CEOSE Advisory Committee
Virtual Meeting
National Science Foundation
June 13 - 14, 2024
Meeting Minutes

Day 1: June 13, 2024

Opening/Welcome

Dr. Suzanne Barbour, CEOSE Chair, opened the meeting and welcomed everyone to the Spring CEOSE AC meeting. After a brief overview of the meeting agenda, she invited the team from the National Science Board (NSB) to give their presentation.

Presentation: NSB/NSF Commission on Merit Review

The presenters, Dr. Wanda Ward, Chair of the Merit Review Reexamination Commission and Mr. Steve Willard, Former Chair and Consultant to the Merit Review Reexamination Commission, provided an update about the work of the Commission, highlighting the Commission's nested workflow approach. During the discussion, attention was given to several CEOSE reports to explore implementation and accountability suggestions.
Feedback/suggestions from CEOSE included the following:

- The PI needs to involve the community in the planning/development process and demonstrate to the reviewers of the proposal that there is genuine community participation. Engage the community early rather than having them be part of the receiving end. We will be much more effective if communities are part of the ideation process.
- A challenge is that universities do not reward faculty members through tenure and promotion with community-based research so it may be useful for NSF to create a funding opportunity that better explores this problem area. Focus on institutional commitment to Merit Review that values publicly engaged research, especially for early career faculty members. Have a mechanism in the MR process for reporting on this very intense work and not simply view it as an add-on.
- RFPs need to specifically give attention to the involvement of communities, particularly communities that are underserved and/or, under-resourced. These ideas sparked the need for NSB to give further thought to the training needs that would ensure meaningful engagement of community members in all aspects of the research process, from ideation to evaluation and publication. CEOSE added that the opportunity for such

training should be available to current and the next generation of PIs (e.g., graduate students and postdocs).

- Move beyond just capturing things through quantitative data. If we are including communities from ideation, to implementation, and analyzing the data and reporting out, we could tell important stories that will not only reflect the value-add the community voice brings but also have the potential to inspire young people in the community and hopefully, get them into the pipeline, where they are ultimately NSF PIs in the future. Committee members reinforced the need for stories to complement/supplement the quantitative data; the practice of triangulation of qualitative data to verify the finding is important. The oral tradition of qualitative stories values certain cultural practices of some groups and is a promising practice for dealing with intersectionality within the small n problem. Increased acceptance of qualitative stories from multiple perspectives was noted, too.
- The need for more longitudinal data was emphasized in the context of the single PI identifier, along with being more granular and inventive such as analyzing and reporting data by zip codes. CEOSE is also seeking to understand trend data, for example, in the last two or three years the overall number of proposals being submitted to NSF has decreased and the quality of the proposals remains the same. Potential influences include the rolling submission deadline, the impact of the pandemic, etc. There might be many different types of factors, including socioeconomic changes, and more granular data would help our understanding of who is doing what and what factors could be influencing them. Have a data clearinghouse for tracking change and significant disruptions. NSF by the Numbers gives a foundation upon which to build, including inputs by Congressional districts, for example.
- It was pointed out it is not just about the demographics of panelists and ad hoc reviewers, it is also about the demographics of the people who are on the program side who are developing the solicitations, helping with the proposal review, and making the recommendations. It is time to think about not just growing the next generation PIs who are going to be writing the proposals, but also the next generation of STEM professionals who are going to be helping NSF with the proposal review process. This includes training graduate students to have administrative skills. It could be about career preparation so that graduate students and postdocs realize that NSF program director is a potential career path.
- Incentivizing individual PIs and incentivizing research communities need to be considered in innovative ways. It is also crucial to address the degree to which novel ideas are appreciated and respected, particularly if they come from PIs who don't look like the other PIs in the discipline. Engage scientific societies in ways that help them to appreciate and ultimately support investigators who may be different than the others, not just in terms of the high-risk ideas they want to put forward, but also in terms of their identities. Additionally, because there's just an increasingly rich and growing body

of research showing that the more diverse teams are, the more diverse team leaders are, the higher the innovation factor is for scientific discovery. Think about the ways that NSF can incentivize new scholars and diverse teams through whatever mechanisms are currently available.

The session ended with a deep appreciation for the rich input from CEOSE regarding the MRX Commission's work on the implementation and accountability recommendations. The CEOSE Chair applauded the Commission for the use of CEOSE reports to shape the Q&A discussion.

Panel: NSF Supporting Native Communities: Part II

The following members of the NSF Environmental Justice Working Group (EJWG) organized this session to engage CEOSE members on the topic of environmental justice as outlined in Executive Order 14095 regarding the revitalization of our nation's commitment to environmental justice for all:

Dr. Wendy Graham, Co-Chair of EJWG and Division Director of the Division of Research, Innovation, Synergies, and Education (RISE), NSF Directorate for Geosciences (GEO)
Ms. Caroline Blanco, Co-Chair of EJWG and Assistant General Counsel, NSF Office of General Counsel (OGC)
Dr. Carlos Martinez, AAAS Science & Technology Policy Fellow (STPF); Coastlines and People Program (CoPe), RISE/GEO
Dr. Elaine Shen, NOAA Knauss Sea Grant Fellow, Division of Ocean Sciences (OCE)/GEON

Section 2 of the Executive Order (EO) defined environmental justice as the just treatment and meaningful involvement of all people, regardless of income, race, color, national origin, Tribal affiliation or disability in agency, decision making and other Federal activities that affect human health and the environment so that people: 1) are fully protected from disproportionate and adverse human health and environmental effects, including risks and hazards, including those related to climate change, the cumulative impacts of environmental and other burdens, and the legacy of racism or other structural or systematic barriers and 2) have equitable access to a healthy, sustainable, and resilient environment in which to live, play, work, learn, grow, worship, and engage in cultural and subsistence practices. NSF must develop its Environmental Justice Strategic Plan by October 2024. The working group is tasked to consult with persons and communities with environmental justice concerns to develop the strategic plan, including short-to-long-term goals, objectives, priority actions, and metrics. Two years after publishing the strategic plan, NSF must evaluate the effectiveness of the plan, the progress in and barriers to implementation, and steps to address those barriers.

CEOSE provided the following input:

- Authentically and equitably engage diverse communities, including current and emerging PIs, graduate students, post-doc fellows, and K-12 stakeholders.
- Leverage place-based initiatives to ensure that people in the impacted communities help identify issues and find solutions.

- Create sustainable lifelong learning pathways, beginning with environmental literacy in K-12.
- Work with Tribes and Tribal Colleges, highlighting work that NSF is currently supporting, such as water quality research.
- Give basic considerations for accessibility with the understanding of the diversity across the disability groups; one representative per Committee is not enough as they do not speak for the whole community.
- Connect ethics, AI, and EJ when integrating data across multiple sources to inform/enhance decision-making.
- Increase awareness of where NSF is making a difference (e.g., the Long-Term Ecological Research program in BIO, the Human-Environment and Geographical Sciences program and the Centers for Research and Innovation in Science, the Environment and Societies in SBE, Engineering Research Centers in ENG, the informal science portfolio in EDU, and the NSF Engines in TIP).
- Help PIs learn to use their work in a storytelling capacity to help the general public understand the value, impact, and how their involvement can influence environmental justice.
- Work with other agencies like NIH, NOAA, USDA, and USGS to help identify best practices for engaging in environmental justice research.

The members also pointed out challenges: the need for bold funding for environmental justice research from a social science perspective, incomplete data and/or the mistrust of data; silos across disciplines, and the need for more well-trained STEM professionals to build sustainability in communities.

Presentation: Report of the CEOSE Executive Liaison

Dr. Alicia J. Knoedler, NSF CEOSE Executive Liaison, began with expressions of deep appreciation for five former CEOSE members: Dr. Kaye Husband Fealing who resigned to assume her new position as Assistant Director of the NSF SBE Directorate, Dean John Anderson of Howard University, President David Wilson of Morgan State, President Gilda Barabino of Olin College of Engineering, and President Cynthia Lindquist of Cankdeska Cikana Community College. Dr. Knoedler announced that NSF is among the top 10 best places to work for mid-sized Federal agencies and that CEOSE's rural STEM report has been transmitted to Congress. Her report covered Senior Leadership updates and the Budget Themes for FYs 25 and 26, giving special emphasis to the theme, Create Opportunities Everywhere. She shared that Former CEOSE Member Juan Gilbert received the National Medal of Technology and Innovation award and that for the first time, all three Allen T. Waterman recipients are female—Dr. Muyinatu A. Lediju Bell, Katrina G. Claw, and Rebecca Kramer-Bottiglio. Other efforts discussed were the 2024 EPSCoR PI meeting held at NSF in May 2024, the Spring 2024 NSF Grants Conference held in Philadelphia, PA in June 2024, the new requirement for mentoring plans discussed in the new

NSF Proposal and Award Policies and Procedures (https://new.nsf.gov/policies/pappg/24-1), the Institutions Factsheet that is in the NSF by the Numbers interactive dashboard, new funding opportunities since the last CEOSE meeting, and selected BP project highlights for Materials Research Science and Engineering Centers program, EPSCoR E-CORE program, and GRANTED.

Discussion: Reports of the CEOSE Chair and CEOSE AC Liaisons

The Chair provided an update about the submission of CEOSE's rural STEM education report to Congress and shared a short video about the report. Dr. Barbour has given presentations about this report to the BIO AC and the SBE AC. She also thanked Dr. Tabbetha Dobbins for giving a presentation about the report at EDU AC meeting.

The CEOSE Liaisons provided reports about the CISE AC meeting, the ERE AC meeting, the ENG AC meeting, the MPS AC meeting, the EDU AC meeting, and the OCI AC meeting. BP-related information included the following:

- the revisiting of the Broadening Participation in Computing Strategic Plan
- learning about the strategies different directorates are using to incorporate environmental research into their research portfolios
- talent drain from EPSCoR institutions to non-EPSCoR institutions
- broadening of the research footprint of AI/more AI funding for minority serving institutions
- perspectives of PIs and students regarding rural STEM education
- a vision for a widely accessible National AI Research Resource

Day 2: June 14, 2024

Opening Remarks

Dr. Suzanne Barbour, CEOSE Chair, opened the meeting, welcoming everyone to the second day of the Spring CEOSE AC meeting. The Vice Chair, Dr. James Martin, provided a brief recap of Day 1, followed by Dr Barbour's overview of the plans for the day.

Work Session: 2023-2024 CEOSE Report

The Leads of the various writing teams shared their section outlines and key points for the following areas: introduction and review of the literature on equitable inclusion, reframing of accessibility to point out what needs to change, intentional focus on community partnerships, intersectionality as front and center for increasing female representation in the STEM workforce, priorities and plans for engaging Native Americans in STEM, and accounting for strategic actions in the STEM enterprise. The goal is to have a draft report available for the October 2024 CEOSE AC meeting.

Briefing: NSF Eddie Bernice Johnson, INCLUDES Initiative (NSF's Eddie Bernice Johnson Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science Initiative)

The following team provided an overview of the current funding opportunities in the NSF EBJ INCLUDES Initiative and highlighted the work of the Coordination Hub and National Network. Additionally, the presentation revealed how the progress of the Initiative over time has aligned with CEOSE recommendations since its inception in 2016. The presenting team were: Dr. Ann Gates, CEOSE Facilitator and Senior Advisor to the Provost and Executive Director of the Computing Alliance of Hispanic-Serving Institutions for Faculty Affairs, University of Texas at El Paso; Dr. Tori R. Smith, Lead Program Director for NSF EBJ INCLUDES/EDU; Dr. Andrea Venezia, Senior Principal Research Scientist, SRI; NSF INCLUDES Coordination Hub; Dr. Tesia Zientek, Senior Director of Programs, American Indian Science and Engineering Society (AISES); Native FEWS Alliance; and Dr. Faye Cobb Payton, Visiting Scholar and Special Advisor to the Chancellor for Inclusive Innovation at Rutgers University; Full Professor Emerita North Carolina State University.

Since 2018, the portfolio has supported 17 alliances and worked with eight Federal agency partners. A few other important points made during this session were:

- The collaborative infrastructure – the key component in the approach for systems change-allows each funded project to become a network in itself.
- Alliances are changing systems and using knowledge, relationships, allocations of resources, power dynamics, mindset change, and perspectives gained to be impactful.
    - There are many needles that need to move and sometimes the discussions involve people looking at the different "dials." While there should likely be different metrics by stage and scale of the programs, we should also distinguish between systems changes that focus on student/learner inclusion where the needle may move faster from the system and cultural changes at the leadership levels.
- By highlighting system and systemic change, this Initiative is acknowledging that systems (and decisions through policies and practices that can be undone) need attention and not just trying to "fix" the individuals.

Discussion with NSF Leadership

CEOSE applauded the Foundation for its emphasis on creating and enabling opportunities for everyone, everywhere to broaden participation in STEM. Members pointed out that numbers and stories are needed to help refrain the small N issues from a problem to a portal of richer information about impact. CEOSE noted the need to measure outreach in ways that acknowledge the contributions of community partners. Also, innovation anywhere was a suggested theme for building research capacity of non-R-1 institutions.

Dr. Karen Marrongelle, NSF Chief Operating Officer, shared insights about disrupting ableism and creating opportunities specifically for individuals with disabilities. She is looking forward to the third CEOSE report in *Making Visible the Invisible* trilogy, underscoring the Foundation's efforts to help disable ableism and make science accessible and enhanced outreach strategies to be inclusive of all community voices.

Panel: Increasing STEM Accessibility

The panel for this session included the following panelists:
-Dr. Peter Hauser, CEOSE Members, Session Moderator and Panelist; Director and Professor, NTID Research Center on Culture and Language/National Technical Institute for the Deaf (NTID), Rochester Institute of Technology
-Dr. Sheryl Burgstahler, Founder of Accessible Technology Services, Director of the Disabilities, Opportunities, Internetworking, and Technology (DO-IT) Center, University of Washington
-Dr. Natalie Shaheen, Assistant Professor, Illinois State University
-Dr. Maithilee Kunda**,** Assistant Professor of Computer Science and Computer Engineering, Deputy Director of Psychometrics, Frist Center for Autism & Innovation, Vanderbilt University
-Dr. Mark Leddy, Program Director, NSF/Division of Equity for Excellence in STEM (EDU/EES)

CEOSE received an overview of the work of the DO-IT Center, with Dr. Burgstahler emphasizing how to make things more accessible using universal design and promoting work-based learning. Universal design has three properties: It's accessible. It's technically accessible. It is usable. Dr. Leddy pointed out that there are many things that universities and colleges, K-12 education systems, businesses, research organizations, and the Federal government can do to increase access, engagement, participation, and employment of persons with disabilities in STEM research and education. Members were reminded to visit the NSF supporting persons with disabilities in STEM website. In discussing research around computer science and autism, Dr. Kunda stressed that all dimensions of diversity actually influence the direction of science and the kind of research that is undertaken. Different ways of thinking about the same problem can lead to creative solutions and advance science. Dr. Shaheen described the five principles of blind STEM pedagogy: 1) embrace nonvisual ways of learning, 2) create an empowering environment, 3) teach nonvisual science in engineering practices, 4) use accessible equipment, and 5) use accessible instructional materials. Her challenge to NSF was to require proposers to address accessibility in their proposals—all proposals and not just the ones related to disability. Dr. Hauser also shared examples of how language does matter (e.g., persons with diverse abilities); terms (e, g., hard-of-hearing vs hearing impaired) are important and will be discussed in the forthcoming CEOSE report. The session reinforced the importance of inclusion by stressing the need to build solutions with the individuals to whom the solutions are targeted; that is for the individuals with disabilities to be present and part of the conversation.

Discussion: 2023-2024 CEOSE Report to Congress

The next step is to consider three recommendations for the upcoming report. The October meeting will focus on developing these recommendations that will address acknowledging the diversity and assets of severely underrepresented populations, promoting geographic diversity in the context of underserved communities, and being inventive with BP measurement strategies. The due date for drafts of the various sections of the report is September 30, 2024.

Announcements, Closing Remarks, Adjournment

Dr. Suzanne Barbour, CEOSE Chair, applauded the members for very engaging and informative meeting. She announced that the next meeting will be a virtual meeting in October 2024. The meeting was adjourned by the Chair.