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MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES

FROM: SHALANDA D. YOUNG
DIRECTOR
OFFICE OF MANAGEMENT AND BUDGET

ARATI PRABHAKAR
DIRECTOR
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

SUBJECT: Multi-Agency Research and Development Priorities for the FY 2025 Budget

Our Nation has immense aspirations today: achieving robust health and ample opportunity for each person in every community; overcoming the climate crisis by reimagining our infrastructure, restoring our relationship with nature, and securing environmental justice; sustaining global security and stability; building a competitive economy that creates good-paying jobs; realizing the benefits of artificial intelligence while managing its risks; and fostering a strong, resilient, and thriving democracy. The purpose of public science, technology, and innovation is to open doors to make these aspirations possible.

Because Federal research and development (R&D) is integral to the just, vibrant, and ambitious future that America seeks, President Biden is prioritizing R&D funding and mobilizing America's powerful R&D ecosystem. To make its vital contribution to our future, federal R&D must sustain America's leadership position in science and technology. It must take aim at and achieve bold, barely feasible goals. Federal R&D must translate into new products and services, new industries and jobs, new policies and regulations, and new standards and practices. And it must bring the power of innovation to important national missions that have not traditionally benefitted from R&D—from K-12 education and workforce training to construction and traffic safety.

This memorandum outlines the Administration's multi-agency R&D priorities for formulating fiscal year (FY) 2025 Budget submissions to the Office of Management and Budget (OMB). These priorities should be addressed within the FY 2025 Budget guidance levels provided by OMB. Clear choices will be required given constrained discretionary funding caps. Agency budget submissions should include an addendum that details how each request level addresses these priorities. Agencies engaged in complementary activities are expected to consult with one another during the budget formulation process to maximize impact by coordinating resources and avoiding unnecessary

duplication. As in previous years, the investments supported by the Budget for the R&D priorities listed below will be highlighted in the 2025 Analytical Perspectives Volume.

Multi-Agency Priority Guidance

Advance trustworthy artificial intelligence (AI) technology that protects people's rights and safety, and harness it to accelerate the Nation's progress. AI is one of the most powerful technologies of our time. The choices we make in the coming years about advancing and using AI will have important consequences for civil rights and civil liberties, safety and security, jobs and the economy, and democratic values. The federal government plays multiple essential roles, including mitigating AI risks and using AI technology to better deliver on the wide range of government missions, advance solutions to the Nation's challenges that other sectors will not address on their own, and tackle large societal challenges. Agency submissions should fund R&D activities to support and fulfill multiple critical purposes:

- Build tools, methods, and community engagement to guide the design of regulatory and enforcement regimes for mitigating AI threats to truth, trust, and democracy; safety and security; privacy, civil rights and civil liberties; and economic opportunity for all.
- Design, pilot, and assess the results of new approaches to apply AI to improve government functions and public services.
- Develop trustworthy, powerful advanced AI systems that help achieve the Nation's great aspirations.

Lead the world in maintaining global security and stability in the face of immense geopolitical changes and evolving risks. Agencies should support R&D that will create the next generation of national security technologies and capabilities, mitigate critical national security risks, and accelerate the pace of responsible technology adoption in a competitive global environment. Agencies should fund world-leading research, development, and innovation activities that:

- Advance critical and emerging technology areas. such as microelectronics, biotechnology, quantum information science, advanced materials, high performance computing, and nuclear energy.
- Mitigate emerging and evolving national security risks, including the risks associated with biosafety, biosecurity, and nuclear weapons.
- Mitigate cybersecurity risks through resilient architectures; building in security by design; strengthening security and resilience for critical infrastructure, and integrating social, behavioral, and economics research.
- Address the national security impacts of autonomous systems and artificial intelligence.
- Leverage R&D investments, including those focused on advanced manufacturing, digital engineering, and robotics, to increase the capacity and agility of government and industry to accelerate the transition of new national security capabilities from demonstration to deployment at scale.
- Harness science and technology intelligence and analytic capabilities to assess and benchmark U.S. competitiveness.

Step up to the global challenge of meeting the climate crisis by reimagining our infrastructures, renewing our relationship with nature, and securing environmental justice. The United States and the world face a profound climate crisis with a rapidly narrowing window to avoid the most catastrophic impacts of climate change. Agency R&D programs should advance the Administration's

climate goals, including by harnessing the power of nature, reimagining and updating our infrastructure, strengthening and protecting the health of communities, lowering energy costs for families, protecting biodiversity, and creating good-paying jobs here in the United States. These investments should advance economic and environmental justice, equity, and public health by reducing vulnerabilities and increasing resilience to climate change. Agency submissions should:

- Support R&D efforts that will help the nation achieve net-zero greenhouse gas emissions by 2050, including priorities identified in the Net-Zero Game Changers Initiative, goals articulated in the Ocean Climate Action Plan and the U.S. Global Change Research Program's Decadal Strategic Plan, and investments that enhance the Nation's ability to measure and monitor greenhouse gas emissions and removal.
- Address climate observations, monitoring, modeling, and research gaps ahead of the 6th National Climate Assessment, including in parts of our Nation beyond the contiguous United States; address risks and opportunities for future generations, including beyond 2100; and advance and use Indigenous Knowledge and social science research to achieve climate goals.
- Advance, through coordination with the U.S. Global Change Research Program, the development of actionable climate services consistent with the Federal Framework and Action Plan, to support communities, governments, and businesses in enhancing resilience and taking action.
- Fund R&D efforts to improve analysis for difficult-to-monetize or -quantify policy options and technologies such as ecosystem services, track natural assets through the emerging national system of environmental and economic statistics, support the National Nature Assessment, and advance recommendations in the Nature-Based Solutions Roadmap.

Achieve better health outcomes for every person. Current U.S. health outcomes are unacceptable. Science, technology, and innovation must open pathways to reverse the course. Agencies should propose R&D activities to achieve better health outcomes in communities across the United States, including those that:

- Robustly fund activities to help the Cancer Moonshot achieve its goal of ending cancer as we know it, including efforts in prevention, early detection, novel therapies, and care delivery and support.
- Bolster the capacity to mitigate current and emerging health threats, including addressing antimicrobial resistance and identifying and eliminating infectious disease outbreaks before they become pandemics.
- Support behavioral and mental health for all Americans, including at-risk communities like our veterans, caregivers, medical professionals, youth, and members of the LGBTQI+ community.
- Improve public health, health equity, and innovation in disease prevention.
- Achieve progress to improve clinical trials, enhance nutrition, advance cures for rare diseases, combat neurodegeneration, and address other high-need areas.
- Reduce the cumulative impacts of environmental burdens and advance environmental justice by preventing exposures to harmful chemicals (such as lead and per- and polyfluoroalkyl substances), and mitigating the health effects of climate change, especially for communities that experience these burdens disproportionately.

Reduce barriers and inequities. This is our Nation's great and unfinished work. Agencies should undertake R&D and apply technology advances to ameliorate inequities and create opportunity in ways that strengthen our values. Agency budget submissions should:

- Support regional innovation and workforce development in science, technology, engineering, mathematics, and medicine all across America with an emphasis on emerging research institutions and historically underserved communities.
- Design and implement rigorous experiments and evaluations, data sharing agreements, and prototyping exercises to answer critical policy questions by generating comparative evidence about how well different approaches can help us reach national goals more equitably, effectively, and expeditiously, with appropriate privacy protections in place.
- Broaden public participation and community engagement in regulatory and civic processes and in R&D.

Bolster the R&D and industrial innovation that will build the Nation's future economic competitiveness from the bottom up and middle out. Global competition is growing, and the pandemic cast a harsh light on the fragility of worldwide supply chains. In this environment, agencies should focus on harnessing science and technology to foster good paying jobs, raise the standard of living, and boost supply chain resilience. Agency submissions should:
- Support applied research, experimental development, pre-commercialization, and standards-related efforts that will facilitate the adoption of a broad range of new technologies.
- Pursue regional innovation and resilience by invigorating communities and traditional or emerging industries to spark growth and create good-paying jobs.

Strengthen, advance, and use America's unparalleled research to achieve our Nation's great aspirations. Basic and applied research is the bedrock upon which our capacity for innovation is built. Agency budget submissions should continue to improve our richly complex research system so it becomes increasingly effective for the greatest challenges of our time. Submissions should:
- Support and enhance the basic and applied research that has been a hallmark of the American innovation enterprise and the envy of the world.
- Assist emerging research institutions to compete effectively for federal funding.
- Provide support to both the industrial and academic sectors in identifying and addressing research security challenges.
- Support the infrastructure and capacity for providing free, immediate, and equitable public access to federally-funded research results, while developing mechanisms to incentivize and reward open, reproducible, and secure research practices, in ways that benefit individuals, industry, and innovators everywhere.
- Experiment with funding processes to better achieve agency R&D missions by designing, trying, and assessing new approaches such as streamlining processes to minimize administrative burdens, engaging new R&D performers, exploring new R&D methods, and forging new partnerships.