

TO: Dr. Willie Pearson, Jr., DRL/HRD Bundled COV Chair
FROM: Dr. Bianca L. Bernstein, COV Co-chair
RE: Gender in Science and Engineering (GSE) 2012 COV Report

Executive Summary

The COV commends the GSE program for assuring the quality and effectiveness of the merit review process and for strengthening and broadening the portfolio of gender-related research in STEM. While the realignment of GSE with REESE and RDE brings the potential to expand program priorities collaboratively and to fund research efforts that address multiple STEM pipeline issues, the merger also increases the vulnerability of the GSE program to diminished resources, divided staff, and loss of emphasis on the gender portfolio. The COV strongly encourages NSF to protect the focus on gender in STEM by further strengthening the portfolio of gender-related research and projects, expanding beyond K-12 to include all educational levels, transitions, and career paths in STEM, encouraging the translation of research to gender equitable practices, expanding the community of gender scholars, and maintaining GSE's leadership role within NSF with regard to gender research.

Selected Findings

The individual and panel reviews are clear in the evaluation of intellectual merit and panel summaries are helpful, detailed, and specific, as are the review analyses and site visit reports. The COV noted that solicitations and management plans are well-crafted, panelists have the relevant expertise and co-funding is appropriate.

The major agency wide issue facing GSE is its merger with REESE and RDE. The challenge will be to combine the programs in a fashion that builds on the strengths and accomplishments of each while minimizing the liabilities they may have faced while operating separately. A unified and collaborative approach will yield proposals and ultimately funded programs that will intersect traditional concerns from the past with innovative and comprehensive approaches. Care should be taken to retain gender research as a top and distinctive priority within the REAL solicitation and program.

The COV finds that a greater investment in building a community of scholars around gender research could have substantial benefits in strengthening the quality of research, attracting young professionals, and shaping the portfolio of projects that focus on gender and intersectionality. The selection of reviewers is one of the most important ways to nurture future PIs and increase researchers' efforts to focus on gender in STEM.

Key Recommendations

The Gender in Science and Engineering (GSE) COV provided the following key recommendations for consideration:

Recommendation: As the GSE program becomes part of the new REAL program, NSF should be careful to protect the focus on gender in STEM and highlight gender research and the GSE portfolio as a top priority within the REAL solicitation and program.

Recommendation: Address gender research in terms of intellectual merit and identify it as a distinctive research area to be retained and nurtured within the current and developing communities of gender researchers.

Recommendation: The COV recommends that the GSE program develop a strategic plan that situates the gender portfolio within the new REAL program. Attention should be given to further strengthening the portfolio of gender-related research and projects, encouraging the translation of research to gender equitable practices, expanding the community of gender scholars, and maintaining GSE's leadership role within NSF with regard to gender research.

Recommendation: The funding of gender research and future solicitations and management plans should expand explicitly beyond the K-16 focus to encompass all educational and career paths and transitions, including graduate education, post-doctoral study and STEM careers. The COV supports the continued emphasis on transitions.

Recommendation: Retain GSE's overarching goal "to support efforts to understand and address gender-based differences in STEM education and workforce participation...that will lead to a larger and more diverse domestic science and engineering workforce," as stated in GSE's program solicitations.

Recommendation: The COV recommends that NSF actively develop and continually expand a pool of potential reviewers with expertise in gender and STEM from a broad range of groups and types of institutions including community colleges, four-year institutions, MSIs and underrepresented minorities.

Recommendation: Both the Site Visits and the Reverse Site Visit reports include useful information for current and new PIs in regard to best practices and lessons learned. The COV recommends that these visits be continued and that selected findings from these reports be disseminated. The investment in site and reverse site visits is substantial and the COV recommends finding ways to expand the impact of these investments beyond a particular project.

Recommendation: NSF should provide opportunities for PIs who work on gender and STEM, regardless of funding source within NSF, to discuss their work and shared challenges.

Recommendation: The COV reiterates the recommendation of the previous COV that NSF fund a rotator position and additional support staff to assist the program officers in managing the program and increasing outreach.

**CORE QUESTIONS and REPORT TEMPLATE
for
FY 2012 NSF COMMITTEE OF VISITOR (COV) REVIEWS**

Guidance to NSF Staff: This document includes the FY 2012 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2012. Specific guidance for NSF staff describing the COV review process is described in Subchapter 300-Committee of Visitors Reviews (NSF Manual 1, Section VIII) that can be obtained at <www.inside.nsf.gov/od/oia/cov>.

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. Committee of Visitor (COV) reviews provide NSF with external expert judgments in two areas: (1) assessments of the quality and integrity of program operations and program-level technical and (2) 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 choose to add questions relevant to the activities under review. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

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 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. Some suggestions regarding portfolio dimensions are given on the template. These suggestions will not be appropriate for all programs.

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 for Part A 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/covs.jsp>.

**FY 2012 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

Date of COV: Wednesday, September 19 - Friday, September 21, 2012
Program/Cluster/Section: Research on Gender in Science & Engineering (GSE)
Division: Human Resource Development
Directorate: Education & Human Resources
Number of actions reviewed: Awards: 50 Declinations: 175 Other: 220
Total number of actions within Program/Cluster/Division during period under review: 220 Proposals Awards: 50 (35 Research Projects, 4 Extension Services Projects, 6 Diffusion of Research-Based Innovation, *5 Submitted to different Solicitation) Declinations: 175(147 Research Projects, 5 Extension Projects, 23 Diffusion of Research-Based Innovation) Other: Information on Awards & Declines represents actions in full proposal panels. Full proposal panel information is presented throughout the COV template.
Manner in which reviewed actions were selected:

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, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program 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, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The review panels appear to be working well with panel reviews being utilized effectively to make funding decisions and to provide constructive feedback to unsuccessful proposals. The COV found reviews to be clear in the evaluation of intellectual merit and panel summaries to be very helpful, detailed, and specific. It is evident to the COV that the differences between research proposals and diffusion/extension proposals require different panel expertise.</p> <p>The COV encourages the continuation of panels as a review method and considers them to be working well. The COV discussed webinars as a cost saving technique that can engage reviewers and continue the collaboration between panel members. Computer applications such as Google Plus and Skype could be considered to facilitate this interaction. The use of new technology enables panel members from different locations to join a "virtual meeting," thereby freeing up program funds. The COV considered this as a possibility for panels where fewer proposals are reviewed.</p> <p>The COV also encourages site visits, particularly for multi-institutional and collaborative grants. A site visit stimulates a partnership to collaborate and heightens the visibility of a project for the local community. Site visits also allow the visiting team to interact directly with community leaders with regard to plans for integrating the NSF program within established initiatives and to discuss community sustainability once external dollars are no longer available.</p>	<p>YES</p>

<p>Recommendation: (elaborated additionally below in Recommendations for Question 7) The COV recommends sharing information from site visits at PI meetings.</p>	
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <p>b) In panel summaries?</p> <p>c) In Program Officer review analyses?</p> <p>Comments:</p> <p>Overall, the COV found reviews to be clear in the evaluation of intellectual merit. However, commentary regarding broader impacts can be improved. The COV noted that the broader impacts were most often the shortest parts of individual reviews.</p> <p>The COV believes that the careful consideration of broader impacts by PIs and panelists is particularly important for GSE and other proposals that address broader participation. Reviewers most often cited efforts for dissemination through publications and presentations. The COV believes that other aspects of broader impacts could be discussed more thoroughly in order to educate proposers.</p> <p>The COV discussed the concern of the prior COV regarding the respective weights of the merit criteria. This COV articulated that a guideline for weighting the two merit criteria is not appropriate given the range of projects proposed.</p>	<p>YES</p>
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>The COV finds that the individual reviews provide substantive information to support their evaluation of proposals.</p>	<p>YES</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>The panel summaries provide clear and comprehensive descriptions of the panel deliberations. The COV found that in the instances where a consensus could not be reached, the different positions were identified.</p>	<p>YES</p>

<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>(Note: Documentation in jacket usually includes 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 COV believes that the Program Officer's review analyses were excellent in articulating the important points of the panel reviews and her decision. Diary notes are present that describe her exchanges with the PIs when questions were raised. The COV found that several site visits reports in the documentation were extremely thorough and constructive. The context statements were well documented.</p>	<p>YES</p>
<p>6. Does the documentation to 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 or telephoned with diary note in jacket) of the basis for a declination.)</p> <p>Comments:</p> <p>The COV found that documentation given to PIs provides a clear rationale for the award or decline decision. The context statements are appropriate in describing the review process and the panel summaries provide a comprehensive view of panelist evaluations of the proposal. The Program Officer comments offer the PIs of declined proposals a useful summary of the strengths and weaknesses of the proposal.</p>	<p>YES</p>

7. Additional comments on the quality and effectiveness of the program's use of merit review process:

The COV noted that, over the three years reviewed, the dwell time increased. In 2009 and 2010 the dwell time exceeded the 70% criterion (82% and 73%, respectively); however, in 2011 64% of proposers were notified of a decision within 6 months. Given the small number of proposals, the slow dwell time was associated with a couple of projects. The COV recommends monitoring dwell time and identifying mechanisms to meet or exceed consistently the 70% criterion.

Recommendation: The COV would like to ensure that NSF is monitoring the impact of funding cuts and resource limitations on merit review processes. There is significant value associated with site visits and reverse site visits and the COV recommends that they be continued.

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>The COV was impressed with the expertise of the reviewers for the GSE program, as judged by the research records of the panelists and the quality of their reviews.</p> <p>Reviewers from small colleges and large universities participated, as did panelists from all geographic sectors. Out of 85 panelists during 2009-2011, however, there was only one reviewer from a community college and two from four-year colleges. Community colleges are an underutilized pathway for women and minority males to pursue STEM education and careers.</p> <p>The data provided do not allow a precise evaluation of the representation of minority-serving institutions. However, the COV noticed the participation of minority reviewers. Reviewers from HBCU's participated but the numbers from Hispanic-Serving Institutions were noticeably low.</p> <p>The COV recognizes that efforts to increase the diverse pool of reviewers remain a challenge for many programs. This is especially true in the case of GSE where the number of reviewers, the size of panels and the research community are considerably smaller than in other programs. However, the selection of reviewers is one of the most important ways to nurture future PIs and increase researchers' efforts to focus on gender in STEM. The COV notes that in the 2009-2011 time period, 36% of awards included underrepresented ethnic groups as PIs or co-PIs.</p> <p>Recommendation: The COV recommends that for the next competitions NSF actively develop and continually expand a pool of potential reviewers with expertise in gender and STEM from a broad range of groups and types of institutions including community colleges, four-year institutions, MSIs and underrepresented minorities. The call for reviewers issued by other programs at NSF provides a useful model.</p> <p>Recommendation: As the GSE program becomes part of the new REAL program and a greater emphasis on intersectionality is incorporated, NSF should be careful to protect the focus on gender in STEM.</p>	<p>YES</p>

<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p> <p>The procedures used for identifying conflicts of interest (COIs) and resolving them are appropriate. The review analysis includes information about COIs.</p>	<p>YES</p>

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

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments:

The solicitations and management plans are well crafted and reflect attention to emerging issues and responsiveness to community input. Replacing the preliminary proposals with letters of intent in FY 2009 has helped to streamline the review process and allocate program funds to other purposes.

Both panel reviews and mail reviews were used in the proposal evaluation process. It is not clear from the documentation in jackets or reports under which conditions mail reviews were requested (in 2010 there were 23 mail reviews) and how the mail method compared to the panel reviews in terms of consensus or decisions.

Webinars are an effective way to do outreach and provide information to potential investigators. Webinars and podcasts could be expanded to reach larger audiences.

A number of awards have been co-funded with other programs such as EPSCoR. The COV considers co-funding to be an appropriate way to encourage collaboration and stretch program funds and may provide ideas for managing cross-sectional projects in the REAL program.

The use of Highlights works well for informing the public about GSE-funded projects, particularly when promising results are the focus of the brief. Making yearly summaries available along with the abstract of the funded project might be another viable option for the dissemination of program outcomes. The COV believes that updates of projects, available electronically, could be more useful to the research and practice community than an historical compendium of awards such as *New Formulas*.

Recommendation: Both the Site Visits and the Reverse Site Visit reports include useful information for new PIs in regard to best practices and lessons learned. The COV recommends the dissemination of selected findings from these reports. The investment in site and reverse site visits is substantial and the COV recommends finding ways to expand the impact of these investments beyond a particular project. For example, at the annual meeting a panel of PIs and/or site visitors could discuss lessons learned that might be useful to other researchers

The GSE program is relatively small compared to other programs in EHR and NSF. Nevertheless, managing the entire cycle of merit review and documentation, communicating with grantees and potential proposers, representing the program within and outside of NSF, and growing the gender in STEM research community is a large load for only one program officer. The GSE program officer is now assigned to two other programs as well, and the development and execution of the REAL program will in all likelihood increase workload and challenges.

The COV is concerned about the current level of staffing to handle the increasing demands of the evolving program. The matter is especially critical at this point since mergers create the hope that more people will be available to handle the load when, in fact, staff end up being stretched still further. The current staffing level adds to the vulnerability of the gender program as it becomes part of REAL.

Recommendation: The COV reiterates the recommendation of the previous COV that NSF fund a rotator position and additional support staff to assist the program officers in managing the program and increasing outreach.

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

Comments:

GSE has responded to emerging research and education opportunities as shown by its project areas, which reflect gender issues in STEM. The program solicitations are well documented and refer to relevant current literature.

The program has made commendable progress in broadening the research portfolio, which includes expanding the concept of gender to include minority males. The “gender gap” in STEM needs to be examined continuously and the progress in the REAL program on eliminating or decreasing the gap evaluated to ensure that participation in all fields of STEM are being addressed effectively.

Recommendation: This is the time for the GSE program to develop a strategic plan that situates the gender portfolio within the new REAL program. Attention should be given to further strengthening the portfolio of gender-related research and projects, encouraging the translation of research to gender equitable practices, expanding the community of gender scholars, and maintaining GSE’s leadership role within NSF with regard to gender research.

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

Comments:

The COV commends the GSE program for continuing to strengthen the research portfolio. It is very evident that the emphasis on high quality research has resulted in an impressive body of research and innovations.

Inviting a study of the lessons learned from the Diffusion and Extension track is an effective way to evaluate and direct future activities in this area.

The COV believes that the funding of workshop proposals, such as the Minority Male Colloquy, is a fruitful way to engage the community in considering new directions for the program and opportunities for researchers and grantees.

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

Comments:

The COV realizes that recommendations fall into two categories: those under the control of GSE and those under the broader control of NSF. Many recommendations, especially related to funding, will have to be addressed by the greater community at NSF.

Several concerns stated in previous COV reports still remain as issues and are repeated in this report. The COV suggests that GSE propose specific actions that will be put into place in order to address COV suggestions or concerns.

The last COV recommended planning an evaluation of the results of projects. The program response indicates that a contract was issued for a formal evaluation to be completed by FY2014. The COV suggests that, if possible, an interim report is submitted or the timeline be accelerated so that the findings can be incorporated in the planning for REAL.

IV. Portfolio Review. Please provide comments on whether the program's portfolio goals are appropriate and whether the program has achieved its goals for portfolio balance.

The portfolio goals of the program include the funding of research proposals associated with gender-based differences in learning, barriers to interest, and performance and the creation of equitable learning environments. The portfolio goals also include the funding of proposals involving the diffusion of research-based innovations and those involving extensions within a region or a community. The GSE highlighted projects reflect a balanced portfolio with respect to research and educational practice. The inclusion of projects involving creative utilization of computer technology strengthens the portfolio.

The COV encourages the GSE program to continue the involvement of community colleges through reviewers, direct awards and institutional partnership awards. While the COV sees community colleges as a key piece of the STEM pipeline for many students and an under developed area for program innovation, continued efforts are needed that encourage traditional colleges and universities to increase their respective underrepresented group participation. The results of a funded GSE project demonstrate the effectiveness of proactive recruitment of women into community college technology programs.

The COV encourages NSF to continue to fund projects that involve females, underrepresented minority groups and prioritize outreach to underrepresented institutions.

Making GSE, RDE, and REESE REAL

The major agency wide issue facing GSE is its merger with REESE and RDE. The challenge will be to combine the programs in a fashion that builds on the strengths and accomplishments of each while minimizing the liabilities they may have faced while operating separately. A unified and collaborative approach will yield proposals and ultimately funded programs that will intersect traditional concerns from the past with innovative and comprehensive approaches. The merger brings the opportunity to expand program priorities and to fund research efforts addressing multiple STEM pipeline issues.

The COV discussed the planned merger at length and offers several recommendations as follows:

Recommendation: Address gender research in terms of intellectual merit and identify it as a distinctive research area to be retained and nurtured within the current and developing communities of gender researchers.

Recommendation: Care should be taken by REAL to ensure that reviewers of gender proposals have the appropriate expertise. The COV recommends continuing the use of separate gender panels.

Recommendation: Retain gender research as a top priority within the REAL solicitation and program. The COV would like to ensure that GSE's portfolio is highlighted in a way that makes gender research distinctive within REAL.

Recommendation: Retain GSE's overarching goal "to support efforts to understand and address gender-based differences in STEM education and workforce participation ... that will lead to a larger

and more diverse domestic science and engineering workforce,” as stated in GSE’s program solicitations.

Recommendation: The funding of gender research and future solicitations and management plans should expand explicitly beyond the K-16 focus to encompass all educational and career paths and transitions, including graduate education, post-doctoral study and STEM careers. The COV supports the continued emphasis on transitions.

Recommendation: Continue to fund basic research while also supporting diffusion of research-based innovations and extension services in education.

Recommendation: Identify specific mechanisms to ensure continued and more collaborative efforts from the old respective programs.

Recommendation: The GSE Highlights are a rich source of information about funded programs. This information should not be lost within the REAL program.

OTHER TOPICS

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

It is important that the previous accomplishments of GSE funded projects be communicated to a broader community in order to influence future research and to encourage the translation and application of research findings to educational practice throughout the educational and career continuum.

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.

This program has done a great deal with limited resources and staff. Program staff are to be commended for their efforts to fund and support a very diverse portfolio of projects.

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

The COV finds that a greater investment in building a community of scholars around gender research could have substantial benefits in strengthening the quality of research, attracting young professionals, and shaping the portfolio of projects that focus on gender and intersectionality. Opportunities should be provided to include PIs from the ADVANCE, REESE, and SBE programs, for example, in annual meetings and forums.

Recommendation: NSF should provide opportunities for PIs who work on gender and STEM, regardless of funding source within NSF, to discuss their work and shared challenges.

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

Based on the NSF stated mission related to STEM, it will be important to not only advance the research base but also to develop specific strategies that will transform practice in the field. A good example is the COV recommendation to integrate community colleges more directly. The creation of effective partnerships between this group, four-year STEM institutions and MSIs will significantly transform the size and diversity of the pool of students available to enter the STEM pipeline and actually end up in STEM careers.

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

The COV discussed the need for materials to be available for their review well in advance of the meeting dates. The organization of data and background material that was provided in electronic folders at the meeting should be made available in advance, in contrast to a listing of individual documents. Additionally, technology allows providing COVs with hyperlinks to materials that are useful for particular questions on the template.

It would be valuable to have a uniform set of guidelines, processes, and expectations distributed to COVs in advance of meetings. As one example, it seems most efficient to have visitors review jackets prior to meeting. Additionally, certain documents (e.g., the previous COV report and program responses and updates) are critical in getting oriented and should be marked for priority attention. Distributing a set of best practices and lessons learned would allow more time for the COVs to address the substantive issues that require group discussion. The COV found that some questions on the template covered similar ground.

Recommendation: Provide standard material, organized in folders, for the COV members to review well in advance of the on-site meeting.

SIGNATURE BLOCK:

Bianca L. Bernstein

For the Research on Gender in Science & Engineering COV
Bianca L. Bernstein
Chair