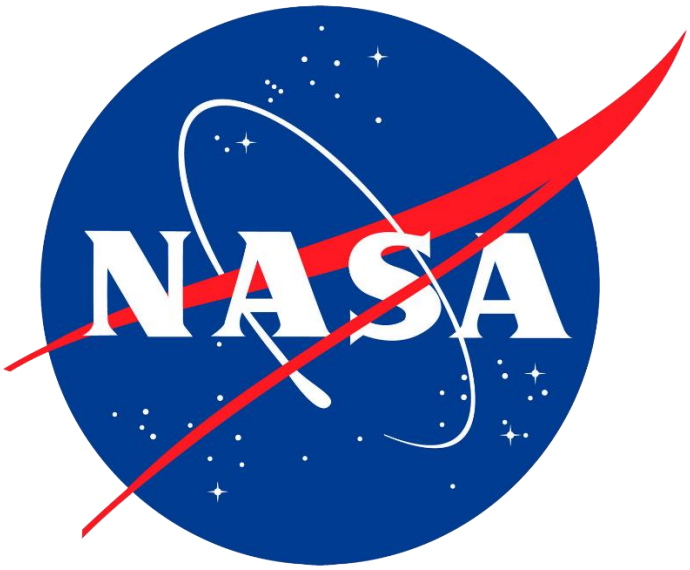

2023 Equity Action Plan

www.NASA.gov/mission-equity

EXECUTIVE ORDER 14091: EQUITY ACTION PLAN

AGENCY NAME: National Aeronautics and Space Administration (NASA)

AGENCY EQUITY TEAM LEAD: Office of the Administrator

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[1] Language and terms used throughout this document are based on Executive Orders 14091 and 13985, which define equity and underserved communities: "(a) The term "equity" means the consistent and systematic treatment of all individuals in a fair, just, and impartial manner, including individuals who belong to communities that often have been denied such treatment, such as Black, Latino, Indigenous and Native American, Asian American, Native Hawaiian, and Pacific Islander persons and other persons of color; members of religious minorities; women and girls; LGBTQI+ persons; persons with disabilities; persons who live in rural areas; persons who live in United States Territories; persons otherwise adversely affected by persistent poverty or inequality; and individuals who belong to multiple such communities. (b) The term "underserved communities" refers to those populations as well as geographic communities that have been systematically denied the opportunity to participate fully in aspects of economic, social, and civic life, as defined in Executive Orders 13985 and 14020." See also NASA's Diversity, Equity, Inclusion and Accessibility (DEIA) Policy Statement.

1. Message from the Agency Head

As NASA prepares to return to the Moon, we celebrate a year of great achievements. From the history-making Artemis I test flight to changing an asteroid's trajectory with the Double Asteroid Redirection Test (DART), and from revealing the first James Webb Space Telescope images to making critical Earth science data more accessible, NASA is steadfast in the belief that our missions are for the benefit of humanity.

One of our greatest missions lies here at home. In this golden age of space exploration, NASA's commitment to advancing equity continues unabated. To meet NASA's potential on Earth, in the air, and in the Cosmos, our Nation's space Agency is reckoning with and addressing the long-standing disparities among underserved communities.

Equity must be embedded in all our endeavors, from expanding opportunities for businesses in historically underserved communities to partner with NASA, to leveraging Earth science to help mitigate environmental challenges. We are also expanding opportunities to ensure NASA's workforce in the 21st century looks like America. This starts with a new generation – the Artemis Generation. To achieve our missions, we must equip this entire generation with resources and support to break new barriers and go farther than ever before. That is only possible if NASA continues to empower the whole of our Nation with opportunity today. Strengthening equity at NASA is vital to the Artemis Generation's success. Greater access to opportunities sparks greater curiosity in young minds, helping more individuals realize their potential and see themselves as a part of NASA's daring future.

Through this Equity Action Plan and NASA's *Mission Equity*, we further identify the barriers that limit opportunity in historically underserved communities and anchor equity as a core component in every mission to inspire a new, more inclusive generation.

At NASA, the sky has never been the limit. This is our opportunity to help make the potential of all Americans limitless.

Bill Nelson
NASA Administrator

2. Advancing Equity Through Agency Mission

The foundation of NASA's work is found in our Mission Statement: "NASA explores the unknown in air and space, innovates for the benefit of humanity, and inspires the world through discovery." From hidden figures to today's trailblazers, NASA embraces all who desire to participate in ongoing discovery and exploration. Equity is essential to applying that principle today and is critical to achieving success in our missions of tomorrow. Together with our industry and international partners, we foster innovation and inspire the world with fresh pathways to discoveries on Earth and throughout the Cosmos. When we enable individuals to inclusively participate and intentionally reduce systemic barriers that hinder equity, we provide space for all possible talent, skills, and ideas. As NASA looks ahead to new missions and making space for everyone, we are actively expanding our reach across all communities, including those who are underserved. To chart America's course in space tomorrow, NASA will empower the whole of our Nation with opportunity here at home today.

3. Executive Summary of Equity Action Plan

As NASA continues its Mission Equity journey, the 2023 Equity Action Plan (EAP), pursuant to Executive Order 14091, *Further Advancing Racial Equity and Support for Underserved Communities through the Federal Government*, expands upon the 2022 plan and incorporates feedback from external stakeholders into new actions and goals. NASA has selected five strategies in the areas of:

1. **Procurement and Contracts:** *Increase Utilization and Integration of Contractors and Businesses from Underserved Communities to Expand Equity in NASA's Procurement Process.*
2. **Grants and Cooperative Agreements:** *Enhance Grants and Cooperative Agreements to Advance Opportunities, Access, and Representation for Underserved Communities.*
3. **Climate Data Accessibility and Environmental Justice:** *Increase Accessibility and Use of Earth Science Data in Underserved and Disadvantaged Communities to Inform Decision-Making.*
4. **Equity for Limited English Proficient (LEP) Populations:** *Improve Language Access Policies to Expand Access for Limited English Proficient Populations to NASA Programs and Activities.*
5. **Equity in Science, Technology, Engineering and Mathematics (STEM):** *Engage Students to Build a Diverse Future STEM Workforce.*

Barriers: Several barriers identified through public listening sessions and feedback opportunities were common across multiple focus areas, including: lack of knowledge regarding access to NASA programs, policies, and procedures; limited understanding of program requirements and resources; and lack of information available in the user's primary language for those with limited English proficiency. More specifically:

- The Office of Procurement (OP) and Office of Small Business Programs (OSBP) found through Requests for Information (RFIs), polling, and survey feedback that understanding how to initially engage with NASA acquisition points of contacts and awareness of subcontracting goals to potentially pursue subcontracting opportunities were barriers to participation. An example of feedback received: *"Partner with non-profit organizations that work towards fostering specific skills and leadership in underserved communities. Organizations like Black Girls Code, *Code2040, and the National Society of Black Engineers (NSBE) are excellent examples of organizations focused on increasing the representation of underserved communities in STEM fields."*
- OP/Grants Policy Compliance (GPC) analyzed proposal submission data from 2019-2021 to determine if there was support for feedback received in the June 2021 RFI. The data indicated only 14 percent of proposal submissions were from underserved communities. This submission rate validates limited engagement due to a lack of access and knowledge as a barrier, as identified in the RFIs on barriers in NASA grants and cooperative agreements published in the Federal Register. Overall, NASA issued three RFIs (June 2021;

April 2023; and June 2023) seeking input from the public on advancing equity in NASA programs, contracts, and grants and the identification of barriers limiting or preventing them from seeking NASA opportunities. These three RFIs identified several barriers including misperceptions by underserved communities about aligning with NASA's mission, a lack of engagement with NASA due to lack of awareness of NASA grant programs, and lack of access to information about NASA's grant programs and policies.

- NASA's Science Mission Directorate (SMD) found through listening sessions and workshops that unequal access to information about our planet, also known as Earth information, is a barrier to well-informed climate-related decision making in underserved communities.
- The Office of Diversity and Equal Opportunity (ODEO) found through research that over 25 million people in the United States (U.S.) lack English proficiency, which could adversely impact communities' ability to access NASA programs or critical safety information.
- The Office of STEM Engagement's (OSTEM) comprehensive internal studies and data analysis showed a need for more strategic collaborations and partnerships to increase access to programs.

Actions: NASA has several key actions outlined in this plan to advance equity and address identified barriers described above, including: formation of a small disadvantaged business tiger team led by NASA's Deputy Administrator to promote equity in procurement awards; expanding the Earth Information Center (EIC) which provides easy-to-use information and resources to support decision makers in responding to climate change; establishment of a NASA Grants and Cooperative Agreements Playlist on NASA's YouTube channel featuring training sessions and informative talks; and signing of a Memorandum of Understanding (MOU) between NASA and the U.S. Department of Education which will leverage 21st Century Community Learning Centers to provide technical assistance and STEM enrichment opportunities for students in high-poverty, low performing schools.

Engagement: Throughout the year, NASA engaged the public through numerous methods to identify and gain insight on the barriers outlined in this plan and best practices to increase access to NASA programs and information, which informed the development of strategies to overcome these barriers and develop this EAP. Since the development of our 2022 EAP, NASA has held multiple small business listening sessions and solicited feedback through RFIs (June 2021, April 2023, June 2023). Through OSTEM, we hosted an Equity Action Plan K-12 Stakeholder Town Hall, the Better Together Conference, and expanded our annual Historically Black Colleges and Universities (HBCU) -Minority Serving Institutions (MSI) Technology Infusion Road Tour. In January 2023, we hosted a Tribal Consultation forum open to all 574 federally recognized tribal nations. NASA also participated in and received feedback from the *Language Access Stakeholder Listening Session* hosted by the U.S. Department of Justice. Our Earth Science Division (ESD) led public sessions such as *Understanding Needs to Broaden Outside Use of NASA Data (UNBOUND) for Environmental Justice*, and captured feedback

from projects including the Indigenous Peoples Initiative. In October, NASA's SMD hosted a community workshop with potential partners to help co-create the new Bridge Program. Through these interactive and inclusive discussions, NASA captured feedback to formulate this living document, which serves as NASA's blueprint as the Agency strengthens efforts to reduce barriers and increase access while continuing to engage our external stakeholders and partners.

4. Equity Progress Update and Accomplishments

A. ***2022 Equity Action Plan Update (pursuant to Executive Order (EO) 13985):*** NASA hosted an Equity Stakeholder Town Hall on September 28, 2022, to share ideas and gain insights on potential barriers to participation in NASA programs and equitable access to agency data and information, and made significant strides toward goals outlined in the 2022 Equity Action Plan, some of which are described below:

Focus Area 1: Equity in Procurement

- In Fiscal Year (FY) 2022, NASA's OSBP increased outreach events by 80 percent from FY 2021, surpassing the goal of 50 percent by 2029, and saw an increase in participation from businesses in underserved communities by ten percent.
- NASA's Small Business Learning Series webinar attendance increased by 20 percent from FY 2021 to FY 2022, and is the only Federal agency with a Small Business app.
- From FY 2021 through FY 2022, NASA obligated $1.9 billion in contracts under the product service line set-asides for small business categories and AbilityOne programs, the largest source of employment for individuals with disabilities.

Focus Area 2: Equity in Grants and Cooperative Agreements

- NASA's GPC completed phase one of its barrier analysis in the fourth quarter of 2022, and took the following actions to address identified barriers:
  - Developed NASA grants resources, including facts sheets.
  - Expanded the posting of Notice of Funding Opportunities (NOFO) to the Agency's Minority Serving Institutions' Exchange newsletter to enhance accessibility.
  - Standardized NASA NOFO template to ensure consistency and compliance with Federal regulations while reducing the administrative burden on grant applicants.
  - Increased the grant award amount to HBCUs between FY 2021 and FY 2022 by 39.9 percent, or $1.36 million.
- Increased public participation in NASA outreach events to underserved communities between September 2022 and March 2023 by 70 percent.
- NASA's SMD expanded its Dual Anonymous Peer Review (DAPR) to 19 science solicitations for NASA's Research Opportunities in Space and Earth Sciences (ROSES), which helps maintain an equitable proposal process.
- Launched the Bridge Program to increase diversity in NASA's STEM workforce and build capacity at HBCUs and minority serving institutions.

Focus Area 3: Equity in Climate Data Accessibility and Environmental Justice

- NASA awarded 39 environmental justice proposals totaling $6.9 million for up to three years. These proposals included topics of air quality, climate hazards, and extreme heat.
- As of December 2022, the Agency migrated 75 environmental data sets to the cloud, surpassing the goal of 50 for 2022, to make the data more accessible to the public.
- Since January 2022, the Agency Applied Remote Sensing Training program has trained almost 28,000 people from all 50 states, three territories, and 159 countries on how to use NASA data to address key environmental issues, surpassing its annual goal of 3,000 people by more than nine-fold.
- NASA awarded 16 proposals totaling $6.5 million over three years for education and training in open science to enable transparent research and data for everyone.
- As part of NASA's Minority University Research and Education Project (MUREP) Data Equity Access program, the Agency awarded eight proposals totaling $11 million over three years to HBCUs to build data science networks with Earth science data.
- NASA's Community Action and Climate & Resilience programs were added to the Justice40 initiative. These programs help NASA ensure underserved communities have access to resources to combat the effects of climate change and promote an environment free of toxins and pollutants, all part of the NASA's Climate Strategy.
- NASA opened its first Earth Information Center, providing accessible resources, user-friendly information, and data both online and on-site that can be used immediately by the public and decision makers. This action will help address the barrier of unequal access to Earth information in many underserved communities.

Focus Area 4: Equity in Civil Rights Compliance and Accessibility to LEP Populations

- The Agency communicated new harassment reporting requirements to all grantees.
- NASA developed and updated Language Access Plans at all ten Centers to establish a more equitable communication strategy for reaching LEP populations.
- NASA completed one Title VI compliance review focused on limited English proficiency. We also completed two Title IX reviews and initiated two additional Title IX reviews.
- NASA greatly expanded Spanish-language communications, including:
  - Released the second episode of Universo Curioso de la NASA, ranked number one in science podcasts in 15 countries.
  - NASA's Spanish language Instagram and X(Twitter) accounts ranked number one in the Federal Government.
  - Expanded Spanish-language products including an Aeronautics web page and live broadcast in Spanish of the Artemis I launch.

B. ***Environmental Justice (EJ) Scorecard Update (pursuant to section 223 of EO 14008):*** Demonstrating an increased focus in EJ, NASA's accomplishments in FY 2022 include: tools and resources to advance EJ; 39 new investigator teams working on EJ through research grants; NASA's Health and Air Quality Applied Science Team working with public health and air quality agencies using NASA data and tools for public benefit; and the NASA

DEVELOP national program conducting seven feasibility projects addressing EJ-related community interests in FY 2022. NASA's EJ Scorecard may be found here.

C. ***Additional Efforts to Advance Equity:*** Examples of recent accomplishments and engagements from which feedback was used to inform this EAP and advance NASA's equity efforts include:

ACCESSIBILITY: Among NASA's efforts to increase accessibility are initiatives at NASA Goddard Space Flight Center and Space Center Houston for Sensory Friendly Hours at visitor centers and numerous STEM materials and programs for students with disabilities. In July 2023, Kennedy Space Center Visitor Complex was named a Certified Autism Center.

EQUITY for LGBTQI+ COMMUNITIES: NASA's Office of Procurement held its first virtual LGBTQI+ Vendor Equity Forum, connecting more than 220 industry stakeholders and businesses with Federal procurement experts. The Agency also collaborated with Google Arts & Culture to showcase contributions of LGBTQI+ employees.

EQUITY FOR RURAL COMMUNITIES: NASA's Earth Science Division embarked on an agriculture-focused tour of Nebraska, Kansas and Oklahoma to learn how satellite data is used, as well as launched NASA Acres which links scientists with agriculture leaders. Other communication tools include a NASA Harvest website, and SMD's "3D Thursdays" Rural Educator Series.

EQUITY IN SPACE: NASA's Artemis missions will launch the first woman and first person of color to orbit the Moon. In 2022, NASA Astronaut and U.S. Marine Corps Col. Nicole Mann became the first Indigenous woman to go to space, while NASA Astronaut Dr. Jessica Watkins became the first Black woman to serve a long-duration mission aboard the orbiting laboratory. NASA also produced and released a documentary *The Color of Space*, which features a conversation between seven current and former Black NASA astronauts.

EQUITY FOR TRIBAL NATIONS: NASA held its inaugural Tribal Nations Forum open to all 574 federally recognized tribes as part of our Tribal Consultation Plan. NASA continues to conduct STEM events with Tribal youth, including the First Nations Launch and a partnership with the Choctaw Nation to support science education.

GENDER EQUITY: NASA expanded the use of Dual Anonymous Peer Review to minimize the impact of implicit or unconscious bias in the evaluation of proposals. We redesigned space suits to better accommodate women, and launched NASA Women in STEM which mobilized the women of NASA to participate in student engagement activities in their communities.

D. ***Advancing Equity Through Key Legislation:*** As NASA implements specific legislative requirements, we are embedding equity throughout key processes and points of access, including areas of NOFOs. The Agency has also established an Evidence-Based Policy Making Act web page.

5. Strategies to Advance Equity in FY 2024

The following outlines NASA's Strategies to Advance Equity in the areas of:

Strategy #1: Equity in Procurement and Contracts: *Increase Utilization and Integration of Contractors and Businesses from Underserved Communities to Expand Equity in NASA's Procurement Process.*

Whole-of-Government Equity Objective(s): Economic Justice

Collaborating Agencies: An MOU with the Minority Business Development Agency (MBDA) to leverage MBDA access to diverse businesses, is scheduled to be signed in 2023 by the NASA Deputy Administrator and Under Secretary of Commerce for MBDA. NASA is also engaging with the White House Initiative on Historically Black Colleges and Universities to learn best practices and strategies to increase awards to HBCUs. NASA is collaborating with the U.S. Small Business Administration to strengthen the partnership and achievement of Small Disadvantaged Business (SDB) goals.

Barriers to Equity:
NASA issued three RFIs (June 2021; April 2023; and June 2023) seeking input from businesses within underserved communities on advancing equity in NASA programs, contracts, and grants and the identification of barriers limiting or preventing them from seeking NASA opportunities. These barriers are described in detail below.

Evidence Base to Support Strategy:
- NASA Metrics (award, obligation, small business concern, etc.):
  - As of September 30, 2023, NASA obligated 7.4 percent of funds to SDBs compared to 8.1 percent at the same point in FY 2022.
- RFIs issued by NASA seeking public input from businesses within underserved communities regarding the effort to advance equity in NASA programs, contracts, and grants (June 2021; April 2023; and June 2023) yielded examples of barriers that include:
  - Inability of businesses within underserved communities to identify solicitation opportunities aligned to their capability and/or opportunities to partner with large businesses for access to subcontracting opportunities.
  - Businesses from underserved communities consider themselves inadequately staffed to perform on NASA requirements.
  - Businesses indicated that there is a lack of understanding with how to engage with NASA acquisition points of contacts.
  - Businesses from underserved communities indicated that they find understanding and complying with Acquisition regulations and processes "too complex."
  - A lack of awareness of businesses in underserved communities of Agency subcontracting goals and the necessity to seek to award contracts to targeted business categories to meet annual goals.
  - A lack of access to capital to cover the costs for outreach to Agency acquisition personnel and for proposal development by businesses within underserved communities.
- Outreach polling, survey feedback, and recommendations.

Actions to Achieve Equity:

NASA has taken or will take several actions to achieve equity:

- **Implement the following recommendations from NASA's SDB tiger team to meet and exceed SDB goals and promote equity in procurement awards:**
  - Set-aside or reserve all construction requirements from the Simplified Acquisition Threshold (SAT) ($250K) to $5M to the 8(a) Business Development (BD) Programs.
  - Continue to work throughout the Agency to improve processes to ensure NASA's forecasting tool is as accurate as possible to minimize "missing" upcoming acquisitions.
  - Develop an SDB Campaign and Communication Plan.
  - Develop a dashboard which would provide NASA's programs and projects with total amount of SB/SDB dollars their organization is obligating (currently this information is only available at the Center level).
  - Pursue statutory/regulatory changes to permit AbilityOne contractors to be considered SDBs.
- **Increase focused outreach, training, and community engagement in underserved communities** (SDB, Women-Owned, Service-Disabled Veteran Owned Small Businesses; Historically Underutilized Business Zones; HBCU and MSIs) to meet federally mandated small business goals.
- **Develop a Small Business Training Program** to expand training for the acquisition workforce to increase knowledge of underserved communities and small business programs, and the specific procurement-related challenges they face.
- **Set aside Product Service Line (PSL)** requirements for small businesses, AbilityOne contractors, and the SBA 8(a) Business Development Program.
- **Develop a strategic plan** to address process and/or policy barriers identified by the public in response to RFIs.
- **Implement small business listening sessions.**
- **Promote NASA's Acquisition Forecast and Active Contracts Lists** to help underserved communities find opportunities.

Proposed Metrics (Outputs and Outcomes):

Near- to Medium-Term:

- Meet small business, AbilityOne, and SDB goals based on the annual PSL acquisition forecasts by the fourth quarter of FY 2023.
  - A $19M increase in contract awards to SDBs is anticipated as a result of a new initiative to set aside some construction PSL procurements.
- Increase underserved community participation in outreach events by five percent to ten percent in FY 2023.
- Gather attendance metrics and utilize various feedback methods to assess the effectiveness and strategically improve outreach and training to underserved communities.
- 100 percent completion of the Federal Acquisition Institute's Equity in Procurement Video Series by the acquisition workforce by the fourth quarter of FY 2024.

Longer-Term:

- Achieve total obligations of at least $2B from FY 2022–2027 under the SDB and AbilityOne programs (establish and track annual targets to be achieved by the fourth quarter of each fiscal year).
- Increase the number of outreach engagements in underserved communities by 50 percent from FY 2021 to FY 2029; increase the number of businesses and institutions participating in outreach events each year by five to ten percent.
- Track overall trends and annual impact of small business and underserved community outreach efforts on prime and subcontract awards/obligations.
- Increase small business program content in functional training courses developed by Agency training providers by 2027; and evaluate the necessity for a higher-level course for Agency leadership.

Public Participation and Community Engagement:

- NASA will execute a robust and enhanced outreach and community engagement strategy with intentional interactions between underserved communities and Agency acquisition personnel and decision makers to further develop and implement this strategy, and assess potential new actions. This will include but not be limited to:
  - Office of Small Business Programs (OSBP):
    - Quarterly OSBP Outreach events; Ongoing OSBP Center Outreach events; OSBP Learning Series Webinars; and Small Business Listening Sessions.
  - Office of Procurement (OP) annual outreach engagements:
    - OP Vendor Communication Plan; HQ OP and Procurement Centers outreach engagements to members of underserved communities.
    - Digital media engagement and email marketing.

Strategy #2: Equity in Grants and Cooperative Agreements: *Enhance Grants and Cooperative Agreements to Advance Opportunities, Access, and Representation for Underserved Communities.*

Whole-of-Government Equity Objective(s): Economic Justice

Collaborating Agencies: NASA participates in several interagency and multi-organizational groups and meetings on an ongoing basis. NASA's engagement with these groups allows us to implement best practices identified across the Federal Government, where applicable and feasible, with the identified barrier. These include:

- The Federal Demonstration Partnership, which is a cooperative initiative among ten Federal agencies and 217 institutional recipients of Federal funds.
- The Financial Assistance Committee for e-Government working group on diversity, equity, inclusion, and access in Federal financial assistance.
- The Grant Symposium hosted by the National Academy of Public Administration, a comprehensive event that convenes experts, policymakers, and practitioners in the field of public administration to discuss and share insights on grant management, allocation, and impact assessment.

Barriers to Equity:

The three RFIs NASA released seeking feedback from the community on barriers to accessing grant programs and resources identified misperceptions by underserved communities about aligning with NASA's mission, and a lack of engagement with NASA due to lack of awareness of and access to information about NASA's grant programs and policies. Community input received through NASA workshops also highlighted that Under-Resourced Institutions (URIs) face a unique barrier in establishing entirely new partnerships with NASA where no previous partnerships exist. More broadly, unconscious and hidden bias present a barrier to equitable evaluation of research proposals across NASA's portfolio.

Evidence Base to Support Strategy:

In June 2021, NASA received public feedback regarding the Agency's grant programs, regulations, and policies through the RFI process. Further, NASA analyzed proposal submission data from calendar years (CY) 2020 and 2021 to support the feedback received from the June 2021 RFI. NASA found that proposals submitted by organizations from underserved communities represented 13 percent in CY 2020, and 11 percent in CY 2021. NASA determined that these figures demonstrated the reported lack of awareness of NASA programs. In July 2023, NASA issued a second public RFI for feedback on barriers for entities that have engaged with and/or applied but are not yet recipients of NASA awards. The feedback NASA received did not identify any additional barriers preventing underserved communities from partnering with the Agency.

Organizations reported that they did not easily "see themselves" partnering with NASA, believing that proposals not related to space or space exploration would not align with NASA's missions and therefore not be eligible for funding. Other organizations from

underserved communities reported they were not able to provide NASA-specific barriers because they were not engaging with NASA due to a lack of awareness of NASA programs.

NASA evaluated the proposal and award data from CY 2021 to August 2023 to evaluate the progress that had been made in increasing the number of submitted and selected proposals from organizations from underserved communities following outreach activities beginning in 2022. NASA found that organizations from underserved communities accounted for 11 percent of total proposal submissions and 12 percent of total selected proposals in CY 2021, and ten percent of total proposal submissions and 12 percent of total selected proposals in CY 2022. NASA attributes the drop in proposals submitted between 2021 and 2022 and the higher number of issued awards to better information sharing related to NASA programs, strategic proposal submission, and relationship-building efforts. As of August 2023, underserved communities accounted for seven percent of total proposal submissions and 20 percent of selected proposals.

Research into hidden bias has revealed how the unconscious cognitive processes humans use to filter information can lead to subjective and unequal evaluations. Analysis of fifteen years of solicitation data from NASA's Hubble General Observer Program found that male-led proposals had consistently higher selection rates than female-led proposals. After a Dual-Anonymous Review Process was implemented to reduce unconscious bias within the proposal evaluation process, the disparity between male-led and female-led proposals was reduced by more than 70 percent.

Input from the SMD-led community workshop with potential Bridge Program partners helped illustrate the landscape at URIs and has provided a foundation for establishing funding opportunities. For example, a common theme from the workshop was the need for NASA to facilitate new potential partnerships where no NASA collaboration currently exists, through seed funding. This informed the development of the Bridge Program Seed Funding awards, first solicited in 2023.

Actions to Achieve Equity:

NASA has taken or will take several actions to achieve equity:

- **Participating in various targeted community engagement and outreach events for underserved communities.** NASA will continue its commitment to a minimum of four grant-related outreach events to underserved communities per calendar year. The outreach events will provide a platform to disseminate information to increase awareness of funding opportunities, ensuring potential applicants have access to NASA programs as well as an understanding of the application process.
- **Addressing and dismantling identified barriers to underserved communities in the award application and administration process.** The completion of the data collection process enables NASA to implement targeted policies and processes. NASA will continue to collect feedback through our two-way outreach and training sessions and evaluate post-event survey feedback offering participants additional opportunities to inform us of barriers faced as they engage with NASA grants.

- **Training and educating grant applicants and recipients on required policies when administering NASA's grants and cooperative agreement awards by holding six training and education sessions in 2023.** Grant applicants and recipients will be equipped with the knowledge required to effectively manage grants and cooperative agreement awards, leading to improved project outcomes, greater compliance with regulations, and strengthened accountability throughout the grant lifecycle.
- **Expand DAPR of grant proposals.** A key to increasing participation of underserved communities in NASA grants is ensuring fairness in the selection process. NASA will continue expanding DAPR, supported by the National Academies. To mitigate unconscious bias, names, and identities of reviewers and proposers are kept hidden in select competitions. DAPR increases equity in NASA's solicitation process by decreasing barriers caused by hidden bias.
- **Award Bridge Program Seed Funding (BPSF).** The SMD Bridge Program's primary goal is to promote participation of traditionally underrepresented groups in NASA's workforce and STEM disciplines through investment in science and engineering research at Under-Resourced Institutions (URIs). In response to community input and to enable future participation in the Bridge Program, the BPSF awards will fund partnership-development projects with NASA Centers. BPSF seeks to facilitate new and expanded partnerships between URIs and NASA researchers that may grow into Bridge partnerships, reducing barriers to entry and enabling participating institutions to become well-positioned to submit future proposals to the SMD Bridge Program.

Proposed Metrics (Outputs and Outcomes):

Near- to Medium-Term:

- Expanded Reach: NASA will target a two percent increase in participation in NASA Grants Policy and Compliance-led engagement events over past events in institutions and organizations serving at least two of the underserved communities' categories as identified in Executive Order 13985, such as HBCUs, Non-HBCU MSIs, or minority owned businesses.
- Reciprocal Engagement**:** NASA will target a two percent increase in the number of selected proposals submitted by institutions from underserved communities and the success of new recipient's selected proposals in remaining compliant with federal and NASA regulations through continued partnership throughout the award's lifecycle.
- Relationship and Trust Building: Positive training session survey feedback.
- Dual-Anonymous Peer Review (DAPR): In 2023, a new DAPR process was piloted to include a more comprehensive evaluation of the applicant's background, research, and accomplishments, thus creating equity in the solicitation process. At least 30 of the ROSES 2023 program elements used DAPR, and NASA anticipates broader adoption of DAPR across the agency in the coming years. In addition, two Space Technology Mission Directorate (STMD) programs (Early-Stage Innovation, and TechFlights) and one Space Operations Mission Directorate (SOMD) program, Human Exploration Research Opportunities, will also implement DAPR.

- Bridge Program: After launching the new Bridge Program in 2022, SMD funded the first set of BPSF awards. The no due date solicitation was released in ROSES-2023, and proposal reviews are ongoing.

Longer-Term:

- Relationship sustainability: Continued positive feedback from pulse-check surveys.
- Achieving Success: Year-over-year increase in awards being issued to underserved communities as well as the compliance rate of award administration.
- DAPR: By ROSES-2026, DAPR will be the default review methodology for NASA ROSES grants, leaving a small number expected to request a waiver and continue using the classic methodology. DAPR will be more widely adopted across NASA for relevant selections.
- Bridge Program: NASA anticipates awarding $2M- $4M per year across more than 20 proposals.

Public Participation and Community Engagement:

- NASA will continue outreach efforts to underserved communities, ensuring new connections are made and existing connections are maintained. For example, in March 2023, the Agency held an “Ask NASA” event for those looking to partner with NASA. Part two of the “Ask NASA” series, held in October 2023, provided a forum for novice recipients on proper award management once an award from NASA has been issued.
- The Agency established a NASA Grants and Cooperative Agreements Playlist on the NASA YouTube channel to broaden the reach of NASA’s grants brand. This channel will feature training sessions and informative talks related to grants and cooperative agreements.
- To encourage broad participation, NASA will engage with potential proposers through events targeting large multidisciplinary and multicultural STEM events in the U.S. For example, SMD Bridge Program team members contributed to two proposed sessions during the October 2023 Society for the Advancement of Chicanos and Native Americans in Science program.
- NASA is also piloting the Research Initiation Award program to provide faculty at emerging research institutions that have not received Agency funding over the previous five years with resources to build a competitive, NASA-relevant research program.

Strategy #3: Equity in Climate Data Accessibility and Environmental Justice: *Increase Accessibility and Use of Earth Science Data in Underserved and Disadvantaged Communities to Inform Decision-Making.*

Whole-of-Government Equity Objective(s): Environmental Justice

Collaborating Agencies: National Oceanic and Atmospheric Administration (NOAA), National Science Foundation (NSF), U.S. Department of State

Barriers to Equity:

NASA ESD conducted listening sessions and workshops, such as *Understanding Needs to Broaden Outside Use of NASA Data (UNBOUND) for Environmental Justice and Air Quality*, to understand how NASA Earth information can best serve communities. These sessions highlighted that underserved communities face unequal access to Earth information used to inform decision-making in their communities. For example, with technical skill requirements for access and data manipulation, hardware and internet requirements were shown to impose constraints on both who can access NASA data and where it can be accessed.

Evaluations focused on Earth system science education have highlighted that underserved communities also face a barrier to inquiry-based Earth system science education, which is heightened by gender and parental income gaps in environmental literacy, STEM identity, as well as confidence, skills, and interest in STEM.

Evidence Base to Support Strategy:

- The ongoing UNBOUND series of workshops, listening and learning from current Equity and Environmental Justice (EEJ) projects and the Indigenous Peoples Initiative provided insight into barriers that will inform future work. This includes defining specific ways to address common challenges in data discoverability, exploration, and use, arising from discussions with these targeted communities around the use of data to address critical environmental challenges, like air quality.
- Global Learning and Observations to Benefit the Environment (GLOBE) has program-level and project-level evaluations. Advancing NASA's Climate Strategy highlights GLOBE as a program that promotes climate and environmental literacy to prepare the workforce of the future and will continue to inform actions to achieve equity.
- The Science Activation (SciAct) projects are guided by independent evaluators and work toward reaching specific underserved audiences based on specific needs. Evaluation data helps to identify barriers to accessing and using scientific data and validate strategies that reduce these barriers so that NASA can empower individuals to play an active role in addressing issues of importance to them.

Actions to Achieve Equity:

NASA has taken or will take several actions to achieve equity:

- **Continue to contribute to the Justice40 Initiative through the Community Action and Climate & Resilience programs** to reach disadvantaged communities disproportionately impacted by underinvestment. Community Action includes EEJ, Indigenous Peoples Initiative, and Prizes & Challenges.

- **Provide trainings to increase awareness, accessibility, and use of NASA Earth information**, particularly for underserved or overburdened[2] groups who face unequal access to scientific data and education needed to address environmental challenges within their communities.
- **Continue Transform to Open Science (TOPS),** NASA's ambitious five-year plan to accelerate adoption of open science, unrestricted sharing of software, data, and knowledge as early as possible in the scientific process. TOPS will create more advanced and inclusive research, build a more just and equitable world, and ensure everyone can participate in science. NASA will release a new curriculum to increase adoption of open science.
- **Advance Visualization, Exploration, and Data Analysis (VEDA),** an open-source, cloud-based Earth Science platform that promotes more inclusive, accessible, and reproducible NASA science. VEDA provides interactive storytelling for environmental changes using Earth observation data and socioeconomic data to study areas such as EJ, greenhouse gases, sea-level rise, and air quality. Through migration of new datasets onto the cloud and continued development of visualization, analysis, and storytelling capabilities, VEDA will broaden user engagement with students, researchers, policymakers, and the general public. VEDA lowers the barrier for entry into science and supports capacity building.
- **Continually refine nine Earth-focused projects in the SciAct portfolio**, which offers authentic science experiences. This includes interaction with data, hands-on learning, camps, and online learning resources. SciAct projects increase equity by focusing on underserved audiences such as rural, tribal, and immigrant communities, as well as neurodiverse learners.
- **Reach new audiences with the EIC.** Specifically, support additional installations and continue to raise awareness of EIC resources that allow users to see how our planet is changing and provide easy-to-use resources to support decision makers in developing the tools they need to mitigate, adapt, and respond to climate change.
- **Maintain and expand the GLOBE Program,** a worldwide science and education program that provides opportunities for students, educators, scientists, citizen scientists, and partners to better understand, sustain, and improve Earth's environment at local, regional, and global scales. GLOBE is currently implemented in 127 countries and the program will continue to collect participant data to assess the program's reach and impact.

[2] Overburdened Community is defined by the Environmental Protection Agency (EPA) as: "Minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities."

Proposed Metrics (Outputs and Outcomes):

Near- to Medium-Term:

- Justice40:
  - The current EEJ landscape analysis projects that will be completed in 2023 will inform the next EEJ solicitation. The outputs of these projects will include reports, community engagement activities, Geographic Information System (GIS)-enabled tools and data such as the Climate and Economic Justice Screening Tool, and other products that can be used by decision makers in EJ communities, enhancing equity and reducing the unequal burdens they face in access to and use of Earth data. These products will be finalized between June 2023 to early 2025.
  - Outcomes under both Community Action and Climate & Resilience, including metrics such as number of individuals and institutions engaged, geographic extent of impacts, project results, etc., will be shared at various conferences, meetings, and workshops.
  - The Indigenous People's Initiative will conduct three remote sensing trainings, seven outreach presentations, and two learning (Indigenous yarning[3]) sessions with Indigenous communities.
- TOPS: NASA TOPS will advance the understanding and adoption of open science with the roll out of an open science curriculum (target 2,000 people to earn a NASA "Open Science Badge" designation), and broaden participation in historically excluded communities, including minority serving institutions, through awards, prizes, challenges, and hackathons.
- VEDA: NASA will increase the number of datasets relevant to climate and EJ from 10 to 15, conduct four community outreach events, and create four new relevant stories (discoveries).
- SciAct: NASA will continue to increase the projects' reach (52 million learner interactions in 2022).
- EIC: The EIC will produce two stories that highlight environmental and climate issues that impact underserved communities and will enable easy access to Earth system data via its virtual website. The EIC will expand to reach new audiences through additional installations in public places.

Longer-Term:

- Justice40: The products and lessons learned from each, including GIS-enabled tools, will be publicly available and used by underserved communities as well as their partners to inform EEJ-related decision-making at all levels. Fair, equitable engagements with Indigenous communities will be strengthened. Indigenous communities will be empowered to use Earth observation information for their decisions and actions. NASA will incorporate Indigenous knowledge in future work.

[3] Indigenous Yarning is defined by the National Library of Medicine as a "conversational process that involves the sharing of stories and the development of knowledge."

- TOPS: This program will enable 20,000 researchers to earn NASA's “Open Science Badge,” double the participation of historically excluded groups across NASA science and enable five major scientific discoveries through open science principles.
- SciAct: By 2025, NASA will increase science learners’ active participation in the process of science through a variety of accessible opportunities that empower individuals to understand and address relevant issues.

Public Participation and Community Engagement:

- NASA will continue to solicit, consider, and act on community feedback through ongoing public listening sessions, as well as targeted workshops with diverse user communities, such as the Indigenous Peoples listening and knowledge sharing sessions, that will continue to assist in land management decisions and actions.
- NASA will design a citizen science challenge focused on underserved women in emerging economy countries. It will also solicit projects under Equity and Environmental Justice and Climate & Resilience, all oriented towards engaging the communities they impact.
- GLOBE is forming a U.S. GLOBE Evaluators Community of Practice, where GLOBE evaluators will share resources, experiences, and best practices to evaluate the outcomes of GLOBE activities.

Strategy #4: Equity for LEP Populations: *Improve Language Access Policies to Expand Access for Limited English Proficient Populations to NASA Programs and Activities.*

Whole-of-Government Equity Objective(s): Civil Rights

Collaborating Agencies: U.S. Department of Justice, U.S. Census Bureau

Barriers to Equity:

NASA programs and information are important to educating the public, increasing America's STEM capacity, and helping to foster the next generation of astronauts, scientists, and engineers. Making more of our public-facing products and events available in other languages will help to develop and sustain interest in STEM careers among individuals with limited English proficiency.

Although NASA has increased our materials available in languages other than English, most materials NASA prepares for the public are available solely in English. Materials in languages other than English are dispersed across many platforms and may not be easy for all users to find.

NASA's Agency Language Access Plan was issued in 2011, and since that time, our process for acquiring language services has changed. As a part of the 2022 Equity Action Plan, NASA developed or updated Language Access Plans for each of our ten Centers; these plans were finalized in early 2023. Integrating the Center plans into a revised Agency plan will provide employees and the public with a comprehensive guide to accessing language services at NASA. Educating the NASA workforce on the revised Agency and Center-level plans is necessary to increase employee understanding of and ability to fulfill their language access responsibilities.

Evidence Base to Support Strategy:

- Recent census information indicates about 8.2 percent of the U.S. population over age five speaks English "less than very well" and more than 25 million people in the U.S. are not proficient in English. Per the most recent U.S. Department of Education data, 10.3 percent of students enrolled in American public schools are limited English proficient (also referred to as English Learners (EL)).[4]
- National Assessment of Educational Progress results gathered over the past decade indicate there is a persistent achievement gap in math and science for EL students at all grade levels measured.[5]
- The most recent report by the National Academies of Science, Engineering and Medicine found EL students' access to STEM instruction is limited by the perception that students must be proficient in English before engaging with STEM concepts.[6]

[4] Digest of Education Statistics, 2022, "Table 204.20. English learner students enrolled in public elementary and secondary schools, by state: Selected years, fall 2000 through fall 2020."

[5] U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2023, "Mathematics Performance;" and U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2022, "Science Performance."

[6] National Academies of Sciences, Engineering, and Medicine. 2018. English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. Washington, DC: The National Academies Press.

- EL students are underrepresented in STEM degree achievement and in the STEM workforce.[7]
- NASA participated in a language access stakeholder listening session hosted by the U.S. Department of Justice. Stakeholder discussion during the session was used to inform this strategy, including a recommendation that federal agencies be more transparent on how individuals can request language services.

Actions to Achieve Equity:

NASA has taken or will take several actions to achieve equity:

- **Complete the integration of updated Center Language Access Plans[8] into the Agency Language Access Plan.** Updating the plan will highlight recent changes to language service acquisition processes for employees, eliminate conflicts between the Agency plans and Center plans, and ensure the crucial role of NASA's Centers in implementing the plan is understood by employees.
- **Develop and implement a communications plan** to increase employee awareness of responsibilities under the Language Access Plan.
- **Expand Spanish-language communications** as Spanish speakers make up approximately 63% of the LEP population.[9] This will include publishing a Spanish translation of the second part of the *First Woman* graphic novel, completing a pilot season for the podcast in Spanish *Universo curioso de la NASA*, and conducting a Spanish live show during the return of OSIRIS-REx in September 2023. NASA will provide Spanish language translation of new products for educators and students created within the Next Gen STEM project.
- **Launch a centralized website** for all of NASA's Spanish-language web content by 2026. This website will assist LEP individuals in locating existing Spanish content.
- **Assess Spanish-language communications' resources** and prioritize the addition of members to our Spanish-language communications teams to support the growing program.

Proposed Metrics (Outputs and Outcomes):

Near- to Medium-Term:

- Track number of visitors to NASA's centralized Spanish-language website.
- Measure growth in reach of NASA's Spanish-language social media sites.

Longer-Term:

- Increased awareness among employees of resources for translating public-facing materials and programs into languages other than English.
- Increased access of NASA materials and programs in Spanish by LEP populations through our centralized Spanish-language website and Spanish-language social media sites.

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[7] Ibid.

[8] A Center Language Access Plan outlines the strategies and actions the Centers will take on an ongoing basis to address the language assistance needs of LEP persons participating in Center programs and activities.

[9] U.S. Census Bureau, American Community Survey (ACS 1-Year Estimates) Language Census 2021, Table B16001, "Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over."

- Increased engagement with NASA multilanguage content, resources, and subject-matter experts to inspire more EL students to pursue STEM education and degrees.

Public Participation and Community Engagement:

- To further develop and implement this strategy, NASA will continue to engage in virtual listening sessions with stakeholders in the civil rights and language access advocacy communities.
- NASA will continue to expand its reach to the Latino/Hispanic populations by leveraging partnerships with Hispanic-led organizations that will provide opportunities for Spanish-speaking NASA subject-matter experts to be a part of public facing events, such as conferences and panels.

Strategy #5: Equity in STEM: *Engage Students to Build a Diverse Future STEM Workforce.*

Whole-of-Government Equity Objective: Educational Equity

Collaborating Agencies:

NASA works with agencies through its participation on interagency committees and working groups, including the Office of Science and Technology Policy Committee on STEM (CoSTEM), the Federal Coordination in STEM (FC-STEM) subcommittee, the Interagency Working Groups on Inclusion in STEM (IWGIS) and Transparency and Accountability, the STEM engagement efforts led by the National Space Council, and the Federal Internship Community of Practice (FICOP). For the specific actions in this plan, NASA will collaborate with the NSF on the Minority University Research and Education Program (MUREP), Inclusion Across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (INCLUDES) initiatives, and with the U.S. Department of Education's (ED) 21st Century Community Learning Centers (21CCLC) program.

Barriers to Equity:

The evidence base for the identification of barriers is described in the section below, which is a combination of internal studies, public participation, and community engagement activities. NASA STEM engagement seeks to remove barriers to participation in STEM engagement and careers, especially those underrepresented in STEM by implementing evidence-based practices addressing the: lack of access to high-quality STEM education; lack of culturally relevant materials/training; importance of strategic collaborations/partnerships; limited access to NASA people, facilities, and content; and lack of awareness of STEM engagement opportunities.

Evidence Base to Support Strategy:

Broadening participation is a fundamental prerequisite for making high-quality STEM education accessible and will maximize the creative capacity of tomorrow's workforce.[10] Furthermore, although the number of women, minorities, and persons with disabilities who participate in and earn degrees in STEM fields has grown over the past several decades, these populations are still underrepresented in STEM careers. That is, their representation in the STEM workforce is smaller than their representation in the national population.[11] The reasons for this are numerous, complex, and systemic. They include factors such as disparate access to high-quality STEM education and a lack of diverse role models.[12]

Recent Government plans highlight the need for action in the area of equity in STEM.[13] The Space STEM Task Force cites "…equity…as one means to address challenges and scale efforts to develop and expand the space workforce." The OSTP Equity and Excellence report identifies the need to "ensure that students, teachers, workers, communities, and others

[10] Best Practices for Diversity and Inclusion in STEM Education and Research: A Guide By and For Federal Agencies, 2021.

[11] National Science Foundation, 2017

[12] National Academies of Sciences, Engineering, and Medicine, 2016.

[13] The Space STEM Task Force Interagency Roadmap to Support Space-Related STEM Education and Workforce; Equity and Excellence: A Vision to Transform and Enhance the U.S. STEMM Ecosystem; and Charting a Course for Success: America's Strategy for STEM Education establish the need to ensure that all students have opportunities to participate and develop their STEM identity and skills.

have adequate support to participate in and contribute to science and technology throughout their lifetimes." A key aspirational goal in the Committee on STEM's Strategy for STEM Education is to "increase diversity, equity, and inclusion in STEM and provide all Americans…access to high-quality STEM education, especially those historically underserved and underrepresented in STEM fields."

NASA utilizes a performance and evaluation strategy to identify and address national barriers through evidence-building activities such as performance and participant data analyses, literature reviews, benchmarking studies, and evaluations. Findings and recommendations revealed areas in which NASA can improve efforts to engage students from groups underrepresented in STEM fields, and practices for broadening participation (e.g., institutional supports for STEM readiness, evidence-based learning practices, authentic research experiences, and high-quality mentors).

Recently completed evidence-building activities include:

- Diversity Deep Dive Study assessed the extent to which NASA investments broadened participation of groups historically underrepresented in STEM: data for the years studied indicated that enrollment data by individuals from underrepresented races and ethnicities exceeded national averages while enrollment data by women was lower than the national average.
- Internship Outcome Assessment Phase II measured students' immediate outcomes of participating in NASA Internships and assess how and to what extent interns are contributing to NASA's missions: data indicated that interns from underrepresented and underserved groups experienced greater gains from an internship experience.
- Workforce and Career Readiness Evaluation Study examined the extent to which NASA programs broaden the NASA STEM workforce and the career readiness of early career NASA STEM professionals: data showed that mentorship is essential for a meaningful internship experience and that technical, communication, and project management training as well as learning the NASA values and organizational structure are valued.
- K-12 Stakeholder Needs Assessment examined how stakeholders used NASA K-12 resources and assessed stakeholders' perceptions of NASA K-12 resources including how the resources met the needs of students from underrepresented groups: respondents cited the need for more multilingual resources, culturally relevant pedagogy, and outreach to diverse populations.
- MUREP Program-Level Evaluation Phase II studied how and to what extent the MUREP activities were achieving intended goals and objectives particularly in the areas of student engagement, partnerships, and competitiveness.
- Sparking STEM Interest Study identified factors that spark a student's interest in STEM, including groups historically underrepresented in STEM which included socially and culturally appropriate contexts and role models of a variety of real and diverse people.

Public participation and community engagement events have also contributed to building NASA's body of evidence: Equity Action Plan K-12 Stakeholder Town Hall in September 2022; Broadening Student Participation session at the OSTEM Better Together Conference in

August/September 2022; and Overcoming Barriers to Broadening Student Participation Listening Session in June 2023. These events contributed to identifying equity barriers described in the previous section.

Actions to Achieve Equity:

NASA has taken or will take several actions to achieve equity:

- **Implement findings strategically from the Internship Process Evaluation regarding barriers in the registration and application system for NASA STEM Internships:** NASA uses internships to build a diverse pool of top talent for the future STEM workforce, actively growing the skills necessary through experiential learning opportunities that impact NASA's mission. The Internship Process Evaluation will inform areas where NASA can create actionable items to insure full and equal participation of individuals from underrepresented communities in the internship program. Annually NASA has approximately 2,200 STEM interns, 39 percent of which are women and people from underserved communities. This program will continue to offer a range of options including in-person, hybrid, and virtual internships to meet the needs of students. The program increased mentor training to assist mentors in understanding the significance of mentorship, awareness of unconscious bias, and considerations of cultural differences.
- **Continue the inaugural MUREP INCLUDES cohort efforts to identify and implement successful approaches to broaden participation, document lessons learned, and conduct evaluations to inform the establishment of a new cohort in 2025:** MUREP INCLUDES facilitates the formation of MSI-led coalitions to enhance student participation in engineering-related disciplines and fields. Implementation strategies of this grant opportunity encompass capstone projects, engineering challenges, infusion of NASA content into courses, and relevant programming.
- **Increase K-12 Opportunities:** NASA's K-12 efforts aim to spark and sustain student engagement in STEM via mission-driven educational resources and learning opportunities.
  - *Collaborate with the U.S. Department of Education's 21CCLC program:* In support of the MOU signed between NASA and ED, NASA will leverage the ED 21CCLC network to provide NASA content and technical assistance and academic enrichment opportunities to ED-selected sites primarily in high-poverty, low-performing schools. Programming is typically conducted during non-school hours where studies show students benefit from increased access to STEM experiences.
  - *Relaunch a redesigned Sparking Participation and Real-world Experiences in STEM (SPARX) in STEM:* The Next Gen STEM (NGS) SPARX activity enables broader participation in a NASA challenge by reducing barriers to entry through educator training and support. SPARX is targeted for students with low STEM identity and little STEM experience. Conducted in formal and informal education settings, SPARX emphasizes the engineering design process to connect students to STEM. The activity seeks to reach populations in diverse or underserved communities.
  - *Implement a third cohort of Community Anchor Awards:* The NGS Community Anchor cooperative agreements strengthen the ability of informal institutions to serve as local

hubs bringing NASA STEM and space science to youth and their families in underserved communities. The activity increases the geographic reach of these financial awards, including in rural and urban areas. Informal Education Learning Cohorts enable awardees to learn from each other and share resources and best practices as well as engage with NASA subject-matter-experts.

Proposed Metrics (Outputs and Outcomes):

Near- to Medium-Term:

- Create unique opportunities for diverse and inclusive students to contribute to NASA's work in exploration and discovery. *Metrics:* Advance higher education students' STEM skills by supporting the release of at least 2,200 paper presentations and peer-reviewed research publications through engagement investments; and conduct a MUREP Outcome Assessment.
- Build a diverse future STEM workforce by engaging students in authentic learning experiences with NASA's people, content, and facilities. *Metric:* Meet or exceed targets for two of four categories: Provide STEM engagement opportunities to higher education students for both virtual and in-person STEM engagement activities: (1) racially or (2) ethnically underrepresented students (Hispanics and Latinos, African Americans, American Indians, Alaska Natives, Native Hawaiians and Pacific Islanders), (3) women, and (4) students across all institutional categories and levels (as defined by the U.S. Department of Education).
- Attract diverse groups of students to STEM through learning opportunities that spark interest and provide connections to NASA's mission and work. *Metric:* Measure (baseline) the number and diversity of K-12 students exposed to NASA STEM engagement opportunities designed to spark student interest in STEM.

Longer-Term:

- Establish well-coordinated and equitable STEM engagement investment areas with demonstrable impacts and benefits for students, educators, and educational institutions. *Metric:* Execution of the evidence-based decision-making process to support the use of evidence across STEM engagement investments.

Public Participation and Community Engagement:

- Expand the Community Anchor cohorts to increase NASA's understanding of the needs of diverse communities through cooperative agreement awards;
- Provide increased feedback through nationally recognized STEM subject-matter-experts in the area of performance and evaluation will continue to build toward using evidence-based decision-making and continuous improvement;
- Conduct broadening participation sessions at the OSTEM Better Together conference to further identify barriers and potential solutions. The focus for the 2023 conference was students' STEM identity;
- Continue to engage with minority professional and student societies through MUREP's participation in conferences and as partners on committees or boards to increase awareness of NASA opportunities.

A Final Word:

As we look to NASA's future in the next generation, in the words of Administrator Bill Nelson, "The first humans who will walk on Mars and the innovators who will help humanity reach the Red Planet are students in America's classrooms today. NASA knows that we need the whole of the Artemis Generation – young people from all parts of America and all walks of life – to achieve big goals, overcome our greatest challenges, and inspire the world through science and discovery."