

COMMITTEE ON EQUAL OPPORTUNITIES IN
SCIENCE AND ENGINEERING (CEOSE)
National Science Foundation

CEOSE Meeting
February 1-2, 2018

MEETING MINUTES

MEETING PARTICIPANTS

CEOSE Members Present

Dr. Ira Harkavy, CEOSE Chair, University of Pennsylvania, Philadelphia, PA
Dr. Louis Martin-Vega, CEOSE Vice Chair, North Carolina State University
Dr. Nancy Cantor, Rutgers University – Newark
Dr. Jose Fuentes, Pennsylvania State University
Dr. Charles Isbell, Georgia Institute of Technology, GA
Dr. Alicia Knoedler, University of Oklahoma
Dr. Daniela Marghitu, Auburn University
Dr. Robert Eugene Megginson, University of Michigan
Dr. Nai-Chang Yeh, California Institute of Technology

CEOSE Members Absent

Dr. Garikai Campbell, Morehouse College
Dr. Lydia Villa-Komaroff, Intersections SBD
Dr. Peter Eden, Landmark College

CEOSE Designated Federal Officer – Executive Liaison

Dr. Suzanne Iacono, Office Head, OIA/OD/NSF

CEOSE Executive Secretary

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

CEOSE Scientific/Technical/Administrative Staff

Ms. Jolaina Jeff-Cartier, Staff Associate OIA/OD/NSF

Ms. Una Alford, Program Analyst OIA/OD/NSF

Ms. Stephanie Hill, Program Specialist OIA/OD/NSF

Mr. Steven Buhneing, Communication Specialist, OIA/OD/NSF

Day 1-February 1, 2018 (Room W 2160)

Welcome and CEOSE Chair Report

Dr. Ira Harkavy, CEOSE Chair, opened the meeting with a welcome, asked for self-introductions, and provided an update of CEOSE membership changes. The Chair then provided a brief report of the Executive Meeting with NSF leadership, highlighting the Director's support of 2015-2016 CEOSE report, encouragement of a future CEOSE meeting to include a visit to Capitol Hill, and agreement that broadening participation is an intellectual endeavor that is integral to other NSF Big Ideas. Dr. Harkavy concluded his report by sharing that he and Dr. Martin-Vega have continued to disseminate the CEOSE 2015-16 Biennial Report to leaders in the higher education community. Responses thus far have been very favorable.

NSF Executive Liaison Report

Dr. Suzanne Iacono, CEOSE Executive Liaison, welcomed everyone and introduced Jolaina Jeff-Cartier, who will be supporting NSF'S broadening participation efforts. Dr. Iacono's report included the following updates:

- NSF received approximately 450 letters of intent to participate in the HBCU Excellence in Research (HBCU EIR) program. The program is designed to provide strategic opportunities for HBCUs to stimulate sustainable improvement in research and development capacity and competitiveness. The due date for full proposals is March 1, 2018.
- A new Hispanic Serving Institution (HSI) program, which specifically addresses Congressional requirements, is poised to increase the graduation rates for students pursuing Associate or Bachelor's degrees in STEM. The current solicitation has two tracks: Capacity-building and HSIs new to NSF.
- A DCL looking to expand the NSF INCLUDES national network has been released. Members of the NSF INCLUDES Design Team were present to discuss the NSF INCLUDES Summit and PI meeting held in January 2018, and a visualization summary was shared with CEOSE. An invitation was extended to CEOSE to participate in the upcoming NSF INCLUDES review and/or reverse site visit panels.

Feedback from CEOSE Members regarding Dissemination of the 2015-2016 CEOSE Biennial Report to Congress

The 2015-2016 Biennial Report to Congress has been widely disseminated, including to groups/organizations like the Association of Public and Land-grant Universities, Penn State's Deans and Executive Directors, and the National Organization of Research Development Professionals (a network of approximately 1000 members focused on helping the world's investigators prepare proposals and determine strategies for growing research). CEOSE continued to discuss additional opportunities for the dissemination of the report, such as CEOSE presentations at upcoming STEM/disciplinary meetings and conferences and

connections with well-known science advocates to spread the word on broadening participation.

NSF 17-110 Dear Colleague Letter (Pursuing Meaningful Actions in Support of Broadening Participation in Computing)

CISE's Strategic Plan addresses BP programmatically via focused activities and through the inclusion of BP efforts as an expected part of its research and education award portfolios. The guiding principles emphasize that broadening participation in computing (BPC) involves a culture change and it begins with enhanced exposure to BPC throughout the CISE community. As such, BP is emphasized in CISE solicitations; a BP component is required for an expanding set of CISE programs and PIs are provided resources as appropriate. Also, there is an emphasis on BP reporting in annual reports.

A Dear Colleague Letter (NSF 17-110) announced a pilot effort to enhance the community's awareness of and barriers to broadening participation in computing. The goals of Phase I of the pilot are as follows: 1) increase PIs awareness and understanding of BPC and 2) provide information, resources and encouragement so that PIs develop interest, skills and meaningful activities in support of BPC. CISE has utilized a series of communication strategies to inform the PI community about NSF 17-110.

Harnessing the Data Revolution

Harnessing the Data Revolution (HDR) is one of NSF's Ten Big Ideas, designed to engage and assess the research community in the pursuit of fundamental research in data science and engineering. It also focuses on the development of a cohesive and national scale approach to research data infrastructure and the development of a 21st century data-capable workforce. HDR is broken up into the following five themes:

1. *Science Domains*
2. *Systems & Algorithms*
3. *Cyberinfrastructure*
4. *Education/Workforce/Outreach*
5. *Foundations*

In April 2016 CISE and MPS cofounded a workshop in D.C. on the theoretical foundations of data science where they brought together about 50 computer scientists, statisticians, and mathematicians from the different domain sciences and engineering. The idea was to have a conversation about what is needed to advance the foundations and how applications from biology, geosciences and other scientific areas generate different types of data then then lead to new foundations being developed.

Phase I of the Transdisciplinary Research in Principles of Data Science (TRIPODS) solicitation came out in 2017. Phase I was an attempt to fund small institutes for three years to discuss

important challenges in the foundations and to build collaborations with domain sciences and engineering. There is a potential for a Phase II solicitation in 2020 which will invest in center-like activities.

Day 2: February 2, 2018 (Room E 2030)

Welcome and CEOSE Chair Report

Dr. Ira Harkavy, CEOSE Chair, opened the meeting and facilitated the confirmation of topics for the discussion with NSF Director, Dr. France A. Córdova. The following areas were proposed for discussion with: future funding to support NSF INCLUDES; CEOSE's emphasis on promoting the inclusion of diverse community voices theme, the summary of the report on what higher education should be doing to emphasize inclusion, advice about how NSF can ensure that the concept of BP is pervasive throughout NSF, and how BP can permeate throughout the Director's Big Ideas.

Interactive Session: Inclusion of Diverse Community Voices

The session began with a presentation by Dr. Harkavy that provided a briefing about the Netter Center for Community Partnerships (University of Pennsylvania) as a case study of the local community and the academy working collaboratively to create communities of experts for co-producing and co-advancing knowledge and human capital development. This on-the-ground learning approach employed three key strategies with three democratic P's.

The three key strategies were: 1) Academically based community service (ABCS) – service directly tied towards Community based structural improvement and research, teaching and learning through a focus on collaborative, real-world problem-solving; 2) University assisted Community Schools (UACS) – focus on the neighborhood school as the core institution for community engagement and democratic development; and 3) ABCS and UACS as core to a comprehensive Anchor Institutional approach – engagement of the university's full range of resources in sustained democratic partnerships, benefitting all parties involved. The three Democratic P's of the Netter Center approach are below:

- 1) Democratic and Civic Purpose –An abiding democratic and civic purpose is the rightly placed goal if higher education is to truly contribute to the public good.
- 2) Democratic Process of genuine respect, trust, transparency- The higher education institution and the community, as well as members of both communities, should treat each other as ends in themselves rather than as means to an end. The relationship itself and welfare of the various partners should be the preeminent value, not developing a specified program or completing a research project.
- 3) Democratic Product that is mutually transformative - Contributing to the well-being of people in the community (both now and in the future) through structural community

improvement should be a central goal of a truly democratic partnership for the public good. Research, teaching and service should also be strengthened as a result.

Following the presentation, members worked in small groups to discuss how to help NSF to promote diverse perspectives through creative community engagement. Members suggested that the next CEOSE meeting should also include a panel of individuals who are performing this work.

Reports by CEOSE Federal Liaisons

Dr. Lisa Evans of NIH provided an update of NIH Extramural Diversity Programs (<https://grants.nih.gov/ngri.htm>) and the NIH Diversity Policy issued in 2015. She pointed out that anyone who can make a showing that he/she is underrepresented in a setting is able to participate in a diversity program. She shared that the 2016 21st Century Cures Act requires that steps be taken to enhance workforce diversity and aligns each of the institutes and centers to the Next Gen Initiative.

Mr. Shahin Nemazee of the Smithsonian Institution discussed the work of the Smithsonian Science and Educational Committee (<https://newsdesk.si.edu/factsheets/smithsonian-science-education-center>). He highlighted the partnership between Smithsonian and the Shell Company to attract and retain underrepresented teachers in STEM and shared that the fourth goal of the One Smithsonian Strategic Plan (<https://www.si.edu/strategicplan>) is directly related to broadening participation.

CEOSE also received a written agency BP update from the Department of Education. The report provided the FY 2017 award results for the Federal Trio programs (Upward Bound Math and Science Program, Veterans Upward Bound Program, and the Ronald E. McNair Post Baccalaureate Achievement Program) and the Title III and Title V programs (Minority Science and Engineering Improvement Program, Strengthening Institutions Program, Developing Hispanic Serving Institutions Program, and Hispanic-Serving Institutions-Science, Technology, Engineering or Mathematics and Articulation Programs).

Reports of CEOSE Liaisons to NSF Advisory Committees

CEOSE Liaisons to NSF Advisory Committees reported on the recent meetings of the Business and Operations, CISE, CI, ENG, GEO, PP, MPS, and the OISE Advisory Committees. Some of the important BP issues/highlights include: there has been an explosion in enrollment in computing that is leading to significant concern about its impact on diversity; while funding for NSF INCLUDES is \$15 million, the funding for other NSF Big Ideas far exceeds the NSF INCLUDES budget; some discussions centered around creative mechanisms for improving broader impacts within the international context.

CEOSE Discussion with NSF Director and Chief Operating Officer

Dr. Córdoba welcomed committee members and articulated an appreciation for the CEOSE report, including the suggestion that a future CEOSE meeting should include a visit to Capitol Hill. She commented that the 2015-2016 report is consistent with the foundational framework of NSF's mission and accountability requirements. She encouraged CEOSE to work closely with NSF to operationalize the recommendation and suggestions outlined in the 2015-2016 report, underscoring that it will take time to design and implement a shared accountability framework. She also provided a few examples of how NSF is creating opportunities for STEM diversity in schools and among STEM researchers and community-based organizations.

CEOSE shared that the next CEOSE report will focus on community engagement in science and that researchers need to better understand BP barriers and challenges so that they can successfully interact with the underserved or underrepresented communities. Members also commented on the importance of early and meaningful community/student engagement for problem solving through strategies like team science and Ideas Labs.

CEOSE stressed that inclusive science leads to better science. Dr. Cantor shared that problem-solving teams should be interdisciplinary, cross generational, and cross gender. "Diverse cognitive complexity on a team leads to better solutions. Inclusive, deeply respectful community based science creates the next generation in a much broader way and may be a tool for BP."

Announcements and Final Remarks

Dr. Harkavy recapped the viewpoint that accountability will help broadening participation and produce better science. After expressing gratitude for the hard work of all members and positive thoughts about the future meetings and next report, the Chair adjourned the meeting.