EAR Committee of Visitors
June 21-24, 2021
Recommendations and GEO/EAR Response

The Division of Earth Sciences (EAR) greatly appreciates the time and effort taken by the 2021 EAR Committee of Visitors (COV) in reviewing the Division's programs for quality and integrity of its operations. The COV included distinguished scholars that ably represented the breadth of the Earth Sciences research community. It met between June 21-24, 2021 after many previous hours of preparation. Because of the COVID-19 pandemic, the COV was asked to work in a virtual setting and across many time zones. EAR thanks the COV for its flexibility and dedication to this important review. In particular we thank the Chair, Dr. Jacqueline Dixon, for her strong leadership and management of the COV in a virtual environment.

We are very pleased that the COV finds that EAR provides a high standard of service and leadership. The COV notes the number of challenges faced by NSF during this COV period and the quality and dedication of EAR staff in responding to those challenges. EAR appreciates that the COV highlighted our strategic planning activities during the past four years, as well as how well EAR is now positioned to make advances in priority areas such as climate change research, critical minerals, BAJEDI (belonging-accessibility-justice-equity-diversity-inclusion) and other NSF and Administration priority areas.

RECOMMENDATIONS AND RESPONSES
The COV provided thoughtful recommendations that are valuable to the EAR, GEO and NSF. Each of the recommendations from the COV report has been extracted verbatim, placed in italics and grouped with similar recommendations. These are followed by EAR's responses to these recommendations.

1. BROADER IMPACTS RECOMMENDATIONS
Recommendation 1: *The COV recommends EAR continue to strengthen its offering of workshops and other forms of professional development for Program Officers (POs) and prospective and current Principle Investigators (PIs) that emphasize the importance of, the breadth of activities that can be considered, the evidence base for effective practices, and accepted strategies for assessing the effectiveness of broader impact activities. These efforts include NSF- or community-sponsored workshops associated with professional meetings, on-line proposal writing clinics in advance of panels, and improved communication of opportunities to partner with existing programs involving substantive BIs, such as Research Experiences for Undergraduates (REUs) and programs that facilitate collaboration with Minority Serving Institutions (MSI).*

Recommendation 2: *The COV recommends EAR provide clear guidelines to reviewers and panelists about what to look for in BIs to encourage substantive and equitable reviews (e.g., implementation of evidence-based best practices). EAR should continue to encourage panels to list strengths and weaknesses of BI, a recommendation that will be easier to implement with templates for panel summaries, which the COV understands is in development.*

Recommendation 3*: The COV recommends both BI and IM scores be recorded and considered as part of portfolio management to quantitatively track how BI and IM influence funding decisions.*

EAR Response:
EAR thanks the COV for recognizing that EAR personnel have made significant efforts to educate reviewers and panelists about Merit Review and the importance of Broader Impacts. EAR is optimistic

that reviewers in the US will continue to improve in addressing both review criteria through guidance provided by NSF and the Division. EAR actively supports and participates in workshops, webinars, virtual office hours and other outreach, including the EAR-support for "Navigating NSF" workshops regularly held at major professional meetings, panel webinars and templates for panel summaries. EAR appreciates the COV suggestions for using other venues to share this information.

EAR will continue to provide best practices and templates for panel reviews to ensure that IM and BI are well discussed and documented in the panel, and to provide training for reviewers and panelists on addressing strengths and weaknesses of both merit review criteria. EAR will also review templates regularly to ensure compliance with NSF policy.

Relating to R3, it is our view that for programs to create a balanced portfolio, the content contained in the panel summaries and ad hoc reviews are much more important than the scores. Quantitatively tracking individual funding decisions using scores has limited value for assessing the overall value of a group of proposals, given the large number of considerations that go into an individual review score. Portfolio management means that a number of portfolio balance considerations go into every decision that include, but are not limited to:

- The potential for transformative impact in both Intellectual Merit and Broader Impacts
- Priority or timeliness of the area of research and systems
- Demographic diversity of PIs, students, and postdocs
- Diversity of institution types
- Geographic diversity
- PI career stage
- International partnerships
- Record of mentorship

EAR programs follow National Science Board and NSF policy guidance (PAPPG section II.C.2.d) that "NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project;" and that "assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project." It is within this context that EAR, at the Division level, develops and assesses the portfolio of Intellectual Merits and Broader Impacts, and plans for new solicitations and programs.

Different programs have different scientific scopes and societal benefits, and therefore the tools used for assessing IM and BI differ by program. Ad Hoc reviewers submit a single overall rating for proposals after considering both Merit Review Criteria and any solicitation specific review criteria. Programs have many tools to prompt panels to assess both Merit Review Criteria and to provide an overall, relative ranking of proposals. EAR will endeavor to make sure that Review Analyses for all programs clearly articulate the important factors in both IM and BI used to make a decision for each proposal.

2. REVIEWER RECOMMENDATIONS

Recommendation 4: *The COV recommends EAR POs consider ways to cultivate and recognize the reviewer community by providing feedback to ad hoc reviewers on the quality of their reviews, without an undue increase in PO workload. One strategy is to simply inform reviewers that they can request*

feedback on the utility of their reviews; another is to highlight meritorious reviewers in a public forum, such as EAR To the Ground.

Recommendation 5: *The COV recommends POs continue to expand their efforts to personalize invitations to review with the intention of expanding the reviewer pool and increasing reviewer response rate to all programs. In particular, the committee recommends targeted invitations to ad hoc reviewers and panelists with experience and/or expertise in broader impacts in addition to those with expertise in the proposed science.*

EAR Response:
EAR appreciates these recommendations to expand the reviewer pool, highlight broader impacts and acknowledge reviewer contributions to the Merit Review Process. Participation in the Merit Review process has always relied on volunteers from across the US research enterprise, as well as the international science community, and is viewed as a community service. We look to maintain and strengthen that spirit of community service.

EAR will explore the bounds of what NSF policy and confidentiality regulations allow for recognizing service, as well as how to provide feedback to reviewers on the utility of their reviews. NSF provides resources to reviewers on the Merit Review process and criteria which is open to all reviewers. EAR highlights these resources in outreach efforts and in review requests.

3. PORTFOLIO DOCUMENTATION RECOMMENDATIONS
Recommendation 6: *We recognize that funding decisions based on portfolio balance are an important tool in the PO toolkit. The COV recommends EAR POs provide clear language to more clearly document when portfolio balance has been. For example: "Decisions related to portfolio balance raised the status of the proposal from Competitive to Highly Competitive based on criteria of balance among science objectives, geography, career level, diversity, and inclusion." A statement like this indicates that portfolio balance was a factor without breaching confidentiality.*

Recommendation 7: *The COV recommends POs increase transparency in funding decisions by providing not only rationales for panel rankings, but additional discussion related to high-risk/high-reward status of projects. For example, POs should include emails and conversation notes related to proposal evaluation in EAGER and RAPID grant jackets. These notes can demonstrate that multiple NSF staff reviewed and provided feedback to PIs.*

Recommendation 8: *The COV recognizes the workload on POs and PDs has increased substantially, but they continue to ensure that high-quality disciplinary and interdisciplinary science is being funded. Many also prioritize getting relevant information out to early-career scientists, as well as preparing the community to respond to new initiatives and other priorities. As such, we see that PO/PDs have a lot of responsibility/high workload, not just finding reviewers and panel members, but also training panels, ensuring that panels are reviewing both criteria, then balancing the portfolio, etc. Viewed in a potentially negative light, however, there might be concern that POs/PDs have an outsized influence on final outcomes. The COV recommends undertaking initiatives to streamline workload and help minimize program-to-program idiosyncrasies, including: development of division-wide reporting templates, training materials to be completed online, and consistent quantitative metrics.*

EAR Response:

EAR appreciates the suggestions in R6 and R7 for improved documentation and transparency in award jackets. EAR Programs provided detailed information in their documentation about the factors that led to award recommendations. These include balancing scientific topics, broader impacts, PI career stage, and diversity of PIs and institutions. The Division seeks to ensure that best practices for documenting portfolio balance decisions are spread across all programs. Documentation associated with evaluation of EAGERs and RAPIDs is critical for the record of decisions on these projects as well as other awards. EAR will ensure in the next four years that these are more uniformly included in jackets.
Relating to R8, EAR appreciates that the COV acknowledges the high workload of the PDs. And relating to the concern that PDs may "have an outsized influence on final outcomes", we note that ad hoc reviews, panel discussion and rankings are advisory to the PDs for making decisions. EAR PDs are dedicated to serving their communities and science, and are trained by NSF and the Division to successfully carry out the mission of NSF, including how to effectively and fairly use Merit Review to make decisions and build a portfolio of research, education and infrastructure. Checks in the system include the recommendation workflow, where EAR management concurs on all award and decline decisions in the division. Most programs engage multiple PDs as responsible for the program or as part of a working group to ensure that there is not a single point of failure. EAR encourages and fosters cross-communication of PDs between Programs, Sections, Divisions and Directorates to improve decision-making and to promote best practices.

EAR is interested in streamlining workflow within the Division that is consistent with NSF practices. We have templates and training for POs and reviewers, and periodically review templates for compliance with NSF policy. As mentioned elsewhere in the response, NSF provides on-line training both for PDs and for the research community. EAR uses multiple venues, both virtual and in-person, for communicating these training opportunities broadly.

EAR employs established Foundation metrics in the Merit Review, including panel rankings that generally categorize proposals based on competitiveness in both IM and BI (e.g. Highly Competitive, Competitive, Not Competitive). Proposal decisions must be justified in the jacket documentation that follows Division templates to assist in assessing proposals consistently at the EAR management level.

4. NO DEADLINES

Recommendation 10*: The COV congratulates EAR staff for the successful transition to the No Deadlines policy and recommends the policy be continued with attention to efficiencies in EAR staff workload.*

EAR Response:

EAR appreciates the review by the COV of the No Deadlines transition in EAR. The Division will endeavor to maintain its high standard for Merit Review and to review metrics for impacts of No Deadlines on the community into the future. EAR is in the process of developing a dashboard to continue the analysis of proposal submission data into the Division and to compare long-term trends. EAR management also will pay close attention to impacts on staff workload that have arisen because of changes in the workflow.

5. COMMUNICATIONS RECOMMENDATIONS

Recommendation 9: *The COV sees post-decline decision conversations between PIs and POs as important for the development of PIs, especially early-career researchers, and would like to see them encouraged. We recommend EAR develop standard text for decline communications to encourage PIs to contact their PO, describing what PIs can expect from those conversations.*

Recommendation 12: *While the communication strategy is robust and inclusive, and we support continuation of these efforts, we have several recommendations that may help strengthen communication.*

a) *Community input is key to the success of EAR integrated activities, and community interaction has been a hallmark of EAR programs as it facilitates identification of emerging science innovation. The COV recommends EAR leadership seek clarification on these rulings and work with the general counsel to determine activities that are permitted versus not permitted under the relevant regulations.*
b) *The COV recommends POs seek enhanced communication modes to inform PIs about funding opportunities, especially in the areas of broader impacts. Among these might be a focused email to department heads/chairs, deans, Vice-Presidents of Research, and other administrative individuals who might proactively work to enhance their PIs' abilities to take advantage of the myriad opportunities that NSF provides.*

EAR Response:

EAR appreciates the suggestion in R9 to develop consistent communications to encourage PIs to contact PDs. This is practice in many programs in EAR, and PDs spend significant time talking to PIs about their proposals and the review. The Division can develop a best practice for communicating the potential for PIs to reach out to PDs.

EAR also thanks the COV for the suggestions in R12 for community engagement and mechanisms for communications. EAR agrees with the COV's articulation of the value in community input to guide scientific directions. External communications with the scientific community are integral to EAR for understanding the science, education, and infrastructure drivers in the Earth Sciences. There are many ways that EAR will continue to engage the research community for input. For example, the NASEM Earth in Time decadal survey described a set of high-priority science questions and discussed infrastructure needs, and how to leverage partnerships to address them. The Report is being used to set priorities for the coming decade. Within the scope of what is permissible, both the disciplinary and special programs engage in many forms of community building to facilitate emerging science, education and infrastructure. Many of the workshops supported out of program funds are associated with these community-building efforts, and often lead to reports that are considered by EAR in its planning process. An important element of the PDs' duties involves working with the research community to understand future directions and challenges.

6. INTEGRATED ACTIVITIES RECOMMENDATIONS

Recommendation 13: *Many Integrated Activities are generated out of community discussions during which emerging science opportunities are outlined; these discussions are often led by PIs whose research is particularly well-suited to the new program. The COV recognizes the value of these discussions, and recommends that review panels for these integrated activities always include panelists who are not part of the group of researchers who led the community discussions.*

Recommendation 14: *Integrated programs train scientists to do a specific style of integrated, collaborative and sometimes shoreline-crossing science. This style of research has great transformation potential as it spans traditional disciplines. When the programs are sunsetted, however, it may leave PIs who were successful in these programs without a natural programmatic home for funding. We*

recommend that directorate leadership explore ways to ensure and communicate "opportunity continuity" for PIs when programs are sunsetted.

EAR Response:
EAR thanks the COV for the suggestions in R13 and R14 related to IA programs. Related to R13, the Division is committed to ensuring that each proposal is reviewed in a fair, competitive, transparent, and in-depth manner. EAR will continue to explore best practices for expanding the panel and reviewer pool. Similarly, related to R14, EAR is committed to preparing the community for changes and/or sunsetting of programs. The Division utilizes DCLs, the EAR newsletter, office hours, and other channels to communicate these changes to the community. EAR will work closely with Directorate leadership in exploring ways to ensure continuity for the research community when programs are sunsetted.

7. INSTRUMENTATION/FACILITIES RECOMMENDATIONS

Recommendation 15: *At present, the IF program is unique to EAR at NSF. The COV recommends that the Division Director of EAR proactively engage in conversations with colleagues in other Divisions and other topically-relevant Directorates about the establishment of partnerships to co-utilize and co-develop facilities, perhaps in parallel with the advent of new, interdisciplinary scientific programs that would benefit from dedicated facilities.*

Recommendation 16: *The prior COV review, the recent NASEM Earth In Time report, and the IF project description provided to the COV all highlighted persistent concerns about the difficulties of sunsetting facilities that might no longer be central to the missions of EAR or Directorates and Divisions it collaborates with. The COV recommends that EAR initiate a triennial external review process of all EAR-funded facilities that have been funded for at least three years, with a review required prior to the submission of any renewal proposal. A panel of reviewers external to NSF should be chosen by IF POs for their expertise with the scientific management and budgeting of large facilities, as well as their own history of scientific productivity and records of broad impact in their work. For the purposes of the review, a template and rubric should be developed that assesses the productivity, vitality, and broader impacts of the facility, and the review should include a site visit by the external reviewers, accompanied by an IF PO. The outcome of this review should become an important, additional component of any consideration of renewal of the facility.*

Recommendation 17: *The challenges associated with sunsetting facilities are matched by the challenges of breaking into the system and initiating a new facility, particularly for PIs from under-resourced institutions where substantial instrumentation and staff support do not already exist. The committee recommends that IF initiate opportunities to broaden participation in the IF program by incentivizing partnerships between institutions, facilitating communication between facilities PIs, and offering planning workshops*

Recommendation 18: *The COV recommends EAR continue to explore mechanisms and perhaps even consider explicit competitions that help to support some of these smaller scale facilities. This is where undergraduates and graduate students get the most hands on analytical training, so they are a crucial component of workforce developed and geoscience education*

EAR Response:
EAR appreciates these recommendations to improve management of the EAR/IF program.

Related to R15, individual IF awards often receive co-funding from other Divisions throughout NSF. On a larger scale, the EAR Division Director (DD) has already begun discussions with OCE and AGS on co-utilizing and co-developing facilities, as well as BIO. The EAR DD will continue to broaden these discussions with other GEO Divisions and across other relevant Divisions within the Foundation.
Related to R16, the question of when and how to sunset facilities is a long standing and often difficult issue. EAR has established a research infrastructure working group constituted of IF PDs and Disciplinary Section PDs. As a direct result of working group findings, IF has developed a new set of terms, conditions and reporting requirements for community facilities that, over time, seeks to standardize program oversight and awardee management best practices and recordation and reporting of facility metrics. The intent is to allow productivity, vitality, and broader impacts to be quantitatively assessed across the portfolio in a comparative structured fashion.

Also related to R16, the suggestion to require mid-term external review of facility management is also appreciated. Mid-term reviews are required as parts of large facilities, and extending such a process to the smaller community facilities will be considered.

Related to R17 and R18, another outcome of IF Working Group activities is the ongoing development of a new and substantially revised IF solicitation that will emphasize broadening participation, workforce development, partnerships, and providing opportunities for new facilities, taking into account and exploring new models and mechanisms to support under-resourced institutions. It is worth noting that IF has supported equipment acquisition at hundreds of laboratories across the U.S. and that many of these labs serve research and student training needs beyond the PI team and the institution.
The Division is also exploring models in how best to align EAR IF to the Disciplinary Programs, as recommended by the National Academies Earth in Time Decadal Survey.

8. DATA RECOMMENDATION

Recommendation 11:

a) *EAR should facilitate a community working group to develop mechanisms for archiving and curating currently existing and future physical samples, and for funding such efforts. Importantly, the working group should address the types of metadata that should be included with samples and potential mechanisms for pairing metadata with its physical samples.*
b) *EAR should develop and implement a strategy to support FAIR (Findable, Accessible, Interoperable, Reusable) practices within community-based data efforts. FAIR data standards will improve the longevity, utility, and impact of EAR-funded data. Although NSF promotes FAIR data practices in spirit, the financial cost makes EAR support for long-term, compliant data storage difficult in times of level budgets.*
c) *EAR should develop synergy and communication with national programs already established to deal with preservation of geoscience datasets at the national level, such as the data preservation program managed by the USGS (NGDPP).*

EAR Response:

The Division is committed to supporting efforts to preserve and share research products in accordance with NSF and EAR data policies, and to enable their findability and accessibility for research transparency and future reuse. Parts a) and b) of the COV's recommendation directly align with recommendations of the "Earth in Time" report, and the Division has formed an internal Working Group that is actively addressing these.

Regarding a), the Division is discussing ways to support community planning efforts and development of cyberinfrastructure for archival and curation of physical samples, in coordination with efforts across the Foundation.

Regarding b), the Division is actively discussing near-term clarifying updates to language in the EAR Data & Sample Policy and in solicitations, and it is also initiating longer-term strategic planning for sustained investments in data management infrastructure.

Regarding c), EAR staff are engaging with colleagues at USGS and other federal agencies to coordinate resources and support for data management and preservation. In addition, the Foundation is currently prioritizing translational research and partnerships, and the Division is actively engaging in these efforts as a way to foster cross-agency collaborations and sustainable funding models for essential cyberinfrastructure, including data management infrastructure.

9. BAJEDI RECOMMENDATIONS

Recommendation 19: *The COV recommends EAR build on its track record of successful partnerships to expand coordination with programs that have been successful at broadening access, both within NSF (e.g., Louis Stokes Alliances for Minority Participation (LSAMP), International Research Experiences for Students (IRES), and REU) and outside of NSF at other federal agencies, professional societies, and foundations*

Recommendation 20: *EAR leadership/Director should convey to the GEO Director and the Director of NSF the need to maintain long-term support for programs that have proven effective in the engagement, recruitment, retention and development of talented underrepresented students. This may include requesting targeted solicitations, BAJEDI supplements to existing EAR-funded research projects, and increased funding for initiatives that support diverse and inclusive workforce development, including evidence-based efforts to expand recruitment of students and early-career professionals from other STEM fields to draw talented physicists, chemists, computer scientists and engineering students into applied research opportunities in the Earth Sciences.*

Recommendation 21: *The COV recommends EAR explore best practices to mentor and help retain diverse scholars in an academic/research career path. For example, EAR could explore developing a program to engage with a subset of late-stage URM PhD students (prior to graduation) in a format similar to OCE's Dissertations on Chemical Oceanography Conference (DISCO) and Physical Oceanography Dissertation Symposium (PODS) programs.*

Recommendation 22: *The COV recognizes a growing concern about the negative impact of some research programs in sensitive geographical areas, where "parachute science" neither achieves meaningful engagement nor increases capacity in the impacted under-served community and may, in fact, further alienate these communities. To mitigate this concern, EAR should:*

a) Include language in its solicitations, similar to that developed by Polar Programs (e.g., Navigating the New Arctic), to highlight ethical research conduct and to provide guidance on how to build true collaborations with local and Indigenous peoples in NSF-funded research and education. NSF should train panels and Pos on how to assess within proposals authentic engagement of local communities and sensitivity to local cultural norms.

b) *Utilize the planning grant functionality to enable PIs to collaborate with community leaders to design the research approach and develop cultural awareness. Some ideas include adoption of different tracks depending on the duration and scope of the planned science project). Track I might be at the level of workshops or meetings whereas Track III grants – for programs with greater impact on communities – should include a cultural sensitivity training component for all participants (even the ones that are not going to the field/site). EAR should follow best practices from OISE that uses planning grants to help establish partnerships with international collaborators / institutions and AGU's Thriving Earth Exchange that uses planning grants for community science initiatives. (Note: planning grants may be longer than 1 year to allow for development of meaningful relationships with diverse/international partners.)*

Recommendation 23: *The COV recommends EAR continue to increase diversity within its leadership (POs, PDs, DD, etc.). (Note: staff at NSF is reflective of diverse communities) :*

a) *EAR should enhance efforts to focus recruitment of under-represented minorities (URM) into NSF leadership positions using best practices recruitment approaches for targeting URM researchers.*
b) *EAR should initiate programs to enable sabbaticals to NSF for URM geoscience professionals.*
c) *EAR should investigate rotations of program managers to other federal agencies with proven success in diversity and inclusion efforts.*
d) *EAR should continue to use the panel as an opportunity to educate PIs/community at all levels- from early to mid-to late career. Panels are great opportunities to train and recruit potential future EAR POs.*
e) *EAR should strive to include officers at multiple career stages in all programs.*

EAR Response:

EAR is enthusiastic about the COV's recognition of the importance of BAJEDI activities and its encouragement to expand actions that support scientists from historically excluded groups in the Geosciences. EAR is well aware of the need to explore best practices to recruit, mentor, and retain a diverse workforce (R20 and R21), and we take note of the suggestions to enhance cooperation with other federal agencies, professional societies, and foundations in this sphere (R19 and R23). EAR is also aware of the need to be aware of effects in sensitive geographic areas and to avoid "parachute science" (R22). There are many specific suggestions in Recommendations 19-23 that we plan to pursue in the future.

We note that EAR continues to build partnerships with programs in other Divisions and Directorates to broaden participation and foster an inclusive discipline. For example, with the Division of Human Resource Development in the Directorate of Education and Human Resources, new cross-Directorate teams have been developed and tasked with strengthening collaborations and creating new opportunities. In addition, EAR is well represented on the GEO Directorate-wide Geoscience Education (GEO ED) working group and participates in ongoing activities and programmatic development that serves the broader geoscience community.

A measure of EAR's commitment to support the most vulnerable members of our scientific community is our proactive support of FY21 supplements that prioritized members of groups that were most strongly impacted by the effects of COVID, including women researchers, members of historically underrepresented groups, early-career faculty, post-doctoral scientists, research trainees, graduate students, technical staff, and individuals at key career transition points. These supplements came from programmatic and EAR Division-wide funds.

In addition to supporting broadening participation work at all levels of academia, the Division directly supports BAJEDI work through support to professional organizations and groups through conference, workshop, and RAISE awards, and through staff participation in the GEO Directorate-wide GEOPAths program.

Regarding research programs in sensitive geographical areas (R22), EAR greatly appreciates the COV's recommendation to be aware of issues and to support research that is ethical and founded in true collaboration/partnership with local communities. EAR will continue to explore ways to incorporate language into solicitations and provide additional training for those who participate in the Merit Review process.

EAR appreciates these recommendations on recruiting a diverse workforce, and EAR will continue to pursue its practice of ensuring that the staff are diverse and inclusive. That EAR values diversity is demonstrated by the makeup of its current Scientific Staff, which shows strong gender balance (12 M and 15 F at the time of this Response) at the leadership (1 M and 2F) and Program levels, includes members of minorities that are under-represented in STEM, and is composed of individuals at all career stages. We realize that we must continue to be vigilant about maintaining our diverse team.

10. AGENCY-WIDE RECOMMENDATIONS

Recommendation 25: *Regarding the race- and gender- non-reporting categories masking representation issues, the issue was acknowledged but related to outdated categories at the federal level. The COV recommends EAR elevate the problem to NSF-wide and to OSTP, for example, to improve the definitions at the federal level.*

Recommendation 26: *The COV recommends NSF and EAR develop a procedure for reporting of actions taken on grievances. While recognizing the need to redact anything that risks identifying individuals or institutions, it would be helpful to NSF to provide an annual report that conveys information on the nature and resolution of filed grievances. This could simply be an accounting of how many grievances were filed and how many were resolved successfully.*

Recommendation 27: *We recognize that the two criteria for merit review and the five questions to be addressed within each criterion are NSF-wide and not within the purview of EAR alone to change. However, the committee feels that modifying the questions for the BI criterion would likely lead to more substantial and critical reviews by both ad hoc reviewers and panelists, would better enable POs to adhere fully to the principle that all funded proposals should include strong BI components, and would facilitate stronger discussions and revisions to declined proposals. The COV recommends EAR elevate the issue to a foundation-wide discussion. Revised questions that would help reviewers assess the long-term impacts and efficacy of the broader impacts might be:*

a) *What is the potential for the proposed activity to benefit society or advance desired societal outcomes?*
b) *To what extent are the proposed activities grounded in the evidence base and likely to have an impact?*
c) *Is an appropriate evaluation plan included that assesses the impact of the proposed activities?*
d) *Is the expertise to carry out the proposed activities and evaluation plan present in the project team?*
e) *Does the budget support the broader impacts activities?*

f) How well does the BI component leverage existing NSF and other federal agency BI investments at their institution (LSAMP, REU, Sea Grant College Programs).

EAR Response:
We appreciate the focus of the COV on these important issues, which are managed at the Agency level. EAR is constrained to follow Agency policies on reporting data, EEO and civil rights issues, and Merit Review. The COV Report and recommendations will be reviewed by the GEO/OAD and the Office of the Director.

Regarding R25, EAR can bring up the concerns expressed about the outdated race and gender categories to higher levels, and note that there are different venues where this issue is being discussed. However, the categories that NSF uses will continue to be Government-wide categories. Also noteworthy is that NSF has changed how PIs navigate through the demographic pages in Research.gov, such that PIs will be required to answer all the questions (with the option to not provide the data).

Regarding R26, the NSF Office of Equity and Civil Rights (OECR, previously ODI, the Office of Diversity and Inclusion) is charged with addressing grievances, and when these issues come to us, they are forwarded to that Office. We understand the COV recommendation for some disclosure, but it is up to OECR to establish policies for disclosure that take into account confidentiality issues. We will forward the COV recommendation.

Regarding R27, the NSB establishes NSF's Merit Review criteria for the Foundation, and they are formalized by the NSF's Policy Office (Office of Budget, Finance and Award Management). Changes involve a multi-year process that includes engagement with the academic community, the NSB, the Policy Office and NSF staff. EAR will forward the COV recommendations through this Report.