

**APPROVED MINUTES
PLENARY OPEN SESSION
473RD MEETING
NATIONAL SCIENCE BOARD**

National Science Foundation (NSF)
Via Videoconference
August 3-4, 2021

Members Present

Ellen Ochoa, *NSB Chair*
Victor McCrary, *NSB Vice Chair*
Sudarsanam Babu
Roger Beachy
Arthur Bienenstock
Maureen Condic
Aaron Dominguez
W. Kent Fuchs
Suresh Garimella
Dario Gil
Steven Leath
W. Carl Lineberger
Matthew Malkan
Emilio Moran
Julia Phillips
Dan Reed
Geraldine Richmond
Anneila Sargent
Scott Stanley
S. Alan Stern
Stephen Willard

Members Absent:

Melvyn Huff
Heather Wilson

Sethuraman Panchanathan, *ex officio*

There being a quorum, the National Science Board (NSB, Board) convened in Open Plenary Session at 1:00 p.m. Eastern Daylight Time on Tuesday, August 3, 2021, via videoconference with NSB Chair Ellen Ochoa presiding.

NSB Chair's Opening Remarks

Ochoa welcomed everyone to the NSB's 473rd meeting. She began by remarking that, as a pilot toward working more efficiently and effectively the board experimented with having two committees, the Committee on External Engagement and the Committee on Awards and Facilities, meet in advance of the meeting and would share reports out and lead discussions with the Board in open and closed plenary sessions, respectively.

NSF Director's Remarks

Director Panchanathan began by thanking the Chair and all Board members. He then thanked all staff members who make these meeting successful in the all-virtual environment.

Panchanathan remarked that he has been the NSF Director already for one year (in August 2020 he became the 15th Director of NSF) and that the year was one of tremendous progress. Before presenting his list of activities and accomplishments for the year, he remarked that Dr. Eric Lander received confirmation as the President's Science Advisory and Director OSTP. He commented that he looked forward to working with Lander to advance NSF's agenda/vision. The Director reflected that the year of activities and experiences demonstrated an alignment of NSF's vision and NSF's 2030 Vision.

Update since May 2021 Board meeting

Since the May Board 2021 meeting there have been new outcomes from investments under the American Recovery Plan and progress on the American Rescue Plan legislation to boost NSF's budget for fiscal year 2022 critical to NSF's ability to support groups that are most heavily impacted by the pandemic.

NSF had deployed \$90 million to support 256 awards at 147 institutions across 40 states and the District of Columbia, including women, underrepresented groups and early career faculty. Panchanathan explained that these investments were focused on sustaining people at vulnerable career transition points – such as undergraduates completing their degrees, graduate studies, postdocs, and early career and mid-career faculty. Finally, these investments are also focused on disproportionately affected groups and institutions, including MSI (Minority-serving institutions) and EPSCoR jurisdictions.

Panchanathan gave an update on legislation demonstrating bipartisan support for NSF including the FY 2022 appropriations bill which included an increase to NSF's budget of \$1.2 billion over FY 2021 strengthening all of NSF's mission components and providing support for TIP. He also said that the Senate passed the U.S. Innovation and Competitiveness Act by a vote of 68 to 32 and the House passed the NSF for the Future Act by a vote of 345 to 67, both in June 2021.

Panchanathan then presented examples of how NSF investments have resulted in impacts over decades. He explained that he would continue sharing examples of impact in every meeting as NSF/NSB priorities are advanced.

Community College Innovation Challenge

In June 2021, NSF announced the three winning teams of the Community College Innovation Challenge which is a partnership with the American Association of Community Colleges that strengthens entrepreneurial thinking among community college students by challenging them to develop STEM-based solutions to real world problems. Community colleges are especially important for developing the nation's technical workforce by offering pathways into STEM for traditionally underrepresented groups. NSF wants to help inspire, motivate and ensure this happens at speed and scale.

Partnerships for Research and Education in Materials (PREM)

Panchanathan explained that PREM is an excellent example of how NSF strengthens STEM pathways, leverages the geography of innovation and promotes diversity, inclusion and equity – describing PREM as having synergy with NSB's Vision 2030, NSF's vision and the Administration's priorities. The Director showed a video clip of student Jerry Goss who talked about how he entered the study of STEM, specifically electrical and computer engineering at Olin College of Engineering. As a child, Goss suffered from heart failure and received a heart transplant. During his experience, he developed an interest in becoming a doctor and had an opportunity to shadow doctors. He later attended an engineering and medical-based high school where he discovered a robotics team and “fell in love” with electronics and how machines and computers work. Goss explained that he is currently at an NSF REU program at Bermuda Institute of Ocean Sciences working on an NSF-funded grant classifying zooplankton. Panchanathan offered the possibility of future and similar brief video clips for NSB members.

Global Competitiveness

Panchanathan offered additional examples of results of combining the power of science and engineering to solve big challenges with talent throughout the nation, specifically transformative advancements in artificial intelligence (AI) In 2020, NSF made 7 awards – 21 states were “touched”, with partnerships across the nation and in 2021, NSF made 11 more awards to AI institutes now “touching” 41 states across the nation.

Outgoing Chief Operating Officer

Panchanathan recognized the dedication and work of Dr. Fleming Crim throughout his tenure as an assistant director and then as Chief Operating Officer and explained that after serving a bit longer in the role of Senior Advisor, in the Office of the Director, he would be leaving NSF.

Best Places to Work

NSF was recently ranked as one of the top five places to work in the Federal government.

Chair's Activity Summary

Ochoa continued the meeting by summarizing her activities since the May Board meeting.

In June 2021, Ochoa met with Chair and Ranking Member of the House Committee on Science, Space, and Technology and with the Chair and Ranking Member of the Subcommittee on Research and Technology. She acknowledged and thanked other board members who joined her on or one more of the meetings, including Victor McCrary, Maureen Condic, Kent Fuchs, Heather Wilson and Darío Gil. These meetings were opportunities to hear from the members of Congress about their priorities, debrief them on Vision implementation, talk about the impact of NSF and thank them for their support of NSF. Ochoa remarked that it was gratifying to hear that committees had paid close attention to Vision 2030 as it developed the NSF for the Futures Act.

Ochoa had an op-ed published in *The Hill* on NSF's key role in developing research benefits and developing STEM talent for the U.S.

Ochoa, along with Julia Phillips and Roger Beachy, participated in a round table that Suresh Babu organized, with government, business, and academic leaders in Tennessee.

Ochoa spoke on a closing panel at the National Academies STEM Diversity Summit where she challenged all Science and Engineering entities to “hold ourselves accountable by collecting and making public relevant data and goals related to diversity, equity and inclusion”.

Community Colleges: Opening Doors to STEM Talent Everywhere

NSB Chair Ochoa invited NSB Vice Chair Victor McCrary to introduce the panel and begin the session until External Engagement Chair Geraldine Richmond could attend the Board meeting [Richmond was in Senate confirmation hearings].

McCrary opened with an overview of the External Engagement panels of the past year, whose story arc was had been centered on the Missing Millions. Those topics included Black and STEM, the effects of COVID-19 on women in STEM, roadblocks to graduate STEM education, and the successes of minority-serving institutions (MSIs).

McCrary then introduced the next annual story arc which will be centered on another Vision 2030 pillar – the Geography of Innovation – starting with the day's panel on

Community Colleges as an entry point for STEM talent across the nation. McCrary reminded NSB that community colleges provide STEM training and STEM Associate degrees and help students transition to four-year colleges and universities. In addition, they serve as science and engineering hubs by forming local partnerships and provide pathways into a STEM-capable workforce. He finished by introducing the panelists: Thomas Brock, Director of the Community College Research Center; Krissy DeAlejandro, Executive Director at tnAchieves; Mary Slowinski, a tenured faculty member at Bellevue College; Reavelyn Pray, a graduate of Delmar Community College and Texas A&M University, and currently a Research Associate at Natera. Each speaker gave a five-minute presentation.

Thomas Brock provided context for the panel by showing data that community colleges enroll 6 million students annually in every state, reflect the demographic diversity of the United States, and make college accessible to those from low socioeconomic backgrounds. Brock highlighted that community colleges provide two main functions: (1) They provide training for middle-skill jobs mostly through Associates degrees, of which STEM fields are highly sought and (2) They serve a transfer function in preparing students for entry into four-year colleges and universities. Brock cited a disappointing figure from community colleges – only 40% of students will earn a credential, with only 13% going on to earn a Bachelor's. Three critical areas that can improve those numbers are students selecting specialized programs (GenEd or Liberal Arts have lowest matriculation rates), consistent academic, personal, and financial advising throughout the duration of the program, and for STEM specifically, taking a calculus class and one college-level science course. Brock concluded that diversity at the faculty level is also essential for recruitment and retention of underrepresented students.

Krissy DeAlejandro focused on a state-wide initiative through tnAchieves and Tennessee Promise that provides student-centered experience for high school seniors applying to community colleges. Impacting 60,000 high school seniors annually, tnAchieves reaches large swaths of first-generation, Pell eligible students, with over 50% majoring in STEM and health-related fields. The program assists students in completing FAFSA applications, provides job shadowing, and requires community service of its students. To support the high school to community college transition tnAchieves uses 72,000 volunteer mentors from across sectors and targeted communication. Meeting students where they are has allowed tnAchieves to increase state's college-going rate by 4.6% and increase college graduation rates by 8%.

Mary Slowinski spoke on the needs of community college STEM faculty to connect with technology and industrial companies, by drawing on her work on Working Partners Project and Workshops funded through NSF's Advanced Technological Education Program (ATE). Slowinski showed data on activities ATE Principal Investigators (PIs) used in collaboration with employers – curricular input, workplace-based learning for students, learning mastery over new technologies. Slowinski cautioned that the workload placed on workforce educators is exceedingly difficult to manage on top of their teaching, advising, program management, and other normal faculty duties. This workload is exacerbated by the part-time status of the majority of community college faculty, coupled

with low-pay. Finally, Slowinski showed data that the majority of workforce educators have no formal education or professional development regarding industry partnerships. These systemic hardships are partially ameliorated by peer mentoring programs and centralized sharing of curricula.

The panel concluded with Reavelyn Pray who shared her personal story of the transformative role community college had for her. Lack of support during her K-12 years, coupled with financial constraints exacerbated by housing insecurity, made community college the only affordable option. The hands-on research experience that Pray gained in community college allowed her to successfully apply to internships at USDA and Lawrence Berkeley National Lab – work that she presented at national conferences and for which she received prestigious awards. Community college also illuminated further STEM degree choices at four-year colleges and gave her the confidence to transition. With published papers, Pray landed a job post-graduation and plans on entering a doctoral program.

During the question-and-answer session, NSB members delved into a number of topics, including programmatic success metrics, increasing visibility of ATE and community colleges writ large, navigating the needs of many community college students to also work full-time, identifying appropriate mentors, building research capacity, financing higher education, and the role of NSF in promoting the work of community colleges.

Session 2 (August 4, 11:00 a.m.–12:30 p.m.)

Vision 2030 Year 1 Retrospective and Year 2 Priorities

Ochoa welcomed everyone to day 2 of the NSB's 473rd meeting. She handed the floor to McCrary, Chair of the Vision Implementation Working Group (VIWG), to share, on behalf of the VIWG, a retrospective of the first year of *Vision 2030* and the priorities ahead for year two.

McCrary began by thanking NSB members Roger Beachy, Maureen Condic, Darío Gil, Julia Phillips, and Alan Stern, as well as NSF liaison Saul Gonzalez, for their efforts on the VIWG. He recapped the major recent trends that led to the *Vision 2030* report: globalization of science and engineering (S&E), growth of knowledge and technology-intensive industries; and demand for STEM talent. He then shared a video overview of *Vision 2030*, which highlighted key goals: delivering benefits from research; developing STEM talent; expanding the geography of innovation; and fostering a global community. McCrary thanked Ochoa for her establishment, support, and leadership of the VIWG, which was created shortly after the May 2020 release of *Vision 2030*.

McCrary then described the broader landscape in U.S. (S&E) that informed the first year of *Vision 2030*. Many major changes occurred: an election cycle brought in a new President and Congress; the NSB and NSF saw leadership changes; and legislation has been proposed that would have a significant impact on the NSF and broader U.S. research

enterprise. These changes occurred during an ongoing national conversation around issues of race and social justice and a global pandemic that has had devastating effects on the U.S. people and economy as well as U.S. and global science and engineering communities. McCrary emphasized that, although this moment is shaped by loss, it is also brimming with possibility for reimagining the future of science and engineering.

The first action of the VIWG was to prioritize areas of focus for the first year of implementation. Two roadmaps were selected: delivering benefits from research and delivering STEM talent for America. McCrary emphasized that making progress on the *Vision 2030* goals requires engagement from the NSB, NSF, and stakeholders across the U.S. working together in a concerted effort, and so achievements are shared, but that the NSB must celebrate any and all progress on goals supported by the call to action represented by the *Vision 2030* report. McCrary then thanked the Director for his leadership and advocacy, as well as his strategy for NSF.

A major goal of the first year of *Vision 2030* implementation was communication of key report messages. Towards this end, over 25 engagements were held with varying stakeholders, including federal- and state-level leaders and organizations representing academic, scientific, and educational communities. In ongoing conversations, McCrary noted that the wider community, including the public, are finding *Vision 2030* relevant and are adopting its rhetoric, using terms such as “Missing Millions,” “delivering benefits from research,” and others.

A second major goal was to see changes in policy. Over the past year, McCrary noted significant successes in this arena as well. One area of focus was on bills passed in the House and Senate which highlight the importance of developing STEM talent, delivering benefits from research, and expanding the geography of innovation. A second key success was sustained prioritization of efforts to address the Missing Millions within Congress, the White House, and NSF. Third, McCrary described progress on Broader Impacts and an NSB partnership with the Committee for Equal Opportunity in Science and Engineering (CEOSE). Finally, NSB messages accompanying the release of *Science & Engineering Indicators* in 2022 will be linked to the *Vision 2030* priorities, as seen in a recent one-pager on K-12 STEM education for nurturing domestic S&E talent.

While celebrating these successes, McCrary emphasized that there is still much progress that must be made. Looking to year two, McCrary mentioned three key areas of focus: building equity in STEM, leveraging the TIP structure to deliver benefits from research, and demonstrating impact through rigorous evaluation and tangible outcomes. McCrary put forth these items alongside three priorities: building talent and delivering benefits, the foci of the first year, with the addition of expanding the geography of innovation.

McCrary then offered several aims for the second year of *Vision 2030* implementation. They included ensuring NSF has strategies for setting and achieving goals; gathering data and baselines to ensure accountability and the ability to measure progress; and engagement on TIP structure, ensuring a productive match between industry and government. McCrary emphasized that a key starting point in this work will be obtaining

baseline data. Alongside this work, McCrary reiterated the importance of continuing to consider merit review policies, communicating progress towards S&E priorities through *Science & Engineering Indicators 2022*, and broad outreach on *Vision 2030*.

McCrary ended his remarks with thanks to Ochoa, his fellow VIWG members, NSB current and former members who led the development of *Vision 2030*, NSB members, NSBO staff, White House and Congressional leaders for their dedication to the S&E enterprise and support of NSF, stakeholders who participated in *Vision 2030* events, Panchanathan and his leadership team, and NSF staff.

Member comments in response focused on the need for developing appropriate metrics to measure success; pursuing policies to remove financial barriers to participation in the STEM workforce; and expanding *Vision 2030* outreach across the country. Following these comments, McCrary handed the floor to Ochoa, who thanked McCrary for his leadership of the VIWG and Panchanathan and the NSF senior leadership team for their embrace of *Vision 2030*. Ochoa remarked that she celebrated the current moment of alignment of priorities across the NSB, NSF, and Administration.

Strategies for Institutional Diversity, Equity, and Inclusion Accountability

Ochoa turned to the second item of the agenda, welcoming Shirley Malcom of the American Association for the Advancement of Science (AAAS) as she joined the meeting to speak on the topic of diversity, equity, and inclusion. Ochoa passed the floor to Anneila Sargent, Chair of NSB Committee on Oversight, to introduce Malcom.

Sargent welcomed Malcom, who was a member of the NSB from 1993-1998 and is a Senior Advisor to the CEO and Director of the STEM Equity Achievement (SEA) Change program at AAAS.

Malcom thanked Sargent for her introduction and began her talk, entitled “Investing in Human Potential.” She began with a historical perspective from the 1960s-70s, in which NSF worked to broaden participation by expanding the support of science at Historically Black Colleges and Universities (HBCUs) and other Minority-Serving Institutions (MSIs) alongside expansion of graduate fellowships for minorities and intervention programs for persons with disabilities. These efforts were accompanied by landscape assessments of numbers of girls, women, and racial and ethnic minorities in STEM. She noted that these efforts were focused on the diverse participants, rather than on the structures of the overall system.

Malcom then highlighted the key role of institutional barriers that impede diverse participation in STEM. She described the case of an MIT study in the 1990s, which found systemic barriers for women professors and discrepancies in resources, space, and pay compared to men. Malcom emphasized that it was key for MIT leadership to acknowledge

the institutional issues and reach out to other institutions to legitimize conversations on this topic and expand discussion beyond MIT.

Malcom mentioned several key initiatives which address institutional bias against women and racial and ethnic minorities, including NSF's ADVANCE program and several international efforts, including two key U.K. Advance HE (Higher Education) programs: Athena Swan, and the Race Equality Charter.

Malcom provided an overview of SEA Change, which works to build individual and institutional capacity for understanding systemic issues. They work through the lens of race, ethnicity, and gender, including issues for women of color, using research and metrics to measure baselines and track success. A major component of the program is its peer-reviewed awards system. Applicants conduct self-assessments and apply to AAAS for awards based on their action plans to address institutional barriers for underrepresented groups. Awards are bronze, for self-assessment and collecting data on what needs to be done; silver for making progress; and gold for providing leadership and acting as a model for other institutions. Malcom closed her remarks by emphasizing diverse, equitable, and inclusive work environments support for quality science and innovation and maximizing return on federal investments.

Several NSB members inquired about the SEA Change program and its administration. Sargent asked whether the SEA Change program provided a significant administrative burden on applicants. Malcom responded that some institutions would say so, but that many of the data that are required are being collected for other reasons. Malcom added that another burden mentioned by potential members is the cost of membership, but from her perspective savings from retaining students would rapidly outweigh this financial burden. Melvyn Huff asked how many institutions work with SEA Change and what the distribution of bronze, silver, and gold awards is. Malcom stated that SEA Change is recently launched, with first awards given in 2019, and currently has five bronze awardees. Ochoa pointed out that additional institutions have joined as members.

Geri Richmond asked whether SEA Change is collecting metrics on demographics, retention, and completion rates of graduate students. Malcom clarified that SEA Change focuses on outlining which data the institution collects for itself, rather than looking at those data.

Several NSB members were interested in how SEA Change engages beyond university administrations. McCrary asked whether SEA Change engages with boards of involved institutions, which Malcom said SEA Change is in the process of beginning. Emilio Moran inquired about involvement at the department and discipline level as well; Malcom agreed that departmental and discipline-wide shifts are also needed, and that SEA Change works to build both top-down and bottom-up structures and use positive peer pressure as a driver. Julia Phillips noted parallel self-assessment efforts in the private sector and asked whether engagements between the private sector and universities could further strengthen SEA Change efforts. Malcom described efforts to identify corporate partners and included private philanthropy as an additional potential partner.

Stephen Willard asked how the Broader Impacts metrics at NSF could be strengthened. Malcom suggested asking “What were you trying to accomplish?” and “What evidence do you have that it was accomplished?”

Ochoa closed with thanks to Malcom and to the NSB Committee on Oversight for inviting Malcom to the Board conversation. The morning Open Plenary Session was then adjourned.

Session 3 (August 4, 3:25 – 5.55 p.m.)

Chair’s Remarks

Ochoa continued the meeting by announcing that the NSB retreat would be held October 19th and 20th for a conversation on Board meetings and governing approach. She also announced that the NSB Committee on Nominations delivered its list of candidates for the Board’s 2022-2028 class and that this list will be submitted to the White House for its consideration.

Ochoa marked several staff transitions, thanking Suzi Iacono who is retiring and Jim Ulvestad, who is transitioning out of the CORF role; welcoming Karen Marrongelle in her new role as Chief Operating Officer as well as Alexandra Isern and Susan Marguilies in their Associate Director roles; and congratulating NSBO’s Kyscha Slater-Williams on a new role within NSF.

Finally, Ochoa approved the minutes from the May 2021 plenary session before handing the floor to the Director.

Director’s Remarks

The Director expanded upon Ochoa’s welcome to new NSF staff roles: Karen Marrongelle, starting as COO as of August 1, 2021; Isern, who was promoted as AD for the Directorate for Geosciences on July 18, 2021; Marguilies, who joined as assistant director/AD of Directorate of Engineering on August 16, 2021; Linnea Avallone, the next Chief Officer for Research Facilities effective October 11, 2021; Ona Hahs, new Deputy General Counsel in the Office of the General Counsel as of June 6, 2021; Rosalyn Hargraves, Division Director of the Division of Undergraduate Education in the Directorate of Education and Human Resources as of August 2, 2021; Roberta Marinelli, Director of the Office of Polar Programs in the Directorate for Geosciences as of August 2, 2021; José Zayas-Castro, Division Director of Engineering Education and Centers within the Directorate for Engineering as of August 2, 2021; Jeanne VanBriesen, who began as Division Director for the Division of Chemical, Bioengineering, Environmental, and Transport Systems in the Directorate of Engineering on August 15, 2021; Victor Powers, Deputy Division Director, Division of Administrative Services, in the Office of Information and Resource Management, as of June 2, 2021; Junping Wang, Deputy

Division Director for the Division of Mathematical Sciences as of August 1, 2021; and Lin He, Deputy Division Director for the Division of Chemistry as of July 4, 2021. Panchanathan celebrated the diverse expertise and leadership this team will bring to NSF.

EE Open Committee Report & Discussion

Ochoa turned to Geraldine Richmond, Chair of the Committee on External Engagement (EE), for a report on that committee's most recent meeting. Richmond began by reminding the Board of the upcoming deadline for nominations for the 2022 Vannevar Bush and Public Service Awards, encouraging members to nominate and describing staff efforts to gather nominations from across the country.

Richmond then began the report out from the July 30 meeting of the EE Committee. Activities discussed in that meeting included a virtual roundtable of business, education, and academic leaders in Tennessee hosted by Suresh Babu and early outreach and upcoming efforts on the 2022 Indicators report on Elementary and Secondary STEM Education.

Richmond raised two major topics for discussion. First, the Board considered priorities and opportunities in the rolling release of Indicators reports. Ochoa raised the importance of including socioeconomic issues as barriers in STEM education, especially students eligible for free lunch. She also suggested that ensuring Indicators has a strong digital release will enhance outreach efforts, especially if in-person meetings are still limited by the ongoing pandemic.

Chair of the NSB Committee on Science and Engineering Policy (SEP) Julia Phillips agreed and commented that, even if in-person meetings are possible, expanding virtual reach is still valuable. Phillips then raised the importance of thinking carefully in outreach about ensuring cross-cutting messages across thematic reports are communicated effectively, for example on the topics of developing a workforce for emerging industries and welcoming international talent. Babu suggested that the Board may want to engage more on international issues more broadly. Beachy raised the topic of the cross-cutting issue of building talent alongside a more geographically dispersed research enterprise, which may be particularly important when considering where and how new institutes and Regional Innovation Engines are established. Willard commented that the NSB needs to devote attention to national security issues alongside other topics.

Second, Richmond introduced a prototype of a strategy tool for helping the Board set priorities, especially around advancing Vision 2030. The tool is an iterative series of questions that ask: what is the issue? What is the goal? Why is it the goal? Who is the Board trying to reach? And how will the Board do so? Ideally, answers would allow the Board to develop, consider and compare options on a specific issue with a specific group in a specific way for a specific purpose. Ochoa expressed support for the tool, especially its potential to increase focus and generate priorities.

Open Committee Reports

Ochoa opened the session on open committee reports with the Committee on Strategy (CS). Chair Suresh Garimella reported that CS received an update on the current year and FY 2022 budgets and also created a subcommittee on technology, innovation, and partnerships (S-TIP) to be chaired by Dario Gil and with Heather Wilson and Dan Reed as members.

Next, Chair Anneila Sargent provided a report from the Committee on Oversight (CO). CO received a presentation on the Merit Review Digest from the Office of Integrative Activities and voted to approve the digest, subject to Board overview. CO also received updates from the Office of Equity and Civil Rights within the Office of Information Resource Management, the Inspector General, and the Chief Financial Officer.

Chair Julia Phillips provided the next update, from the Committee on national Science and Engineering Policy (SEP). SEP discussed Indicators 2022, with some reports already released and some forthcoming, and the release of a policy companion entitled “The U.S. Must Improve K-12 STEM Education for All.” SEP also discussed themes for the January 2022 release of The State of U.S. Science and Engineering 2022 and the connection between those themes and Vision 2030.

Finally, Vice Chair Carl Lineberger reported out from the Committee on Awards and Facilities (A&F). A&F held an open meeting July 9, 2021, for the AIMS (Arctic Infrastructure Modernization for Science) project. COVID-19 pandemic-related impacts have led to revisiting and refreshing the long-term plan for research infrastructure in Antarctica. A&F asked NSF to keep the Board informed of progress in developing AIR (Antarctic Infrastructure Recapitalization), with a re-baselining brought to the Board early in FY22.

Votes

In the final agenda item of the day, Ochoa brought two votes. The first was on accepting the 2020 Merit Review Digest, with publication to follow after the NSB overview is completed. Willard moved to accept, with multiple speakers seconding the motion. The motion passed with no dissent.

The second vote was on the draft 2022 NSB meeting schedule. Garimella and McCrary moved to approve, with Lineberger seconding the motion. The motion passed with no dissent.

Chair's Closing Remarks

Ochoa concluded the meeting by thanking Board members for their attendance and participation as well as the guest speakers who contributed to a very productive meeting. She also thanked the Board Office team for its work in support of the meeting.

There being no further business, the meeting was adjourned at 5:57 p.m.

/s/

Andrea I. Rambow
Executive Secretary to the National Science Board