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NRAO Diversity Strategic Plan

PREPARED BY	ORGANIZATION	DATE
Lyndele von Schill & Faye Giles	NRAO	March 13, 2017

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Diversity Defined at NRAO

The concept of diversity encompasses acceptance and respect. It means understanding that each individual is unique, and recognizes our individual experiences. These experiences can be along the dimensions of race, ethnicity, gender identity and expression, sexual orientation, socio-economic status, age, physical abilities, religious beliefs, political beliefs, or other ideologies. It is the exploration of our individual experiences in a safe, positive, and nurturing environment. It is about understanding each other and moving beyond simple tolerance to embracing and celebrating the rich dimensions of diversity contained within each individual. From a practical view, diversity is the synthesis of many human resource-related laws and best practices. It is a recognition that NRAO benefits greatly from a wide variety of differing perspectives and experiences.

For several years, NRAO has taken a number of concrete steps towards improving diversity and broadening participation within the Observatory and in the community. This strategic plan, incorporating recommendations and ideas from the 2013 Diversity Review panel, and the Office of Diversity & Inclusion's (ODI) Advisory Council, represents NRAO's commitment to a shared vision toward enhancing and improving diversity across the Observatory. This plan also focuses on creating and maintaining effective communication strategies to ensure that the Observatory's definition of, and commitment to, diversity is understood and embraced by the entire workforce.

Diversity & Inclusion efforts across the Observatory will focus on the following key areas: outreach to underrepresented minority (URM) communities, broader impacts, new and on-going initiatives to increase the number of URM students entering STEM fields of study, workforce hiring, retention, training, and workplace culture. The primary responsibility for managing these efforts rests with the ODI, in collaboration with Human Resources and other key departments within the Observatory.

In 2017, ODI will continue to:

- Develop opportunities to leverage and coordinate existing resources, talents, and projects across Observatory departments (e.g., EPO and SSR).
- Expand outreach programs focused on African-American, Native American, Hispanic American, and other underrepresented populations
- Develop and offer diversity and cultural-awareness training for all staff at NRAO, the GBO, and the LBO
- Support HR's diversity recruitment efforts
- Assess and enhance NRAO's workplace culture, and provide access to cultural activities, when possible, to GBO and LBO
- Manage and improve ongoing ODI programs

Primary areas of focus for the immediate future, in order of priority:

- Continue to provide access to training and cultural awareness opportunities to GBO and LBO, and to explore ways in which to provide additional diversity and inclusion-related support
- Conduct presentations at each site, by Q2 of FY2018, that describe ODI programs and mission, including roundtable discussions focused on identifying issues (e.g., What are the most pressing D&I issues at your site? What possible solutions/strategies for improvement might be considered?)

- Convening of focus group to review issues identified at roundtable discussions, and development of recommendations and priorities based upon identified issues
- Support implementation of recruitment guidelines for supporting diversity hiring
 - Verify compliance with guidelines
 - Require Implicit Bias training for eligibility to serve on hiring committees
- Continue, and fund, diversity issues under broader impact in the scientific community
 - Establish a continuous and sustainable funding stream for existing and new initiatives
- Establish an annual diversity & inclusion (D&I) summit (beginning in 2018) with managers, diversity advocates and staff, to present the status of D&I efforts, solicit feedback on activities, and encourage ideas for modifications and/or new initiatives.
- Establish accountability measures for success of diversity initiatives for middle management
 - Establish metrics to monitor and evaluate success of initiatives
- Integrate diversity elements into Education & Public Outreach, Recreation Committee, and Science User Support
 - Establish diversity goals for each area and encourage collaborations amongst them
 - Provide access to diversity-related training for hiring committees, supervisors, and other staff working within the community and with the public
- Identify and fund opportunities for diversity professional development
- Identify and increase the number of diversity champions across the Observatory
 - Provide public recognition and opportunities for individual development
- Identify incentives and recognition for individuals and groups supporting this Strategic Plan
- Establishing a robust communication strategy that encourages continuous discussion throughout the observatory

I COMMITMENT

I.1 Management Accountability

- Management must be champions of diversity (job requirement).
 - They may designate their staff to actively engage and participate in diversity initiatives
 - Encourage and recognize staff who are involved with diversity initiatives.
- Include diversity goals/objectives in all management performance evaluations.
 - ODI and HR, working with the Director's Office will establish a set of yearly diversity goals for management
 - Additional goals/competencies should be added by the manager as relevant to their team
 - Managers will include announcements about their diversity goals at a team meeting
- Maintain a suite of skills in which supervisors should demonstrate competence in order to maintain a supervisory position, or to be considered for a supervisory position
 - Adoption of these skills will be included as part of the NRAO's 360 feedback process
- Managers are required to attend all diversity related presentations, and encourage their staff members to attend
 - Managers are expected to brief the main points of these presentations to their team at team meetings

I.2 Improve the internal culture and environment for diversity:

Diversity is critical to the success of NRAO. All managers and supervisors have a responsibility to promote and support NRAO's Diversity initiatives. In order to improve the internal culture and environment for diversity, managers and supervisors should support the following:

- Strongly encourage attendance for diversity training topics
- Recruit diversity advocates and employee diversity group members who are motivated and engaged
- Participate, support and encourage staff in their participation of diversity initiatives

Training and educational programs are important tools for improving the environment for a diverse workforce. ODI and HR will work together to:

- Incorporate specific diversity training components in supervisor training on diversity issues, including best practices in hiring and management of a diverse workforce
- Develop a set of matrices for evaluating areas of success in improving the work climate for under-represented employees, and areas that need improvement
- Develop and sponsor, annually, at least four training events that focus on: (i.e. unconscious bias, privilege, LGBTQ issues)
- Train and deploy Diversity Advocates whose role in the organization is to promote the advancement of diversity within each NRAO site. The advocate will work directly with the ODI Director

I.3 Communication

Develop a coordinated communication strategy:

- Communicate the message that diversity is not an HR-only initiative; Diversity is an organizational priority
- Continue to include diversity messages on outward-facing webpages
- Enhance the diversity vision statement which synchronizes the science and diversity mission
- D&I appears as agenda item:
 - at the Director's All Hands Meeting
 - in weekly Coordination Meeting
 - in Departmental/Division Meetings
- Management recognizes diversity/broader impact activities
- Develop and maintain targeted emails, posters, presentations, and diversity web site

I.4 Financial Commitment

- Continued dedicated funding for ODI must be an annual line item at the current level of support for the current suite of programs
 - Funding for the employee's effort (an independent WBS code for Diversity)
 - Additional funds for special programs or new initiatives
- AUI may fund additional programs / activities in collaboration with NRAO staff

2 ROLES & RESPONSIBILITIES

2.1 Roles

The **ODI Director** coordinates the overall diversity initiatives throughout the Observatory and carries forth the main goals described above.

Diversity Advocates (rotating every two years) act as site representatives for ODI activities and initiatives, and serve as diversity spokespersons for each site's Employee Diversity Group.

The **NAC Program Manager** works with the ODI Director to manage the NAC budget and NAC program activities.

The **NINE Program Manager** works with the ODI Director to manage the NINE budget and NINE program activities.

The **HR Recruiting Manager**, along with the ODI Director, work to improve outreach to pools of highly-qualified URM applicants for NRAO, GBO, and LBO positions.

3 PROGRAMS

As a national observatory, an important part of our mission is to train the next generation of scientists and engineers. It is especially important to help build the STEM pipeline in under-represented minority (URM) groups, so that NRAO, as a publicly-funded observatory, reflects the general U.S. population. Efforts described here align with NRAO's 10-year plan towards building a vibrant STEM pipeline with national and international partners. This work will be done jointly by ODI, HR, EPO, and SSR.

Program Integration – HR/EPO/SSR/Diversity

In order to maximize the myriad activities within HR, EPO, SSR, and through ODI initiatives, integration and coordination is required. A concerted collaboration among these groups will allow NRAO to utilize existing resources, and maximize the reach and impact of each activity.

Broader Impact - Community

The broader impact of our operation is a program evaluation criterion by the National Science Foundation which funds the bulk of our activities. Efforts ranging from education and public outreach to reaching a broader science community are encapsulated within this evaluation criterion. The goals described below relate to diversity initiatives and will be undertaken by ODI, in partnership with EPO, HR and SSR where appropriate. These programs are included in the FY2017 Program Operating Plan (POP) and in the 5-year Long Range Plan (FY18-22).

3.1 National Consortium in Astronomy (NAC)

The NAC Undergrad Experience



Figure 1. Graphical description of the major components of the NAC Undergraduate Experience

The National Astronomy Consortium (NAC) is a program led by the NRAO and AUI, in partnership with the National Society of Black Physicists (NSBP), and a number of minority and majority

universities to increase the numbers of students from underrepresented¹ and underserved groups and those otherwise overlooked by the traditional academic pipeline into STEM or STEM-related careers.

The NAC is an innovative, competitive program designed to provide research opportunities, and long-term mentoring support to underrepresented students in STEM fields (see Fig. 1). The NAC program expands upon the traditional summer research experience by creating an expectation of long-term mentoring, along with engagement in a strong, national-level peer and mentor network. NAC students are selected for *grit*² and are partnered with world-class scientists, engineers, technicians, and other professionals, for research activities that extend beyond the summer into the academic year. Peer mentoring and support is an important component of the NAC, and is fostered through placement in thoughtfully-developed cohorts at leading observatories and universities.

Students are recruited through NAC partners (HBCUs, Community Colleges, and HSIs), at the AAS, and SACNAS meetings. Students selected for the NAC program are partnered with trained mentors at one of the NAC Site Partner sites (e.g., NRAO-Socorro, University of Wisconsin-Madison, etc.). In order to build cohorts, each site will host between 2-4 students. Over the summer the students interact with other REU students to take advantage of shared resources (colloquia, lectures, site visits, etc.).

3.2 Annual NAC Workshop

NRAO organizes the annual NAC meeting at Howard University in Washington, DC, and provides funding for all NAC students to attend the meeting. The NAC Workshop is a key component of the NAC experience, and is designed to bring the current year's cohort of students together to:

- share their research with their peers, NAC mentors, and invited guests
- meet with influential professionals in the field of astronomy, including scientists, program managers from important national funding agencies, and representatives from observatories and professional organizations
- strengthen peer, mentor, and professional relationships

Because students from the LSAMP and PING programs are members of the NAC cohorts, these students are also supported to attend the NAC workshop.

3.3 Annual AAS Meeting

NRAO provides support for current year NAC students, from all sites, to present a poster at the Winter AAS meeting. NRAO LSAMP and PING students are also invited to participate in the AAS meeting.

3.4 VA-NC Louis Stokes Alliance for Minority Participation (LSAMP)

¹ Within the mandate and mission statement of NRAO we define under-represented groups to mean all of the following, but not limited to, people of color, women, economically disadvantaged and first-generation college students.

² Students with 'grit' exhibit passion for a particular long-term goal, along with powerful motivation for achieving their objectives.

The LSAMP (NSF funded) program targets under-represented minorities in STEM. NRAO provides summer research opportunities to 1-2 LSAMP student each year. As part of their summer experience, students are partnered with experienced NRAO mentors, and have opportunities to conduct hands-on research using state of the art lab facilities, observe at Green Bank and the VLA, use advanced software applications, and/or participate in projects across a wide range of career fields (e.g., astronomy science, engineering, computing, and EPO). NRAO's funding commitment is to sponsor 1-2 students who will be named NRAO-LSAMP fellows. The LSAMP students will be integrated into the NAC cohort, and will have opportunities to participate in all NRAO summer student-related activities, including the NAC workshop and AAS poster presentation opportunities. The UVA-NRAO LSAMP partnership optimizes resources from both UVA and NRAO, and benefits the students and both organizations.

3.5 Physics Inspiring the Next Generation (PING)

The PING program is a collaboration between NRAO, the National Society of Black Physicists (NBSP), and AUI. The two-part program supports multiple levels of the physics and astronomy pipeline: an 8-week research experience for undergraduates (ODI) and a 2-week summer camp experience for middle-school students (EPO).

In 2014-2016, the PING program operated in Green Bank, WV. In 2017, the EPO department will begin developing a PING program to serve middle school students in Socorro, NM.

3.6 African American Teaching Fellows (AATF)

The mission of the [AATF](#) is to recruit, support, develop and retain a cadre of African American teachers to serve the schools of Charlottesville and Albemarle County. Nearly 30 percent of school-age children in Charlottesville and Albemarle County are African American, but less than 10 percent of their teachers reflect the same demographic. The absence of African American teachers leaves many African American students feeling disconnected from school, and the disparity creates misperceptions and stereotypes that disadvantage all students, regardless of race. The absence of diverse teaching staffs affects every one of our children. They rarely witness cross-cultural collaboration, and rarely benefit from diverse mentorship. A generation grows up without an appreciation for cultural differences, and without understanding that, despite our varied experience, our similarities unite us. African American students suffer the most: in Charlottesville and Albemarle County, they are three times more likely to drop out of school than their white peers are. They lack mentors who share their sociological and cultural roots and who can address the needs of a diverse student population. NRAO will continue its partnership with the AATF by supporting its annual summer institute, and will coordinate with EPO to explore opportunities for utilizing curriculum materials as part of their teaching goals to strengthen the relationship between NRAO, AATF, and local public schools.

3.7 Native American Outreach

NRAO will explore opportunities for establishing a partnership with Native Americans in an effort to extend pipeline opportunities. Working through SACNAS, it is our intention to improve outreach into Native American communities in order to recruit students (both k-12 and

undergraduate) into EPO and ODI programs (e.g., SEDLE, NAC, PING).

3.8 Socorro Electronics Division Learning Experience (SEDLE)

The Socorro Electronics Division Learning Experience (SEDLE) is designed to involve URM undergraduate students in the production of NRAO hardware, software, and in drafting and design activities. This program, previously known as the Socorro Electronics Division Undergraduate Internship Program (SEDUIP), has been extremely beneficial to students, introducing them to a professional laboratory environment, and providing mentors to guide them while they make meaningful contributions to ongoing technical design, assembly, and documentation projects at the Observatory. An added benefit of the program is that it increases the visibility of NRAO and AUI in the community in New Mexico, and trains potential future employees who will be well qualified to help NRAO retain its current world-class status for cutting edge technology in radio signal processing. Still in development, SEDLE will actively recruit students from across the country, targeting female, Hispanic, and Native American students at Hispanic-serving Institutions (HSIs), including 2- and 4-year colleges and universities. We also make use of these recruiting avenues to attract Hispanic and Native American students to existing astronomy programs at all NRAO sites.



Figure 2. Graphical description of the major components of the NINE Professional Training Experience

3.9 (NINE) NRAO National/International Exchange

In the United States (and around the world), the NRAO has been the leader in enabling cutting edge scientific research with its world leading radio facilities. Part of NRAO’s core mission goals is to train the next generation of scientists and engineers and provide the US science community with cutting-edge radio facilities. The radio astronomy landscape across the globe is quickly

changing. South Africa and China, two developing countries are building a slew of observatories (MeerKAT, African VLBI, SKA, QTT, FAST, etc.). At the same time countries like Chile, Brazil and India have or recently acquired access to unique radio facilities (e.g., ALMA, GMRT, etc.).

The radio astronomy expertise in these countries is generally limited, and these nations are interested in developing the human capacity that will be essential to design, build, and operate these facilities. In the U.S., there is also a strong desire to develop further our human capacity in the STEM fields, especially within traditionally under-represented groups. By partnering with these nations the NINE program will foster astrophysical research and an exchange of students and staff to not only train a new generation of scientists and engineers, who will be our long term international partners, but also to pave a path for access to the next generation of radio facilities for the US community.

Underrepresented groups in the U.S., and overseas, face similar challenges and obstacles. Increasing diversity and improving the environment for diversity are essential ingredients for human capacity development. The NINE Program is part of the NRAO Office of Diversity and Inclusion. It is geared towards building the next generation of scientists and engineers in STEM fields through enticing the best and brightest, both nationally and internationally, into high quality programs designed to benefit the participant, each partnering location, and the radio astronomy community as a whole.

The NINE's primary objectives are to 1) provide supported short programs (typically 9-weeks duration) designed to teach sustainable skills in any STEM functional area associated with radio astronomy that can ultimately be applied in the home location, 2) to form long-term mentor/mentee relationships with staff at NRAO, and 3) position the participant to successfully develop a NINE Hub, capable of providing training in the STEM field of experience (see Fig. 2).

Elements of the NINE program are as follows:

1. Exchange of students and postdocs
2. Exchange of faculty/instructors and other professionals in line with ODI's mission of broadening participation for under-represented populations
3. Workshops to foster collaboration, professional development and networking
4. Virtual classrooms and continuous distance learning environments
5. Fostering of long-term mentoring relationships

The NINE Program provides learning opportunities throughout all disciplines affecting the full spectrum of activities associated with designing, constructing, and operating, radio astronomy observatories (human resources, education and public outreach, electronics, engineering, technicians, operators, project management, systems engineering, and many others.)

The NINE program will continue to develop relationships with national and international partners, including the development of additional hub(s).

3.10 ODI-Chile Undergraduate Research Experience

NRAO will provide summer research opportunities to 2 students from traditionally underrepresented communities/universities by pairing the students with ALMA science mentors in Santiago.

4 INTERNAL RECRUITMENT, HIRING & RETENTION

4.1 Work Force Diversity

There are three key aspects to NRAO's efforts toward improving work force diversity: recruitment, hiring and retention. The two main goals described below will require a strong commitment from management to ensure that the enhanced recruitment guidelines that center around improving diversity are shared by those who have hiring and management responsibilities.

4.2 Diversity and Cultural Awareness Training

4.2.1 Multi-Cultural Workforce

Finding common ground in an environment rich with varying opinions and perspectives can be an organizational challenge. Education and awareness initiatives that teach employees how to succeed and perform optimally across a multi-cultural workforce can directly support diversity efforts in the workplace. Diversity education encourages thoughtfulness and consideration between co-workers of different nationalities and backgrounds. Cultural awareness is achieved when all employees in a company can appreciate the benefits of cultural diversity. The numerous benefits of cultural diversity stem from the fact that people from different cultures bring different perspectives to the table, introducing new ideas, perspectives and personalities into strategic planning processes and workplace activities in general. A culturally diverse and aware workforce can create a culture of mutual respect and dignity, garnering a reputation as a fair employer in the job market. Diversity awareness sessions will be offered across the Observatory utilizing a mixture of online training courses, outside speakers, and sessions facilitated by NRAO staff and Diversity Advocates. Diversity awareness will also be incorporated in supervisor and management trainings.

4.2.2 Recruitment & Hiring

A staff recruiting guide that draws upon recent studies on diversity hiring and recruitment has been implemented. The guide provides details in regards to increasing minority applicants and advertising to targeted underrepresented populations. The guide will be used for all subsequent hiring within the Observatory. The guide details steps required for the formation of a search committee, and subsequent training in the review process to avoid unconscious biases. The guide describes a uniform and fair process for all applicants, and describes the requirements for documenting specific efforts undertaken by the search committee to improve diversity. The guide also contains guidelines on broader transparency in the hiring process that will provide necessary information to the applicants and to any staff members within the Observatory.

4.3 Retention

In FY2017, HR and ODI will implement a process to review the status of under-represented staff members and investigate means to improve their retention and advancement. The recommendations from this process will be communicated to the NRAO Director by September, 2017.

Diversity and inclusion training will continue to be conducted across the observatory. Emphasis will be placed on incorporating diversity training in supervisory/management training.

5 Expected Outcomes

5.1 National Recognition

NRAO is recognized for its leadership in promoting diversity and inclusion as core values in its research, employment, public outreach, and training activities.

5.2 Workforce Diversity

NRAO's workforce better reflects the diversity of local, regional, and national pools of talent, and benefits from the rich variety of expertise, experience, and perspectives.

5.2.1 Workforce Diversity Metrics

The HR Department will report quarterly on (a) the number of women, minorities, and underrepresented groups, by EOE category, that flow through the hiring process, and (b) the number of women, minorities, and underrepresented groups, by EOE category on staff. See NRAO Performance Evaluation and Management Plan (PEMP); 2.11.

5.3 Climate of Inclusion

NRAO's workplace climate is one that actively seeks out diverse opinions and ideas. Climate surveys reveal that staff feel a strong sense of belonging, and feel valued by other NRAO staff and the broader astronomy community.

5.4 Management Committed to D&I

Management fully participates in D&I training opportunities, and demonstrates a commitment to diversity and inclusion as core values. Supervisors and managers actively encourage staff to participate in D&I activities and training, and include broader impact activities of staff in quarterly reports.

5.4.1 Diversity Training Metrics

ODI will report quarterly on the number of diversity-related training opportunities offered to NRAO staff. See NRAO Performance Evaluation and Management Plan (PEMP); 2.11.

5.5 Underrepresented Minority Representation

Increased numbers of URM undergraduate students and professionals enter graduate school and/or astronomy-related careers, because of NRAO's partnerships with HBCUs, HSIs, Minority-serving professional societies (e.g., SACNAS and NSBP), and programmatic efforts to increase participation in STEM education and training.

5.5.1 URM and Collaboration Metrics

ODI will report quarterly on the number of URM students reached through its programs, and will report on collaborations with minority-serving institutions. See NRAO Performance Evaluation and Management Plan (PEMP); 2.11.

6 Green Bank Observatory (GBO) and Long-Baseline Array (LBO)

The **ODI Director** coordinates the overall diversity initiatives throughout the Observatory and provides, through the ICC agreement, D&I-related support to the GBO and LBO.