Congress of the United States
Washington, DC 20515

November 2, 2022

The Honorable Arati Prabhakar
Director
White House Office of Science and Technology Policy
1650 Pennsylvania Avenue NW
Washington, DC 20502

Dear Director Prabhakar,

The U.S. must have a workforce skilled in science, technology, engineering, math, and computer science ("STEM"). Having a domestic, STEM-literate workforce ready to develop and deploy critical emerging technologies is foundational to our future competitiveness. As Members of the Science, Space, and Technology Committee, we have been invested in ensuring all Americans have access to high-quality STEM education and training and would like to request an update on your office's progress in developing the next iteration of the Federal STEM Education Strategic Plan, as authorized by the America COMPETES Reauthorization Act of 2010 (P.L. 111-358).

In recent years, the federal government has undertaken several efforts to strengthen our research enterprise and bolster the pipeline of STEM-capable workers to support critical technology areas. The recently enacted CHIPS and Science Act (P.L. 117-167) is the latest effort to diversify and invest in a robust domestic workforce that is prepared to meet the challenges of the future.

Building on the Trump Administration's 2018 STEM strategy, "Charting a Course for Success: America's Strategy for STEM Education," the federal government must continue to focus on closing the STEM skills gap and advancing U.S. competitiveness in critical technologies and industries of the future. The 2018 strategy highlighted several paths to further these objectives including building strategic partnerships, improving STEM teacher training, encouraging transdisciplinary learning, and building computational literacy.

The need is self-evident. The Bureau of Labor Statistics projects that STEM employment in the United States is projected to grow nearly 11 percent over the next ten years, over double the growth rate of non-STEM occupations.[1] While this demand continues to grow, K-12 STEM test scores have shown little improvement or even decline, particularly in mathematics.[2] The Department of Education recently released the 2022 National Assessment of Educational

[1] U.S. Bureau of Labor Statistics, 8 September 2022. Employment in STEM Occupations. Washington, DC. Available at https://www.bls.gov/emp/tables/stem-employment.htm
[2] National Science Board, National Science Foundation. 2022. Science and Engineering Indicators 2022: The State of U.S. Science and Engineering. NSB-2022-1. Alexandria, VA. Available at https://ncses.nsf.gov/pubs/nsb2022

Progress Report Card with 4th and 8th grade mathematics scores recording their largest decrease ever in decades.[3] Simultaneously, demand for advanced degrees in STEM fields are outpacing available talent, widening the skills gap.[4] In the United States, 28% of recruiters struggle "to find applicants with experience in deep learning, machine learning, and data engineering and analytics."[5] Another study found that more than two million U.S. manufacturing jobs could go unfilled by 2030 due to the skills gap and retirements.[6] According to the Center for Security and Emerging Technology, "teaching capacity gaps" in American universities have also constrained the national STEM talent pipeline, particularly the AI workforce.[7]

The Chinese Communist Party ("CCP") has made unprecedented investments in its STEM talent pipeline. President Xi Jinping has identified investment in human capital as a key priority for advancing national competitiveness.[8] Currently, more than 75% of Chinese doctoral students enter STEM fields, and experts project that by 2025, China will have "twice as many STEM PhDs as the United States."[9] If the U.S. wants to contend with the broad investments that the CCP has already made, the federal government must implement congressionally authorized programs in a way that cultivates a STEM-capable workforce in every zip code, including assisting with the technical training to fill high-demand jobs.

As you look to finalize the upcoming 2023 Federal STEM Education Strategic Plan, it is vital to consider shortcomings in existing science and technology curricula and training initiatives and to build upon the prior Administration's progress. The 2018 Federal STEM Education Strategic Plan envisioned continued U.S. technological leadership built upon a "diverse pool of STEM-literate Americans, including college-educated STEM practitioners and skilled trade workers."[10] Further, it emphasized a multidisciplinary approach to student engagement and investment to advance technological innovation and literacy across the board. We urge OSTP to ensure these initiatives continue in the next Federal STEM Education Strategic Plan. We would like to request a briefing and seek detailed answers to the following questions:

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[3] "NAEP Report Card: 2022 NAEP Mathematics Assessment." *The Nation's Report Card*, 24 Oct. 2022, www.nationsreportcard.gov/highlights/mathematics/2022/.
[4] Masiowski, Mateusz, et al. "Quantum Computing Funding Remains Strong, but Talent Gap Raises Concern." McKinsey & Company, 15 June 2022, www.mckinsey.com/business-functions/mckinsey-digital/our-insights/quantum-computing-funding-remains-strong-but-talent-gap-raises-concern.
[5] Nawrat, Allie. "1 in 3 Struggling with AI Skills Gap." *UNLEASH*, 25 Apr. 2022, www.unleash.ai/artificial-intelligence/one-in-three-struggling-with-ai-skills-gap/.
[6] Deloitte and the MI. 2021. Creating Pathways for Tomorrow's Workforce Today. Washington, DC. Available at https://www.themanufacturinginstitute.org/2-1-million-manufacturing-jobs-could-go-unfilled-by-2030-11330/?stream=workforce-news.
[7]Zwetsloot, Remco, et al. China is Fast Outpacing U.S. STEM PhD Growth. Center for Security and Emerging Technology, 2021. cset.georgetown.edu/publication/china-is-fast-outpacing-u-s-stem-phd-growth/#:~:text=Executive%20Summary,in%20the%20next%20five%20years.
[7] Boland, Briana, et al. *How China's Human Capital Impacts Its National Competitiveness*. Center for Strategic and International Studies, 2022, www.csis.org/analysis/how-chinas-human-capital-impacts-its-national-competitiveness.
[8] Zwetsloot, Remco, et al.
[9] Committee on STEM Education. *Charting a Course for Success: America's Strategy for STEM Education*. Executive Office of the President of the United States, 2018, www.energy.gov/sites/default/files/2019/05/f62/STEM-Education-Strategic-Plan-2018.pdf.

1) How is OSTP engaging stakeholders from the STEM education ecosystem in the development, design, and implementation process to ensure the Federal STEM Education Strategic Plan's success in cultivating a STEM-capable workforce?
2) Is OSTP ensuring that there is a diverse group of stakeholders represented and participating in this planning process from around the U.S.? Please provide a list of engagement events OSTP has hosted that will contribute to the production of the STEM Strategy and, if available, who has attended or will be invited. In addition, please provide any presentation materials from stakeholder events.
3) How will OSTP build upon the goals put forth in the 2018 Federal STEM Education Strategic Plan? What objectives from the prior plan will OSTP prioritize?
4) How is OSTP considering and evaluating the fundamental education and training needed for the workforces of the future in fields like Artificial Intelligence and Quantum?
5) What is OSTP's timeline for rolling out the Federal STEM Education Strategy in 2023?

Thank you for considering this matter that has major implications for U.S. national security and competitiveness. If you have any follow up questions, please reach out to Representative Kim's office at (202) 225-4111. We look forward to hearing from you.

Sincerely,

Young Kim
MEMBER OF CONGRESS

Frank Lucas
MEMBER OF CONGRESS

CC: The Honorable Eddie Bernice Johnson, Chairwoman

Committee on Science, Space, and Technology