

**Committee on Equal Opportunities in Science and Engineering (CEOSE)**  
**Meeting Minutes**  
**June 15-16, 2023**  
**National Science Foundation**  
**Alexandria, VA 22314**

**MEETING PARTICIPANTS**

**CEOSE Members Present**

**Dr. Jose D. Fuentes, CEOSE Chair**, Pennsylvania State University  
**Dr. Kaye Husbands-Fealing, CEOSE Vice-Chair**, Georgia Institute of Technology  
**Dr. John M. Anderson**, Howard University  
**Dr. Suzanne, Barbour**, University of North Carolina at Chapel Hill  
**Dr. Tabbetha Dobbins**, Rowan University  
**Dr. Ryan Emanuel**, North Carolina State University  
**Dr. Ann Gates**, The University of Texas - El Paso  
**Dr. Sandra Graham**, University of California-Los Angeles  
**Dr. Cynthia Lindquist**, Cankdeska Cikana Community College  
**Dr. James R. Martin**, University of Pittsburgh  
**Dr. Vernon Morris**, Arizona State University  
**Dr. Timothy Pinkston**, University of Southern California  
**Dr. Susan Renoe**, University of Missouri-Columbia  
**Dr. Barbara Endemaño Walker**, University of California-Santa Barbara  
**Dr. Nai-Chang Yeh**, California Institute of Technology

**CEOSE Members Absent**

**Dr. Gilda Barabino**, Olin College of Engineering  
**Dr. David R. Wilson**, Morgan State University

**CEOSE Designated Federal Officer – Executive Liaison**

**Dr. Alicia Knoedler**, Office Head, OIA/OD/NSF

**CEOSE Executive Secretary**

**Dr. Bernice Anderson**, Senior Advisor, OIA/OD/NSF

**CEOSE Scientific/Technical/Administrative Staff**

**Ms. Una Alford**, Program Analyst, OIA/OD/NSF  
**Mr. Steven Buhneing**, Communications Specialist, OIA/OD/NSF  
**Ms. Jolaina Jeff-Cartier**, Staff Associate, OIA/OD/NSF

**CEOSE Advisory Committee  
Virtual Meeting, June 15-16, 2023  
National Science Foundation (NSF)  
Meeting Minutes**

**Day 1: June 15, 2023**

**Opening, Welcome, Introductions – Dr. Jose D. Fuentes, CEOSE Chair and Professor of Atmospheric Science, The Pennsylvania State University**

Dr. Fuentes opened the meeting with a welcome and a few opening remarks, highlighting the submission of the 2021-2022 CEOSE report to the NSF Director and the positive feedback from NSF leadership during the recent June Executive CEOSE meeting. Members introduced themselves and shared updates about their DEAI efforts and/or accomplishments since the last CEOSE meeting.

**Presentation: Report of the CEOSE Executive Liaison – Dr. Alicia J. Knoedler, NSF CEOSE Executive Liaison and Office Head, OD/OIA**

Dr. Knoedler began the session with special appreciation to the CEOSE support team, including MEM and GOH, followed by a moment of silence in honor of the late Dr. Kellina Craig-Henderson, former SBE AD and an extraordinary BP/DEAI champion. She announced the following staffing updates: Angela Williams (Angel) assumed the position of General Counsel in the Office of General Counsel on April 10, 2023, and Susan Marqusee of the University of California – Berkeley will assume the position of AD for BIO, effective June 20, 2023. She reported that the terms for CEOSE members Gabriel Lopez and Ryan Emanuel CEOSE have ended and thanked them for their many contributions to CEOSE. She expressed deep appreciation to the Committee for the submission of the 2021-2022 CEOSE report. She also shared information about the Alan T. Waterman award recipients (i.e., Natalie King – Georgia State University, William Anderegg – University of Utah, and Asegun Henry – Massachusetts Institute of Technology).

The funding opportunities that were highlighted included: *Growing Research Access for Nationally Transformative Equity and Diversity (GRANTED)*, emphasizing the no-deadline, no cap program description; *Workplace Equity for Persons with Disabilities in STEM and STEM Education*, stressing the agency-wide effort to advance accessible STEM in STEM education workplaces and post-secondary training environments; *Cultural Transformation in the Geoscience Community*, calling out support for institutional transformation of STEM learning and research ecosystems by focusing on broadening participation; and two new EPSCoR solicitations—E-RISE RII and E-CORE RII (the *EPSCoR Research Incubators for STEM Excellence Research Infrastructure Improvement*, focusing on the development and sustainability of EPSCoR-eligible jurisdictions' research capacity and competitiveness in a

scientific topical area, and *EPSCoR Collaborations for Optimizing Research Ecosystems Research Infrastructure Improvement Program*, supporting jurisdictions in building capacity in one or more targeted research infrastructure cores that underlie the jurisdiction's research ecosystem).

Dr. Knoedler also discussed recent and upcoming events (i.e., the NSF EPSCoR workshop on quantum computing in science and engineering that was held March 23-24, 2023, the EPSCoR PI meeting held May 15-16, 2023, and the upcoming annual HBCU conference that will be held in September 2023 in Washington, DC). She ended her presentation by highlighting the NSF FY24 Budget Request, calling attention to three pillars (i.e., strengthening established NSF, inspiring missing millions, and accelerating technology and innovation) and four crosscutting themes (i.e., advance emerging industries for national and economic security, create opportunities everywhere, build a resilient planet, and strengthening research infrastructure).

### **Discussion: NSB-NSF Merit Review Commission – Mr. Stephen Willard, NSB Member and Commission Chair; Dr. Wanda E. Ward, NSB Member and Commission Vice Chair**

Mr. Willard provided an overview of the NSB-NSF Commission on Merit Review, sharing that the work of the Commission is driven by two overarching questions: To what extent are the merit review process and criteria--as currently understood, implemented, and assessed--resulting in awards for research education that achieve NSF's mission? Are changes to the merit review process and criteria, their implementation or their assessment needed to achieve NSF's mission? Exploration is underway in three areas of the NSF's merit review's policy system: 1) Policy – criteria and guidelines that determine how research proposals will be identified and funded, 2) Implementation – how merit review policies are interpreted and utilized by various people throughout the merit review process, and 3) Accountability – how we know our policies are successful in fulfilling NSF's statutory mission.

Dr. Ward added that this review requires the examination of both criteria as well as the elements and principles which are provided to clarify and guide proposers, reviewers, external advisors, and NSF staff in submitting, evaluating, and selecting research proposals with the most potential to advance NSF's mission. She engaged CEOSE in a discussion of the following three topics and related questions:

- The intellectual merit criterion aims at advancing knowledge and the broader impacts criteria aims at achieving specific desired societal outcomes. Do you think these are the right goals for NSF? What do you think about measuring progress toward these goals?
- What do you think NSF's BP goals should be and how can merit review help to achieve such goals? What metrics can be used to measure progress toward these goals?
- The CHIPS and Science Act encourages federal research agencies to remove, assess, and update policies and practices to remove or reduce cultural and institutional barriers limiting the recruitment, retention, and success of groups historically underrepresented in STEM research careers, including policies and practices relevant to the unbiased review of federal research applications. Are you aware of any barriers in NSF's merit review policy or process? If so, what can be done to reduce or remove such barriers?

Some of the comments during the discussion are as follows. People tend to give more attention to intellectual merit than broader impacts (BI). Most of the proposal content is related to intellectual merit with much lesser content devoted to broader impacts, and in the review panels more time is spent on intellectual merit, compared to societal/broader impacts. Advancing intellectual merit does not have guidance related to DEIA. One simple consideration is to include the discussion of diverse and inclusive teams as part of intellectual merit. Inclusivity within the research team is important to science itself. More discussion is warranted to address the active role a reviewer should play when broader impacts are not being considered in the same way that intellectual merit is.

CEOSE pointed out that the Commission needs to examine issues of equitable inclusion and differentiated outcomes. For example, intellectual merit has been used as rigorous coded language that often resulted in many emerging scholars being eliminated, excluded, or marginalized because their proposals were “not rigorous enough.”

Another suggestion was to measure MR policy and practice by focusing on the progress of institutions. There was overall agreement that championing and rewarding good BI in faculty proposals is an institutional responsibility. Within the context of institutional responsibility/transformation, an important question is whether a third criterion, BP, should be broken out to put the onus not just on the individual but on the organization as well. Institutional accountability for BP/BI was strongly suggested by CEOSE.

CEOSE commented that incomplete data in the reviewer system must be addressed. Reviewers and PIs who do not fill out demographic information may become more problematic for NSF with the transition from FastLane to Research.gov. In Research.gov, the more you interact with the system, the fewer reminders you receive to complete missing information. Members stressed the need for demographic data to understand BP barriers. Using the annual reports from the PIs to assess how BP is being addressed was suggested, also.

### **Presentation: Supporting Rural STEM Education and Research – Dr. James L. Moore, Assistant Director, STEM EDU**

Dr. Moore began by pointing out that the recent name change to the EDU Directorate is more inclusive and underscores that the core support is for STEM education research. In describing the four divisions, he emphasized GRFP reaching about 8,000 graduate students; the suite of Congressionally mandated broadening participation programs in EES; NSF as the largest Federal agency funding education research on STEM in formal and informal settings; and the increased interest of Congress in the ATE and Noyce programs of the undergraduate portfolio. Other programs highlighted included REU, NSF’s Eddie Bernice Johnson INCLUDE Initiative, AISL, and he noted the “rural footprint” in S-STEM, ITEST, and NOYCE via specific projects or program data. He discussed the challenges linked to the potential losses of students who will enter, be retained, or graduate with a STEM degree.

Dr. Moore emphasized that talent exists everywhere, but opportunity does not. EDU is catalyzing opportunities for students at every level, every juncture of education, especially in rural and urban America. Specific efforts supported by EDU to address the grand STEM challenges in

rural America included proliferating the number of STEM teachers that will work in under-resourced school districts; ensuring that students at every junction of education have experiential experiences that will strengthen/enhance academic preparation for the STEM career trajectory; supporting/establishing strong, meaningful partnerships with industry in rural communities; providing scholarships to increase access to a STEM degree and address the financial burden of earning a STEM degree; leveraging technology to mitigate disparities by helping students succeed in STEM courses/coursework and persist in the STEM pathways; bridging formal and informal to fill in the gaps around exposure, interests and preparation; strengthening mentorship opportunities; and supporting knowledge mobilization to compile and share exemplary practices and strategies to improve teaching and learning in the rural context. Dr. Moore stressed the need to expose rural students to the new frontier of STEM to help spur innovation at speed and scale.

CEOSE members raised the following concerns or topics during this session: STEM employment opportunities in rural communities within the context of the geography of innovation; the coordination of efforts to produce new talent and systemic change; the role of community colleges regarding dual enrollment programs and career technical education; a strategic approach to utilize AI as a way to broaden participation of the next generation of rural STEM talent; and potential collaborations with EPSCoR in advancing rural STEM education.

### **Discussion: Reports of the CEOSE Liaisons – CEOSE Advisory Committee Liaisons**

CEOSE Liaisons provided updates about the recent AC meetings or plans for attending forthcoming meetings. Some highlights related to broadening participation from the CEOSE Liaisons are listed below:

-*BOAC* is looking for recommendations of diverse individuals or individual from diverse types of institutions.

-*BIO committee* continues to be concerned about the demographics of the PI pool, particularly for the molecular and cellular biosciences, and encourages program officers to provide expansive comments to PIs whose proposals get reviewed but not funded. There's a recognition that there's a need for outreach in EPSCoR jurisdictions and institutions that are currently underrepresented in the bio portfolio.

-Themes at the *ENG AC* meeting included broadening participation, workforce development, education, and strategic directions for increasing partnerships and alignment with the agency strategic plan. Points of agreement between CEOSE and the ENG ADCOM were: we need to accelerate and expand pathways; we must focus on institutional transformation; we need to have a sense of scientific urgency to do the hard things related to broadening participation; and better data sets are needed for increased attention to be given to the return on investment, enabling better understanding of investment in the context of broadening participation and broadening impacts.

-The current *GEO AC* is now a merger of the former OPP AC and GEO AC. A new white paper is forthcoming about the impact of research on the environment. Other discussion areas focused on access to GEO facilities, isolated/hostile fieldwork, the continuing impacts of COVID, the influence of AI on graduate education, the influx of diverse students and inclusive Geosciences programs at community colleges, opportunities of the GRANTED program for the GEO community, data and workforce needs, and the need to dismantle or disrupt institutional barriers. The last meeting of the OPP AC covered topics related to sexual harassment and issues of equity

related to the physical qualification process to conduct field work in Antarctica. CEOSE members were encouraged to read the DEI report written by a subcommittee of the OPP advisory committee.

-The *MPS advisory committee* meeting had several scientific presentations and several relevant BP discussions, including how to evaluate the broader impacts during the review process and challenges of small and less resourced institutions. Two focused BP partnership programs that focused on support to minority-serving institutions were highlighted—*PAARE*, Partnerships in Astronomy and Astrophysics Research and Education and *PREM*, Partnerships for Research Education and Materials. The meeting included a CEOSE presentation that covered an overview of CEOSE and the Envisioning the Future of EPSCoR report.

-*SBE AC* paid tribute to former AD, Kelli-Craig Henderson and expressed a need and commitment to continue her vision of “beyond boarding participation.” A presentation about the Centers for Research and Innovation in Science, Environment and Society spurred an interesting conversation about how information on new programs are disseminated to advance broadening participation. Another relevant BP conversation focused on how NSF/SBE count the success rates of HSI institutions in the context of R1 HSIs and non-R1 HSIs and how these institutions serve Hispanic students.

### **Day 2: June 16, 2023**

#### **Opening Remarks – Dr. Jose D. Fuentes, CEOSE Chair Discussion: 2021 – 2022 CEOSE Report and its Dissemination**

The CEOSE Chair opened the meeting and provided an overview for the second day of the meeting. Then the EDU AC Liaison report was shared with the Committee, highlighting the three themes that were discussed at the Spring meeting: creating opportunities everywhere, investigating in new frontiers – US STEM ecosystem, and investing in ideas and people.

The Chair announced that the 2021-2022 CEOSE report was submitted to NSF. The dissemination discussion covered: edits to the report handout that will be sent to more than 130 STEM organizations, a release video, and the potential for companion videos regarding the report recommendation and suggestions for action, and a revised CEOSE slide deck featuring the 201-2022 report.

#### **Discussion: Topics to Share with NSF Senior Leadership**

A range of topics continue to be important for discussion with NSF leadership. They included the following: 1) breaking out BP from BI as merit review criterion, 2) ongoing emphasis on institutional accountability and transformation, 3) better data and the use of a more rigorous framework to understand our ROI, 4) the appreciation for and importance of the GRANTED Initiative for underserved/under-resourced institutions, 4) implications of the decisions of the Supreme Court on BP programs and activities, 5) new models of delivering funding (e.g., lottery system or randomized awards or an improvement cycle of rewriting proposals), and 6) increasing opportunities to rural communities, especially for dual enrollment programs.



## **Discussion with NSF Senior Leadership – Dr. Karen A. Marrongelle, Chief Operating Officer, OD**

The highlight of the session was Dr. Marrongelle's positive remarks about CEOSE's submission of the 2021-2022 Biennial Report, underscoring that NSF takes seriously the recommendation and suggested actions in the CEOSE Report, as well as advice shared during the CEOSE meetings. She pointed out, for example, that OIA is collaborating throughout the agency and with the EPSCoR community to leverage the CEOSE recommendations to enhance the EPSCoR program itself, but also beyond, thinking about how to support EPSCoR jurisdictions more broadly. She also expressed deep appreciation for the active engagement of the CEOSE Liaisons with other NSF Advisory Committees and acknowledged the impressive contributions of outgoing CEOSE members. She shared the certificates of appreciation for Dr. Gabriel Lopez and Dr. Ryan Emanuel.

Other areas emphasized by Dr. Marrongelle were the FY 24 budget themes and Congressional hearings, the launching of the GRANTED program, the 10% agency priority goal, renewed attention to the NSF equity ecosystem, and the momentum of the NSF INCLUDES program becoming the Eddie Bernice Johnson NSF INCLUDE Initiative. The issues that CEOSE members raised during the discussion were: 1) whether it is time for a third merit review criterion focused on broadening participation and thinking beyond broadening participation, such that whole organizations are more accountable for the research, training and working cultures that they have developed in STEM; 2) the implications for BP in STEM in light of the decision(s) of the Supreme Court on affirmative action; 3) interrupting the bias in the review process through innovative practices and processes (e.g., anonymous voting processes, hybrid models of funding), 4) success of dual enrollment programs for rural regions, 5) applauding the new theme of creating opportunities to harness talent that is everywhere; and 6) leveraging NSF power to address the "missing data problem" to help address the challenges of demonstrating impact.

## **Diversity, Equity, Inclusion, and Accessibility (DEIA) Briefing – Dr. Charles Barber, Chief Diversity and Inclusion Officer, OD**

The Chair welcomed the new Chief Officer for Diversity and Inclusion, Dr. Charles (Chuck) Barber. Dr. Barber's presentation described four core lines of effort to inform a data-driven model to align and analyze NSF's work across the DEAI space. It will involve: 1) assessing policy instruments for unintended consequences, 2) focusing on barriers that prevent representation throughout the workforce, 3) leveraging the diverse spectrum of talent to improve organizational performance, and 4) addressing culture by linking it to organizational effectiveness. He noted that this work aims to provide a comprehensive, common operating framing for the multiple Executive Orders, the government wide DEAI strategy, the recommendations of the NSF Racial Equity Task Force, and the grassroot activities that are taking place across the Foundation. Tools highlighted included the Denison framework for linking DEIA efforts to culture intelligence, the DEAI Maturity Model to give increased attention to inclusion and belonging, a comprehensive barrier analysis tool called Underrepresentation Model, and a DEAI sustainment strategy for forging partnerships with other federal agencies and the diversity offices at universities and colleges. He stressed that culture is

the underpinning of the DEAI work, moving from solely focusing on compliance to placing greater emphasis on culture intelligence. The open discussion focused on the important role of data/data analytics to drive “actionable accountability.”

**CEOSE Panel: Engaging Tribal/Indigenous Communities – Dr. Ryan E. Emanuel, CEOSE Member and Professor, Duke University, Department of Environmental Sciences and Policy, Nicholas School of the Environment; Dr. Cynthia Lindquist, CEOSE Member and President, Cankdeska Cikana Community College**

The Chair pointed out this panel session is directly connected 2023-2024 CEOSE report to Congress that will include a focus of the increased engagement of Native communities, being inclusive of their diverse perspectives for scientific innovation, and tripling their representation in the STEM workforce, as suggested by the Missing Millions. Dr. Cynthia Lindquist and Dr. Ryan Emanuel briefed their colleagues on the following facts, issues, and perspectives:

- AIHEC is the advocacy group for the 35 Tribal Colleges within the US, serving 160,000 mostly native students of which 55% of the students are part time. Fifteen of these schools offer bachelor’s degrees, eight offer masters, and one just announced that it will offer doctoral degrees.
- Most Tribal college students are 28-30 years old, working full-time, and PELL grant eligible. Most are first generation students; many are single mothers.
- Each Tribal College is chartered by a different tribe. There are Native American serving non-tribal institutions that also engage and support tribal communities.
- Tribal students have been known to actively participate in their native community. STEM students from Tribal communities go to TCUs that fulfill their academic and cultural needs. In other IHEs, these students feel invisible because of the lack of community in non-tribal institutions.
- Practices that can help Tribal students consider and persist in STEM careers are 1) creating an environment where they feel accepted and welcomed, 2) putting infrastructure in place to support these students and provide endorsements and encouragement throughout the process; and 3) being good listeners, showing deep respect for their communities to dispel negative connotations/beliefs;
- Faculty development at TCUs must be a priority area. It is also important to bring in more diverse faculty to help foster a better community among students of different cultures. Inter-Institutional Work has been a place of support, to band together and pull resources into less fortunate communities.
- Although there is good communication and relations between different Tribal colleges and other larger institutions, there is no national organization to facilitate or organize these relations, so it is not uniform across the US.
- Think about the individual and not the percentage because with percentages the individuals become invisible again; the emphasis must focus on how the National Science Foundation can support the people.

CEOSE noted that it would be beneficial to highlight the narratives of the people within the Native communities to raise awareness and draw focus to these situations of both needs and opportunities.



### **Discussion: Institutional Sharing around Broadening Participation (BP)/Diversity, Equity, Inclusion and Accessibility (DEIA) Practices and Activities – Dr. Jose D. Fuentes, CEOSE Chair**

Members shared insights about the “push back” to the efforts of the DEIA. The discussion included examples of states passing legislation that limits the BP funding opportunities, revisiting the terms “diversity, equity, and inclusion,” as well how some institutions are defunding DEAI programs. Members shared deep concern about these legislative issues as CEOSE is charged to improve and promote equity and inclusion in the scientific enterprise. CEOSE Member James Martin stated that “one of the greatest strengths we have in this country is diversity, and it is ironic that our greatest strength for innovation is becoming a weakness just at the time we need it.”

### **Announcements, Closing Remarks, Adjournment**

The Chair announced that Dr. Vernon Morris will serve a second term on CEOSE and continue his assignment as CEOSE Liaison to GEO. The Chair also expressed deep appreciation to outgoing members, Dr. Gabriel Lopez and Dr. Ryan Emanuel. Members were encouraged to attend their assigned AC meetings as CEOSE Liaisons. The Chair also stressed the importance of starting early on the 2023-2024 CEOSE report. After applauding the membership for a great meeting and announcing that the next meeting will be a virtual meeting scheduled for October 26, 2023, the Chair adjourned the meeting.