



**Meeting of the Directorate for Education and Human Resources (EHR)
Advisory Committee
Tuesday, October 29, 2019
Holiday Inn Alexandria - Carlyle**

Advisory Committee Members Present: Hyman Bass, Catherine Casserly, Muhammed Chaudhry, Kaye Husbands Fealing, Margaret Honey, Okhee Lee, David Monk, Debra Joy Pérez (virtually), Francisco C. Rodriguez (chair), James Spillane, Marilyn Strutchens, Laurel Vermillion, Lilian Wu
Not Present: Carlos Castillo-Chavez

Designated Federal Officer: Karen Marrongelle

8:30 AM – 9:00 AM WELCOMING REMARKS FROM THE EHR AC CHAIR & THE EHR ASSISTANT DIRECTOR
Dr. Francisco Rodriguez, Chair, EHR Advisory Committee, & Chancellor, L.A. Community College District
Dr. Karen Marrongelle, Assistant Director, EHR

Dr. Francisco Rodriguez welcomed AC members and began the meeting with introductions around the table, followed by an overview of the agenda. Meeting topics included the Annual Progress Report on the Federal STEM Education 5-Year Strategic Plan; revisiting EHR's Strategic Re-Envisioning Report; a discussion on Mid-scale Research Infrastructure, one of NSF's 10 Big Ideas; updates from the EHR AC Subcommittee on STEM Education of the Future; EHR's response to the Graduate Education AC Subcommittee report; remarks from the NSF Chief Operating Officer, Dr. Fleming Crim; a presentation from the EHR AC Subcommittee on Public Private Partnerships; an update from the Committee on Equal Opportunities in Science and Engineering (CEOSE); and a report out from the EHR AC Subcommittee on Broadening Participation. Dr. Rodriguez requested motions to approve the previous meeting's minutes. James Spillane moved to approve, seconded by Margaret Honey. Dr. Rodriguez ended his remarks by highlighting recent achievements of AC Members since the Spring 2019 AC Meeting.

Dr. Karen Marrongelle welcomed AC members to the meeting and expressed gratitude for their work, dedication to STEM Education, and for sharing their time and expertise with EHR. She continued by acknowledging EHR staff who worked diligently to plan and organize the meeting, and introduced Cindy Hasselbring, the new Senior Policy Advisor and Assistant Director at the Office of Science and Technology Policy (OSTP). Dr. Marrongelle also introduced AC members to the new Division Director for the Division of Graduate Education (DGE), Dr. Kim Barrett, and thanked Dr. Nirmala Kannankutty for her work as Acting Division Director. Following this, Dr. Marrongelle acknowledged Dr. Tyrone Mitchell, a DGE Program Officer who passed away in summer 2019. She expressed that Dr. Mitchell was highly regarded by his colleagues and friends across NSF. His legacy continues through his passion for equity and inclusion. Dr. Marrongelle led attendees in a moment of silence to acknowledge his passing. She continued by providing an overview of EHR's achievements, noting that EHR has aligned with the priorities outlined in the memo released by the Office of Management and Budget and OSTP, used, in part, to prepare EHR's FY2021 budget. She further provided updates regarding her work to tell the EHR story, engaging with the legislators on the Hill for a Rural STEM Education Roundtable and a testimony before the House Subcommittee on Commerce, Justice, Science and Related Agencies Committee on Appropriations. Dr. Marrongelle continued by highlighting EHR accomplishments and impacts, including

the Northwest Passage Project, the Skilled Technical Workforce report, ATE Industry Association (SEMI) Partnership, the NSF INCLUDES National Network Convening and three new NSF INCLUDES Alliance awards, a study on changing career trajectories of new parents in STEM, an Ongoing Assessment Project (OGAP) study, the Boeing company partnership and investments, and the Excellence Awards in Science and Engineering (EASE).

9:00 AM – 9:45 AM SESSION 1: FEDERAL STEM EDUCATION 5-YEAR STRATEGIC PLAN's ANNUAL PROGRESS REPORT

Moderator: Karen Marrongelle, Assistant Director, EHR and FC-STEM Co-Chair

Presentation: Cindy Hasselbring, Senior Policy Advisor, Assistant Director, STEM Education, White House Office of Science and Technology Policy and FC-STEM Co-Chair

Panel:

Sylvia James, Deputy Assistant Director, EHR and Co-Chair, IWG Inclusion in STEM

Sarah-Kay McDonald, Senior Advisor, EHR and Co-Chair, IWG Transparency and Accountability

Arlene de Strulle, Program Director, EHR and Member, IWG Computational Literacy

Karen Keene, Program Director, EHR and Member, IWG Strategic Partnership
Cindy Hasselbring on behalf of the IWG Convergence

Cindy Hasselbring provided an update on the Federal STEM Education 5-Year Strategic Plan, *Charting a Course for Success: America's Strategy for STEM Education*, which was released December 2018. Hasselbring emphasized that NSF was integral to the report's development and remains highly engaged. Hasselbring provided a general outline of the STEM education strategic plan, including its three overarching goals. Additionally, she provided a summary of the pathways for achieving each goal and stated that NSF has identified action items to pursue the plan. To conclude, Hasselbring referenced the release of the upcoming annual progress report and segued to the Interagency Working Group (IWG) updates.

Dr. Karen Keene, updated AC members on the progress of the Strategic Partnership IWG, whose goals include fostering STEM learning ecosystems and increasing work-based learning opportunities and training.

Dr. Arlene de Strulle provided an update on the work of the Computational Literacy IWG, which has three key objectives -- to promote digital literacy and cyber safety; to expand digital platforms for learning to broaden participation in rural communities; and to thread computational thinking through education in early grades to college.

Cindy Hasselbring reported progress for the Convergence IWG. The group's goals focus on making STEM learning more meaningful and relevant through transdisciplinary learning and real-world experiences and applications. Members plan to gather best practices on education, collect stakeholder input, and gather baseline transdisciplinary learning models based on both federally and non-federally sponsored research.

Dr. Sarah-Kay McDonald, Transparency & Accountability IWG Co-Chair, provided updates on the group's work. The group's goals focus on reporting participation rate of underrepresented groups, using common metrics to measure progress, and making program performance and outcomes publicly available.

Dr. Sylvia James, Interagency Working Group on Inclusion in STEM (IWGIS) Co-Chair, provided updates on the group's progress. IWGIS, previously the Broadening Participation IWG, has been given a new, expanded charge. The group is working on diversity and inclusion issues related to the federal STEM workforce. Its objectives include identifying and developing a best-practices document for increasing diversity and inclusion in STEM, collaborating with other IWGs in helping them achieve their priorities in advancing key actions around diversity and inclusion, and providing recommendations on how to increase the diversity of the STEM workforce. Dr. James also noted that the IWGIS and Transparency & Accountability IWG are meant to work across all other IWGs.

Dr. Karen Marrongelle opened the floor for **discussion, questions, and comments**.

Questions and discussion about the plan included: providing open access to materials created by the IWGs for the benefit of the larger community; tackling the challenge of developing common metrics to assess broadening participation projects; and clarifying the definition of computational literacy. Dr. Bass commented that there is an emerging issue regarding discerning authenticity of websites and information, or data source credibility, that the Computational Literacy IWG should explicitly address. Dr. de Strulle agreed that this is a critical problem that is pervasive, and assured Dr. Bass that the Computational Literacy IWG is working on safety and authenticity of information. She noted that she would bring Dr. Bass' comment to the group. Dr. Okhee Lee provided insight into similarities across the five IWGs. Shared elements included developing common metrics, clarifying definitions, identifying best practices, and reviewing exemplary models. She suggested that common themes and storylines could be brought together to help communicate the big picture for the FC-STEM vision.

9:45 AM – 10:00 AM BREAK

10:00 AM – 11:00 AM SESSION 2: REVISITING EHR's STRATEGIC RE-ENVISIONING REPORT

Moderator: Sarah Kay-McDonald, Senior Advisor, EHR

Presentation: Karen Marrongelle, Assistant Director, EHR

Panel of AC Members who contributed to the Original Report:

- **Muhammed Chaudhry**, Former CEO, Silicon Valley Education Foundation
- **Margaret Honey**, President and CEO, New York Hall of Science
- **Francisco C. Rodriguez**, Chancellor, Los Angeles Community College District
- **Lilian Wu**, Program Executive, Global University Programs, IBM Corporation

Dr. McDonald described the goals of the session: to discuss how EHR activities have aligned with the Strategic Re-envisioning Report, developed five years ago, and to consider how the report can inform the

work of the AC going forward. She noted that the AC had been asked to provide input on a strategic framework that would help accomplish the Directorate's mission, focusing on three broad themes: viewing Broadening Participation (BP) as a solution, not a problem to be solved; aligning investments in PK-16 education with changing STEM workforce needs; and capitalizing on promising trends in STEM learning.

Dr. Marrongelle presented background information about the report to help re-familiarize all present, to revisit the recommendations, and to discuss the relevancy of the document now, in 2019, in order to understand how it aligns with EHR's work. She noted that EHR does not have an exhaustive or comprehensive analysis of progress toward the goal outlined in the report. Dr. Marrongelle reviewed the three broad focus areas within EHR and provided examples of work that EHR has done that aligns with these themes.

Dr. McDonald introduced the panel of AC Members who contributed to the original report and reminded attendees that the report is available publicly online on the NSF EHR AC page. AC members were asked to share their perspectives on the original vision for how the plan was meant to guide EHR's work; where the Directorate has made meaningful progress, based on the panel members' knowledge of its activities over the last five years; and what elements or aspects of the plan might be relevant to guide EHR's work moving forward.

The panelists and the broader AC member group had a fruitful discussion that produced several recommendations. Regarding the original vision for the plan, panelists commented that it evolved from the workforce point of view. They noted that at the time there was a critical call to action to build STEM communities by both leveraging the resources that were present and by building new partnerships. Panelists also commented that the issues outlined in the original vision continue to be current, and that NSF's 10 Big Ideas align and support much of what is discussed in the document, noting that NSF INCLUDES poignantly captures the original vision.

Discussion in response to the question of where EHR has made meaningful progress centered around BP efforts, citizen science, cyberlearning, learning in informal settings, interdisciplinary studies, as well as curricula, assessment, and professional development practices. However, AC members added that there is still meaningful work to be done in the areas of: Artificial Intelligence (AI)-based learning, specifically with respect to infrastructure, ownership, and security of student data; the integration of technology into various learning settings more generally; the relationship between the classroom and real-world, hands-on learning experiences; and the continuing priority to develop methods and metrics for assessing BP and differential impact.

Panelists and AC members noted that there are multiple elements of the plan that may guide EHR's work moving forward, including further work in the areas of the nature of educator credentialing and certification; AI machine learning, and access to technology and its integration with education; an intersectional and intergenerational approach to BP; partnerships with industry that would bring the startup system into EHR's work (i.e., in Silicon Valley); and collaborating with ecosystems to create a marketing strategy or public-image campaigns for STEM. Dr. Rodriguez added that the report does not pay enough attention to graduate studies, and suggested that, in alignment with BP goals, EHR add more emphasis on improving experiences for graduate students and adult learners, including those who have had some college experience, former veterans, former incarcerated, undocumented immigrants, and first-generation college attendees.

11:00 AM – 11:30 AM SESSION 3: DISCUSSION ON BIG IDEAS: MIDSCALE

Moderators/Presentation: **John Cherniavsky**, Senior Advisor, Division of Research on Learning in Formal and Informal Settings, EHR and **Steve Turley**, Program Director, Division of Research on Learning in Formal and Informal Settings, EHR

Dr. Steve Turley and Dr. John Cherniavsky presented an overview of Mid-scale Research Infrastructure (MRI), one of NSF's 10 Big Ideas. They provided examples of successful awards and emphasized that projects under this program must have national impact, identify and articulate community need, and demonstrate strong technical and management expertise. Dr. Turley noted that there have not been any EHR awards in the MRI program since 2010 and emphasized the importance of the current session to stimulate discussion around how the EHR community could be involved. Questions for the EHR AC Members to consider included: What does infrastructure look like in EHR? What in STEM could we learn from a big set of data? What are some big questions that could be answered if the EHR community and stakeholders had the infrastructure to do it?

Dr. Catherine Casserly suggested placing sensors on students in interactive educational environments to gather data and insight into early student learning. She noted that some early childhood learning environments (e.g., Montessori schools) are beginning to do that. AC members clarified that infrastructure does not just encompass technology, it includes anything that helps to understand learning in STEM, including "human infrastructure" (phrasing in the solicitation). Dr. Cherniavsky emphasized the importance of data to the EHR community. Members agreed that many potential ideas and activities would include data-related infrastructure (e.g., repositories and tools). Dr. Casserly suggested that EHR allow the public, including design schools, to submit ideas to expand the input for the next wave of funding.

11:30 AM – 12:30 PM BREAK FOR LUNCH

12:30 PM – 1:15 PM SESSION 4: EHR AC SUBCOMMITTEE: STEM EDUCATION OF THE FUTURE

Moderator: **Robin Wright**, Division Director, Division of Undergraduate Education, EHR

Presentation: **Margaret Honey**, President and CEO, New York Hall of Science, and AC Subcommittee Chair

Dr. Robin Wright, Division Director for the Division of Undergraduate Education, began the session by noting that there have been many advances in technology, which have affected and changed daily life. As part of the work of the EHR AC Subcommittee STEM Education of the Future, NSF Program Officers (POs) and the AC have been exploring how these advances will affect the future of STEM education. To generate further ideas and conversation at the current AC Meeting, NSF POs and AC Members were asked to move into groups for a discussion activity.

Dr. Margaret Honey, subcommittee chair, presented a summary of the group's work. She noted that in developing the vision for STEM Education of the Future, the subcommittee kept Dr. Rodriguez' guidance in mind, and that the results of their work are not meant to be prescriptive in any way. Dr. Honey emphasized, that while the educational practices that have emerged look different in how institutions are

engaging with them, they have an enduring quality and exemplify the values of progressive education: student-centered, problem-based, performance-driven. They can be used as a roadmap for the future of funding and decisions for the Directorate.

The groups of NSF POs and AC members discussed questions for 15 minutes and then reported out. Questions focused around the vision for STEM Education of the Future, whether anything should be added or changed, and how EHR could implement the vision of having access and inclusion as the foundation. The first group reported their discussion entailed financing of education, mental health of students and teachers, and breaking down silos as areas that must be added and that EHR could address. The second group agreed regarding the issue of silos and added that looking at different learning levels and environments and shifting the focus, from organizational-specific to learner-specific goals, is important. EHR must ensure that it reflects how students are changing the education of the future. The third group reported that EHR must think about real life problems and how the vision for STEM education of the future applies to them, giving the example of a growing number of jobs in the Uber and Lyft industry. It is critical to think about how EHR can prepare those learners, and how to translate experiences to the real world. Group four noted that for the current vision, 15-20 years may be more realistic. They added that some elements are missing from the vision, including people as part of a community and the actions of communities that would be necessary to fulfill the vision. Further, the notion of the workforce and workers were not explicit in the vision, as well as citizens in global aspects of education, which need to be considered for preparing the U.S. workforce of the future. Finally, the group agreed with the recommendation of the second group to shift perspective from organizations to learners and recommended that EHR incorporate into the vision the perspective of learners – what learners perceive their needs to be, as opposed to an outside perspective of what learners need. The fifth group discussed the tension between generalization and specialization with STEM educators and recommended that the vision statement be more explicit in linking the future of work to the vision itself, and that STEM education could be an NSF Big Idea.

**1:15 PM – 1:45 PM SESSION 5: EHR RESPONSE TO GRADUATE EDUCATION AC
SUBCOMMITTEE REPORT**

Moderator/Presentation: Nirmala Kannankutty, Acting Division Director,
Division of Graduate Education, EHR

Dr. Nirmala Kannankutty, Acting Division Director for the Division of Graduate Education (DGE), provided updates on the DGE action plan in response to the National Academies Report on Graduate Education for the 21st Century. Dr. Kannankutty encouraged the AC members to make recommendations regarding any gaps in DGE strategies or to provide ideas for any activities that should be considered to address the National Academies graduate education report, with an emphasis on expanding DGE's research portfolio and sharing with the community.

Dr. Kannankutty opened the floor for **discussion, questions and comments**.

Members applauded the DGE response framework and provided positive feedback. Questions and discussion focused on gathering robust best practices beyond demographics to inform broadening participation efforts; mentorship and mentoring practices; graduate experiences in industry labs and training; innovation in graduate education; the effect of new technologies on student-faculty dynamics; and the importance of developing graduate education models that teach students to be adaptable. Dr. Casserly noted that citizen science approaches are needed to solve problems and recommended that EHR

lead with that type of work in graduate education.

**1:45 PM – 2:00 PM PREPARE TO MEET NSF CHIEF OPERATING OFFICER (COO),
F. FLEMING CRIM**
Moderator: Francisco Rodriguez, Chair, EHR Advisory Committee

AC members suggested questions and topics for which the AC would like insight from NSF COO Dr. Fleming Crim. Topics included the agency's position with respect to the current Administration, the impact of the national discourse on how NSF addresses issues of equity and inclusion, the transition for the next NSF Director, the relationship between NSF and the Department of Education (ED), and the continuity of NSF's 10 Big Ideas with the upcoming change in NSF leadership.

2:00 PM – 3:00 PM TALK WITH NSF CHIEF OPERATING OFFICER, F. FLEMING CRIM
Moderator: Francisco Rodriguez, Chair, EHR Advisory Committee

Dr. Crim updated the AC about the Director's engagements and travels, during which she has been disseminating information about the scientific discoveries funded by NSF. He emphasized the international partnership with the Event Horizon Telescope team and the breakthrough that the partnership has produced. Dr. Crim informed the AC about NSF's upcoming 70th anniversary, and the 75th anniversary of Vannevar Bush's volume *Science, The Endless Frontier*. He updated AC members on other recent NSF activities, including: budget closeout for Fiscal Year (FY) 2019, the status of the FY2020 budget, and the preparation of the FY2021 budget; the first round of 43 awards made for the convergence accelerators; the completion of the search for a CISE Assistant Director; the recent Excellence Awards in Science and Engineering recognition; and progress of the Committee on STEM Education. AC Members thanked Dr. Crim for the updates, and asked questions about the agency's plans and process for the transition of the Director, the legacy for the continuity of NSF's 10 Big Ideas, and the possibility of STEM Education of the Future as a Big Idea. Other questions from the AC Members to Dr. Crim included the impact of national discourse on NSF's broadening participation efforts, the agency's position with respect to the current Administration, and the relationship between NSF and the Department of Education in the context of the Federal STEM Education 5-Year Strategic Plan. Dr. Crim provided responses to the Committee's questions and acknowledged the Committee for its time, advocacy, and guidance provided to EHR.

3:00 PM – 3:15 PM BREAK

3:15 PM – 4:00 PM SESSION 6: EHR AC SUBCOMMITTEE: PUBLIC PRIVATE PARTNERSHIP

Moderator: Evan Heit, Division Director, Division of Research on Learning in Formal and Informal Settings, EHR

Presentation: David Monk, Dean, College of Education, Pennsylvania State University and AC Subcommittee Chair

Presentation: Karen Marrongelle, Assistant Director, EHR

Dr. Evan Heit, Division Director for the Division of Research on Learning in Formal and Informal Settings (DRL), began the session by congratulating the technical staff. Dr. Heit then highlighted the Public Private Partnerships (PPP) Subcommittee's hard work over the past two years, mentioning numerous subcommittee meetings in which a lot of work had been done, and particularly recognizing the efforts of Dr. Ellen McCallie. Dr. Heit introduced Dr. David Monk, Public Private Partnership AC Subcommittee Chair, and asked AC Members to focus on the subcommittee's recommendations while keeping in mind the strengths NSF already has around forming and maintaining partnerships.

Dr. David Monk reported on work of the subcommittee, noting partnerships are powerful and can be fruitful, but also require careful thought and strategic planning. He praised subcommittee members for their active engagement, thanked Dr. Liz Boylan for her work on the initial phases, and acknowledged Dr. Ellen McCallie for keeping the subcommittee on track and facilitating interviews with individual members. Dr. Monk provided an overview of the subcommittee charge, which was sensitive to the arrival of new leadership within EHR and asked the committee to address three basic questions: What can EHR do to strengthen its capability for forming and maintaining Public Private Partnerships? How can those Public Private Partnerships be strategic? How can EHR encourage others to form Public Private Partnerships?

The subcommittee's recommendations were as follows: self-awareness of how EHR operates and how it may be inhibiting the formation of PPPs, akin to the disjuncture in graduate education for individual work versus the emergent trend of working in teams; recognition that partnerships must be strategic and must align with EHR priorities; staffing necessary to maintain successful partnerships; transparency in EHR operations for partners; the need for attentiveness beyond money; the importance of developing metrics to assess success, monitor progress, and develop early warning systems and exit strategies if a partnership is not working; and looking beyond the obvious partners.

Dr. Karen Marrongelle built on the subcommittee's recommendations to provide further context. When Dr. Marrongelle returned to EHR in October 2018, EHR had just announced its partnership with Boeing. She explained that the partnership was a milestone, which helped not only to raise the profile of NSF INCLUDES but also to develop, research and study opportunities for current workers in the workforce. Dr. Marrongelle underscored the recommendation on staffing and noted that managing the relationship with Boeing is a different task that needs dedicated staff. Additional staff is necessary to alleviate those currently managing partnerships. She added that other programs also require partnerships, and that across NSF there are ongoing discussions of partnerships, not only with federal partners, but also with nonprofits and other organizations. It is an Agency Priority Goal to increase the number of partnerships. Dr. Marrongelle shared that EHR is reviewing the literature on best practices on partnerships and evaluating its priorities and goals with respect to partners.

As she opened the floor for **discussion, questions, and comments**, Dr. Marrongelle encouraged AC members to consider how EHR can best set priorities, identify partnerships to cultivate, ensure that partnerships are strategic, and how AC members can help build bridges in different communities.

AC members inquired about exemplary EHR partnerships and whether EHR has analyzed what features make those partnerships exemplary. Dr. Heit commented that across the Foundation, many partnerships, including those with private foundations and federal agencies, are being evaluated. Dr. Husbands Fealing added that exemplary partnerships can be found in the literature, and that both partners must be strong to make a successful partnership. She recommended that EHR ask what that means in its context, and consider public, private, philanthropic partnerships (PPPPs), which are becoming more common.

Other comments during the discussion period focused on the need for partnerships to survive changes in leadership; exploring partnerships with nonprofits; the importance of evaluation and identifying unsuccessful partnerships; and the role of NSF in brokering relationships, especially through NSF INCLUDES. Dr. Husbands Fealing suggested that EHR look at lessons that can be learned from international scientific partnerships. As a member on the committee of American Academies, she offered to provide further information regarding this point. Dr. Lilian Wu pointed out that CISE has been successful with partnerships and can serve as a model for EHR.

4:00 PM – 4:15 PM SESSION 7: UPDATE FROM COMMITTEE ON EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING (CEOSE)
Moderator: Jermelina Tupas, Acting Division Director, Division of Human Resource Development, EHR

Update: Kaye Husbands Fealing, Professor and Chair, Georgia Institute of Technology and Member, CEOSE

Dr. Jermelina Tupas, Acting Division Director of the Division of Human Resource Development, introduced the Committee on Equal Opportunities in Science and Engineering (CEOSE). Dr. Tupas also introduced Dr. Kaye Husbands Fealing, Professor and Chair at the Georgia Institute of Technology and a member of CEOSE.

Dr. Husbands Fealing gave an update from CEOSE. CEOSE is currently working on its biennial report. Broadening participation (BP) is a core value in NSF's strategic plan. Specifically, Strategic Objective 2.2 – STEM Workforce: "Foster the growth of a more capable and diverse research workforce and advance the scientific and innovation skills of the Nation." NSF spends more than 1 billion dollars per year in BP initiatives, a small part in NSF INCLUDES. Dr. Husbands Fealing noted that CEOSE is interested in BP initiatives specific to communities. For example, Hispanic Serving Institutions, Historically Black Colleges and Universities, etc. The committee would like to amplify diverse community voices on BP through community-driven projects, and wants to develop frameworks, methodologies, and data sets. CEOSE is interested in creating change and broadcasting outcomes. Dr. Husbands Fealing further stated that CEOSE wants to accomplish these goals by partnering with other agencies, foundations, etc. and include communities. Emphasis on inclusion of persons with disabilities will be a key aspect of upcoming report. She shared a diagram from Dr. Hannah Valentine, NIH Chief Officer for Scientific Workforce Diversity, on including the voice of the community in community-driven projects. This could be helpful in Future of Work and STEM jobs initiatives.

Dr. Tupas opened the floor for **discussion, questions, and comments.**

The AC asked questions about the subcommittee's focus on community-driven projects. Dr. Husbands Fealing clarified that the communities themselves do not propose awards, but the community is empowered through a creative space where community practitioners and individuals are working together, similar to a "maker-space" for policy. Dr. Marrongelle added that the Hispanic-Serving Institutions model is an example of this type of approach, which began with meetings with communities to determine needs. Dr. Jermelina Tupas agreed and added that the Tribal Colleges and Universities Program is also an exemplar. Dr. Robin Wright provided another example through the Data Science Corps, which engages undergraduates in data science to solve problems and involves partnerships. AC Member Dr. Lilian Wu noted that she liked the recommendation and believed it would make a difference through community-driven solutions.

4:15 PM – 4:30 PM SESSION 8: EHR AC SUBCOMMITTEE: BROADENING PARTICIPATION

Moderator: Jermelina Tupas, Acting Division Director, Division of Human Resource Development EHR

Presentation: Debra Joy Pérez, Senior Vice President, Organizational Culture, Inclusion and Equity, Simmons University, and AC Subcommittee Chair

Dr. Jermelina Tupas introduced Dr. Debra Joy Pérez, Senior Vice President, Broadening Participation AC Subcommittee Chair. Dr. Tupas acknowledged the work of Dr. Regina Sievert, the subcommittee's executive secretary. Dr. Pérez also acknowledged Dr. Sievert and underscored the importance of aligning work with values. All presentations today have echoed the value of BP to the work. Most of the work of making the case has already been done. Dr. Pérez emphasized the importance of data in assessing the value of broadening participation, including the prominence of data and data collection. The purpose of the subcommittee is to develop metrics, not solve the problem of BP. As such, the subcommittee has been developing common metrics for studying BP and enabling conditions, so programs can examine and solve BP problems. Dr. Perez noted that the subcommittee is working with data currently available and will make recommendations on what data needs to be collected. For example, if data is collected on veteran status, future analyses can then include this variable. She shared that the subcommittee is charged with developing a set of questions that would help compare represented vs. underrepresented groups: a core set of identifiers and unique measures for discrete programs. BP is highly dependent on having a robust set of data about the demographics of groups under consideration. Dr. Pérez stated that these questions could be used for deep exploration of a program (e.g., Graduate Research Fellow program, CAREER), understand its impact, and identify opportunities and challenges. Data about publications and grants could serve as a measure of success. She added that the subcommittee will determine where data collection can be improved, using programs that are often evaluated. AC Members were asked where there are exemplar programs collecting the types of measures discussed, and how the issue of non-disclosure should be addressed.

The AC chair opened the floor for **discussion, questions, and comments.**

AC members discussed how to measure success in BP. Dr. Hyman Bass noted that judgment of success varies at different levels, unless there is a coherent program of BP at each level. Dr. Gina Sievert added

that there is a related problem regarding judging success by the number of publications and whether that was a good metric of success. Dr. Francisco Rodriguez inquired about the next steps of the committee. Dr. Pérez shared that the committee plans to conduct a review of all the data dictionaries to identify gaps in the data collection process and address the non-disclosure issue. Dr. Alexandra Medina-Borja, Acting Deputy Division Director for DGE, commented that in 2010 or 2012, an analysis of CAREER awards was made. The analysis indicated that Principal Investigators who received CAREER awards were more likely to change institutions to a better institution or receive a promotion. Dr. Jermelina Tupas suggested that the committee could look at CAREER awards only from EHR, as it is a small number of awards and only five years of data. Dr. Nirmala Kannankutty inquired whether the subcommittee was thinking about benchmarks and how they relate to the national trends. Dr. Pérez responded that the subcommittee was looking at the best practices on data collection itself, but not on the outcomes of programs specifically.

4:30 PM – 5:00 PM CLOSING REMARKS

Karen Marrongelle, Assistant Director, EHR

Francisco Rodriguez, Chair, EHR Advisory Committee

Dr. Karen Marrongelle thanked all AC members for their valuable input and encouraged all attendees to send her their comments or feedback. She acknowledged and thanked participating EHR staff, including the note-takers; IT and tech team, who kept the meeting running smoothly all day off-site; Administrative Specialist Tamara Virgil; Executive Assistant Andrea Watkins; Program Analyst Sharon Binns; and EHR AC Executive Secretary Dr. Nafeesa Owens. Dr. Marrongelle thanked Dr. Francisco Rodriguez, departing AC Chair, for his dedication and stamina advising EHR. She also acknowledged and thanked the departing AC members Dr. Sian Beilock, Muhammed Chaudhry, Dr. Margaret Honey, and Dr. Lilian Wu. Dr. Marrongelle welcomed the incoming EHR Advisory Committee chair, Dr. Marilyn Strutchens, and adjourned the meeting, wishing all AC members safe travels home.