**NSB-2023-5**

May 9, 2023

**Approved Minutes**

**PLENARY OPEN SESSION**

**483rd MEETING**

**NATIONAL SCIENCE BOARD**

National Science Foundation (NSF)

 Via Videoconference

February 15 – 16, 2023

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| --- | --- |
| **Members Present:** | **Members Absent:** |
| Dan Reed, *NSB Chair*Victor McCrary, *NSB Vice Chair*Sudarsanam BabuDeborah BallRoger BeachyDorota Grejner-BrzezinskaVicki ChandlerMaureen CondicAaron DominguezSuresh GarimellaDarío GilMelvyn HuffSteven LeathMatthew MalkanJulia PhillipsMarvi Ann Matos RodriguezScott StanleyKeivan StassunS. Alan SternMerlin TheodoreStephen WillardWanda WardBevlee WatfordHeather WilsonSethuraman Panchanathan, *ex officio* |   |

There being a quorum, the National Science Board (NSB, Board) convened in Open Plenary Session at 11:00 a.m. EST on Wednesday, February 15 – 16, 2023, in person and via videoconference with NSB Chair, Dan Reed, presiding.

NSB Chair’s Welcome

Reed welcomed Board Members, staff, and guests to NSB’s 483rd meeting and provided an overview of the plenary agenda.

Swearing in of New NSB Members

Members appointed to the NSB in January 2023 were sworn in. New Members include:

* Deborah Ball from the University of Michigan
* Vicki Chandler from Minerva University
* Dorota Grejner-Brzezinska from the Ohio State University
* Marvi Ann Matos Rodriguez from Boeing
* Keivan Stassun from Vanderbilt University
* Merlin Theodore from Oak Ridge National Laboratory
* Wanda Elaine Ward from the University of Illinois
* Bevlee A. Watford from the College of Engineering, Virginia Tech

NSB Chair’s Remarks

*Chair’s/Members’ Activities*

Reed shared some of his activities on behalf of the NSB since the December 2022 Board meeting. Highlights included a meeting with the majority staff of the House Space Science and Technology Committee on priorities and STEM talent and a meeting with Research!America to learn about the organization’s expanding focus beyond National Institutes of Health (NIH), lessons about sustained budget growth, and potential synergies with the Board.

*NSBO Staff Updates*

Reed introduced Elizabeth Jeffers who joined the NSB Office in December 2022. Reed described her experience in media and congressional engagement, work with scientists and engineers on engagement initiatives as well as her education in journalism, geochemistry and environmental science and welcomed her to the NSB Office.

Approval of Prior Open Meeting Minutes

Reed presented the minutes of the December 1 - 2, 2022, Open Plenary session for approval. The minutes were approved as presented.

NSF Director’s Remarks

Director Sethuraman Panchanathan welcomed the eight new NSB Members and gave a brief overview of NSF priorities and how they aligned with the Biden Administration’s, NSB’s *Vision 2030,* and NSF’s vision. Panchanathan also noted the bipartisan support that led to the 2023 appropriation of $9.9 billion which included a 12 percent increase for NSF. The Director concluded his remarks with some examples of his engagements since December 2022 with U.S. representatives in their districts, university faculty, and students and entrepreneurs emphasizing the reach and visibility of NSF.

The Director introduced eight members of the NSF Executive Leadership Team (ELT) each of whom presented brief examples of innovation and change in NSF’s investment strategy for research and education in their directorates. The presentations were followed by a brief discussion about interagency activities and partnerships and how information is shared across directorates.

NSB External Panel – Pre-K-12 STEM Teachers

NSB’s external panel “Beyond the Test Scores: Into the PreK-12th Grade STEM Classroom” focused on talent development. Reed and Suresh Babu introduced the session by noting ties to the Board’s *Vision 2030*, the importance of improvements in K-12 STEM education to the development of a strong domestic STEM workforce including in the areas of critical technologies and for purposes of encouraging innovation needed for pressing societal challenges, maintaining global leadership in science and engineering, and ensuring national security.

The panel featured five teachers from across grade levels, disciplines, geography, and student populations served. They shared their perspectives on what is needed in their classrooms to have sustained and positive impacts on teaching STEM competency for all students.

Discussion following the panel presentations covered best practices in teacher professional development, including instructional, skill, and leadership; networks and targeting early childhood educators; scaling up and transferring best practices to more schools; and finally, methods for employing culturally relevant educational practices.

Committee and Working Group Reports

*Committee on Awards and Facilities (A&F)*

Committee Chair Aaron Dominguez provided highlights of the open meeting on February 14, 2023, which covered the following topics:

* Risk management training and competency standards for awardees,
* How NSF thinks about risk at the portfolio level, across all major facilities, and specific types of cross-portfolio risks such as cyber security,
* NSF’s proactive approaches to enterprise risk management, and
* How NSF evaluates risk on collaborative projects with international partners.

Dominguez noted great progress on risk management at the agency and thanked the multiple NSF staff teams for their collaborative efforts across the Office of the Chief Officer for Research Facilities, Large Facilities Office, Office of General Counsel, Office of Budget, Finance and Award Management, and program officers.

*Committee on Oversight (CO)*

Committee Chair Stephen Willard reported that CO met on January 18, 2023, to receive a presentation by Jose Fuentes, the Chair of NSF’s Advisory Committee on Equal Opportunities in Science and Engineering (CEOSE) about its recently completed report on the future of NSF’s EPSCoR program, the Established Program to Stimulate Competitive Research. CO Members also heard from Sandra Richardson, Head of the EPSCoR program at NSF. Willard provided a brief background of the EPSCoR program, outlined CEOSE’s recommendations and noted that NSF is addressing those recommendations and others made by the NSF Office of Inspector General and the Government Accountability Office.

During the CO meeting, one Member noted the value of an NSF study presenting a framework for analyzing EPSCoR impacts, Academic Research Excellence and Competitiveness, and looks forward to seeing it in use. Committee members underscored the importance of incentivizing EPSCoR jurisdictions to invest, and to generate tangible short-term metrics. NSF staff noted it is engaging with other federal agencies that employ EPSCoR programs on ways to collaborate for a larger impact on participating jurisdictions.

*Committee on External Engagement (EE)*

Committee Chair Darío Gil provided highlights of the Board’s engagement efforts last fall and the emphasis on NSF’s critical role in U.S. economic competitiveness. Engagement activities included interviews with various media venues, publishing an op-ed, meetings with over a dozen congressional offices, and engaging with industry leaders. Committee Members propose building on those efforts in 2023 through engagement with leaders in government, universities, and industry, developing a cohesive Board message informed by those engagements, using data from the Board’s Science and Engineering Indicators report, existing and relevant NSF programs, and leveraging NSB’s collective Board connections to advance NSB’s priority of building STEM talent to meet workforce needs.

*Committee on Science and Engineering Policy (SEP)*

*Indicators-focused Meetings*

Committee Chair Maureen Condic described SEP activities since the December 2022 NSB meeting including two *Indicators-*focused videoconferences to consider and approve detailed narrative outlines for the reports “*Invention, Knowledge Transfer, and Innovation”* and “*Publications Output: US Trends & International Comparisons*.” Condic outlined scheduled work over the next few months including considering detailed narrative outlines for the final three thematic reports of this *Indicators* cycle - *Public Perceptions*, *Knowledge-and Technology-Intensive Industries*, and *Research and Development* reports. Several draft reports will also go to Board reviewers, including *K-12*, *Academic R&D*, *Higher Education*, and the *STEM Labor Force*.

*SEP Policy Meeting*

The Committee met on February 8, 2023, to discuss two policy topics – nurturing STEM talent and the role of science and engineering in strengthening U.S. national security. SEP decided to form two groups, one on each topic, and give each a focused, short-term task of considering what data are available, how the data can be best employed, and identifying a few potential themes for policy pieces or committee activities for discussion by SEP. When SEP has concrete ideas, the Committee will look for Members beyond SEP willing to work on further developing those ideas.

*Socioeconomic Status (SES)*

Julia Phillips reported that working group Members reviewed data to understand how they can shed light on the problem of participation of low-SES individuals in STEM. In parallel, as the *Indicators 2024* cycleunfolds, there has been a consistent emphasis in SEP Committee meetings to ensure that data shedding light on socioeconomic status and STEM be included in reports where high-quality data exist.

The working group’s focus is on participation in higher education and questions of representation of low-SES students. Phillips noted that access to and persistence in higher education is clearly negatively impacted by socioeconomic status, and to address the Missing Millions and develop domestic STEM talent the U.S. needs to act to address that issue. SES is particularly interested in ways the data landscape could be improved for STEM doctoral students and will continue examining gaps in data that could be filled in the future.

The working group’s focus continues to tie into broader Board attention to nurturing STEM talent with touchpoints including SEP’s planned policy team focused on STEM talent, Explorations in STEM K-12 Education working group’s findings, and ongoing Board-level threads related to STEM talent, especially NSB’s longstanding interests in increasing graduate student stipend levels and, more broadly, in expanding the geography of innovation.

Following the report there was a brief discussion about whether NSF can require NSF-awardees to provide demographic data. Different opinions surfaced and Acting General Counsel Ona Hahs offered to look into whether and how other federal agencies collect demographic and could start with agencies recommended by Members. Several Members agreed that data will be required to determine whether NSF is making progress toward its strategic goals.

*Merit Review Commission (MRX)*

Committee Chair Willard provided a brief history of the development of and revisions to NSF’s Merit Review policy over the last several decades. Due to continued concern for the effectiveness of the Merit review process (particularly as related to the broader impacts criterion) and criteria the Board determined that the time is right for another reexamination and established the Commission on Merit Review more than 12 years after its last comprehensive assessment. Willard referenced the Commission charge in the NSB’s Board book and requested there be a full-Board vote on the Merit Review Commission charge.

Discussion ensued about who the stakeholders of the Merit Review process are and whether they would be consulted during the re-examination process. Willard agreed stakeholders should be consulted and would be identified early in the process. Members agreed that a close partnership of NSB and NSF would lead to the best outcome. Willard and Reed invited feedback on the workplan in the Board book by all Members.

*Vote on Merit Review Commission Charge*

Members voted to approve the Merit Review Commission charge to undertake a reexamination of NSF’s Merit Review Policy, the associated criteria, and process. The vote passed unanimously. (NSB-2023-3)

NSF Director’s Closing Remarks

Panchanathan introduced NSF’s newest cohort of senior executives:

* Charles (Chuck) Barber, NSF’s Chief Diversity and Inclusion Officer (CDIO). Barber will report to Panchanathan. The difference between the CDIO and the diversity efforts of OECR led by Rhonda Davis is Barber will focus on promoting diversity throughout NSF and working with external partners while OECR focuses on compliance.
* LeVale Jenkins, Deputy Office Head, OECR
* Dena Smith-Nufio, Division Director, Division of Earth Sciences
* Tony Maciejewski, IPA, Division Director of Electrical, Communications, and Cyber Systems
* Germano Iannachhione, Division Director, Division of Materials Research (DMR)
* William (Bill) Olbricht, Deputy Division Director for the Division of Chemical, Bioengineering, Environmental, and Transport Systems
* Jim Ulvestad, Acting Office Director for the office of Polar Programs

Explorations in STEM K-12 Education (ESKE)

Reed introduced the ESKE session by noting the importance of strong K-12 STEM skills to address the domestic STEM worker shortage and a STEM literate population to address many societal issues that will require thoughtful and nuanced conversations about complex issues derived from scientific principles, such as climate change for example. Reed referenced NSB’s policy piece entitled “The U.S. Must Improve K-12 STEM Education for All” as a sobering reminder of how far U.S. children are behind many of their global counterparts and how they are often tied to traditionally underrepresented groups.

Matt Malkan outlined ESKE’s mission and critical topical areas explored by the working group at the federal level. He summarized actions taken by ESKE since the inception of the group in February 2022 including conducting research and listening sessions with educational experts and stakeholders and distilling the information into priorities broken into levers under NSB’s governance role and advisory role. Each ESKE Members presented the group’s priorities and invited input from all NSB Members.

Members engaged on how best to select priorities and the difficulty of doing so without more information. Suggestions for next steps included identifying priorities where NSB has leverage and where data exist. The Director offered that NSB could determine where NSF is already doing something then determine what more NSF could do, identify priorities that are new and might be incorporated into TIP programming, and lastly those priorities that would best be shared with partners. Reed concluded that no decision was made during this plenary session on next steps and more discussion was needed.

NSB Chair’s Closing Remarks

Reed encouraged continued conversation on the topics raised by ESKE and concluded that they are part of the bigger story as it relates to workforce issues. He opened the floor to additional comments and questions from Members and to the Director for his closing remarks.

There being no further business, the meeting was adjourned at 5:15 p.m. EST.

***Session 2* (February 16, 2023, 8:30 – 9:22 a.m. EST)**

NSB Chair’s Opening Remarks

Dan Reed welcomed Board Members, staff members, and guests to NSB’s 483rd meeting, conducted the ceremonial swearing in of new NSB Member Deborah Ball, and provided an overview of the plenary agenda for the day.

NSF Update – Sexual Assault/Harassment and Prevention Response (SAHPR)

Reed reaffirmed NSB’s commitment to ending harassment in the Antarctic program and more broadly in research environments and outlined steps taken and planned by NSB for holding accountable those individuals and systems responsible. Reed then turned the floor to NSF’s COO Marrongelle for an update on NSF’s progress since December 2022 to address the Sexual Assault and Harassment Prevention Response (SAHPR) report released publicly in August 2022 and plans going forward.

Marrongelle noted that NSF is taking steps to dismantle a culture that developed over decades. She expressed the seriousness and urgency by which NSF is addressing the conditions described in the SAHPR report. NSF’s effort is led by the Office of Equity and Civil Rights (OECR) and includes staff spanning multiple offices at NSF Headquarters and in the Antarctic. NSF is taking an “all-hands-on-deck” approach to addressing and changing the conditions in the Antarctic.

*Progress Since December 2022*

Marrongelle described progress made since December 2022 including providing support for victims through an on-ice advocate, improving physical security measures and communications, improving training, increasing vetting for contractors, completing a series of listening sessions, and weekly SAHPR task force reporting to the Director for agency-wide coordination. Marrongelle meets regularly with her counterpart, the COO of the USAP contractor, Leidos, to talk through how NSF and Leidos must work together to ensure a safe research environment.

*Looking Ahead*

Marrongelle described plans for the coming months including establishing a crisis hotline by April 2023 and launching NSF’s first USAP climate survey by summer 2023. The survey will provide NSF with the first opportunity to collect statistically robust information as a baseline to monitor trends and provide information about what is working. NSF will develop an enhanced communication plan for SAHPR resources and new trainings for supervisors and staff. NSF is also starting to build an infrastructure for SAHPR including adding staff to OECR, establishing a data reporting framework and tracking system, and a USAP-wide complaint process template and accountability framework with partners.

Following the presentation, discussion covered the importance of additional security or law enforcement in the Antarctic, establishing clear lines of communication and the elimination of layers between Antarctic and NSF Headquarters which some members said should include a “base commander”, the ability to isolate perpetrators as needed, and support for both claimants of and respondents to claims of sexual assault or harassment. Members also asked whether NSF is collecting data to know whether this conduct is occurring in other remote research sites to which NSF’s OECR Office Head Rhonda Davis responded affirmatively. To date, NSF has also reached out to the National Oceanic Atmospheric Administration, the Department of Energy, Air Force, Navy, and the Federal Arctic Research Operators to gather information.

NSF offered that some of the reasons for this conduct in the USAP are power differentials between research team members, existing cultural norms and practices, isolation, lack of communication tools/phones and channels, lack of contracting flexibilities, coordination and communication between program partners (agencies and contractors, for example).

Marrongelle remarked that NSF’s priorities include making progress toward changing the culture to one where harassment is not tolerated, ensuring that communication reaches all community members in the Antarctic, continuing to address these issues with urgency, increasing staffing where needed, and continuing to improve vetting of staff and contractors.

There being no further business, the open session was adjourned at 9:22 a.m. EST.

Andrea Rambow

Executive Secretary to the National Science Board