

CORE QUESTIONS and REPORT TEMPLATE
for
FY 2020 NSF COMMITTEE OF VISITOR (COV) REVIEWS

NSF relies on the judgment of external experts to maintain high standards of program management, to provide advice for continuous improvement of NSF performance, and to ensure openness to the research and education community served by the Foundation. COV reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations; and (2) program-level technical and managerial matters pertaining to proposal decisions.

The program(s) under review may include several sub-activities as well as NSF-wide activities. The directorate or division may instruct the COV to provide answers addressing a cluster or group of programs – a portfolio of activities integrated as a whole – or to provide answers specific to the sub-activities of the program, with the latter requiring more time but providing more detailed information.

The Division or Directorate may add questions relevant to the activities under review. Copies of the report template and the charge to the COV should be provided to OIA prior to forwarding to the COV. In order to provide COV members adequate time to read and consider the COV materials, including proposal jackets, COV members should be given access to the materials in the eJacket COV module approximately four weeks before the scheduled face-to-face meeting of the COV members. Before providing access to jackets, the Conflict of Interest and Confidentiality briefing for COV members should be conducted by webinar, during which, NSF staff should also summarize the scope of the program(s) under review and answer COV questions about the template.

Suggested sources of information for COVs to consider are provided for each item. As indicated, a resource for NSF staff preparing data for COVs is the Enterprise Information System (EIS) –Web COV module, which can be accessed by NSF staff only at <http://budg-eis-01/eisportal/default.aspx>. In addition, NSF staff preparing for the COV should consider other sources of information, as appropriate for the programs under review.

For programs using section IV (addressing portfolio balance), the program should provide the COV with a statement of the program's portfolio goals and ask specific questions about the program under review.

Guidance to the COV: The COV report should provide a balanced assessment of NSF's performance in the integrity and efficiency of the **processes** related to proposal review. Discussions leading to answers of the Core Questions will require study of confidential material such as declined proposals and reviewer comments. **COV reports should not contain confidential material or specific information about declined proposals.** The reports generated by COVs are made available to the public.

We encourage COV members to provide comments to NSF on how to improve in all areas, as well as suggestions for the COV process, format, and questions. For past COV reports, please see <http://www.nsf.gov/od/oia/activities/cov/>.

FY 2020 REPORT TEMPLATE FOR NSF COMMITTEES OF VISITORS (COVs)

The table below should be completed by program staff.

Date of COV: June 4-5, 2020			
Program/Cluster/Section: Established Program to Stimulate Competitive Research (EPSCoR)			
Division: Office of Integrative Activities			
Directorate: Office of the Director			
Number of actions reviewed:			
	Awards	Declines	
Research Infrastructure Improvement (RII)	41	26	
Co-Funding (CF)	35	15	
Workshops and Conferences (W/C)	8	1	
Total	84	42	
Total number of actions within Program/Cluster/Division during period under review:			
	Awards	Declines	Other
Research Infrastructure Improvement (RII)	233*	396	58
Co-Funding (CF)	770	337	0
Workshops and Conferences (W/C)	8	1	1
Total	1011	734	59
*RII Awards include Cooperative Agreement Increments			
Manner in which reviewed actions were selected:			
<p>Lists of all EPSCoR actions for the RII activities, Co-funding actions, and Workshop/Conference investments, as well as a representative sample of randomly selected RII and co-funding actions, from the FY 2015 – FY 2019 review period were made available to COV members in advance of the meeting.</p> <p>The EPSCoR proposal samples provided to the COV were chosen as a balanced selection of actions, types of program investments, and geographical distribution of jurisdictions. The RII and CF samples along with the Workshop/Conference actions were made available to the COV via e-Jacket. In total, the Committee had immediate electronic access (e-Jacket) to documentation for 126 EPSCoR actions.</p>			

COV Membership

	Name	Affiliation
COV Chair or Co-Chairs:	Dr. Siân Mooney	Indiana University
COV Members:	Dr. Lesia Crumpton-Young	Morgan State University
	Dr. Le Gruenwald	University of Oklahoma
	Dr. Beverly Karplus Hartline	Montana Technological University
	Dr. Jeanette Jones	Alabama A&M University
	Dr. Rachel Nobel	University of North Carolina, Chapel Hill
	Dr. Eugenia Paulus	North Hennepin Community College
	Dr. Jorge Santiago-Aviles	University of Pennsylvania

MERIT REVIEW CRITERIA

An understanding of NSF's merit review criteria is important in order to answer some of the questions on the template. Reproduced below is the information provided to proposers in the Grant Proposal Guide about the merit review criteria and the principles associated with them. Also included is a description of some examples of broader impacts, provided by the National Science Board

1. Merit Review Principles

These principles are to be given due diligence by PIs and organizations when preparing proposals and managing projects, by reviewers when reading and evaluating proposals, and by NSF program staff when determining whether or not to recommend proposals for funding and while overseeing awards. Given that NSF is the primary federal agency charged with nurturing and supporting excellence in basic research and education, the following three principles apply:

- All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.
- 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. The project activities may be based on previously established and/or innovative methods and approaches, but in either case must be well justified.
- Meaningful assessment and evaluation of NSF funded projects should be based on appropriate metrics, keeping in mind the likely correlation between the effect of broader impacts and the resources provided to implement projects. If the size of the activity is limited, evaluation of that activity in isolation is not likely to be meaningful. Thus, assessing the effectiveness of these activities may best be done at a higher, more aggregated, level than the individual project.

With respect to the third principle, even if assessment of Broader Impacts outcomes for particular projects is done at an aggregated level, PIs are expected to be accountable for carrying out the activities described in the funded project. Thus, individual projects should include clearly stated goals, specific descriptions of the activities that the PI intends to do, and a plan in place to document the outputs of those activities. These three merit review principles provide the basis for the merit review criteria, as well as a context within which the users of the criteria can better understand their intent.

2. Merit Review Criteria

All NSF proposals are evaluated through use of two National Science Board approved merit review criteria. In some instances, however, NSF will employ additional criteria as required to highlight the specific objectives of certain programs and activities.

The two merit review criteria are listed below. Both criteria are to be given full consideration during the review and decision-making processes; each criterion is necessary but neither, by itself, is sufficient. Therefore, proposers must fully address both criteria. (PAPPG Chapter II.C.2.d.(i) contains additional information for use by proposers in development of the Project Description section of the proposal.) Reviewers are strongly encouraged to review the criteria, including PAPPG Chapter II.C.2.d.(i), prior to the review of a proposal.

When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, and what benefits could accrue if the project is successful. These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers will be asked to evaluate all proposals against two criteria:

- **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
 - a. Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - b. Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

3. Examples of Broader Impacts

The National Science Board described some examples of broader impacts of research, beyond the intrinsic importance of advancing knowledge.¹ “These outcomes include (but are not limited to) increased participation of women, persons with disabilities, and underrepresented minorities in science, technology, engineering, and mathematics (STEM); improved STEM education at all levels; increased public scientific literacy and public engagement with science and technology; improved well-being of individuals in society; development of a globally competitive STEM workforce; increased partnerships between academia, industry, and others; increased national security; increased economic competitiveness of the United States; and enhanced infrastructure for research and education. These examples of societally relevant outcomes should not be considered either comprehensive or prescriptive. Investigators may include appropriate outcomes not covered by these examples.”

¹ [NSB-MR-11-22](#)

INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, returns without review, and withdrawals) that were *completed within the past five fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, <i>ad hoc</i>, site visits) appropriate?</p> <p>Comments:</p> <p>In general the review methods are explicit and efficient. Assessment can be completed by <i>ad hoc</i> reviewers, panels or site-visits. Most EPSCoR reviews are conducted with panels and/or <i>ad hoc</i> reviewers, the use of site-visits is limited. The RII Tracks-1, 2, and 4, receive proposals covering many different disciplines, and the panels bring together experts with the full range of expertise needed. Panels have the advantage of having members share information and contribute diverse applicable perspectives. <i>Ad hoc</i> assessment allows for the careful selection of experts, capable of doing comprehensive disciplinary assessments. The RII Track-4 program utilizes an innovative two-step approach of <i>ad hoc</i> reviews followed by an interdisciplinary panel. The panel discussions integrate the information from the <i>ad hoc</i> reviews into their assessment. The COV considers this approach to be effective for evaluating the breadth of science exhibited within the RII Track-4 proposals.</p> <p>Data Source: EIS/Type of Review Module</p>	Yes
<p>2. Are both merit review criteria addressed</p> <p style="padding-left: 20px;">a) In individual reviews?</p> <p style="padding-left: 20px;">b) In panel summaries?</p>	<p>Yes</p> <p>Yes</p>

<p>c) In Program Officer review analyses?</p> <p>Comments:</p> <p>Intellectual Merit and Broader Impacts are addressed in individual reviews, panel summaries, and program officer analyses. However, the attention to Broader Impacts is sometimes not as thorough as for Intellectual Merit in some individual reviews.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
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<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>Individual reviewers provide substantive comments to explain and support their assessments. Reviews are well reasoned, justified and supported with substantive comments for the review criteria under intellectual merit. Reviewers are more likely to provide shorter and/or not as well supported comments related to broader impacts or program-specific review criteria. Reviewers sometimes seem not certain about what constitutes broader impacts. Although training and instruction may have been provided to reviewers through webinars, it may be helpful to provide sample reviews or a model review template to create uniform expectations regarding what would constitute a thorough review of Broader Impacts. This extra information might help to benefit all reviewers by clarifying expectations.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
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<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>The COV examined the individual reviewers' comments and the panel summaries arising from those comments and panel deliberations. For almost all the proposals scrutinized, the summaries were more comprehensive than the individual reviews and captured the essence of the reviewers' analyses, and nearly all panel summaries supported the program's decision to recommend or decline funding for the projects. For many proposals, the panel summary included only a few sentences on Broader Impacts. Overall, considering the diversity of the reviewers and the differences in their backgrounds, the vast number of proposals submitted and reviewed, the panels did a commendable and thorough job of creating panel summaries that provided a rationale for the panel view supporting the outcome of the merit review process.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
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<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>[Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments:</p> <p>The documentation in the eJacket is very comprehensive. It includes all the important information necessary to explain the rationales for the award/decline decisions, including the <i>ad hoc</i> and panelist reviews, panel summaries, communications between the program directors and the PIs, co-funding requests, and the program directors' review analyses. The review analyses are especially thorough with very strong cases made supporting the award/decline recommendations. Program Directors asked the PIs to respond to the reviewers' comments/questions when it was necessary to help in making a funding decision or to strengthen the case for a funding decision for a proposal that had mixed reviews. Evidence showing program directors asking the PIs to respond to the reviewers' comments and considering the PIs' responses in the award/declination decisions is excellent.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
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<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <p>[Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.]</p> <p>Comments:</p> <p>Overall, the documentation sent to the PIs provides the necessary information that supports the rationale for the award/decline decisions, which includes the context statements, individual reviews, and panel summaries, when applicable.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
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<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>The EPSCoR program officers have made considerable efforts to educate reviewers and panelists, so that they can address both merit criteria effectively in their reviews. Nonetheless, in many cases, the reviewers' assessments of Broader Impacts are not as substantive as for Intellectual Merit. Both the program and NSF overall should continue reviewer orientation and training, especially regarding Broader Impacts. Individual reviewers should provide more substantive comments for their assessment of broader impacts. NSF could give more guidance to reviewers on how to evaluate Broader Impacts.</p>	
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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments:</p> <p>A reviewer matrix is used by EPSCoR to create a pool of qualified reviewers, who are well suited to evaluate the Intellectual Merit and Broader Impacts of the proposal(s) being evaluated. The majority of reviewers have previously received grant funding from NSF; in addition, panels occasionally include early career or other investigators (with expertise in the applicable science field(s)), who may not have received NSF funding. Less frequently, industry or other government scientists are included as panelists. At least three reviewers are selected to review each proposal.</p> <p>Data Source: Jackets</p>	Yes

<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p> <p>EPSCoR was meticulous about educating reviewers regarding conflicts of interest, encouraging their disclosure, and resolving any potential conflicts identified. Conflicts of Interest were clearly identified. A sampling of the eJackets shows that in each case, reviewers with a Conflict of Interest (COI) were clearly documented, denied access to the proposal, excluded from the room during the discussion of the conflicted proposal, and did not appear on the list of panelists for the review of that proposal. Panel minutes (contained in e-Jacket Diary Notes) list the COIs for each panelist and for any NSF program officers.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
<p>3. Additional comments on reviewer selection:</p> <p>The reviewers are a diverse group, based on their field of expertise, gender, race/ethnicity, geography, and institutional type.</p> <p>Many of the reviewers have national reputations for scholarship and service, and some were from organizations, such as national laboratories, industries, or associations, such as the National Association of Black Engineers or Association for Women in Science. While Historically Black Institutions and Tribal Colleges were represented, there were few in the sampling. It is evident that EPSCoR expends significant effort to ensure panelists represent a variety of institutional types and academic positions, thereby ensuring important diversity of thought and perspective which strengthens the review process.</p>	

III. Questions concerning the management of the program under review. Please comment on the following:

<p>MANAGEMENT OF THE PROGRAM UNDER REVIEW</p>
<p>1. Management of the program.</p> <p>Comments:</p> <p>The management team has been proactive in managing and expanding the activities and impact of the EPSCoR program since the last COV. Specifically, planning efforts have been undertaken to increase, enhance, and ensure the quality of program-targeted activities.</p>

The leadership team is to be commended for utilizing continuous process improvement strategies that emphasize the importance of hosting various stakeholder discussions, which facilitate the creation of new programmatic efforts and ensure the quality and efficiency of existing components. Also, the team has developed and disseminated clear guidelines, for example, for its co-funding decisions and for conference/workshop proposals. Moreover, EPSCoR has a framework in place for helping to define academic research competitiveness and plans to use this tool as a basis for developing a more holistic framework for assessment and evaluation. This is a work-in-progress and has not yet been operationalized.

The EPSCoR team works cooperatively and collaboratively to stimulate investments in STEM research, education, and outreach in eligible jurisdictions with other directorates and divisions throughout the foundation.

2. Responsiveness of the program to emerging research and education opportunities.

Comments:

The EPSCoR program supports the NSF agency-wide priorities, as documented in the NSF Strategic Plan. Additionally, EPSCoR is a capacity-building program that funds efforts to transform the infrastructure and human resources available to develop science and engineering initiatives that build the local, regional, and national research and human-resource STEM ecosystem in the eligible jurisdictions. The portfolio of programs and projects supported within the Track-1 awards spans a range of emerging areas, such as those in data science, human-technology interaction and interface design, advanced astrophysics, and other areas of innovation. In addition, the EPSCoR workshop/conference proposals offer an opportunity for the program to fund and disseminate across its jurisdictions many innovative ideas at the frontiers of science and engineering that extend beyond the current NSF strategic plan and prepare the nation and its researchers for the next frontier. The workshops/conferences keep EPSCoR jurisdictions abreast of these developments and priorities.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:

Over the past few years, the EPSCoR program has undertaken extensive planning activities that have guided and strengthened the overall portfolio of programs and projects supported. These planning activities have advanced the STEM capacity and capabilities of the EPSCoR-eligible jurisdictions. EPSCoR restructured the Track-2 solicitation to require PI's to initiate projects that align with specific selected NSF "priority areas" which has strengthened sustained collaborations in interdisciplinary areas of high national/NSF priority, thus helping its jurisdictions to increase competitiveness and build capacity to connect with other NSF solicitations in these areas.

Also, the planning activities yielded the creation of the Track-4 Research Fellows program, which has afforded opportunities for early career researchers to observe, learn, and engage with premier STEM professionals at leading academic, governmental, and private research institutions throughout the nation. Additionally, as a result of planning efforts, the EPSCoR workshop solicitation was amended in 2019 to encourage multi-jurisdictional efforts focused on themes of regional and national importance. The planning and prioritization has also sharpened the criteria and process for co-funding to align with and further the EPSCoR goals.

Planning efforts also led to the workshop held with the EPSCoR Interagency Coordinating Committee, which resulted in seeding deeper EPSCoR partnerships with other federal agencies, most notably NASA. This activity further broadened the opportunities for EPSCoR jurisdictions to improve their research competitiveness.

4. Responsiveness of program to previous COV comments and recommendations.

Comments:

EPSCoR has been responsive to the previous COV's comments and recommendations. The 2015 COV issued nine (9) key recommendations for the EPSCoR program. The recommendations as well as a discussion of actions taken to respond to each are described here.

2015 Recommendation #1. The COV recommends exploration of a mechanism for extending training to reviewers.

The EPSCoR program has responded to this recommendation by providing webinar sessions for training reviewers prior to a panel meeting. *Ad hoc* reviewers for all RII tracks are provided with detailed written instructions about EPSCoR and specific review criteria for that Track. Webinars are provided to *ad hoc* and panel reviewers of Track-1 and Track-2 proposals

2015 Recommendation #2. Reviewers should be trained in identifying best practices and panel members should be held accountable for meaningful review of broader impacts in each proposal.

The EPSCoR program is providing webinars to train and educate panel members and some *ad hoc* reviewers. However, after reviewing the e-jacket portfolio, the 2020 COV noticed that most but not all individual reviews and panel summaries provide a substantive and meaningful assessment of the broader impacts of the proposed project, leaving room for improving this review dimension further.

2015 Recommendation #3. Quantitative data on EPSCoR outcomes including the full range of broader impacts with respect to education and diversity are important for COV evaluation of the EPSCoR program. The COV commends the EPSCoR program for attempting to address this situation by improved collection of data. However, the COV encourages the best possible disaggregation of data and making that data available to future COVs.

EPSCoR has been responsive to this recommendation. The programmatic self-assessment provided for the current COV presents quantitative data on institutional collaborations, reviewer demographics, and participant demographics of various types of participants for Track-1 and Track-2 awards (separately). The participant demographic tables include more information than previously presented including percentages of men and women, and of African Americans, Hispanics, and other underrepresented ethnic groups for each type of participant.

2015 Recommendation #4. The RII Track-3 solicitation appears promising, and should be continued and assessed in future years. In order to capitalize on the longitudinal opportunities within this program, the budget limitation of RII Track-3 awards should be increased to more than \$750 K.

The EPSCoR leadership team is to be commended for its Track-3 initiative to broaden the participation of underrepresented groups in STEM fields. Despite encouragement from the COV, however, Track-3 has not continued. This situation is understandable, as that mission has been rolled into the major Foundation-wide NSF INCLUDES initiative. EPSCoR has co-funded some INCLUDES projects, and it continues to emphasize broadening participation, especially in RII Track-1. Consequently, the program leads are working collaboratively with the new NSF INCLUDES

program to leverage its funding and enhance the efforts to increase the engagement of underrepresented persons in STEM research and education in EPSCoR jurisdictions. This recommendation has been addressed.

2015 Recommendation #5. *Workshop and conference awards have covered a number of important topics. We recommend expansion to include more emerging topics, such as Big Data and multi-scale modeling and analysis.*

EPSCoR has funded workshop topics as proposed by the scientific proposers in response to local, regional and national needs in or crossing EPSCoR jurisdictions. Harnessing the Data Revolution is one of NSF's Big Ideas, and such topics have been featured at major sessions and breakouts at the EPSCoR National Conferences held in 2017 and 2019. In 2019 EPSCoR issued an updated solicitation for workshop opportunities (NSF 19-588, replacing NSF 12-588). The NSF program officers have taken an active role in suggesting to potential PIs the inclusion of important and responsive topics in workshops and conferences that are awarded.

2015 Recommendation #6. *The current COV template does not align consistently with the goals and processes of the EPSCoR program. A review of questions, and perhaps the inclusion of program-specific questions, would be helpful to future COVs. One key feature of EPSCoR is the responsiveness to jurisdictional priorities, and the COV template does not capture this facet of the program.*

NSF uses a common template for all COV analysis of programs throughout the agency. This approach is designed by NSF to ensure consistency and integrity of the COV assessment and review process. However, for 2020, the portfolio questions are specifically tailored to EPSCoR's goals and mission, which enables the COV to provide feedback and assessment focused on how the program's components and processes enable its goals and mission.

2015 Recommendation #7. *It is recommended that EPSCoR establish a standing Advisory Committee, that would provide regular and sustainable advice to the program. An Advisory Committee can be justified on the basis of the uniqueness of the program and the mostly rural states that they serve.*

No Advisory Committee has been established. Such committees are subject to the Federal Advisory Committee Act (FACA), which specifies the process and approvals necessary to establish an Advisory Committee. Consistent with an Executive Order that was issued by the White House on June 14, 2019, "Evaluating and Improving the Utility of Federal Advisory Committees," NSF cannot currently establish any new Advisory Committees. EPSCoR, instead, uses *ad hoc* advisory panels to obtain guidance from the national research community, and EPSCoR reports that it is in the planning stages for such a convening to take place in FY2021, tentatively titled *The Future of EPSCoR*. NSF's move to Alexandria, the federal appropriations lapse, and staff turnover caused this meeting to be delayed from FY 2017, when it was originally planned. The COV views this response as satisfactory, and urges EPSCoR to hold this convening in FY2021, virtually if needed to cope with the global pandemic.

2015 Recommendation #8. *The COV recommends the implementation of formal Site Visits as part of the post award management for RII Track-1 and RII Track-2 projects.*

The EPSCoR program has long utilized reverse site visits (RSV) as a post award management tool. In response to the 2015 COV, it stated that site visits (SV) would be completed for all Track-1 projects. During this review period for the Track-1 projects, the program hosts a RSV early in Year 2, while in Year 4 a SV is used. The visits to the jurisdiction are greatly appreciated by the awardees, project participants, other jurisdiction stakeholders, and program office staff. They allow for

interaction with many constituencies that cannot be accommodated in a brief RSV at NSF: students, early-career faculty, industry and government partners, etc.

2015 Recommendation #9. *The ratio of permanent to rotating Program Officers in EPSCoR should be increased to help improve award management continuity during the 5-years of RII Track-1 awards.*

Currently EPSCoR has six program officers on staff with interviews in progress for two more. The current allocation of eight program officers is two more than the program had in 2015. Six of the program officers are federal FTEs (including one VSEE). Two program officers are IPA “rotators”. The current section head is currently an IPA rotator. The number of permanent program officers has increased. The opportunity to serve as an NSF program officer in EPSCoR or any of the other NSF directorates is a very valuable one that can help researchers from EPSCoR jurisdictions become more competitive and more knowledgeable about NSF and its funding and policy processes and priorities.

IV. Questions about Portfolio. Please answer the following about the portfolio of awards made by the program under review.

PROGRAM PORTFOLIO REVIEW

1. What specific steps has EPSCoR taken to address its five stated goals in the context of its portfolio?

Comments:

EPSCoR responds to the Congressional desire for more equitable geographic distribution of federal research funds and its goals address this mandate by:

- (1) Catalyzing the development of research capabilities and new knowledge;
- (2) Establishing sustainable pathways to advance STEM research priorities and workforce development;
- (3) Broadening participation of diverse individuals, institutions, and organizations;
- (4) Building sustainable engagement through data-sharing, communication, outreach, and dissemination; and
- (5) Impacting research, education, and economic development beyond the project.

To accomplish these goals, EPSCoR used three different RII tracks, co-funded proposals with other directorates, supported conferences and workshops, and conducted extensive outreach and PI mentoring, including at annual EPSCoR PI meetings. Outreach is covered in the response to IV.4, below.

RII Tracks-1 and 2 address these goals by incorporating special requirements in the program solicitations, employing the cooperative agreement mechanism for managing and overseeing awards, requiring a detailed strategic plan and schedule for the Track-1 projects, and providing multiple interactions between the EPSCoR program managers and the jurisdictions’ Track-1 and -2 teams. EPSCoR also requires jurisdictions to have a Science & Technology strategic plan, and

makes sure the Track-1 project tackles at least one of this plan's identified research priorities. Broadening participation, broader impacts, data sharing, workforce development, and outreach are major factors emphasized in the RII solicitations, cooperative agreements, annual reports, Site Visits and Reverse Site Visits. The EPSCoR program officer managing the jurisdiction award generally attends each jurisdiction's Track-1 annual gathering, networking with participants at all levels.

For Track-2 collaborative projects involving two or three EPSCoR jurisdictions, recent program announcements have required or encouraged proposing teams to focus on a high-priority multidisciplinary topic, such as a "Big Idea". This focus helps the participating institutions and investigators build expertise and a track record in key areas, positioning the teams to prepare competitive proposals of interest to the research directorates.

In 2017, EPSCoR added a new RII mechanism, Track-4, "EPSCoR Research Fellows," to build research capacity in institutions [in EPSCoR jurisdictions] and transform career trajectories of non-tenured investigators ... through extended collaborative visits to the nation's premier private, governmental, or academic research centers." Special review factors are included related to enhancing infrastructure and sustainability within the jurisdiction, among others.

During this review period EPSCoR had no Track-3 solicitations. The EPSCoR program elected to pause and refocus the Track-3 program after the launch of a similar NSF-wide funding opportunity unveiled in 2016, NSF INCLUDES (Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science)..

The co-funding mechanism addresses the goals by providing up to half of the funding for research proposals from not-well-funded investigators in EPSCoR jurisdictions. To be eligible, the proposals must have reviewed favorably within the program, but on or very near the cusp of the funding available.

Finally, EPSCoR funds conferences and workshops organized by eligible jurisdictions. The primary conference is the EPSCoR biennial national conference. These conferences include panels, workshops, and plenary speakers to help educate and build capacity, plus they share research interests and progress and catalyze networking and collaborations. Student poster sessions are featured, and professional development opportunities are provided. The biennial national conference is attended by EPSCoR program staff, program officers from other NSF Directorates, plus project leaders, investigators, post-docs, and students from all EPSCoR jurisdictions.

2. Is the current funding distribution across the portfolio appropriate?

Answer: Yes

Comments:

An important part of the mission of EPSCoR that relates to funding is "to strengthen research and education in science and engineering throughout the United States and to *avoid undue concentration* of such research and education." Given this mandate, it is important to focus on the latter portion of that statement. EPSCoR eligibility is calculated for each jurisdiction on a rolling 3-year average. A jurisdiction that is not eligible can still qualify for co-funding if the jurisdiction has been EPSCoR eligible within the past three years.

The EPSCoR overall budget has been allocated similarly over the past several years, with the RII portfolio capturing about 80% and co-funding and workshops receiving the remainder. Within RII the balance across Track-1, Track-2 and Track-4 has varied, with the majority allocated to Track-1 and

Track-2 awards. These Tracks directly support the goals of diversity, capacity building, and the creation of sustainable efforts, not only for research but also for data sharing, outreach, and communication. The co-funding mechanism and amounts appear to be working well to support investigators in EPSCoR jurisdictions becoming successful PIs.

The EPSCoR funding allocation overall continues to be commensurate with its long-term goals, and it has permitted EPSCoR to **achieve its mission**, which is to provide key, **multi-disciplinary or state-based cohort funding across a wide array of topic areas**, while promoting **inclusion of young professionals, budding researchers, and underrepresented groups**. The track-based system of RII funding allows emphasis of key strategies to increase each jurisdiction's competitiveness, encourage collaborations among jurisdictions, and support diverse high-potential investigators early in their careers. Importantly, in recent years, EPSCoR has taken steps to make the EPSCoR co-funding mechanism more transparent to the recipients and their research administrators. This is an important and valuable evolution in the information provided to the PI.

EPSCoR has been successful in accomplishing its goals over the period. No major change to the funding allocation is suggested.

3. Is the program's post-award management/oversight appropriate?

Summary: Yes management/oversight is appropriate.

Comments:

Track-1 and Track-2 are awarded using a cooperative agreement mechanism, and in every case, it was clear there is significant oversight from the EPSCoR office, focusing on the awardee's progress toward goals stated within the proposal as well as careful tracking of general financial management. EPSCoR management is evident from the inception of these awards, where special programmatic terms and conditions that arise from the original review are created (if necessary). In the first year of Track-1 awards, a strategic plan is created and submitted to EPSCoR. There is evidence that the managing program officer reviews and approves this plan. The program officer refers to the programmatic terms and conditions, the strategic plan and the proposal as benchmarks against which to measure progress, and award compliance, throughout the life of the award. Award management by the EPSCoR program officers is extremely thorough, well documented and transparent.

Examples of post award oversight of Track-1 awards include review of strategic plans, reverse site visits (RSV), detailed reviews of annual reports, and periodic visits to each jurisdiction. Since the prior COV report, the EPSCoR office has also included site visits (SV) in addition to reverse site visits for projects in some years. The RSV and the SV bring in external panels of disciplinary, administrative and other experts to further comment on progress and provide additional guidance and suggestions to the project teams. Their comments and recommendations are also employed by the program officer for award management.

It is evident from reviewing the information within eJacket that there are a significant number of interactions between the program officer and the PI to discuss elements of the project. These are well documented using diary notes and correspondence. There are some differences across program officers regarding their use of diary notes versus correspondence. However in all cases interactions are documented in one of these formats.

The award annual reports are very detailed, identifying activities under every goal of the project and discussing any impediments to progress or alterations from the original planned activities. There is written evidence that the program officer has significant interaction with the PI after reading through the annual report to ensure the report is comprehensive and thorough. Diary notes in eJacket address the approval of annual reports by the program officer, and demonstrate that program officers have thoroughly and carefully read the annual reports before approving.

An additional opportunity for award management is program officer attendance at jurisdiction annual meetings. These provide an opportunity for the program officer to meet with the larger project team, including faculty, staff and students and to better understand award operations and progress.

Program officers also monitor cost-share and other expenditures from each jurisdiction to ensure that these items occur at an appropriate rate consistent with that agreed to in the initial award. Significant deviations from the original budget are documented with approvals from the program officers.

4. How does EPSCoR's outreach program fit within the context of the portfolio?

Comments:

Outreach is utilized by the EPSCoR program to reach researchers, educators, and administrators at institutions in EPSCoR jurisdictions. EPSCoR outreach efforts include sponsoring conferences and workshops, webinars, and traveling to EPSCoR jurisdictions to attend jurisdiction annual meetings.

The annual EPSCoR jurisdiction meetings, the annual EPSCoR PI meeting and the biannual EPSCoR National Conference provide opportunities for program officers share information about NSF funding opportunities, priorities, policies, programs, and how to access them. At the annual meetings program officers meet researchers from their jurisdictions and learn about their interests, expertise, and capabilities, and the priorities of the eligible jurisdictions. The national EPSCoR conference brings together principal investigators, RII project leaders, students, and administrators from all the EPSCoR jurisdictions, and it is well attended by EPSCoR program staff. EPSCoR program staff provide considerable advice to the national conference organizers, guiding them to include numerous informative keynote speakers, panels, and professional development sessions aimed at each level and type of attendee.

EPSCoR also encourages and supports outreach from other NSF directorates to EPSCoR jurisdictions. Recent examples include providing information for establishing NSF-funded research centers, such as those focused on science and technology, engineering, materials research, advanced physics, and collaborations with private industry.

OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

None identified.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

EPSCoR is notable in the NSF portfolio in being highly multi and interdisciplinary. Its program officers not only prepare program announcements and manage the proposal process from receipt through review and award through closeout, but they also engage in the outreach described above, and they each are assigned to manage and oversee complex, managerially intensive cooperative agreements for the Track-1 and Track-2 programs. Moreover, EPSCoR is also tracking a large amount of data (funding, demographics of participants, outreach programs and effectiveness) about the eligible jurisdictions, requiring considerable data analytics. The program staff and leadership at all levels impressed the COV as being incredibly competent, capable, committed, innovative, high-energy, and enthusiastic. The increased number of program officers (from six to eight) appears to be serving NSF and the program well. The challenge of catalyzing improved research competitiveness in the eligible jurisdictions demands more from this program than is typical of NSF research and education directorates. The COV suggests that it would be worthwhile to examine whether this staffing level is sufficient to fully realize the multiple nationally important demands of the program, given the number of jurisdictions, the nature and amount of the workload, and the increasing need for synthesizing and analyzing large amounts of data.

The EPSCoR program has been successful in meeting program-specific goals and objectives. In 2017, Congress renamed it through the American Innovation and Competitiveness Act (AICA P.L. 114-329) to the **Established** Program to Stimulate Competitive Research.

The EPSCoR office has created new programs (e.g. Track-4) that increase its ability to address its goals. We encourage the office to continue this practice of identifying opportunities and needs to develop innovative programs that serve their community. For example, there might be a unique opportunity and significant need to "modulate" EPSCoR efforts in helping and supporting under-represented minorities (URM). Following the pandemic and civil disturbances of the year 2020, the URM community has suffered particular losses in the age group that is usually identified with active engagement in academic pursuit and research. Not only African Americans and Latinos, but losses among Native Americans (more prevalent in EPSCoR jurisdictions than in others) might merit a strong effort in re-vitalizing their involvement in scholarly pursuit. To the extent compatible with EPSCoR mission, it would be well worthwhile to invest in and energize this vital segment of America's constituency.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

The EPSCoR program is an excellent capacity building initiative that intersects with many other programs (if not all) offered in the agency, because of its tradition of co-funding.

To accomplish its goals, EPSCoR has broadened its portfolio (more solicitations) increasing the number of proposals and competitions to manage. We recommend that NSF consider increasing EPSCoR's staffing levels in the context of the significant management demands associated with co-

operative agreements and the benefits from increased collaboration across the agency and outreach efforts targeted at technical assistance, data analytics and other resources that assist underprepared PIs and under-resourced institutions.

4. Please provide comments on any other issues the COV feels are relevant.

The EPSCoR Track-4 (EPSCoR Research Fellows) program provides funding support for non-tenured faculty from EPSCoR states to enhance their research careers through extended visits to the private, governmental, or academic research centers. The COV was pleased to see this innovative addition with potential to increase the research capacity of the EPSCoR institutions.

The COV team agreed that the template and criteria developed for co-funding is well constructed and is an efficient means of collecting information to support decisions about co-funding. The co-funding mechanism is very valuable and operates under clear and transparent processes and criteria, with liaisons identified in each directorate. Co-funding is an important means of expanding the reach and visibility of the EPSCoR program.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

The committee spent time reviewing a considerable number of proposals to complete this process. These are the observations that we think would improve the process for the reviewers: During the orientation NSF provided information on EPSCoR self-study, the SharePoint file, COV website eJackets, and NSF staff availability which were essential to the COV review process. A guide describing the contents of the files and indicating the primary sources of information located in each file would be helpful and time saving in the review process.

The 2020 template was more focused than that used by the prior COV, and the EPSCoR Office staff provided well formatted and useful information. EPSCoR staff and program officers were extremely responsive to COV questions through the review period, and they resolved issues in a timely way. The quality of the self-study materials was high and helped to inform the review.

Some concerns about the template used for preparing the report were: Is EPSCoR and NSF interested in yes/no answers or what/how/how much/where answers? The template should drive the COV feedback in the appropriate direction in this regard. The template could benefit from the addition of a specific section for recommendations.

RECOMMENDATIONS

1. Continue the work to enhance reviewer training (particularly with respect to Broader Impacts).
2. Encourage hosting and conduct of the Future of EPSCoR meeting to be held in 2021.
3. Encourage continued identification of opportunities and the design, shaping, and implementation of innovative programs that serve the EPSCoR community.
4. We recommend that NSF consider increasing EPSCoR's staffing levels in the context of the significant management demands associated with co-operative agreements and the benefits from increased collaboration across the agency and outreach efforts targeted at technical assistance for underprepared PIs and under-resourced institutions, in addition to increased demand for data analytics.

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SIGNATURE BLOCK:



For the EPSCoR COV 2020
Siân Mooney
Chair