

**APPROVED MINUTES  
PLENARY OPEN SESSION  
486<sup>TH</sup> MEETING  
NATIONAL SCIENCE BOARD**

National Science Foundation (NSF)  
In Person and Via Videoconference  
November 29 - 30, 2023

**Members Present:**

Dan Reed, *NSB Chair*  
Victor McCrary, *NSB Vice Chair*  
Sudarsanam Babu  
Deborah Ball  
Roger Beachy  
Dorota Grejner-Brzezinska  
Vicki Chandler  
Maureen Condic  
Suresh Garimella  
Darío Gil  
Melvyn Huff  
Matthew Malkan  
Julia Phillips  
Marvi Ann Matos Rodriguez  
Scott Stanley  
Keivan Stassun  
S. Alan Stern  
Wanda Ward  
Bevlee Watford  
Stephen Willard  
Heather Wilson

**Members Absent:**

Aaron Dominguez  
Steven Leath  
Merlin Theodore

Sethuraman Panchanathan, *ex officio*

There being a quorum, the National Science Board (NSB, Board) convened in Open Plenary Session at 10:00 a.m. EST on Wednesday, November 29, 2023, in person and via videoconference with NSB Chair, Dan Reed, presiding.

## NSB Chair's Open Remarks

---

Reed welcomed Board Members, staff, and guests to NSB's 486th meeting and provided a preview of the agenda, an NSBO staff update, and a summary of Board activities since the August 2023 meeting. Activities highlighted by the Chair included NSB's annual retreat in

Kentucky, NSB's first off-site annual retreat since 2019, a series of meetings with congressional members and staff and continued advocacy work in support of research funding. The Chair acknowledged NSB Vice Chair Victor McCrary's election to the Association of Public and Land-Grant Universities Council on Research Committee and Dario Gil's election as a trustee of the Center for Strategic and International Studies. Reed then, together with the Director, delivered a tribute to the late and former NSB Member Carl Lineberger.

## NSF Director's Remarks

---

The Director highlighted examples of how *CHIPS and Science* has enabled NSF to continue making progress in the Foundation's three priority areas, namely by investing in people and ideas. He then drew connections from NSF investments to the extraordinary achievements of the 2023 Nobel Prize and the 2020 MacArthur Fellowship winners, recipients of the Civic Innovation Challenge and Designing Materials to Revolutionize and Engineer Future awards then followed with a number of exemplar programs / grants and events.

The Director also provided highlights of his many engagements, including university students and faculty and with elected officials, entering into agreements for collaboration with institutions in Korea and Canada, and representing the U.S. at the G20 as the head of the delegation for the Chief Science Advisors Roundtable. The Director noted that these conversations and activities are opening doors for high impact work at the nexus of areas like artificial intelligence, agriculture, energy, climate change, and more.

### **Highlights**

#### ***CHIPS and Science funded Programmatic Highlights***

- Training of upwards of 100,000 new semi-conductor professionals / five years (\$50M)
- Building capacity at 16 minority-serving institutions through financial support for research, infrastructure, personnel, and services (announced Sept. 2023, \$9.2M)
- Establishing NSF's research security and integrity information sharing and analysis organization / SECURE.

#### ***Artificial Intelligence (AI)***

- On Nov. 7, NSF hosted a kick-off collaborative process including representatives from federal agencies, academia and the private sector to design a pilot program for the National Artificial Intelligence Research Resource (NAIRR).
- NSF invested \$837M in AI in FY 2023 (increase of \$55M over FY 2022) in large part to expanding workforce training and education opportunities and to NSF AI Institutes.

### **Senior Staff introductions / announcements**

The Director concluded his remarks with an update of senior staff in the following directorates:

- Dr. Wendi Graham, IPA as the inaugural division direction of the Division of the Research, Innovation, Synergies and Education, and the Directorate of Geosciences;
- Dr. Ellen Zegura, division director Computer and Network System, and the director for Computer and Information Science and Engineering (CISE);
- Erika Rissi, chief evaluation officer and section head, Evaluation and Assessment Capability, Office of Integrative Activities (OIA);
- Dr. Jessica Robin, deputy office head, Office of International Science Engineering (OISE); and

- Rob Moller, deputy office head of the Office of Legislative and Public Affairs.

## Approval of Prior Open Meeting Minutes

---

Reed presented the minutes of the August 2023, Open Plenary session for approval. The minutes were approved as presented.

## Discussion with NSF Directorate for STEM Education (EDU), Assistance Director, James Moore

---

NSF EDU Assistant Director of James Moore presented EDU’s mission and a high-level description of the portfolio, including areas of investment, scale and scope, and examples of current programs, ideas for scaling up through collaboration and partnerships, both internally with other NSF directorate with an emphasis on the directorate for Technology, Innovation, and Partnerships (TIP), and externally with federal and private sector partners, and plans for the road ahead.

***MISSION***

“to develop a well-informed citizenry and a diverse, well-prepared workforce across the STEM ecosystem.”

***PRIORITIES***

- Education & learning research
- Learning / learning environments both formal & informal
- Broadening participation & institutional capacity
- Scholarships / fellowships
- Professional workforce development

Moore explained that NSF is the largest federal government funder of education research, and why its budget is not sufficient to meet identified needs. He was optimistic that through stepped up collaboration, partnerships, and outreach – especially through and with TIP awardees, NSF / EDU could be more impactful.

***SCALE AND SCOPE***

- EDU funds 52% of HBCUs, 80% of TCUs, 60% of HSIs
- FY 22 NSF invested approximately \$1.6B in programs w/a direct educational focus. Of this, EDU’s investment is \$1.3M

***PLANS***

- Increase support for STEM scholars
- Address Graduate Research Fellowship Program over subscription
- More effectively disseminate evidence-based best practices
- Expand National Research Traineeship grants
- Increase attention and investments in community colleges
- Reach more individuals and more future teachers

***NSB Input***

NSB Members asked questions and offered several suggestions aimed at addressing the challenges highlighted by Moore. Input from Members included:

- Collaborate with TIP awardees;
- Measure outcomes of existing programs;
- Explore opportunities to work with states and state-level actors;
- Leverage community colleges for greater access to STEM courses by high school students;
- Seize the opportunity to educate policy makers and others about where change is possible;
- Look to professional associations to attract individuals of diverse backgrounds to STEM and funding, and act as role models.

## Committee Reports

---

By way of introduction to the NSB committee reports, Reed thanked the members of the NSB Explorations in STEM K-12 Education (ESKE) Group working group for their work over 18 months and announced the ESKE report would be posted to the NSB website following the meeting.

### **Committee on External Engagement (EE)**

Committee Chair Darío Gil reported that EE held a retreat in October 2023 where Members explored ideas for the board's engagement strategy centered on the urgent need for STEM talent, especially in critical technology areas. EE Members continue to engage with Congress, the White House and with leaders in the science and technology community about the STEM talent crisis, relying heavily on data in the NSB's *Indicators* report and complimentary policy pieces. Since, a few Board members met to discuss how influencers ranging from community leaders to celebrities could help with NSB and NSF engagement initiatives.

### **Committee on National Science and Engineering Policy (SEP)**

Committee Chair Maureen Condic reported that SEP has been diving into data analysis and policy priorities related to the need to address the STEM talent crisis in the U.S. and published three thematic reports for the 2024 *Indicators* cycle – *Academic R&D, Elementary and Secondary STEM Education, and Higher Education in S&E*. Condic presented highlights of the reports. Releases for the 2024 cycle will continue for the next several months, including the March 15 delivery of *The State of U.S. S&E* to the White House and Congress. Early in 2024, the Board will also consider this cycle's policy messages to accompany that delivery focused on developing STEM talent. SEP continues to work towards an enhanced *Indicators 2026* vision discussed over the summer.

### **National Security Working Group**

Team Lead Marvi Ann Matos Rodriguez reminded the Board of the working group's two focus areas; Foreign-born talent, especially in the context of critical technology areas and S&E and National Security more broadly highlighting key points of exploration –

- U.S. reliance on foreign-born STEM talent, especially students from China and India, and especially in STEM fields important to U.S. national security; and
- Warning signs that the U.S. ability to attract STEM talent at the enrollment entry point is ebbing.

The working group is also developing policy recommendations for future consideration by SEP and the full Board, with plans for a fuller discussion at the next Board meeting. The group will align its work with the SEP Talent Team, the Board's external engagement strategy, and the *Indicators* cycle.

### **Talent Development Team Working Group**

Team Lead Julia Phillips reported that the Talent Development Team working group has moved from the scoping phase to implementation and reminded Members of the group's charge to identify potential focus areas and products that could be developed into policy pieces and recommendations around the *Vision 2030* pillar of Talent Development.

The group has identified two focus areas for further exploration - financial hurdles for STEM undergraduates and community colleges - and are in the process of collecting data. Other subgroups are beginning to form – Skilled Technical Workforce and PreK-12 / instructional workforce. The group’s deliverables are intended to amplify messaging in alignment with the SEP National Security Team working group, the Board’s external engagement strategy, and the *Indicators* cycle.

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

---

NSB Chair opened the session by noting it is a particularly important time to receive an update on SAHPR progress because three NSB Members would be traveling to the Antarctic in December 2023 to engage firsthand with U.S. Antarctic Program (USAP) community members for the first time since before the start of the pandemic in December 2019. NSF is also in the process of responding to a series of questions from the House Committee on Science Space and Technology.

The Director stressed the importance of addressing issues of sexual violence, sexual assault and harassment and outlined NSF’s guiding principles including the need for NSF to be a model for teamwork, fairness, and equity. He added that NSF’s investment in science, technology, engineering and education necessitates a safe environment free from harassment and a commitment to creating a safe and inclusive research environment. He then outlined many of the actions taken by NSF from 2018 to 2023, beginning with the National Academies’ release of its NSF-sponsored report on sexual harassment in academia.

The Director then outlined NSF’s expectations of the Antarctic Support Contract (ASC) and the contractor. He explained that after the release of the SAHPR in 2022, NSF began by communicating expectations and contract modifications followed. He concluded his remarks by describing his and staff efforts to regularly engage with their Leidos counterparts.

### **NSF expectations of ASC and contractor:**

- Adhere to code of business ethics and integrity under FAR
- Communicate and report on all policies and practices on sexual violence, to include subcontractors
- Provide documentation supporting that procedures are in place
- Any new NSF policies and practices will flow down to all subcontractors

Marrongelle shared actions taken by NSF which were largely presented by the Director, with a few additions, and topics raised during listening sessions conducted in 2022 and 2023 with USAP community members and described NSF actions planned in response. **Topics raised in listening sessions** included retaliation, reporting, accountability for perpetrators, and addressing privacy and safety concerns.

The Director introduced Renee Ferranti, Special Assistant to the Director for SAHPR who onboarded mid-November 2023. Ferranti provided a brief description of her professional experience and reminded members that this type of work is never done, the importance of

evolving, continually learning, and making organizational improvements. This session was concluded with no further discussion.

## **Session 2 (November 30, 2023, 9:20 to 9:50 a.m. EST)**

There being a quorum, the NSB convened in Open Plenary session at 9:20 a.m. EST on Thursday, November 30, 2023, in person and via videoconference with NSB Chair, Dan Reed, presiding. Members not in attendance were Steven Leath, Merlin Theodore, and Heather Wilson.

## Chair's Remarks

---

Chair Reed welcomed Board Members, staff, and guests to the second day of the meeting and previewed the agenda.

## Committee/Commission Reports

---

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

Committee Vice Chair Julia Phillips reported that A&F held an open meeting on November 28, 2023, to hear a briefing on the Next Generation Very Large Array, which the NSF Director recently advanced from the Development to Design Stage. She reminded Members that the Board does not typically engage with major research infrastructure projects until the transition from Preliminary to Final Design, when the project is fairly mature. The aim of this briefing was to enable earlier NSB engagement in the facility lifecycle. She summarized NSF's presentation and the committee discussion, noting that the Committee found the conversation to be very useful and expected the practice to continue. Members expressed concern about the number of expensive projects on the horizon and are interested in how NSF will approach agency-wide prioritization. The A&F Committee's discussion can be found in *NSB-AF-2023-35*.

### **Committee on Oversight (CO)**

Committee Chair Stephen Willard reported that since the NSB August 2023 meeting, CO held three meetings and briefly described the agendas and discussion at each meeting. Willard called Members' attention to the Chief Financial Officer's report in the NSB Board book.

#### **CO Meetings**

- Sept. 6 – Office of Inspector General's -
  - FY 25 budget request and CO vote to include in NSF's budget submission;
  - Plans for oversight of TIP and USAP
- Sept. 20 – FYs 22 and 23 Merit Review Digest timeline and data
- Oct. 18 – OIA analysis of reviewer training

**NSB-NSF Commission on Merit (MRX)**

Commission Chair Willard reminded the Board of the Commission charge and provided a brief description of the workplan and progress to date. He invited those in attendance to future meetings as appropriate, to visit the Commission's website [www.nsf.gov/nsb](http://www.nsf.gov/nsb) and to provide feedback and input by email to [meritreviewcommission@nsf.gov](mailto:meritreviewcommission@nsf.gov)

There being no further business, the open session was 9:36 a.m. EST.

2/26/2024

**X** Andrea Rambow

---

Andrea I. Rambow

Signed by: ANDREA I RAMBOW

**Andrea Rambow**

Executive Secretary to the National Science Board