merging existing analyses of SDWIS data.
- Working with academics to consider the value of additional analyses (e.g., application of statistical methods such as those employed through machine learning) to improve upon information gleaned from existing analyses, which have already identified and tested system factors correlated to noncompliance.
- Conducting literature searches to identify data sets that describe system characteristics/factors (e.g., system size, resource base, source water contamination, as well as technical, managerial, and financial capabilities) that are believed to correlate to performance. Previous analyses indicate the majority of systems in chronic non-compliance are in communities with environmental justice concerns.
- Once EPA has completed work to identify correlative factors, it will consider conducting studies of the factors to determine causation. Studies will be designed based on the information gleaned from the analysis. Study designs may vary based on the types of correlative factors identified and what is already known about the factors and how much

data exists for them. Studies could involve use of “big data” analytical tools, randomized control trials, retrospective analyses, or other study types.

3. Does increased use of compliance assurance tools (inspections and enforcement) improve system compliance, and if so, under what circumstances?

EPA is engaging in the following activities to answer this priority question:

- Gathering and synthesizing past and ongoing analyses.
- Conducting analyses of available information in SDWIS and the Enforcement and Compliance History Online that describe trends related to use of inspection and enforcement, which will help identify factors to include in randomized control trials (RCTs).
- Working with academics to determine interest in and approaches to further analyze historical data and design studies to answer questions about use of enforcement and inspections in the drinking water program.
- Using existing literature summaries and conducting additional literature searches on the efficacy of using compliance monitoring inspections and enforcement to ensure compliance.

4. How can we determine if a system has the technical, managerial, and financial capacity to provide safe water on a continuous basis to its customers?

To answer this priority question, EPA will identify minimum core technical, managerial, and financial capabilities required for systems to maintain compliance based on empirical evidence gathering and use those minimum core capabilities to develop measures that will help to identify systems vulnerable to failure. The evaluation for priority question two will inform this evaluation’s design and activities, as will other sources such as relevant published literature and data sets that exist outside of EPA and state drinking water agencies. It is particularly critical that primacy agencies, Tribal leaders, water sector associations, and technical assistance providers actively engage in this process.

5. What EPA oversight activities are effective at assessing and improving state programs’ ability to drive compliance?

To answer this priority question, EPA will develop an evidence-based methodology to identify the most effective oversight approaches that ensure state programs’ ability to improve compliance in drinking water systems. The evaluation for this question will also be informed by the evaluations of the other questions.

Anticipated Challenges and Proposed Solutions:

- Only a small portion of drinking water compliance data is housed in EPA’s SDWIS database. States have compliance data, but some are reluctant to share them with EPA. Some states make the data open to the public through Drinking Water Watch. EPA will begin working early with states and invite them as collaborators on the Drinking Water Learning Agenda. EPA will also use the publicly available data as a starting point.
- A potential major challenge may occur if the data sets states are willing to give to EPA or that already are public are not similar to the data from states that do not share publicly (i.e., sampling bias). For example, states that are willing to voluntarily share their data with EPA or the public compared with states that are not as transparent may have higher compliance rates and/or implement their programs differently.

- The drinking water program under the Safe Drinking Water Act is delegated to authorized states, thus state participation in RCTs will be critical. EPA will need to recruit states willing to participate. Controlling for variations among state approaches and among drinking water systems will present a significant challenge. Upfront work will be done to ensure study designs and appropriate statistical methods are used to account for the variations and can produce statistically significant results.
- EPA regions will be asked to use inspection and enforcement tools in new ways. As these two tools are used so infrequently now, without piloting changes in the use of these tools, EPA will likely have trouble learning under what circumstances such tools are effective. Working through the National Compliance Initiative for Drinking Water Compliance, EPA will attempt to get regional buy-in for the RCTs.
- EPA will have to overcome definitional problems in which a simple notice of violation (NOV) and a formal enforcement action with a binding compliance schedule are lumped together as enforcement actions, when in fact they are very different. While the use of NOVs is common, EPA suspects the use of formal enforcement actions is much less common and these two different tools will need to be distinguished to advance learning on when formal enforcement works.
- Participation from primacy agencies in states and the Navajo Nation in the RCTs is critical to the success of this effort, since the primacy agencies implement and enforce the National Primary Drinking Water Regulations, and the sample sizes would be increased. Working with additional organizations necessarily adds complexity. EPA will use lessons learned from other studies that have included primacy agencies.
- EPA has had success collaborating with academic researchers without providing the researchers with funding, EPA will spend time finding university researchers who are both interested in this work and can engage in it without EPA funding. This somewhat limits the pool of academics. EPA understands that engagement with external researchers will require external researchers (e.g., academics) to align their research to policy-relevant questions in order to help the agency to address these learning agenda questions. EPA may use strategies such as Memoranda of Understanding (MOUs), EPA data-sharing, assisting with data-sharing partnerships with other government entities, and/or other tools to engage these researchers on understanding and developing the body of evidence in these areas.

Learning Priority Area: Workforce

Workforce is critical for all large organizations and EPA is at an important juncture to shape the workforce of the future. Currently, 25 percent of EPA's workforce is retirement eligible, increasing to an estimated 42 percent over the next five years. EPA's decentralized workforce approach and urgent programmatic needs often result in a "one-for-one" replacement of staff, with insufficient consideration of new skills and disciplines that might be needed. In addition, forward-thinking approaches often are hampered by the constraints and complexity of federal hiring practices and position classifications. For example, to successfully transition its workforce, EPA needs to better understand what skills are needed across all disciplines for a future that will certainly be more reliant on adept use of data. EPA also needs to acknowledge the wealth of institutional knowledge developed

over the past 50 years. Knowledge management is the holistic process of creating, sharing, using, and maintaining the key knowledge and information of an organization. It creates organizational efficiencies by capturing information and best practices for the workforce of the future.

EPA identified this area as an enterprise risk due to the high number of staff eligible for retirement and EPA's aging workforce. The Agency completed several initiatives to better understand its workforce needs and to capture and close skills gaps. The completion of these activities will assist EPA in developing an evidence-based plan and roadmap for how EPA can ensure it has diverse employees with the competencies needed to achieve its mission now and in the future. This is especially timely given the Agency's expected significant increase in hiring due to allocations from the 2021 Infrastructure Investment and Jobs Act. It will also help determine the overall processes used to cultivate and manage the workforce, while anticipating internal and external changes, and continuously maximizing the efficiency and effectiveness of the Agency's human resource services.

EPA will take a two-phased approach to this learning priority area, with an ongoing goal of imbedding all learning into the Agency's tactical approaches to workforce.

In the near term, EPA will focus on:

- Determining current capabilities for assessing workforce status and needs;
- Defining the future skills and disciplines that will strengthen and modernize the workforce; and
- Planning for and beginning data collection for EPA's longer-term efforts, described below.

In the longer term, EPA will focus on:

- Identifying best strategies to retain and attract employees and develop skills to meet the Agency's future mission-critical needs; and
- Developing leading practices for maintaining expertise by transferring knowledge from current subject matter experts (SMEs) to existing and new employees.

To identify the actions needed to address the priority questions, EPA consulted with the U.S. Office of Personnel Management (OPM), external organizations, and academicians focused on the future of the federal workforce. Of specific interest is determining how government can attract and retain individuals with needed skills in environmental science.

This learning priority area covers all program areas and as such supports all strategic goals and is aligned with Cross-Agency Strategy 3: Advance EPA's Organizational Excellence and Workforce Equity.

Priority Questions

1. To what extent does EPA have access to the tools and strategies needed to analyze and understand the Agency's near and long-term workforce needs?
2. What are the critical skills needed to support the Agency's mission, now and in the future?
3. What are the leading strategies to attract, recruit, train, and retain a diverse and talented workforce? What makes people stay in the Agency long-term?
4. How can EPA ensure knowledge is transferred from outgoing to current and incoming staff to support succession planning?

Stakeholder Engagement

EPA understands that its success in answering the above priority questions will to a great degree depend on the support and buy-in received from key stakeholder groups. Thus, the Agency has begun briefing a range of internal stakeholders, including senior leaders, members of the Human Resources Officer/Program Management Officer (HRO/PMO) community, and Shared Services Centers (SSCs) staff, and key employee groups. Information provided by Agency HROs/PMOs is being used to revise existing and future workforce tools. Quarterly updates to senior leaders are building greater understanding of the scope and anticipated benefits to answering the workforce priority questions. Interviews with human capital contacts at the National Institutes of Health (NIH), Internal Revenue Service (IRS), Department of Homeland Security (DHS), Small Business Administration (SBA), and Department of State are aiding EPA in fine-tuning its methodology for several actions. In FY 2021, the Agency also partnered with OPM's Strategic Foresight Team to hold a special training workshop for its HROs/PMOs and Office of Human Resources' (OHR) Management Team. Moving forward, additional stakeholder groups such as EPA's Diversity, Equity, Inclusion, and Accessibility Tiger Team; Emerging Leaders Network; First Line Supervisors Advisory Group; Executive Management Council; Human Resources Council; and members of the external human resources academic and practitioner community will be integrated into the preparation, delivery, and evaluation of workforce priority items.

Strategy for Addressing the Priority Questions and Accomplishments to Date

1. To what extent does EPA have access to the tools and strategies needed to analyze and understand the Agency's near and long-term workforce needs (including those as a result of the Infrastructure Investment and Jobs Act)?

While gathering data from various internal and external stakeholders, EPA will engage in the following activities to answer this priority question:

- Assess: 1) overall effectiveness of EPA's existing workforce planning tools (Workforce Demographics Dashboard, Diversity Dashboard, Succession Management Guide, and Workforce Plan), 2) consistent use of the tools, 3) alignment of the tools with stakeholder needs, and 4) effectiveness of EPA's communication of and training for these tools; and
- Ensure appropriate features and measures of diversity, equity, inclusion, and accessibility are incorporated into EPA's workforce planning tools and strategies.

During FY 2021, significant progress was made on this priority question, including: designing the template for a workforce planning/succession management dashboard specifically aligned with each stage of the workforce planning process, developing training materials on workforce planning and succession management processes for our HRO/PMO community, and securing an annual membership with the American Productivity and Quality Center to facilitate researching leading practices and Key Performance Indicators for workforce planning/succession management.

2. What are the critical skills needed to support the Agency's mission, now and in the future?

EPA has begun and will continue to engage in the following activities to answer this priority question:

- Establish Mission Critical Skills needed across the Agency to ensure the demands of EPA and its various constituents are met by maintaining both the correct positions and employees

with sufficient proficiencies including those in support of EPA's learning agenda both now and in the future;

- Enhance the Talent Enterprise Diagnostic (TED) tool — EPA's competency assessment tool — and conduct Agencywide skills gap analyses;
- Administer competency assessments using a revised version of the methodological and well-documented approach employed to complete the assessments already conducted;
- Analyze results of all relevant competency and skills assessments, including those conducted via TED, the National Training Needs Assessment, and through other Evidence Act priorities; and
- Evaluate competency assessment data to identify disparities along gender, racial, and targeted disability categories and, if found, research and recommend leading practices to eliminate such gaps.

EPA has already started addressing several of the actions under this priority question by holding a special strategic foresight training workshop for its HROs/PMOs and Office of Human Resources' Management Team, beginning the enhancement of our competency assessment tool to provide more robust features in preparation for conducting large-scale skills assessments, and revamping the Agency's National Training Needs Assessment to better address stakeholder and Agency needs.

3. What are the leading strategies to attract, recruit, train, and retain a diverse workforce? What makes people stay in the Agency long-term?

EPA will engage in the following activities to answer this priority question:

- Analyze internal and external recruitment strategies;
- Enhance employee engagement strategies;
- Develop an employee career progression model;
- Conduct an attrition cause analysis; and
- Track and evaluate trend data of key indices within the annual Federal Employee Viewpoint Survey.

When analyzing the results of the above five actions, EPA will determine if disparities exist along categories of employee diversity, equity, inclusion, and accessibility. If found, the Agency will research and recommend leading practices to eliminate such disparities.

In FY 2021, EPA started addressing several of the actions under this priority question by participating in OPM training to identify root causes of Mission Critical Occupation attrition, preparing to refill the Agency's Employee Engagement Officer role, and designing the template for an Agencywide dashboard capturing trends in the Employee Engagement Index and Global Satisfaction Index of the Federal Employee Viewpoint Survey.

4. How can EPA ensure knowledge is transferred from outgoing to current and incoming staff to support succession planning?

EPA has begun and will continue to engage in the following activities to answer this priority question:

- Perform a literature review for knowledge management and knowledge transfer to identify best practices;
- Perform market research to identify relevant leading tools and resources; and
- Assess EPA's current strategies for knowledge transfer to identify best practices, paying close attention to leading practices for individuals with different abilities.

To accomplish the action items for this priority question, EPA deployed a knowledge transfer pilot for two organizations, gathered initial information on leading practices for knowledge management within both private industry and a government setting, and registered two OHR employees for the training required to obtain a certificate in knowledge management.

Anticipated Challenges and Proposed Solutions:

- There might be low participation among stakeholders in the evaluation and analysis of EPA workforce planning tools and communication plan, including lower than expected completion rates for interviews, surveys, and focus groups. This possible challenge will be mitigated by enlisting the buy-in and support of senior leaders, the Human Resources Council, and other key stakeholders to help promote the process prior to its start and by keeping in constant contact with those stakeholders during the evaluation and analysis process.
- Once TED is enhanced and EPA begins conducting skills assessments needed for workforce planning and succession management, there might be low completion rates across the Agency and/or in certain organizational components. This possible challenge will be mitigated by enlisting the buy-in and support of senior leaders, EPA's Human Resources Council, and other key stakeholders to help promote the process prior to its start and by keeping in constant contact with those stakeholders during the evaluation and analysis process. In addition, numerous training sessions will be conducted and recorded, and TED's User Guide and website will be refreshed.

Learning Priority Area: Grant Commitments Met

Every year, EPA awards over \$4 billion in grants and other assistance agreements. Through these grants, EPA helps to protect human health and the environment through the work of small non-profits, academic institutions, Tribes, states, and local communities. 96 percent of these grants are awarded to state, local, and Tribal governments to implement environmental programs.

EPA's grant policies require each award be tied to the Agency's Strategic Plan and that the environmental results associated with grant actions be clearly established. Responsibilities for the management and tracking of the individual awards are dispersed among approximately 1,400 staff throughout headquarters and EPA's ten regional offices. The Agency's lack of a comprehensive system for tracking grant-related activities leads to an inability to proficiently evaluate environmental outcomes on a national scale.

Work to date has contributed to an improved understanding of reporting and tracking processes across the Agency's current grant programs. This baseline will help EPA develop a sustainable and consistent

process for negotiating and tracking the environmental outputs and outcomes resulting from EPA's grant funding.

Over the last two years, the Office of the Administrator has engaged program and regional offices to better understand the Agency's grants management processes, including reporting mechanisms and frequency. The Agency found that due to variability in programmatic goals and metrics, the management of EPA's grants and cooperative agreements is highly variable. While some regions and programs employ a coordinated process to negotiate and track grant commitments, others rely on Project Officers. In addition, the Agency's current centralized grants management system is not configured to collect and track grantee progress on discrete commitments. EPA's work under this learning priority area will further Agency efforts to effectively report on the outcomes of taxpayer dollars and to make informed resource decisions.

This learning priority area covers all program areas, and thus supports all strategic goals and aligns with Cross-Agency Strategy 4: Strengthen Tribal, State, and Local Partnerships and Enhance Engagement.

Stakeholder Engagement

As this learning priority area moves into its second year, internal and external stakeholder engagement will be very important. The effort to date was internally focused on understanding EPA grant program practices and tools. The focus on best practices will involve essential engagement with both internal and external stakeholder groups, including the following:

- State media associations (e.g., Environmental Council of States, Association of State Drinking Water Administrators, Association of Clean Water Administrators, National Association of Clean Air Agencies, Association of Air Pollution Control Agencies, National Association of State Departments of Agriculture, Association of State and Territorial Solid Waste Management Officials);
- EPA programs that administer grant programs;
- EPA regions that implement grant programs; and
- EPA's Office of Grants and Debarment.

Priority Questions

1. How do EPA's existing grant award and reporting systems identify and track grant commitments?
2. What EPA practices and tools (1) effectively track grantee progress towards meeting workplan grant commitments including outputs and outcomes and/or (2) support communication of national program level outputs and outcomes?
3. Are the commitments established in EPA's grant agreements achieving the intended environmental and/or human health results, particularly for environmental justice and underserved communities?

Strategy for Addressing the Priority Questions and Accomplishments to Date

1. How do EPA's existing grant award and reporting systems identify and track grant commitments?

To answer this priority question, EPA surveyed active EPA grant programs to determine the universe of existing grant reporting and tracking systems. EPA is reviewing the completeness of the data and will follow up with programs and regions, as appropriate, to collect any remaining

survey data. EPA is using quantitative and qualitative methods to analyze the data. EPA will review survey data to identify where equity and climate change impacts are identified as priority outcomes of grant programs. EPA will use this information to better understand what factors might affect a grant program's ability to effectively track grant commitments related to equity and climate impacts and to help inform actions taken pursuant to the Agency's equity assessment under E.O. 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*; and pursuant to climate change initiatives under E.O. 14008, *Tackling the Climate Crisis at Home and Abroad*.

2. What EPA practices and tools (1) effectively track grantee progress towards meeting workplan grant commitments, including outputs and outcomes, and/or (2) support communication of national program level outputs and outcomes?

EPA will engage in the following activities to answer this priority question:

- Select a subset of Agency grant programs and conduct interviews to collect best practices, barriers, and challenges to gain an understanding of the most effective tools and processes for effectively tracking grant commitments.
- Analyze Agency grant program tools and systems to discover the sources of data and reporting that track grantees workplan commitments, outputs, and outcomes.
- In addition to best practices, interview questions will address barriers, challenges, and ideas for improving tools and processes for tracking grant commitments.
- Review interview findings to identify opportunities for improvement for Agency grant program tracking and monitoring, focusing on tools that help the Agency demonstrate environmental results more effectively on a national scale and to determine the extent to which these environmental results benefit underserved communities.

3. Are the commitments established in EPA's grant agreements achieving the intended environmental and/or human health results, particularly for environmental justice and underserved communities?

Do the agency's tracking and reporting mechanisms support programmatic efforts to determine if grant program outputs and outcomes are achieving their intended results? What actions should the agency take to continue to improve grant monitoring systems to ensure the ability to determine and communicate progress toward achieving the intended environmental results?

EPA will engage in the following activities to answer these priority questions:

- Select a subset of Agency grant programs to review for environmental, human health, or other priority strategic programmatic outcomes.
- Provide recommendations, as appropriate, for the selected Agency grant programs to better communicate how grant outputs advance the Agency's mission through environmental and/or human health results, including achieving outcomes related to equity and climate change impacts.
- Identify what potential changes could be made to grant programs' data collection efforts to help EPA determine equity, climate change, and human health impacts.
- Outline next steps in establishing an EPA system that compiles the outputs and outcomes of Agency grant reporting.

Anticipated Challenges and Proposed Solutions:

- Through approximately 1,400 project officers, EPA administers approximately 105 grant programs, each defined by its own set of laws, regulations, and policies that can change annually, in conformance with the Agency’s priorities. Currently, there are on the order of 6,000 active grants across the Agency, each with an unknown number of specific commitments. EPA will be thoughtful in assessing what data are needed to answer each question and determining what data currently exist and what need to be collected to fill gaps. EPA will determine in advance how it will analyze the data to answer the questions and will collect data in a way that supports those analyses.
- The Agency plans to pilot a data collection tool with a subset of regions to ensure that it is a reliable instrument and that the data collected fulfills the anticipated need. EPA will refine the tool as needed before expanding its use to the complete universe of programs. EPA will involve internal stakeholders in the analyses to ensure the accuracy and utility of findings.
- EPA anticipates there will be a wide range of practices for monitoring grantee performance, but due to the lack of clear metrics and/or a clear directive to track individual grant activities, the data collection process may reveal data gaps. EPA also understands that a one-size-fits-all approach for grants management may not be appropriate across the Agency’s grant programs. EPA will ensure both the national program and regional grant managers are closely involved in the criteria development for what constitutes a “successful” model for assessing grantee performance.