**U.S. GOVERNMENT ACCOUNTABILITY OFFICE**

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**Washington, DC 20548**

**Comptroller General**
**of the United States**

**Accessible Version**

May 10, 2023

The Honorable Arati Prabhakar
Director
Office of Science and Technology Policy
1650 Pennsylvania Ave. NW
Washington, DC 20501

**Priority Open Recommendations: Office of Science and Technology Policy**

Dear Director Prabhakar:

The purpose of this letter is to provide an update on the overall status of the Office of Science and Technology Policy's (OSTP) implementation of GAO's recommendations and to call your personal attention to areas where open recommendations should be given high priority.[1] In November 2022, we reported that, on a government-wide basis, 77 percent of our recommendations made 4 years ago were implemented.[2] OSTP's recommendation implementation rate for that year was 100 percent, reflecting implementation of five recommendations made in two reports from fiscal year 2018. As of April 2023, OSTP had nine open recommendations. Fully implementing these open recommendations could significantly improve OSTP's operations.

Since our July 2022 letter, OSTP has implemented the following one of our eight previously identified priority open recommendations:

- As of January 2023, OSTP provided information demonstrating the Subcommittee on Quantum Information Science had implemented leading practices that enhance and sustain collaboration, consistent with what we outlined in September 2018.

We ask that you direct your attention to the remaining seven priority recommendations. (See enclosure for the list of recommendations.)

## The seven priority recommendations fall into the following three areas.

### Strengthening interagency collaboration.

OSTP plays a critical role in bringing agencies together under the committees and subcommittees of the National Science and Technology Council. We have two priority

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[1]Priority recommendations are those that GAO believes warrant priority attention from heads of key departments or agencies. They are highlighted because, upon implementation, they may significantly improve government operations, for example, by realizing large dollar savings; eliminating mismanagement, fraud, and abuse; or making progress toward addressing a high-risk or duplication issue.

[2]GAO, *Performance and Accountability Report: Fiscal Year 2022*, GAO-23-900398 (Washington, D.C.: Nov. 15, 2022).

recommendations in this area. One calls for fully implementing leading collaboration practices, such as defining and articulating a common outcome; agreeing on roles and responsibilities; and developing mechanisms to monitor, evaluate, and report on results. The second recommends that OSTP develop a plan to address data limitations for potentially critical materials. By fully implementing these two recommendations, OSTP could help agencies enhance and sustain coordination on research and development priorities, as well as address cross-cutting science and technology issues.

### Managing climate risks.

OSTP can strengthen interagency efforts to enhance the climate resilience of federal, state, and local infrastructure investments by implementing GAO's two priority recommendations in this area. One recommendation involves identifying the best available climate information for use in infrastructure planning. The other recommends clarifying sources of local assistance for incorporating climate-related information and analysis into infrastructure planning. Enactment of the Infrastructure Investment and Jobs Act in November 2021 provides additional impetus for OSTP to take action through its role in interagency coordination on federal transportation research and communication infrastructure efforts.[3]

### Tracking progress toward national goals.

OSTP provides leadership to agencies in working together to address a variety of national goals. In our prior work we have emphasized the importance of effective performance management to help the federal government more effectively implement programs and deliver services. Congress and the Executive Branch developed a framework that provides tools to help address significant financial, management, and performance challenges.[4] This framework, among other things, calls for establishing various government-wide and agency-specific performance goals, and assessing progress in achieving goals and objectives through performance reviews.

We have three priority recommendations that, if implemented, would help agencies better adhere to elements of the framework by improving how they track progress in two areas. Specifically, for high-performance computing, we recommended that OSTP (1) address characteristics of a national strategy, as practical, such as establishing performance measures and identifying the resources needed for implementation, and (2) prepare annual reports assessing progress made in implementing the 2020 strategic plan. In the area of advanced manufacturing, we recommended OSTP identify information to collect from federal agencies to determine whether the objectives outlined in the National Strategic Plan for Advanced Manufacturing are being achieved.

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In April 2023, we issued our biennial update to our High-Risk List. This list identifies government operations with greater vulnerabilities to fraud, waste, abuse, and mismanagement. It also identifies the need for transformation to address economy, efficiency, or effectiveness

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[3]Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, §§ 25013 and 90008, 135 Stat. 429, 868, and 1349 (2021) (to be codified at 49 U.S.C. 5506(e)(3), and 47 U.S.C. § 921 (note).

[4]Government Performance Results Act of 1993 (GPRA), which was significantly enhanced by the GPRA Modernization Act of 2010 (GPRAMA), Pub. L. No. 103-62, 107 Stat. 285 (1993 and Pub L. No. 111-352, 124 Stat. 3866 (2011), (codified at 31 U.S.C. § 1115-25).

challenges.[5] One of our high-risk areas—limiting the federal government's fiscal exposure by better managing climate change risks—is shared among multiple agencies, including OSTP.

Several other government-wide, high-risk areas also have direct implications for OSTP and its operations. These include (1) improving the management of IT acquisitions and operations, (2) improving strategic human capital management, (3) managing federal real property, (4) ensuring the cybersecurity of the nation,[6] and (5) managing the government-wide personnel security clearance process.

We urge your attention to these government-wide, high-risk issues as they relate to OSTP. Progress on high-risk issues has been possible through the concerted actions and efforts of Congress, the Office of Management and Budget (OMB), and the leadership and staff in agencies, including within OSTP. In March 2022, we issued a report on key practices to successfully address high-risk areas, which can be a helpful resource as your agency continues to make progress to address high-risk issues.[7]

In addition to your continued attention on these issues, Congress plays a key role in providing oversight and maintaining focus on our recommendations to ensure they are implemented and produce their desired results. Legislation enacted in December 2022 includes a provision for GAO to identify any additional congressional oversight actions that can help agencies implement priority recommendations and address any underlying issues relating to such implementation.[8]

There are various strategies Congress can use in addressing our recommendations, such as incorporating them into legislation. Congress can also use its budget, appropriations, and oversight processes to incentivize executive branch agencies to act on our recommendations and monitor their progress. For example, Congress can hold hearings focused on OSTP's progress in implementing GAO's priority recommendations, withhold funds when appropriate, or take other actions to provide incentives for agencies to act. Moreover, Congress could follow up during the appropriations process and request periodic updates. Congress also plays a key role in addressing any underlying issues related to the implementation of these recommendations. For example, Congress could pass legislation providing an agency explicit authority to implement a recommendation or requiring an agency to take certain actions to implement a recommendation.

Copies of this report are being sent to the Director of OMB and the appropriate congressional committees. In addition, the report will be available on the GAO website at http://www.gao.gov.

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[5]GAO, *High-Risk Series: Efforts Made to Achieve Progress Need to be Maintained and Expanded to Fully Address All Areas*, GAO-23-106203 (Washington, D.C.: Apr. 20, 2023).

[6]With regard to cybersecurity, we also urge you to use foundational information and communications technology supply chain risk management practices set forth in our December 2020 report, GAO*, Information Technology: Federal Agencies Need to Take Urgent Action to Manage Supply Chain Risks*, GAO-21-171 (Washington, D.C.: Dec. 15, 2020).

[7]GAO, *High-Risk Series: Key Practices to Successfully Address High-Risk Areas and Remove Them from the List*, GAO-22-105184 (Washington, D.C.: Mar. 3, 2022).

[8]James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, Pub. L. No. 117-263, § 7211(a)(2), 136 Stat. 2395, 3668 (2022); H.R. Rep. No. 117-389 (2022) (accompanying Legislative Branch Appropriations Act, H.R. 8237, 117th Cong. (2022)).

I appreciate OSTP's continued commitment to these important issues. If you have any questions or would like to discuss any of the issues outlined in this letter, please do not hesitate to contact me or John Neumann, Managing Director, Science, Technology Assessment, and Analytics, at 202-512-6888 or neumannj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Our teams will continue to coordinate with your staff on all of the nine open recommendations. Thank you for your attention to these matters.

Sincerely yours,

Gene L. Dodaro
Comptroller General
of the United States
Enclosure

cc:     The Honorable Shalanda Young, Director, Office of Management and Budget

**Enclosure - Priority Open Recommendations to the Office of Science and Technology Policy (OSTP)**

## Strengthening Interagency Collaboration

*Federal Research: Additional Actions Needed to Improve Public Access to Research Results*. GAO-20-81. **Washington, D.C.: Nov. 21, 2019.**

**Year Recommendation Made:** 2020

**Recommendation**: As the Subcommittee on Open Science moves forward, the Office of Science and Technology Policy co-chair, in coordination with other co-chairs and participating agencies, should take steps to fully implement leading practices that enhance and sustain collaboration.

**Actions Needed**: OSTP initially disagreed with the recommendation, stating that the subcommittee had already taken steps to implement the leading practices that can help to enhance and sustain interagency collaboration identified in our report. In August 2022, the subcommittee released a new charter. However, the charter does not fully address the leading practices; for example, it does not discuss how the results of the subcommittee's collaborative efforts will be monitored, evaluated, and reported. In February 2023, OSTP provided additional information on the subcommittee's efforts, including identifying the focus areas of its six subgroups and detailing current members. However, from the information OSTP provided it was not clear how the practices of defining outcomes and monitoring results are being implemented.

To fully address our recommendation, OSTP should work with subcommittee member agencies to implement all three leading practices we identified and provide information on how the subcommittee's efforts incorporate these practices. Implementing these practices can help agencies better marshal their collective efforts to support public access to research results.

**Director**: Candice Wright, Science, Technology Assessment, and Analytics

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*Advanced Technologies: Strengthened Federal Approach Needed to Help Identify and Mitigate Supply Risks for Critical Raw Materials*. GAO-16-699. **Washington, D.C.: Sep. 7, 2016.**

**Year Recommendation Made:** 2016

**Recommendation**: To enhance the ability of the Executive Office of the President to coordinate federal agencies to carry out the national materials policy outlined in the National Materials and Minerals Policy, Research and Development Act of 1980, and to broaden future applications of the early warning screening methodology, the Subcommittee on Critical and Strategic Mineral Supply Chains (now the Subcommittee on Critical Minerals) should take the steps necessary to include potentially critical materials beyond minerals, such as developing a plan or strategy for prioritizing additional materials for which actions are needed to address data limitations.

**Actions Needed**: OSTP neither agreed nor disagreed with our recommendation. OSTP stated that it saw the value in analyzing more minerals and non-minerals to help inform policy decisions but that fulfilling this need would require additional dedicated personnel and financial resources. In May 2022, OSTP stated that multiple interagency working groups, including the

subcommittee and the Executive Order 14,017 Working Group, continue to address critical materials issues relevant to our recommendation. OSTP provided several examples of interagency activities related to critical minerals data collection and mapping. However, as of January 2023, OSTP had not provided any examples of activities focused on addressing data limitations for materials other than minerals.

To fully address our recommendation, OSTP should work with subcommittee member agencies and other relevant interagency working groups to develop a plan to coordinate federal efforts and resources to address data limitations. For example, OSTP could work with other agencies to collect data on the quantity of materials consumed for the production of advanced technologies both in the United States and globally. Doing so will enhance agencies' ability to assess other potentially critical materials, in addition to minerals, and could help to more fully implement the requirements of the Energy Act of 2020.

**Director**: Candice Wright, Science, Technology Assessment, and Analytics

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## Managing Climate Risks

> **Climate Change: Future Federal Adaptation Efforts Could Better Support Local Infrastructure Decision Makers. GAO-13-242. Washington, D.C.: Apr. 12, 2013.**

**Year Recommendation Made:** 2013

**Recommendation**: To improve the resilience of the nation's infrastructure to climate change, the Executive Director of the United States Global Change Research Program or other federal entity designated by the Executive Office of the President should work with relevant agencies to identify for decision makers the "best available" climate-related information for infrastructure planning and update this information over time.

**Actions Needed**: The Director of OSTP did not comment on this recommendation. According to officials from OSTP, the U.S. Global Change Research Program (USGCRP) is developing a Climate Resilience Information System that will provide access to the "best available" climate-related information. USGCRP continues to work on the development of this system. OSTP, in coordination with USGCRP and the National Oceanic and Atmospheric Administration, released the Climate Mapping for Resilience Assessments portal in September 2022. This portal allows users to plan for climate change across five hazards and is an example of the type of information resource that the Climate Resilience Information System will more efficiently enable once fully established.[9]

To fully address our recommendation, OSTP should provide information demonstrating a government-wide effort to develop and periodically update a set of climate change observations and projections for use in federal decision-making, which federal, state, local, and private sector

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[9]On March 22, 2023, OSTP released a report titled "Selecting Climate Information to Use in Climate Risk and Impact Assessments: Guide for Federal Agency Climate Adaptation Planners." Further, a report released on March 22, 2023 by the National Science and Technology Council with OSTP involvement titled "A Federal Framework and Action Plan for Climate Services" provided recommendations and next steps to implement a coherent federal approach to climate services. Should the guidance and recommendations within these reports be implemented over time, it may address elements of this recommendation.

decision makers could also access to obtain the best available climate information. These actions can serve to improve the resilience of the nation's infrastructure to climate change.

**Recommendation**: To improve the resilience of the nation's infrastructure to climate change, the Executive Director of the United States Global Change Research Program or other federal entity designated by the Executive Office of the President should work with relevant agencies to clarify sources of local assistance for incorporating climate-related information and analysis into infrastructure planning, and communicate how such assistance will be provided over time.

**Actions Needed**: The Director of OSTP did not comment on this recommendation. In January 2023, OSTP reiterated previously provided information that existing regional science organizations work to provide climate information to regional and local agencies.[10] We acknowledged the value of such organizations in providing regional climate information in our report. However, we reported that no federal entity had comprehensively clarified sources of local assistance for incorporating climate-related information and analysis into infrastructure planning.

To fully address our recommendation, OSTP should provide information demonstrating a government-wide effort to develop and periodically update a set of climate change observations and projections for use in federal decision-making, which federal, state, local, and private sector decision makers could also access to obtain the best available climate information and sources of local assistance for incorporating this information into infrastructure planning. These actions can serve to improve the resilience of the nation's infrastructure to climate change.

**High-risk area:** Limiting the Federal Government's Fiscal Exposure by Better Managing Climate Change Risks

**Director**: J. Alfredo Gómez, Natural Resources and Environment

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## Tracking Progress toward National Goals

**High-Performance Computing: Advances Made Towards Implementing the National Strategy, but Better Reporting and a More Detailed Plan Are Needed. GAO-21-104500. Washington, D.C.: Sept. 30, 2021.**

**Year Recommendation Made:** 2021

**Recommendation**: The Director of the Office of Science and Technology Policy should address each of the desirable characteristics of a national strategy, as practicable, in the implementation roadmap for the 2020 strategic plan or through other means.[11]

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[10]On March 22, 2023, OSTP released a report titled "Selecting Climate Information to Use in Climate Risk and Impact Assessments: Guide for Federal Agency Climate Adaptation Planners." Further, a report released on March 22, 2023 by the National Science and Technology Council with OSTP involvement titled "A Federal Framework and Action Plan for Climate Services" provided recommendations and next steps to implement a coherent federal approach to climate services. Should the guidance and recommendations within these reports be implemented over time, it may address elements of this recommendation.

[11]The desirable characteristics of a national strategy we assessed in our report include: (1) organizational roles, responsibilities, and coordination; (2) purpose, scope, and methodology; (3) goals, subordinate objectives, activities,

**Actions Needed**: OSTP concurred with this recommendation. OSTP officials stated that it would address the desirable characteristics of a national strategy, as practicable, in the upcoming implementation roadmap for the 2020 strategic plan for high-performance computing, with the exception of characteristics that it considers not to be reasonable for inclusion in federal strategies. The implementation roadmap was issued in May 2022; however, it does not address many of the desirable characteristics of a national strategy, such as performance measures or a process for monitoring and reporting on progress. The officials said they plan to publish a progress report on the strategic plan in summer 2023 that would address additional desirable characteristics of a national strategy. By doing so, OSTP could fully address our recommendation and, as a result, the agencies involved in implementing the 2020 strategic plan can improve their ability to achieve its goals.

**Recommendation**: The Director of the Office of Science and Technology Policy, in consultation with the 10 National Strategic Computing Initiative agencies, should prepare publicly available annual reports assessing progress made in implementing the 2020 strategic plan on the future advanced computing ecosystem.

**Actions Needed**: OSTP concurred with this recommendation. OSTP officials stated that it will publish an annual report on progress toward implementing the 2020 strategic plan for high-performance computing, with the first progress report expected in summer 2023. To fully address our recommendation, OSTP should complete the first annual report in 2023 and develop a plan for subsequent annual reports on progress implementing the 2020 strategic plan. Such information could help Congress and the public gain a better understanding of the efforts made by federal agencies to sustain and enhance U.S. scientific, technological, and economic leadership in high-performance computing.

**Director**: Candice Wright, Science, Technology Assessment, and Analytics

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> ***U.S. Manufacturing: Federal Programs Reported Providing Support and Addressing Trends. GAO-17-240. Washington, D.C.: Mar. 28, 2017.***

**Year Recommendation Made:** 2017

**Recommendation**: To enhance the ability of the Executive Office of the President to implement the Revitalize American Manufacturing and Innovation Act of 2014 requirements related to reporting on advanced manufacturing, the Director of the Office of Science and Technology Policy, working through the National Science and Technology Council and agency leadership, as appropriate, should identify the information they will collect from federal agencies to determine the extent to which the objectives outlined in the National Strategic Plan for Advanced Manufacturing are being achieved.

**Actions Needed**: OSTP did not state whether it agreed or disagreed with this recommendation. OSTP stated that a mechanism existed to collect information from federal agencies to determine the extent to which the objectives in the National Strategic Plan for Advanced Manufacturing are being achieved. However, we believe the recommendation is still warranted because OSTP has not identified the information it would need to collect from agencies to measure progress toward the national plan's objectives. In October 2022, the Subcommittee on Advanced Manufacturing

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and performance measures; (4) problem definition and risk assessment; (5) resources, investments, and risk management; (6) integration and implementation.

published an updated National Strategy for Advanced Manufacturing. While the strategy does establish a clear linkage between the goals, objectives, and recommendations, it does not include specific metrics or information to be collected to measure achievement of such goals.

To fully address our recommendation, OSTP should also ensure that the plan identifies specific and measurable information it will collect from agencies to assess progress toward the plan's goals and objectives. Identifying such information will help ensure collection of consistent, comprehensive information with which to measure progress, and will enhance reporting on the progress of advanced manufacturing efforts.

**Director**: Thomas Costa, Education, Workforce, and Income Security

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