

**FY 2014 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

Date of COV: September 22–23, 2014
Program/Cluster/Section: ADVANCE
Division: Human Resource Development (HRD)
Directorate: Education and Human Resources (EHR)
Number of actions reviewed: 110 Awards: 17 Declinations: 73 Other: Supplements: 4 (supplemental funding for existing awards) Increments: 14 (annual disbursements on Cooperative Agreement awards) Forward-Fund Actions: 2 (early payoff of commitments from the next fiscal year)
Total number of actions within Program during period under review: 335 Awards: 47 Declinations: 201 Other: Supplements: 26 Increments: 50 Forward-Fund Actions: 2 Withdrawn: 6 Returned: 3
Manner in which reviewed actions were selected: The COV Chair was asked to select three numbers between 0 and 9. She selected 0, 7, and 8. All eJackets with proposal numbers that ended in these digits were uploaded into the eJacket COV Module. This sample includes 110 jackets out of the 335 total created for FY2011–FY2013. Program staff confirmed that the sample adequately represents the portfolio (each proposal track, awards, declinations, other funding requests, etc.). Some of the proposals ending in 0, 7, or 8 are components of collaborative proposals. In those cases, all collaborators' proposals are also included in the sample, regardless of the ending digit.

COV Membership

	Name	Affiliation
COV Chair:	Suzanne Ortega	Council of Graduate Schools
COV Members:	Suzanne Brainard	Center for Workforce Development University of Washington
	Molly Carnes	Center for Women's Health Research University of Wisconsin
	Sophia Perdikaris	Dept. of Anthropology and Archaeology CUNY Brooklyn College
	Darryll Pines	Clark School of Engineering University of Maryland

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(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.

I. 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) appropriate?</p> <p>Comments:</p> <p>The program's use of panel and ad-hoc reviews are appropriate. Panel reviews are the primary method for evaluating proposals submitted in accordance with the ADVANCE program solicitation. The program office coordinates ad-hoc reviews on an as-needed basis, typically as a mechanism to ensure the timely review of unsolicited proposals or to resolve a split vote.</p> <p>Data Source: COV Module, eJackets In COV Module, Documents, see also: File: III.A. ADVANCE Proposals Received 2011-13.xlsx</p>	YES
<p>2. Are both merit review criteria addressed...</p> <p style="margin-left: 40px;">a) In individual reviews? YES</p> <p style="margin-left: 40px;">b) In panel summaries? YES</p> <p style="margin-left: 40px;">c) In Program Officer review analyses? YES</p> <p>Comments:</p> <p>The COV examined jackets, awards and declines. The ADVANCE panel review process substantively and effectively addressed both intellectual merit and</p>	YES

Section I: Merit Review Process

<p>broader impacts criteria across individual reviews, panel summaries, and Program Officer (PO) review analyses.</p> <p>With regard to individual reviews, the COV noted that some reviewers had a better understanding of intellectual merit than broader impacts. This resulted in some unevenness in the commentary. While both criteria were addressed in every case, some reviews were more thorough and clearly documented the strengths and weaknesses of proposals, while others lacked substance and detail.</p> <p>Panel summaries addressed both criteria and included a summary section as well as information from individual reviews. In some cases, the broader impacts were discussed more substantively in panel summaries than in individual reviews.</p> <p>Program Officer (PO) review analyses were sound, focused on both merit criteria, accurately represented panel discussions and included supplementary material as needed from NSF staff and other sources.</p> <p>Data Source: COV Module, eJackets Additional files in COV Module, Documents: File: III.C.1.a. 2012 ADVANCE IT Panelist Orientation webinar File: III.C.2.a. PAID sample Review E-mail - instructions to panelists File: III.C.3.a. 2012 ADVANCE IT panel Review Template File: III.C.4.a. 2012 ADVANCE ITC Panelist Orientation – onsite Additional examples of orientation/instructions available upon request.</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>Guidance to panelists during orientation to the ADVANCE program and the NSF review process helps ensure substantive proposal reviews that reflect an understanding of program goals and explain the basis for funding recommendations. While review styles ranged from the succinct to the elaborate, the majority of reviewers provided comprehensive, relevant comments that were generally consistent with their individual ratings. In some instances, comments from individual reviewers were non-specific and very brief compared to the panel summaries and PO review analyses, especially in regard to broader impacts.</p> <p>The COV noted that when proposals lacked a strong project management plan and timeline including milestones, reviewers offered very little constructive criticism or specific guidance on how to improve that component of the proposal. Comprehensive feedback to new investigators—especially where declines are concerned—is critical.</p> <p>Data Source: COV Module, eJackets</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>Comments:</p> <p>The COV was impressed with the quality and thoroughness of the panel summaries and PO review analyses. The panel summaries—both in discussion of merit criteria and in summary statements—were positive and constructive; outlined the strengths and weaknesses of the proposals; and provided sufficient information for understanding the rationale for consensus. This was true for both awards and declinations.</p> <p>Data Source: COV Module, eJackets</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 the jacket usually includes a context statement, individual reviews, panel summary (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments:</p> <p>The eJackets contained appropriate and substantial documentation to support award and decline decisions. PO rationales were clearly stated and generally consistent with reviews and panel summaries. Follow-up correspondence (including staff diary notes) with Principal Investigators (PIs) to address concerns or clarify issues related to various aspects of the project (e.g., goals, budgets, resources, etc.) reflected thoughtful due diligence by program office staff.</p> <p>Data Source: COV Module, eJackets</p>	<p>YES</p>
<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), 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>Differences between competitive and non-competitive proposals for the period under review were sometimes minor ones. While the documentation provided to PIs conveyed the rationale for both “recommended for award” and “declined for funding” decisions, feedback was occasionally inconsistent in scope and level of detail. This occurred more frequently with declinations.</p> <p>The COV recommends that reviewers provide specific guidance to PIs who submit weak proposals that are declined as well as investigators whose proposals are highly rated, yet fall short of being funded. Constructive, detailed feedback is particularly valuable to first-time PIs and individuals from non-research intensive institutions. For example, if an ADVANCE-IT proposal lacks or doesn’t sufficiently address the comprehensive internal and external project evaluation plan required of all funded projects, this deficiency should be clearly spelled out to the would-be PI. A checklist or set of frequently asked questions (FAQs) that offers PIs “how to” proposal development advice and common pitfalls to avoid might also be helpful.</p> <p>Data Source: COV Module, eJackets</p>	<p>YES</p>

Section I: Merit Review Process

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

The merit review process is effective and provides appropriate and useful feedback to PIs, especially those whose proposals are recommended for award. A pre-panel orientation to the ADVANCE program and the NSF review process via webinar, how-to instructions and a reviewer template for IT, ITC and PAID panelists were among the strategies and tools used by the program office to streamline the overall process and help ensure quality feedback from panelists to prospective PIs. The COV commends the ADVANCE program's commitment to continual improvement.

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.

<p>II. SELECTION OF REVIEWERS</p>	<p>YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments:</p> <p>The COV acknowledges the program’s efforts to increase diversity while balancing the need for panelists motivated and knowledgeable about gender equity in the academic STEM disciplines. The ADVANCE peer review panels examined by the COV were comprised of individuals with diverse backgrounds, disciplinary expertise and requisite experience to evaluate the assigned proposals. Program staff indicated that at least 50% of ADVANCE panels are made up of reviewers with prior panel experience.</p> <p>Reviewers represented a mix of disciplines covering a range of STEM and non-STEM fields. SBE disciplines (including sociology, psychology, anthropology, geography and political science) comprised 38% of panel reviewers from FY2011-2013. Another 27% came from science and mathematics (bioscience, geoscience, chemistry, and computer science), 15% were engineers (electrical, computer, mechanical and civil) and 10% represented some field of education, including educational administration. The remaining 11 percent of panelists included non-STEM fields such as women’s studies, liberal arts, special education, international development, etc.</p> <p>Over the same period, 47% of reviewers were faculty, 45% administrators, 7% came from private enterprise and there was one post-doc participant.</p> <p>While the proportion of male reviewers increased from a three-year average of 20% between FY2008-2010 to 29% between FY2011-2013, males continue to be underrepresented on ADVANCE panels. Is this an issue unique to ADVANCE or are males underrepresented in panels associated with other NSF programs?</p> <p>The Committee agrees with the previous COV’s recommendation that the program aim to increase gender diversity by targeting and encouraging male faculty, department leaders, and mid- and senior-level institutional administrators to participate in or chair review panels. The COV strongly believes that the greater the exposure to and participation in ADVANCE program activities, the more likely reviewers are to become advocates back on their home turf. The value of buy-in at the grass-roots level and across a broad spectrum of STEM</p>	<p>YES</p>

<p>faculty, administrators, and leaders can't be underestimated.</p> <p>When examining reviewers by geographic location, the COV noted the absence of reviewers from 13 states—Alabama, Delaware, Idaho, Iowa, Kentucky, Louisiana, Montana, Rhode Island, South Carolina, South Dakota, Utah and Wyoming. The West, along with Alaska, Hawaii, and Puerto Rico, was also underrepresented in the reviewer pool between FY2011-2013.</p> <p>Expanding the geographic representation of reviewers would likely result in a broader geographic representation of submitted and successful proposals. People who review often get interested in the program and either submit a proposal or serve as a catalyst for a submission on their home campus. The COV recommends that the ADVANCE program continue its efforts to expand the geographic representation of reviewers. Skype, video and conference calls and regional panel review sites are just a few of the strategies to consider when reaching out to participants at a distance.</p> <p>In looking at the type of institutions that panelists represented over the same three-year period, 78% came from research universities with high (32%) or very high (46%) levels of research activities. Another 4% of reviewers came from doctoral research universities and 4% from master's universities. A substantial number of community college STEM faculty come from institutions that are not research intensive. Reviewers representing this constituency combined with public/rural serving large universities comprised just 9% of ADVANCE panels. The COV suggests the program engage more panelists from non-research intensive institutions, including community colleges. Greater participation in peer review panels could lead to an increase in new investigators from community colleges and non-research heavy institutions.</p> <p>Prioritizing the expansion of the reviewer pool is strongly encouraged. While the program currently obtains nominations from ADVANCE Implementation Committee (AIC) members, more can be done. Ask current and/or past panelists to nominate potential reviewers. Create mentorship opportunities by inviting early-career STEM faculty to participate in review panels and develop skills. This approach could also serve as a mechanism to cultivate the next generation of investigators. Current PIs could also be asked to identify like-minded individuals to serve on panels.</p> <p>The new ADVANCE solicitation includes a change that shifts a project's external evaluation to impact evaluation rather than output evaluation. Accordingly, it would be extremely valuable for future review panels to include at least one individual with the expertise to focus on the evaluation components of proposal submissions.</p> <p>To formalize and streamline the process of managing a larger pool of past and prospective reviewers, the COV highly recommends the creation of an ADVANCE reviewer database. This central clearinghouse would include contact information, professional details, disciplinary expertise, relevant qualifications and skills, along with previous panel history (ADVANCE and/or other NSF programs). The COV also suggests that the program implement a systematic, yet simple post-panel debriefing process to assess and document the quality of reviews and include the results in the database.</p>	
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<p>Data Source: COV Module, Documents: File: IV.A. List of Panelists, 2011-13.xlsx File: IV.B. ADVANCE Panelists by Gender - figures.docx File: IV.C. Panelist States (Map).pptx File: IV.D. Panelist States (Table).pptx File: IV.E. Panelists by Institutions Type Pie Chart.pptx File: IV.F. Panelists by Institution Type (Table).pptx</p>	
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p> <p>The procedures for identifying and resolving conflicts of interest (COI) related to the ADVANCE program followed NSF-established criteria and protocols and were easy to understand. All COI cases reviewed by the COV were appropriately resolved and documented. The COV noted one case in which a panelist had conflicts with five out of 12 proposals under review. This raised the question of why the individual was assigned to or allowed to remain on the panel when recusal from the entire panel may have been more appropriate under the circumstances.</p> <p>Data Source: eJackets (the Review Analysis for each declination and award indicates whether there was a conflict of interest and how it was resolved)</p> <p>Additional Information: COV Module, Documents: File: IV.G.1. Conflicts of Interest procedures.docx File: IV.G.3. 2011 PAID-Research Panel Assignments COIs.pdf</p> <p>Additional Files Available Upon Request: File: G.2. NSF Form 1230 COI.pdf File: G.4. 2011-PAID-Dissemination Panel Assignments COIs.pdf File: G.5. 2011 PAID-Adaptation Panel Assignments COIs.pdf File: G.6. 2012 IT Panel Assignments COIs.pdf File: G.7. 2012 ITC Panel Assignments COIs.pdf File: G.8. 2013 PAID-Adapt-Diss Panel Assignments COIs.pdf File: G.9. 2013 PAID-Research Panel Assignments COIs.pdf</p>	<p>YES</p>
<p>3. Additional comments on reviewer selection:</p> <p>The COV believes that participation on a review panel is an important part of the professional development process. Panels can also foster mentoring relationships between and among participants that can extend beyond the confines of the review. The quality of the merit review process is only as good as the quality of the reviews and the diversity of the institutions and people that represent them.</p>	

III. Questions concerning the management of the program under review.

Please comment on the following:

III. MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments:

The COV commends the ADVANCE program for its effective and efficient management practices, a well-conceived and detailed management plan, and the high-degree of professionalism exhibited across all phases of the award process. In addition, the Committee recognizes program staff's commitment to making continual improvements to ADVANCE in the three years since the previous COV. Especially noteworthy are a number of actions that support and enhance the panel review process, strategies to increase panel diversity, and stepped up outreach efforts to diversify the portfolio. In FY2013, the program office conducted a portfolio analysis to assess the outcomes and impacts of the ADVANCE Institutional Transformation (IT) track. The Committee also noted changes to the new solicitation that focus a project's external evaluation on impact evaluation rather than output evaluation; increased emphasis regarding the eligibility of professional societies for PAID (now Partners for Learning and Adaptations [PLAN] in new solicitation) award funding, and targeted interest in "special populations of women."

Program goals and objectives align with the NSF strategic plan and with the President's objectives to significantly increase the STEM workforce by broadening the participation of underrepresented groups and exposing more girls and young women to STEM fields. ADVANCE's agency-wide mission and complicated budget, which often seems to require program officers to lobby NSF directorates for funding, put enormous demands on the staff. In addition to program administration and management responsibilities, program officers also coordinate monthly ADVANCE Implementation Committee (AIC) meetings, negotiate complex funding streams, review and respond to quarterly reports from ADVANCE-IT PIs, and organize and execute first- and third-year site reviews.

The considerable workload associated with managing the program requires a dedicated "permanent" NSF employee and at least one rotator. Rotators bring from their campuses and associations deep scientific knowledge that is invaluable to the current and future success of the ADVANCE program. To maximize a rotator's on-the-job effectiveness, it is imperative that the permanent NSF staff member acts as a guide to help the individual acclimate to the organization, and to learn how to work within the confines of the culture and how to get things done. The Committee has serious concerns that program consistency and continuity would be jeopardized and a seamless transition difficult to achieve if turnover among permanent staff and/or rotators took place at the same time. It takes time to get to know the face(s) of the program and develop relationships within the NSF and across the ADVANCE community.

Opportunities to strengthen and improve management practices within the program remain. One area of concern is the current NSF-wide distributed budget model in which directorates and offices are responsible for allocating monies to fund the ADVANCE program. This approach makes strategic, multiyear planning a real challenge. Some directorates make funding decisions at the

director level, while others make them at the division level. While the COV understands and appreciates the value of striving to deeply engage directorates and offices in the success of the program by “having skin in the game,” we strongly recommend a transition from the current model to a more centralized one. A centralized budget would better facilitate long-term planning, make the budget more transparent and predictable, cut down on bureaucratic red tape/politics and reduce uncertainty about funding from one cycle to the next. It would also free up valuable staff time that could be redirected toward other program activities.

The COV acknowledges there is a potential to lose agency buy-in when shifting from a decentralized to a centralized budget. Consequently, it would be important for ADVANCE staff to maintain and expand efforts to engage other directorate program officers and senior level staff. We also recommend the addition of quarterly meetings with Assistant Directors (ADs) and/or Deputy Assistant Directors (DADs).

Data Source: COV Module, Documents:

File: V.A.1. Management Plan 2011-12.pdf

File: V.A.2. Management Plan 2013-14.pdf

See also Solicitations, Files: II.C.1., II.C.2., and II.C.3

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

Comments:

The ADVANCE program is aligned with critical NSF priorities and the national need to increase the size and diversity of the STEM workforce. It contributes to the growing body of social science literature on gender equity and the advancement of women in science, technology, engineering, and mathematics. Conceptual models of institutional climate and career progression have become increasingly sophisticated and the social science methodologies used to test them are much more robust now than in the beginning years of the program.

In our review of the program portfolio, the COV did not find any projects that directly addressed the major changes in pedagogies currently sweeping higher education, including active and problem-based learning, competency-based approaches to curriculum development, analytics, and personalized learning. To the extent that pedagogical innovation and recognition for excellence in teaching and learning are part and parcel of the advancement of women in the sciences as well as a strategy for keeping them engaged in the field, this would seem to be an area to encourage in future proposals.

During its assessment of ADVANCE’s responsiveness to emerging research, the COV noted that while the program increased its emphasis on project evaluation, the majority of projects do not yet capitalize on recent innovations in evaluation methodologies. The COV strongly recommends that the program find ways to encourage PIs to submit proposals with a primary focus on innovative strategies and methodologies in project impact evaluation including best practices, scaling analysis, and learning what works, why, in what context, and for what populations.

The COV also encourages the program to obtain input from non-academic stakeholders to help identify other emerging areas of research and educational interest that could strengthen and diversify the program portfolio.

Data Source: COV Module, Documents:

Solicitations, Files: II.C.1., II.C.2., and II.C.3
File: V.A.1. Management Plan 2011-12.pdf
File: V.A.2. Management Plan 2013-14.pdf
File: V.B. Responsiveness of Program to Emerging RnE Opps.pdf

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

Comments:

Program staff use a variety of internal and external mechanisms to help shape the development of the portfolio. The ADVANCE program receives internal guidance from AIC members (including representatives from NSF research directorates) about directions and needs of women in the field, particularly from their respective disciplines. The AIC also provides critical advice and feedback on award portfolio recommendations and changes to the solicitation and management plan. The needs of the community are also discussed in Division of Human Resource Development (HRD) staff meetings and through an internal program office review that includes discussions with PIs and review of interim, annual, and final reports.

The future direction of the ADVANCE portfolio is also shaped by a number of external mechanisms. Most notably, the annual PI meeting serves as a vehicle to disseminate information about the program and an opportunity to solicit feedback about the portfolio. The 2013 PI meeting included a town hall where members of the community discussed the future of ADVANCE with an emphasis on priorities. Program office staff also attends a wide range of meetings and conferences as part of an outreach effort to communicate about the ADVANCE program and to meet with potential investigators across targeted communities that include professional societies, disciplinary associations, women's colleges, and minority-serving institutions (MSIs).

The ADVANCE program staff's efforts to solicit advice and feedback about the portfolio from a variety of sources is commendable. Nevertheless, how this input is specifically used to establish funding priorities is unclear to the Committee. It would be beneficial for the NSF to provide more clarity on this as well as how and to what extent the program's distributed budget impacts the planning and prioritization process.

Data Source: COV Module, Documents:
File: V.C. Program Planning and Prioritization Process.docx

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

Comments:

The COV reviewed the original ADVANCE Program Response to the 2011 Committee of Visitors Report (2011) and the 2014 Update. Program staff responded thoroughly and thoughtfully to previous suggestions and the Committee noted that a number of recommendations (e.g., pre-panel webinar/reviewer template, inclusion of supplementary material requested by PO in e-Jacket, increased proportion of male reviewers, expanded outreach efforts, etc.) have been implemented or are currently in the works.

In a few instances, program staff implemented a new process or procedure and then later reversed

or changed course. For example, in FY2013, the program replaced the more common three-level rating system used for panel recommendations (non-competitive, competitive, and highly competitive) with a new five-level rating system (non-competitive, low-competitive, competitive, competitive plus, highly competitive). During our review, the COV questioned the rationale for the new rating system and wondered how it correlated to funding decisions. We support the ADVANCE program office's decision as stated in the 2014 update to go back to the three-level system after the five levels proved to be more complicated than necessary.

While acknowledging the program's responsiveness to the previous COV's recommendations, the lack of progress with regard to completing a comprehensive evaluation of ADVANCE program impact is a major concern. Evaluations conducted by two outside firms hired by the NSF in 2008—the Urban Institute and Westat—focused on whether or not PIs conducted the projects as proposed and on likely institutional changes rather than a qualitative and quantitative analysis that identified broad-based programmatic impact. Funding issues also prevented case studies from being developed and the NSF subsequently decided not to publicly release the preliminary findings.

Changing organizational climate and creating a sustainable model of change are among the key goals of the ADVANCE program. A deep understanding of which policies, programs, and practices are driving positive change is a MUST to ensure that lessons learned are applicable and scalable to the entire educational ecosystem. To achieve this objective, a sophisticated program impact evaluation across the entire enterprise is necessary. Such an evaluation requires an empirical demonstration—both qualitative and quantitative—of the utility of various aspects of the overall program portfolio. Program elements should be tested against established design criteria. Findings should be widely disseminated as a way of scaling and advocating for the program, securing new sources of funding, and establishing best practices. The COV fully concurs with the strong recommendations made by past COVs (2008 and 2011) and urges the ADVANCE program to prioritize the timely undertaking of an enterprise-wide program impact evaluation.

Data Source: COV Module, Documents:

File: V.D. ADVANCE_COV--June_2011--EHR_Response Follow-Up 2014.docx

IV. The Portfolio

IV. Questions about Portfolio.

The background materials provide basic data describing the awards made in the ADVANCE program’s IT, IT-Catalyst, and PAID tracks, as well as a detailed draft analysis of the IT track awards over time. *In addressing Questions 1-4 below, please focus on the draft report on the IT portfolio of awards, “ADVANCE Institutional Transformation: Diverse Approaches to Achieve Gender Equity and Institutional Transformation” (referred to as “IT Portfolio Analysis” below).*

Note from Program Staff:

The ADVANCE program’s portfolio goals over the past few years have been to move the portfolio, in general, into new institutional and programmatic areas, specifically to:

- (1) expand the representation of minority-serving institutions in the portfolio;
- (2) move into new topical areas that have not previously been covered in the portfolio but are critically important to both institutional transformation and the advancement of women faculty in academic STEM, including issues related to women faculty of color, persistence of women in the academic workforce, and inclusion of contingent STEM faculty in ADVANCE goals; and
- (3) focus more on NSF-wide goals including an initiative on work-life balance and expanding international activities.

IV. RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the portfolio of IT awards appropriately reflect the features that have been emphasized in ADVANCE solicitations and other (supplied) relevant policy documents?</p> <p>ADVANCE IT award recipients implement a diverse set of initiatives to promote gender equity in academic STEM at their institutions. These activities fall into three major themes that appropriately reflect the features highlighted in program solicitations and other relevant policy documents:</p> <p>(1) Initiatives focused on advancing the scientific careers of women—faculty professional development and networking, mentoring and leadership development, activities focused on women STEM faculty from underrepresented groups.</p> <p>(2) Initiatives focused on changing institutional policies and procedures—hiring and recruitment, promotion and tenure, career-life balance initiatives.</p> <p>(3) Initiatives focused on measuring and changing departmental culture and institutional climate—department and institutional level initiatives, institutional climate change surveys.</p> <p>With respect to projects that implement initiatives to support and advance women STEM faculty from underrepresented groups, the ADVANCE IT track progressed from having 11% (n=1 out of 9) of the institutions in the first cohort implementing activities targeted to STEM women faculty from</p>	<p>APPROPRIATE</p>

IV. The Portfolio

<p>underrepresented groups to 100% of the institutions (n= 4 out of 4) in the last cohort. In the current portfolio of ADVANCE IT awardees (n=29), 52% of the institutions are targeting women in underrepresented groups.</p> <p>Programmatic guidance reflected in ADVANCE solicitations is somewhat responsible for this change. Passive encouragement has been replaced with a particular interest of the program in this topic such as “ADVANCE is particularly interested in projects that include a focus on underrepresented minority women.” The latest solicitation is even more specific: “Special populations of women, for the purposes of the ADVANCE Program, includes women of diverse characteristics and backgrounds including, but not limited to: race, ethnicity, disability status and sexual orientation.”</p> <p>The COV suggests that the program focus more attention on aspects of institutional transformation that are harder to achieve, including projects linking institutional policies and procedures to changes in departmental culture. The majority of new policies focus on work-life balance, an area that disproportionately affects women, but also benefits a larger population at the university. A COV member shared that male employees at his university use work-life balance policies more often than female employees. This illustrates an important barrier to long-term success: if you don’t fundamentally change culture and climate at the unit level, then you won’t achieve intended goals despite new policies and procedures.</p> <p>Leadership change is another potential challenge to institutionalizing the ADVANCE program. This requires an ongoing commitment to develop and implement strategies that ensure continuity even when there is a change in university leadership.</p> <p>The COV found only one funded project with an international component in the ADVANCE portfolio, despite the program’s stated commitment to be a world leader in promoting gender equity in the STEM disciplines. If this is indeed a priority for the program, then future ADVANCE program solicitations should do more to encourage proposals with international components. Identifying the obstacles to expanding international activities and taking steps to mitigate them is also recommended.</p> <p>Data Source: COV Module, Documents: File: VI.A.1. IT Portfolio Analysis - NSF Publication_Draft_140829_COV.pdf File: VI.A.2. IT Portfolio Analysis - NSF Publication_Draft_140829_Figures.pdf</p>	
<p>2. Does the portfolio of IT awards contain an appropriate balance of institution types, investigator expertise, and geographic coverage?</p> <p>Since the program started in 2001, ADVANCE IT awardees have been largely research-intensive universities (85%), with representation from other types of institutions as follows: doctoral research universities (3%), master’s universities (10%), and baccalaureate colleges (2%). A large proportion are</p>	<p>APPROPRIATE</p>

IV. The Portfolio

<p>land grant institutions (45% of the total), which are currently mostly large public universities. IT awards have gone to a more diverse set of institutions over time. Approximately 17% of ADVANCE IT awardees are minority-serving institutions (MSIs) including Historically Black Colleges and Universities (HBCUs) and Hispanic-Serving Institutions (HSIs). The COV noted there has been a steady increase in the proportion of IT awards to MSIs over the last three cohorts. In fact, 50% of the institutions in the last cohort were classified as MSIs. There was also an increase in awards to institutions with lower levels of research activity.</p> <p>With regard to investigator expertise, ADVANCE IT PIs and Co-PI teams are multidisciplinary and have different backgrounds and experiences. PIs and Co-PIs represent a range of STEM disciplines including biological sciences, engineering, math and physical sciences, computer sciences, geological sciences, social, behavioral and economic science, and education as well as non-STEM disciplines such as humanities, business and management.</p> <p>ADVANCE IT PI and Co-PI teams are also diverse with respect to university positions held including: faculty, department chair, dean, president/provost, and central administration (e.g., vice-provosts, assistant and associate provosts, vice presidents, assistant and associate vice presidents and vice chancellors).</p> <p>Similar to what we found with the composition of review panels, the gender composition of PI/Co-PI teams between FY2011-2013 was overwhelmingly female. Seventy-three percent of ADVANCE IT PIs and Co-PIs were female and 27 percent male. Individual teams ranged from no male members to upward of 67% male. While it is the COV's position that increasing the presence of male PIs or Co-PIs in ADVANCE IT projects would be beneficial on many levels—and would certainly provide different perspectives—the draft IT portfolio analysis shared with the COV as part of the review process showed no association between gender composition and institutional changes measured over the term of the grant.</p> <p>ADVANCE IT awardees are located throughout the United States. The majority of institutions are concentrated east of the Mississippi, with smatterings of projects in the Midwest, Northwest, and Southwest. The West as a whole is underrepresented with regard to ADVANCE IT projects.</p> <p>The COV commends the program's efforts to improve the balance of IT awards across institution types—including expanding its outreach to MSIs, investigator expertise, and geographical coverage. There is still more work to be done in each of these areas.</p> <p>Data Source: Same as for Q1.</p>	
<p>3. Does the portfolio of IT awards exhibit the characteristics that are important for achieving the goals of the program? If not, what is missing or what should be strengthened? Would any additional data be useful for making this determination?</p>	<p>APPROPRIATE</p>

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<p>The draft portfolio analysis of the ADVANCE IT track indicates that the program is achieving the primary goals of changing the gender composition of STEM faculty, advancing women STEM faculty, and beginning the process of institutional change. Data from the first four cohorts revealed statistically significant increases in the proportion of women STEM faculty at all ranks at these institutions. This increase is most notable at the full professor rank, a position where women are particularly underrepresented in STEM. A significant proportion of institutions focus on reviewing faculty-related policies and guidelines that can lead to policy recommendations and changes. In fact, data from the first four cohorts of ADVANCE IT awardees show that close to 80% create new policies or start the process of establishing new policies during the grant period. Fifty-nine percent made changes to their organizational structure by creating new positions, new offices, and new institution-wide workgroups aimed at creating more equitable environments for faculty.</p> <p>Data Source: Same as for Q1.</p>	
<p>4. Does the portfolio of IT awards include projects that are innovative or potentially transformative?</p> <p>The COV anticipates that many of the projects undertaken at ADVANCE IT institutions will be transformative over the long term. While the portfolio includes a mix of very strong projects with the potential to have significant effects, the COV would not characterize them as “bold.” Instead, the projects appear to be variations on well-established themes. With the primary focus on responding to current needs, some projects may fail to identify factors that will affect the career success of women in academic STEM careers for generations to come. In fact, the COV sees a variety of issues on the horizon that could challenge the historical ADVANCE model.</p> <p>There is growing evidence that STEM careers are becoming less linear. Women in academic STEM careers are likely to move between and across employment sectors—industry, government labs, nonprofits, and academia—throughout their working lives. The adjunct-professional model is a pathway to the professoriate that is outside the traditional tenure track. For many women, the adjunct role will be a career or will supplement a full-time career.</p> <p>Projects that focus on seamless career transitions and how to remove impediments to them have the potential to be transformative. The COV recognizes that current priorities and funding levels may not support a significant sea change from relatively prescriptive proposal requirements to more open requirements. We are nevertheless convinced that adapting to changing trends in academia is a gateway to innovation and transformation that is too important to ignore.</p> <p>Opening up the requirements in future ADVANCE program solicitations would allow more room for “ground up” innovation in a number of areas including international, interdisciplinary research networks, and student-</p>	<p>APPROPRIATE</p>

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<p>centered active learning-teaching models.</p> <p>Data Source: Same as for Q1.</p>	
<p>5. Comment on whether the program portfolio has appropriate participation of underrepresented groups¹.</p> <p>a) In particular, to what extent has the portfolio expanded to include MSIs since the last COV?</p> <p>Of the 47 new ADVANCE awards given between FY2011-2013, 12 (or 26%) went to Minority-serving institutions (MSIs), while 35 (or 74%) went to non-MSIs. The distribution of new ADVANCE awards among MSIs is as follows:</p> <ul style="list-style-type: none"> • Historically Black Colleges and Universities (HBCUs) = 5 awards • Hispanic Serving Institutions (HSIs) = 6 awards • Pacific Islander/Native American (PI/NA) = 1 award <p>Between FY2008-2010, Historically Black Colleges and Universities (HBCUs) received five awards; Hispanic Serving Institutions (HSIs) two awards and one award went to an Alaska Native Serving Institution (ANSI).</p> <p>2012 represented the most diverse year of funding to MSIs since 2001, while 2013 had a funding pattern similar to 2011. When asked by the COV about the drop in diversity during the recent funding cycle, program staff indicated they had been somewhat unhappy with the quality of proposal submissions in 2013.</p> <p>Given the limitations in funding available to support new projects, the net result was a less diverse portfolio of new projects. The COV is very concerned that the ADVANCE program could lose momentum with respect to institutional diversity and diversity of project PIs if funding continues to remain flat. Therefore it is more critical than ever for ADVANCE program staff to reach out to PIs on proposals that showed considerable promise but did not make the final funding cutoff as well as first-time investigators from non research-intensive institutions and/or those that have not been among NSF's traditional customers (e.g., community colleges, professional societies, other STEM-related, not-for-profit organizations, etc.). Some individuals may not fully appreciate how typical it is for grant proposals not funded on first submission to be revised and resubmitted with subsequent funding success.</p> <p>In addition, while recognizing the program office's stepped-up efforts to reach underrepresented groups including minorities and MSI populations since the last COV, proposal submissions from and awards to these groups continue to be low. Creating a mentoring opportunity that pairs successful,</p>	<p>APPROPRIATE</p>

¹ NSF does not have the legal authority to require principal investigators or reviewers to provide demographic data. Since provision of such data is voluntary, the demographic data available are incomplete. This may make it difficult to answer this question for small programs. However, experience suggests that even with the limited data available, COVs are able to provide a meaningful response to this question for most programs.

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experienced PIs with prospective first-time investigators from underrepresented groups and MSIs merits consideration. Another potential strategy for cultivating new investigators would be to recruit them to serve on ADVANCE review panels. See *Section II: Selection of Reviewers, Q.1* for more details.

b) To what extent does the portfolio include projects with a focus on women of color?

Seven of the 17 awards (41%) reviewed by the COV had themes specific to women/faculty of color. Of the 49 new ADVANCE awards distributed between FY2011-2013, 11 awards or 22% of the portfolio focus on women/faculty of color while another nine (9) awards or 18% of the portfolio are minority-themed. Ten additional awards (20%) focus on African-Americans (3 awards/6%), five awards (10%) on Latinas, and two awards (4%) target underrepresented minorities (URMs).

The COV commends the program for its efforts to include projects with a focus on women/faculty of color and minorities in the ADVANCE portfolio.

Data Source: COV Module, Documents:

File: VI.I. Template Section IV Q5 - MSIs, WOC.docx

In addition, the following files provide information on the IT-Catalyst and PAID track awards for FYs 2011–2013:

File: VI.B.1. ADVANCE Proposals Awarded FY11-13.xlsx

File: VI.B.2. ADVANCE Gender of PI - CoPI.pptx

File: VI.B.3. ADVANCE Underrepresented Groups (as PI or CoPI).pptx

File: VI.C.1. ADVANCE Awarded Proposals by Discipline_graphs.pptx

File: VI.C.2. ADVANCE PIs and CoPIs Discipline - Table.xlsx

File: VI.C.3. ADVANCE Inter and Multi-disciplinary Cofunded Projects.xlsx

File: VI.C.4. Awards by Discipline Theme.docx

File: VI.D. Disciplinary Findings.docx

File: VI.E. Average Award Size and Duration by Track

File: VI.F. ADVANCE Awards by State.pptx

File: VI.G. ADVANCE Awards by MSI status.pptx

File: VI.H. Funding Rates for new PIs all awards 2011-2013.pdf

File: VI.I. Template Section IV Q5 - MSIs, WOC.docx

See also files on NSF Mission, NSF Strategic Plan, etc.:

Files: VI.J.1., VI.J.2., VI.J.3., and VI.J.4.

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<p>6. The document “New Themes in ITC and PAID Awards” outlines several new themes that have appeared in IT-Catalyst and PAID awards during recent years. Are these themes appropriate? Do additional themes need to be explored?</p> <p>Several new themes emerged in IT-Catalyst (ITC) and PAID awards that are not only appropriate, but crucial to the success of the program. The Committee was especially pleased to see projects focused on women in non-tenure-leading positions in the STEM disciplines (e.g. Otterbein College; Stevens Institute of Technology); dual-career hires (Washington State University); and the use of new statistical methodologies to assess culture and climate (e.g. University of Massachusetts Medical School/University of Massachusetts Lowell; Morgan State University).</p> <p>The COV also noted an emphasis on project themes related to women of color across diverse institution types (UC-Davis, University of Texas-Pan American; Ivy Tech Community College of Indiana; University of Southern Mississippi, University of Southern Alabama, Marine Environmental Sciences Consortium; Lafayette College/Cal Polytechnic Institute). It is imperative that the ADVANCE program maintain its focus on expanding program outreach to women faculty of all ethnicities in STEM disciplines at diverse institutions.</p> <p>One possible mechanism for reaching even more diverse institutions and women STEM faculty would be to foster collaborations with tribal colleges and minority-serving institutions (MSIs) in Hawaii, Alaska, and Puerto Rico—all geographical areas with few ADVANCE awards. Funding projects similar to the University of Maryland-Baltimore County and Universidad Metropolitana (mentorship of an institution from Puerto Rico by a prior ADVANCE-IT awardee) would help achieve these objectives.</p> <p>The increased emphasis regarding the eligibility of professional societies for PAID award funding (now Partners for Learning and Adaptation Networks [PLAN] in new solicitation) could also yield new and interesting themes.</p> <p>Data Source: COV Module, Documents: File: VI.K. New Themes, IT-Catalyst and PAID Awards, 2011-2013.docx</p>	<p>APPROPRIATE</p>
<p>7. Additional comments on the balance of the portfolio or the activities undertaken by the funded projects are welcome (with regard to any of the tracks).</p> <p>As discussed earlier in this section with regard to innovation and transformation, the majority of funded projects focus on the traditional academic career trajectory from assistant professor through full professor to administrator. The portfolio does not yet do an adequate job of addressing either the transition from post-doctoral fellow to first academic appointment or the increasingly common career paths that span multiple employment sectors. It is the COV’s position that if the ADVANCE program is going to help prepare women for the careers they will have in the future and not just</p>	

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careers as they are currently conceived and measured, then it will need to actively seek proposals and begin to fund projects that work in this space.

Finally, with respect to the portfolio as a whole and geographic coverage, Arkansas, Kentucky, and Wyoming are the only states that have yet to receive at least one ADVANCE award. Wyoming is also the only state to have submitted proposals and not received competitive ratings from panelists. Based on a comparison of ADVANCE award recipients between FY2011-2013, the West remains underrepresented (18%) with respect to its overall U.S. population footprint (24%). By contrast, the Northeast comprised 26% of ADVANCE award recipients while representing 18% of the overall U.S. population.

OTHER TOPICS

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

The Management Plan FY2013-FY2014 indicated a high-level of interest in ADVANCE from the University of Bristol and international organizations ranging from the Dutch Research Council to the Japanese Society for the Promotion of Science. An “active dialogue” between the program and the European Commission, National Council of Technological and Scientific Development (Brazil) and the AMONET Portuguese Association of Women in Science was also reported. Consequently, the COV was somewhat surprised by the extremely limited activity related to international collaborations/global partnerships and projects across ADVANCE program tracks. What are the obstacles to expanding the program’s international activities as a world leader promoting gender equity in the STEM disciplines? What strategies would be most effective for stimulating proposals with an international component?

The COV asserts that a balanced ADVANCE portfolio would include the right mix of focused “here and now” programs as well as opportunities that support innovation and transformative research and education.

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.

The COV has concerns about the long-term viability and visibility of the ADVANCE program given the complex budget structure and the nature of directorate contributions to the program budget. In addition, the high turnover rate among program officers combined with a lack of clarity between the roles and responsibilities of NSF permanent staff and rotators present additional challenges to recruiting and retaining top-quality candidates for these critical positions.

The COV encourages funded projects to make use of emerging technology such as massive open online courses (MOOCs) to facilitate workshops that can be made accessible to a broader, more diverse community.

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

The COV addressed program continuity and consistency concerns with regard to staff turnover and the ADVANCE community in *Section III: Management, Question 1*. With the current ADVANCE program officers transitioning to other posts and responsibilities at the same time, the Committee has a similar concern about the potential loss of institutional memory with regard to the COV recommendations. Have career transitions or staff turnover in other NSF programs had an adverse effect on or delayed the implementation of recommended actions to improve program performance? While staff turnover is inevitable, what steps can the NSF take to mitigate or prevent the loss of COV-related institutional memory?

While project-level evaluation has its place in the process, robust, state-of-the-art evaluation strategies and methods that assess program impacts are especially critical given the somewhat mercurial nature of directorate contributions to the ADVANCE budget. The ability to provide quantitative and qualitative proof that the money spent has made a positive difference is especially

Other Topics

important. Funding should be made available to support innovations in ADVANCE impact evaluation if the NSF truly values its benefits.

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

The COV discussed technical assistance and outreach at length—including ways to widely disseminate successful ADVANCE project outcomes, lessons learned, and best practices. We recommend that future workshops and panel discussions allocate time for participants to share effective tactics for institutionalizing and sustaining policies and practices.

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

The COV acknowledges and thanks NSF leadership and staff and the ADVANCE program officers and staff for their professionalism, responsiveness to the group's information needs and questions, and hospitality during the two-day meeting. The working lunch on Day 1 enabled the COV to work efficiently and maximize our time. Refreshments throughout both days were appreciated.

COV members found the webinar and conference call beneficial for defining expectations, distributing materials and allocating lead reviewer responsibilities for various sections of the report. The volume of information made it impossible to review all materials prior to the two-day session. Several participants said it would help to have documents that require advance substantive review marked "required reading" or "priority."

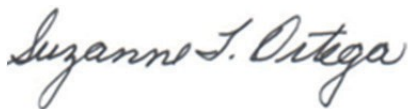
The eJacket system facilitated quick electronic access to ADVANCE proposals (awards and declines) and was easy to use. It was also convenient to have a reference binder with paper copies of all relevant materials at our fingertips.

The streamlined COV Core Questions and Report Template was easy to use, helped guide and focus the review process, kept the team on track and enabled the group to produce a working document at the end of the second day. The COV encourages the NSF to fine-tune the template and ADVANCE-specific questions as needed.

The process was well served by having COV members with direct experience in ADVANCE cohorts and/or panel review members. A strong leader as Chair and the presence of a technical writer familiar with the process also contributed to a successful outcome.

Lastly, to ensure continuity from one COV to the next, the Committee suggests that future ADVANCE COVs include at least one person who participated in the prior review.

SIGNATURE BLOCK:



For the ADVANCE COV
Suzanne Ortega
Chair