

**MEMORANDUM**

**DATE:** October 14, 2008

**TO:** Bernice Anderson, Senior Advisor for Evaluation  
Directorate for Education and Human Resources

**FROM:** Jessie DeAro and Kelly Mack  
Program Directors, ADVANCE

**SUBJECT:** COV for ADVANCE  
COI and Diversity Memo

The Committee of Visitors report for the ADVANCE Program will be reviewed at the EHR Advisory Committee meeting to be held at NSF on November 5-6, 2008. The COV consisted of nine members selected for their expertise related to the goals of the program. They provided a balance with respect to the type of institutions supported through the program, gender, and representation from underrepresented groups.

The NSF-wide ADVANCE program held its COV meeting July 30, 31 and August 1, 2008. The final list of COV members is attached. Due to a family emergency, one committee member who originally committed could not attend. In addition, the program had a very difficult time identifying a potential COV member from the Directorate for Biology recommendations since the individuals were not available or had a significant conflict. The program office worked with the ADVANCE Implementation Committee (AIC) Biology representative and went through thirteen potential committee members before finally identified a candidate who was available. Unfortunately he was at the same institution as another already committed COV member. The program consulted with the EHR front office COV liaisons and it was determined that it was better to have a Biology representative on the committee even if there would be two committee representatives from the same institution on the COV since the program is an NSF-wide program. The final list of committee members is below.

**ADVANCE 2008 COV Members**

	Name	ST	Institution/Organization
1	Jane Daniels	NY	Henry Luce Foundation
2	Estella Blaisten-Barojas	VA	George Mason University
3	Linda Green	AZ	University of Arizona
4	Emir Macari	CA	Cal State Sacramento
5	John Curtis	DC	American Association of University Professors
6	Melvin Hall	AZ	Northern Arizona State University
7	Jean Morrison	CA	University of Southern California
8	Tom Dean	CA	Google Inc.
9	Geoffrey Birchard	VA	George Mason University

Demographic information for the nine COV members is below:

- Gender: 4 Females and 5 Males
- Minority Representation: 3 URM
- Geographic Distribution: 3 West, 2 Southwest, 1 Northeast, and 3 Mid-Atlantic
- Institution/organization Type: 1 Foundation, 1 Non-profit organization, 1 Company, 1 Private Four-year Institution of Higher Education, and 4 Public Institutions of Higher Education (two committee members from the same institution)

#### Resolution of Conflict of Interest

The chair, Jane Daniels, was a reviewer on the ADVANCE Institutional Transformation 2005 competition. For the COV, she did not review any actions and did not participate in any specific discussions about any actions that she reviewed. These institutions include: Yale University, Norfolk State University, Old Dominion University, SUNY at Buffalo, Howard University, Washington University, Marshall University, Duke University, University of Florida, Prairie View A&M University, and South Dakota School of Mines and Technology.

Other committee members had individual conflicts with institutions listed below. The committee member did not review program actions from these institutions and did not participate in discussions of any specific actions from these institutions. Emir Macari: University of Texas El Paso, John Curtis: Pennsylvania State University and University of California Hastings, Jean Morrison: University of Southern California, Linda Green: University of Arizona, and Tom Dean: Brown University.

## MEMORANDUM

**DATE:** February 12, 2008

**TO:** Bernice Anderson, Senior Advisor for Evaluation  
Directorate for Education and Human Resources (EHR)

**FROM:** Victor Santiago, Division Director (Acting)  
Division of Human Resource Development (HRD)  
Directorate for Education and Human Resources (EHR)

**SUBJECT:** Bundled COV for HRD Programs – COI and Diversity Memo

The Committee of Visitors (COV) report for the Bundled HRD Programs was approved at the EHR Advisory Committee meeting held at NSF on November 7-8, 2007. The COV consisted of 21 members distributed across five sub-panels, excepting the chair. Members were selected for their expertise related to the goals of the programs. They provided a balance with respect to the type of institutions supported through the program, gender, and representation from underrepresented groups. The following table shows the main features of the COV's diversity.

Member of EHR Advisory Committee: Dr. Willie Pearson, Chair, Bundled COV for HRD Programs

<u>Institution Type</u>		<u>Gender</u>	
University	13	Female	8
Four year college	0	Male	13
Two year college	0		
K-12	1	<u>Race/Ethnicity</u>	
Industry/Non-profit	4	White	5
Federal/State Govt.	3	Black	12
		Hispanic	0
		Asian / Pacific Islander	1
		American Indian	3
<u>Location</u>		<u>Persons with Disabilities</u>	
East	8	None	
Midwest/North	3		
West	4		
South	6		

The COV was briefed on Conflict of Interest issues and each COV member completed a COI form. COV members had no conflicts with any of the proposals or files.

## 2008 NSF Committee of Visitors Report ADVANCE Program

The table below should be completed by program staff.

<b>Date of COV:</b> <i>July 30, 31 and August 1, 2008</i>
<b>Program/Cluster/Section:</b> <i>ADVANCE Program</i>
<b>Division:</b> <i>Human Resource Development (HRD)</i>
<b>Directorate:</b> <i>Education and Human Resources (EHR)</i>
<b>Number of actions reviewed:</b> <b>Awards:</b> <i>37</i> <b>Declinations:</b> <i>32</i> <b>Other:</b> <i>28 (returns without review and award increments)</i>
<b>Total number of actions within Program/Cluster/Division during period under review:</b> <b>Awards:</b> <i>37</i> <b>Declinations:</b> <i>105</i> <b>Other:</b> <i>56 (returns without review and award increments)</i>
<b>Manner in which reviewed actions were selected:</b> <i>All the awards made during the COV review period (FY 2005, FY 2006 and FY 2007) were reviewed. The declinations and other actions were selected by a random sampling from list of all declines and other actions during the COV review period as directed by the COV chair.</i>

### INTRODUCTION:

The COV for the ADVANCE Program was composed of nine individuals from eight different institutions. Although every person on the COV contributed immensely to the overall review, we feel that there should not have been two COV members from one institution. Seven of the nine members of the COV participated in an orientation webinar on Thursday, July 24, 2008, and all nine members participated in two and a half days of work at the NSF site. A list of COV members and the manner by which conflicts of interest were handled, appears at the end of the report. The COV would like to express its thanks to the individuals who facilitated our work: Jessie DeAro, Anne Fischer, Pat Simms, Todd Stewart and Susana Olague. Their preparation and responsiveness was extremely helpful and sincerely appreciated. In addition we would like to thank Cora Marrett, James Wyche, and Bernice Anderson for being responsive to our comments at the end of the second day and assuring us that communication with the COV would continue after the completion of the Committee's work.

### PART A. 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.

**A.1 Questions about the quality and effectiveness of the program's use of merit review process.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

<b>QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</b>	<b>YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE<sup>1</sup></b>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments: Concerns about the review panels and processes of ADVANCE in its early stages do not appear to exist any longer. There is more uniformity in the review process and it appears to have gotten more rigorous than in the early years of the program. The issue of uniformity, however, needs to be continually monitored for consistency. Proposals are more competitive and reviewers are providing good feedback to the Program Officers and to the Principal Investigators. The Program Officers have done a good job in screening proposals to see if they are appropriate for this program before being sent out for panel review.</p>	Yes
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews? In most cases, both merit review criteria were specifically addressed. Of all of the jackets that COV members reviewed, only a few missed specifying both review criteria but followed up with good summary comments.</p> <p>b) In panel summaries? They all appeared to be appropriate. PIs always wish they could [get] summaries that are a little more specific. This is especially true of declines, so that PIs can revise and resubmit; the more feedback, the better.</p> <p>c) In Program Officer review analyses? Program Officers have done a very nice job of documenting all of the reviewers' comments and presenting them to the PIs of declined proposals in a helpful and meaningful fashion.</p>	Yes
<p>3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals?</p> <p>Comments: This appears to be a weakness. While most of the reviews were complete, the word "substantive" does not come to mind. Proposals that were recommended for funding received more complete reviews than those that eventually were not recommended for funding.</p>	Yes
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p>	Yes

<sup>1</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>Comments: Panel summaries do provide proper rationale but it would be good if more detailed and more substantive review comments could be provided, especially for proposals not recommended for funding.</p>	
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <p>Comments: Every one of the jackets that were reviewed contained all of the needed documentation showing the rationale provided by the reviewers. In addition, each jacket contains supporting information such as site visits reports, officer reviews, diary notes and email correspondence relevant to the proposal. Committee members did note that for several projects the jacket did not include electronic versions of key proposal sections such as project summaries. This made review of the files less than optimal.</p>	<p>Yes</p>
<p>6. Does the documentation to PI provide the rationale for the award/decline decision?</p> <p>Comments: The documentation provided to the PI presents the rationale for the award or decline of each of the proposal jackets reviewed. More substantive comments are always welcomed by PIs, especially in the case of declined proposals. Program Officers could try to provide additional insights as to how a proposal might become stronger.</p>	<p>Yes</p>
<p>7. Is the time to decision appropriate?</p> <p>Note: Time to Decision --NSF Annual Performance Goal: <b>For 70 percent of proposals, inform applicants about funding decisions within six months of proposal receipt or deadline or target date, whichever is later.</b> The date of Division Director concurrence is used in determining the time to decision. Once the Division Director concurs, applicants may be informed that their proposals have been declined or recommended for funding. The NSF-wide goal of 70 percent recognizes that the time to decision is appropriately greater than six months for some programs or some individual proposals.</p> <p>Comments: Less than 7% of the IT proposals were completely reviewed in six months, 64% between six and nine months and 29% longer than nine months. For PAID the dwell time is much better with over 94% completed within nine months. Of the Leadership proposals, 20% were completely reviewed within six months.</p> <p>This appears to be a weakness for ADVANCE since the NSF's goal is to have at least 70% of the proposal reviews completed within 6 months.</p>	<p>No</p>

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

Overall, the program appears to have been well managed regarding review panels, reviews, site visits and decision-making. Merit review has clearly improved substantially since the 2005 COV. Complicated proposals which needed personalized negotiation and site visits required for on-going projects may have resulted in an overload for the Program Director and dwell times much longer than the six months desired by the NSF. Something clearly needs to be done to shorten the length of time of the review process.

**A.2 Questions concerning the selection of reviewers.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE <sup>2</sup>
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <p>Comments: For the most part the different panels appear to have matched program focus to panelist expertise. One possible exception concerns the relative lack of expertise from senior administrators in the case of ADVANCE IT. It would seem that institutional perspective would be critical in judging the prospects for success regarding transformations at the institutional level. It might be worth trying to have broader coverage by including senior administrators from a broad range of institutional types.</p>	Yes
<p>2. Did the program use reviewers balanced with respect to characteristics such as geography, type of institution, and underrepresented groups?</p> <p>Comments: Demographics regarding disability and institution seem fine. Drawing three-fourths of the reviewers from PhD granting institutions, with two-thirds of them (one-half the total) from the top 100 research institutions makes sense given the focus on advancement and NSF's mission. Regarding the ratio of men to women, the demographics for the PAID and Leadership panels look fine (2/3 and 1/3 respectively), however, the 1/10 male-to-female ratio for the 2005 ADVANCE IT panel is of concern. ADVANCE IT is all about institutional buy-in and it is important to have insight into whether institutions have the will to invest time and political capital in carrying out transformational change. It may be appropriate to have somewhat better gender balanced panels to assist in making such evaluations given the perspective male panelists can bring to the table.</p>	Yes

<sup>2</sup> If "Not Applicable" please explain why in the "Comments" section.

<p>3. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments: Review of proposal evaluation documents (panel summaries and review analysis) indicated appropriate attention was given to identifying conflicts of interest. Actions taken when a COI was identified were consistent with standard practice. Panelists with a COI removed themselves from the room and discussions related to proposals. These actions were then documented in the summary documents related to recommendations by the panel and the program director.</p>	<p>Yes</p>
<p>4. Additional comments on reviewer selection: None</p>	

**A.3 Questions concerning the resulting portfolio of awards under review.** Provide comments in the space below the question. Discuss areas of concern in the space provided.

<p><b>RESULTING PORTFOLIO OF AWARDS</b></p>	<p><b>APPROPRIATE, NOT APPROPRIATE<sup>3</sup>, OR DATA NOT AVAILABLE</b></p>
<p>1. Overall quality of the research and/or education projects supported by the program.</p> <p>Comments: The overall quality of the projects that have been supported by the ADVANCE Program is generally very high. A number of the supported projects, such as the IT projects at the University of Michigan, the University of Wisconsin, the University of California-Irvine and the University of Washington, have resulted in outstanding outcomes. However, our observation is that on the basis of the mail reviews and panel summaries, the quality of projects selected for funding, particularly in the PAID and Leadership Programs, appears to be somewhat variable. Although summary data showing the mean mail review rating and the mean panel rating was not available, it is our sense that some proposals with variable and sometimes seemingly low overall ratings by mail reviewers were selected for funding. Assessment of the Review Analysis, however, reveals extremely thoughtful, careful and well reasoned oversight by Program Director Alice Hogan, resulting in a high quality program portfolio. Some of the funded IT projects appear to have had demonstrably transformative effects on hiring (e.g. Brown, Columbia) but the absence of a few clearly defined metrics for success makes further assessment difficult.</p>	<p>Appropriate</p>

<sup>3</sup> If “Not Appropriate” please explain why in the “Comments” section.

<p>2. Does the program portfolio promote the integration of research and education?</p> <p>Comments: In a review of a sample of funded projects, the COV found many illustrations of the integration of research and education, and additionally notes that this integration was further enhanced by action components that provided an immediate application of this integration. For example, projects that called for the identification of a responsible individual within each college or school provided a mechanism for adapting promising practices and policies to the unique needs and features of that academic unit. By locating responsibility for the integration of research results into actions tailored to meet the needs of a specific unit, accountability is clarified and focused. This also results in putting a human face on project goals, replacing the typical bureaucratic or regulatory image of remediation or equity measures.</p> <p>Proposals reviewed also illustrated use of an impressive range of social science methods, including a mixture of qualitative and quantitative strategies. Use of participatory action research, investigation of stereotype threat and related coping strategies, and employing more traditional survey research methods all combined to reflect panel openness in consideration of research, education and action agendas. The result is a portfolio that promotes the state of the art in integrating research and education on relevant topics.</p>	<p>Appropriate</p>
<p>3. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments: None</p>	<p>Appropriate</p>
<p>4. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Innovative/potentially transformative projects?</li> </ul> <p>Comments: None</p>	<p>Appropriate</p>
<p>5. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Inter- and Multi- disciplinary projects?</li> </ul> <p>Comments: None</p>	<p>Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance considering, for example, award size, single and multiple investigator awards, or other characteristics as appropriate for the program?</p> <p>Comments: None</p>	<p>Appropriate</p>

<p>7. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Awards to new investigators?</li> </ul> <p>Comments: This question is not applicable. For IT and PAID awards, new investigators are not appropriate awardees; the PI's should be experienced, relatively senior faculty.</p>	<p>NA</p>
<p>8. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Geographical distribution of Principal Investigators?</li> </ul> <p>Comments: Program awards have an appropriate geographical distribution, however given the small number there appear to be several states without an award from any ADVANCE program. Although it was not possible to do a definitive assessment, it appeared that some states also had virtually no proposals submitted. As the program continues to evolve, strategies designed to yield stronger applications from these states are encouraged.</p>	<p>Appropriate</p>
<p>9. Does the program portfolio have an appropriate balance of:</p> <ul style="list-style-type: none"> <li>• Institutional types?</li> </ul> <p>Comments: The institutions receiving awards were primarily PhD granting institutions and the overall pool of proposals reflected the same mix. Given the much broader pool of institutions preparing and employing women in STEM fields, some consideration should be given to the efficacy of this distribution. The current distribution does not provide coverage for the institutions (community, four year, and master's) where the majority of women are employed as faculty, although it may be viewed as reaching the segment of women in STEM fields who can have the most impact.</p> <p>The IT-Start program promises to begin to address the issue of inclusion, by providing an opportunity for engaging a broader range of institutional types, and their respective faculty. Without a method of engaging a broad range of institutions ADVANCE appears to be forced to choose between development of faculty who can have the most impact upon STEM fields or faculty who teach and impact the largest numbers of students. This reflects an undesirable forced choice. ADVANCE is encouraged to give consideration to the most effective combination of institutions to promote program objectives.</p>	<p>Appropriate</p>
<p>10. Does the program portfolio have an appropriate balance:</p> <ul style="list-style-type: none"> <li>• Across disciplines and sub-disciplines of the activity?</li> </ul> <p>Comments: The program portfolio has an appropriate balance given that the nature of the projects by definition tends to be multidisciplinary. The majority of the projects in the portfolio are multidisciplinary, but some are focused on one discipline (e.g. chemistry, geosciences).</p>	<p>Appropriate</p>
<p>11. Does the program portfolio have appropriate participation of underrepresented groups?</p>	<p>Appropriate</p>

<p>Comments: Program data for IT and PAID submissions and awards illustrate the challenge in ADVANCE programming. Only 13 of 70+ funded IT proposals included minority group members in a leadership role, while among those rejected 20 would have provided leadership by both women and minority group members. Within PAID awards only five appear to have gone to institutions with minority involvement. It is recommended that the data be further analyzed to examine the need for pre-proposal support to institutions that have been unsuccessful through multiple proposal submissions, or where the opportunity for minority involvement is present.</p>	
<p>12. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments: The ADVANCE program is essential to enable the scientific and engineering communities to foster the full participation of women in the nation's scientific and engineering workforce. As documented in the recent NAS report "Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering", proactive efforts must be made to ensure the full participation of women. The NSF's ADVANCE Program is an essential element of those national efforts and it is having an extremely important impact.</p>	<p>Appropriate</p>
<p>13. Additional comments on the quality of the projects or the balance of the portfolio:</p> <p>The IT Program, the longest running component of ADVANCE, continues to be characterized by high quality projects that are making a significant impact on the institutions that have received awards. The newer ADVANCE PAID projects are designed to take advantage of the successes of the IT Program and it appears that a number of high-quality projects have been funded. Assessment of the quality of the Leadership projects supports the decision to fold those awards into the PAID program.</p>	

**A.4 Management of the program under review.** Please comment on:

<p>1. Management of the program.</p> <p>Comments: The program management during the review period has resulted in a thorough and outstanding job managing the program, which has provided a strong foundation for its further development. This is evidenced in the continuing efforts to involve the different directorates at NSF; strong leadership; effective site visits; detailed and accurate review reports; convening of effective panels; and outreach and dissemination efforts. Since the present COV covers only work done through FY2007, it is still too early to evaluate the program management within EHR with the same level of detail. The new outreach initiatives in 2007 show promise. The logistics involved in a change of directorate seem to have been mostly resolved, and adequate preparations have been made for the new IT-Start (IT-Catalyst) competitions.</p>
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We are concerned that the funding model currently in place, which relies on essentially voluntary contributions from the directorates, is not adequate to sustain this very important and successful program as it evolves. The move from one directorate to another coincided with a decrease of about \$3 million in funding for FY2007. This lost funding was not replaced; the COV finds that the Foundation should be more attentive to the program's funding level. We recommend that the program be given a dedicated budget line, and/or that it be returned to the previous funding model drawing a required proportion from each directorate.

Site visits: Site visits are an extremely important—although time-consuming—element of the program for IT projects. They raise the level of visibility of IT projects and keep them from being isolated efforts that are “just for women.” The COV encourages program staff and AIC to support continued site visits and to explore new ways of staffing the visits and making use of reports prepared in conjunction with them. The addition of first-year site visits for IT projects is a good idea. It would be unfortunate if the timing of third-year site visits from the previous round might preclude actual onsite visits to first-year projects in the upcoming year.

Implementation Committee (AIC): We have questions about the level of involvement and structure of the AIC. (It should be noted that we have only limited written evidence from which to draw conclusions.) The COV believes that the AIC could be more proactively involved in carrying out activities in support of the program, both within and outside NSF. Representatives from the different directorates appear to be willing volunteers, but AIC activities are added to their existing workloads. We suggest they be given support from their directorates to participate actively in ADVANCE. Based on a review of meeting minutes, it appears that meetings are primarily a means for disseminating information; it's unclear whether AIC members are sufficiently proactive in promoting ADVANCE across the Foundation. There was a significant amount of uncertainty in the AIC in early 2007, with the relocation of the program to EHR and the change in program director; it appears that the Committee is now back on a more stable footing, but the evidence we have covers only through September 2007.

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

Comments: The last three years have been a period of continuing and renewed interest in the issues of gender equity for faculty, especially in the STEM disciplines. Advance seems to be both stimulating the development of this research and encouraging its continued application in projects with a real effect on the institutional context and academic culture.

The program is very proactive in embracing new approaches for increasing the visibility of project outcomes. (See also the comments on outreach in item 3 below)

The plan for integrating data collection and tabulating quantitative results is commendable and will be a very important addition to the program's evaluation and planning efforts.

The evaluation component of all the proposals is strong and should be continued in future awards. This is an important means for building on the knowledge acquired through previous projects.

The requirement of social science expertise in each of the IT (and recommended for IT-Start and PAID) projects is a good step.

The ADVANCE PI conferences are an excellent mechanism for exchanging ideas and supporting the dissemination of proven practices. The program staff and AIC should consider opening attendance and participation in the conferences to a broader audience. If the meetings are limited to ADVANCE participants only, the result may be mainly “preaching to the choir.” We recommend an

effort to develop exchanges with others working in the area of academic gender equity (other conferences, other publications). (See also the comments on outreach in 3.)

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

Comments: The COV recognizes the enormous effort to develop and sustain the ADVANCE program and is impressed with the achievements represented in the present portfolio of awards. The components of the program have evolved over time, which is a positive sign. Elimination of the Fellows program was a thoroughly-considered decision of prioritizing funding where it can have the greatest impact. The move to emphasize broader initiatives—leadership, and now dissemination—has been a positive one. The IT-Start (soon to be IT-Catalyst) component, although it has not yet produced awards in the period under consideration, seems like a good additional step in this direction.

The geographic dispersion attained by the program is impressive. The distribution of awards among institutions of varying types is important and we encourage continued attention to this issue in future awards.

The COV strongly recommends that the IT competition be continued, since seven years of program life is still a short period of time to fully evaluate the impact of institutional transformation and cultural change.

In terms of awards, we were not able to determine the total amount used for increments and additions to existing awards. The COV suggests that, in the future, better documentation of this total amount for the review period be provided.

The continuing feedback from past and present PIs has enriched the program and should continue to receive adequate attention.

Outreach: The presentation to the AASCU conference was a good idea; program staff and AIC members should make presentations at other institutional leadership conferences, such as ACE, AAC&U, NAICU, and also should participate in other gender equity meetings and conferences. This is especially important for encouraging proposals for IT projects, where strong support from institutional leaders is a necessity. It would be wonderful to submit articles on the program to *Science* or *Academe* or *The Chronicle of Higher Education* or other publications that reach a fairly broad audience. It would also be good to make the basic pre-proposal technical assistance information available online to anyone who might be considering submitting a proposal.

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

Comments: The program has been responsive to the 2005 COV recommendations. The written response is generally good, although it would have been helpful to have the items numbered to correspond to the 2005 COV report itself (as are comments below).

Synthesis of program outcomes (A.5.4 and C.2) – This was not specifically addressed in the response to the COV recommendations. The book referenced (University of Michigan Press 2007) is great but is too large to provide a basic overview of program outcomes. It also appears to have been initiated by the grantees themselves, not by ADVANCE.

Staffing – The program has increased staffing, and clearly this is a situation that may be beyond the program's control. It seems that the current level of staffing should be sufficient—when all the

positions are actually filled. Currently there may be a problem of a lack of continuity in the IPA status of program co-director. Recruitment of an NSF program director on “detail” from a directorate for an interim period might be helpful, if the right individual is available. The AAAS fellow provides useful support for various special initiatives, but cannot participate in project management.

“Longer term evaluation” (C.2) – There is a plan for a program evaluation noted in the response, but this has not yet happened; we were told it is now in the contracting process. It is scheduled to be a program evaluation, but the 2005 COV noted that it would be important to document impact on institutions and on the disciplines themselves. The planned program evaluation needs to address the impact of the program within participating institutions, in the broader academic community, and even within the NSF itself.

#### 5. Additional comments on program management:

Collection and dissemination of data should be a priority for the program, in order to demonstrate its impact. It should be possible to track and tabulate projects with similar components. We recommend development of a standard format for data elements in annual and end-of-project reports, to provide data and/or examples that can be generalized across projects. The “toolkit” developed by PIs in 2005 is now part of agreements in new awards; it could be used as a model for collecting and tabulating data across projects, including older projects. The COV recommends that some of the projected PAID or IT-Catalyst awards be dedicated to compilation of data from completed and ongoing IT projects.

The COV recommends that the program staff and AIC develop an outreach program on behalf of Advance to the disciplinary directorates across NSF. There should be common efforts across directorates to highlight data in specific disciplines documenting successes in advancing women in science, engineering and mathematics.

## **PART B. RESULTS OF NSF INVESTMENTS**

The NSF mission is to:

- promote the progress of science;
- advance national health, prosperity, and welfare; and
- secure the national defense.

To fulfill this mission, NSF has identified four strategic outcome goals: Discovery, Learning, Research Infrastructure, and Stewardship. The COV should look carefully at and comment on (1) noteworthy achievements based on NSF awards; (2) ways in which funded projects have collectively affected progress toward NSF’s mission and strategic outcome goals; and (3) expectations for future performance based on the current set of awards.

NSF investments produce results that appear over time. Consequently, the COV review may include consideration of significant impacts and advances that have developed since the previous COV review and are demonstrably linked to NSF investments, regardless of when the investments were made.

To assist the COV, NSF staff will provide award “highlights” as well as information about the program and its award portfolio as it relates to the three outcome goals of Discovery, Learning, and Research Infrastructure. The COV is not asked to review accomplishments under Stewardship, as that goal is represented by several annual performance goals and measures that are monitored by internal working groups that report to NSF senior management.

**B. Please provide comments on the activity as it relates to NSF's Strategic Outcome Goals. Provide examples of outcomes ("highlights") as appropriate. Examples should reference the NSF award number, the Principal Investigator(s) names, and their institutions.**

**B.1 OUTCOME GOAL for Discovery: *"Foster research that will advance the frontier of knowledge, emphasizing areas of greatest opportunity and potential benefit and establishing the nation as a global leader in fundamental and transformational science and engineering."***

Comments: Reports, both final and annual, provide evidence that the program has had significant success in initiating and continuing the transformation within the institutions receiving support. An increased participation in the decision making process of women in STEM careers will be transformative over time. The IT, PAID and IT-Start awards at key institutions have components needed for women to participate effectively in discovery and innovation.

The information available indicates that basic and effective mechanisms for achieving intra-institutional change appear to have been developed. It is too soon to ascertain whether these changes will be permanent (the desired goal); but it looks promising. Elimination of cultural barriers enriches the workforce with views and approaches that contribute to establishing the nation as a global leader in STEM disciplines. Long term follow up will be needed to see whether permanent changes in the culture of the institutions have been achieved and, if not, why not. Creating longitudinal profiles of awarded institutions can be a valuable tool for comparison with peer institutions and for evaluation both internally and externally in monitoring changes and permanently adopted new policies. Such a need could be addressed by projects funded in the future.

The successes of the program so far are notable. Discovery of embedded cultural barriers is probably one of the most important outcomes of the program. Because of the importance of these discoveries, they need to be shared across the academic community.

Awardees have shown the success of many outreach efforts from the supported projects. However, there seems not to be a mechanism to measure and monitor the effectiveness of these efforts for a cultural change to take on a life of its own. This is critical. NSF should find creative methods (beyond a web site repository) that would allow institutions desiring to embark on change to learn and use what peer institutions have already developed, without having to submit a proposal for funding.

The COV recommends that the program consider funding a study to determine whether or not institutions embracing the cultural change supported by IT grants develop an advantage in recruiting talented faculty members, increasing sponsored funding, accumulating prestigious prizes and honors and moving upwards in the institutional research rankings. If so, other institutions will be compelled to embrace change leading to a morphing of ADVANCE. Avenues for facilitating transformation may transition into policies that institutions would need for competitiveness. Analysis of this hypothesis should include data disaggregated by institutional type.

**B.2 OUTCOME GOAL for Learning: *"Cultivate a world-class, broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens."***

Comments: ADVANCE IT, PAID and Leadership grants, among others, have fostered a plethora of

diverse university programs that to date have made significant strides in advancing the status of academic women and underrepresented minorities in the STEM workforce. The geographic breadth and diversity of academic institutions that have been funded by the ADVANCE program are noteworthy. ADVANCE grants have been awarded to small rural universities, liberal arts colleges, both large and small state universities along with elite private institutions demonstrating the overarching importance and the extent of the reach of these programs. Across the board the funded institutions have made significant strides in the recruitment, retention, and advancement of women faculty in STEM departments and to a lesser extent, to leadership positions within their universities. Large public institutions such as the

**University of Michigan** (proposal # 012357), **the University of Wisconsin** (proposal #0123666), **the University of Washington** (proposal #0123552), **and the University of California at Irvine** (0123682) have developed successful practices that are being adapted and implemented in regional and national partnerships among institutions across the nation, and in the case of the **University of Montana** (proposal #0125094) reaching across borders to tribal colleges in Canada. That is why the PAID and Leadership programs within ADVANCE have been so effective in disseminating and implementing best practices attained by the ADVANCE-IT programs to many more institutions that would otherwise not have benefited from ADVANCE.

ADVANCE Strategies and Tactics for Recruiting to Improve Diversity and Excellence program (**STRIDE**) at the University of Michigan is one noteworthy example of the broad-ranging impact of these achievements. The faculty peer information model has not only made significant impact on the number of women in academic positions in STEM departments at the University of Michigan, but has been widely adopted by universities and colleges nationally, and also increasingly internationally, as a result of an ADVANCE-PAID program. Moreover, a number of grantees have developed creative projects such as Michigan's interactive theatre workshops that foster broad faculty awareness of the issues opening possibilities for structural reform. The **University of Montana's PACE** program has developed "**Talking Circles**" that give voice to the concerns of indigenous women scientists, developed electronic tools for distribution through flash drives, a portal to the American Indian Higher Education Consortium website and the Blackfoot Project that addresses particular concerns of tribal members seeking advanced degrees.

To date most of the ADVANCE programs have placed an emphasis on recruitment issues of women in STEM departments, as well as underlying structural issues of pipeline problems, campus climate, unconscious bias and work-family juggling. A few institutions such as the University of Wisconsin's Women in Science and Leadership Institute and the University of Washington's Center for Institutional Change have begun the process of fostering retention and leadership issues at both the departmental and university levels. Support and dissemination of these kinds of programs are needed more broadly.

Lastly, although ADVANCE has made excellent strides in "cultivating a world-class broadly inclusive science and engineering workforce", less obvious is its impact on expanding the scientific literacy of all citizens. Although this is not a stated goal of the ADVANCE program, it could be a creative expansion of the program as relates to female faculty serving as role models. ADVANCE should not work in a vacuum; it can serve to promote the broader goals of nurturing the development of future scientists and engineers.

If the goals of ADVANCE are realized across all types of colleges and universities, it will create a positive image among the general population of academic careers in STEM fields.

**B.3 OUTCOME GOAL for Research Infrastructure: "*Build the nation's research capability through critical investments in advanced instrumentation, facilities, cyberinfrastructure and***

***experimental tools.”***

Comments:

The ADVANCE Program is not designed to address this outcome goal through investments in advanced instrumentation, facilities, cyberinfrastructure and experimental tools.

## **PART C. OTHER TOPICS**

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

It would be good if some of the best practices produced and vetted by participating institutions could be packaged and made available for broader dissemination. Examples include standards and tools for tracking progress developed by ADVANCE IT grantees, consciousness-raising products such as the plays and role-playing events produced by University of Michigan, University of Illinois at Chicago and Cornell, and best practices identified by University of Wisconsin and American Chemical Society. It would seem that this could be facilitated by working closely with discipline-specific, professional societies, AAUP, etc.

In evaluating statistics and data which have been presented and or gathered to date it is clear that this process needs to become more thorough, comprehensive and standardized. The tool kit document was a reasonable first step—but only that. More data is needed to allow analyses which could fairly assess progress and/or allow identification of issues which are facilitating or hindering progress towards the ADVANCE program goals. This would also allow more timely determination of questions and problems which need to be addressed by proposals during the funding process. It is recommended that a social scientist, familiar with evaluation and use of data to identify and examine causes of bias, be consulted. This person could act to determine what information should be gathered to evaluate the program in the context of its goals. The gathering of data should also be standardized. The current lack of standards limits data accessibility decreasing its value considerably. The COV recommends that electronic data reporting be initiated. For example, Excel spreadsheet templates could be developed which would allow rapid and easy manipulation of data for analysis.

We recognize both the difficulty and the potential benefit of collecting data and producing comparative statistics. On the one hand, without appropriate measures of progress and timely collection and reporting of relevant data, it is difficult to measure progress and justify funding. Universities, on the other hand, are already mandated to provide a great deal of data to federal and state governments, often at high cost in terms of computing infrastructure and the effort required to collect the data. There are also legal complications related to privacy that complicate the submission of data involving small samples. Moreover data pertinent to ADVANCE has an additional political element that involves university reputations and competitiveness. Acknowledging the sensitivity and complexity of the issues, we feel that it is important for NSF to figure out how to encourage useful reporting and data tabulations so as to achieve compliance without undo effort, embarrassment, or legal complications.

### **C.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.**

Although leadership initiatives have been instituted at a few key institutions, the COV believes these processes should be developed and disseminated more widely. Development of leadership initiatives is crucial for the success of significant institutional changes promoted by ADVANCE.

We discussed the questions included in the COV Protocol and suggest adding questions that focus the group on whether the goals of the program are the right goals. Currently we begin with the goals of the program and assess progress against them. We should also look at the goals themselves—how they are defined and understood. For example, we discussed the relative merit of impacting the women faculty of research institutions versus impacting the much larger number of women in other types of institutions. It is a trade-off between impacting the largest part of the workforce or the most influential individuals within the STEM community.

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

Suggestions on data gathering in C.1 could be applied to ALL NSF proposals. However, this would be valuable only if extraordinary thought is given to template (what specific data is gathered) and data gathering techniques.

As the reach of Title IX evolves from a rather limited application to athletics to more wide-ranging applications that include consideration of gender representation on university science and engineering faculties, institutions may well develop a heightened interest in transforming their institutional cultures to enhance and improve the representation of women faculty in science and engineering. This would mean that the ADVANCE Program would be poised to respond immediately – provided sufficient funding were available - to what could be a significant demand. The activities of the ADVANCE Program document the commitment of both the funded institutions and the NSF to addressing the under representation of women as faculty members. They should therefore be included in high-level discussions about the evolving role of Title IX.

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

To understand the relevant institutional and larger social issues, it would be good to enlist the expertise of social scientists. This is suggested in the July 2008 Future Program Directions document. Another area the COV suggests, and the Future Directions document also anticipates, is working with and leveraging the efforts of STEM professional societies and private foundations. For example, in the area of computing, the National Center for Women in Technology (<http://www.ncwit.org>) and the Computing Research Association (<http://www.cra.org>) provide data, reporting standards and best-practices resources which could enhance ADVANCE goals. NCWIT has received over \$5M in NSF funding (\$3.25M from CISE and \$2.4M from EHR).

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

- The COV believes that either the webinar or the orientation (at NSF) is sufficient. If all COV members are unable to participate in the webinar, it should be cancelled.
- Reading of specific COV documents should be more strongly encourage ahead of the meeting at NSF—particularly the previous COV report, program director's response, and updates since the last COV
- The COV meeting at NSF should be started with a change of password on the electronic system, verification that everyone can access all systems/documents, and training on system use. There is a particular need to provide orientation to the e-jacket system

including the composition of e-jackets, where to find certain items, and how to use filters, sort lists, etc.

- The work of the COV got off to a slow start because of the unavailability of the E-jacket system until Todd Stewart and his colleagues entered information for each of the relevant proposals individually. The problem was exacerbated by the unwieldy size of the paper IT jackets. It was all but impossible to find specific information using the paper copies. Some of these paper jackets had more than 50 tabs.
- We recommend that future chairs be chosen who would not a significant number of conflicts of interest, as was the case in 2005 and 2008.
- The COV size was perfect to divide the workload and have enough time to share responses and react to one another's ideas. We recommend that NSF consider this larger COV composition for all programs, even less complex ones, whenever possible.
- COVs would benefit from a shared communication system similar to that used for review panels: access to a common template with the ability to see and offer suggestions on the text prepared by other committee members. It would also have been helpful to have a tracking system to let us know who on the COV viewed and made comments about a specific jacket.
- The COV would have appreciated the ability to view proposals on line BEFORE we gathered face to face.
- The Virginia Tech ADVANCE Portal should have been publicized to COV members prior to face to face meeting.
- The COV recommends that the Logistics Team identify the location of recycling containers for paper, plastic, aluminum and glass during the orientation and that only caterers who provide recyclable products be used.
- The COV discussed how the knowledge and understanding acquired during the review process could be used in other ways once the COV report is complete. For example, the COV report considers the program's effectiveness in meeting its stated goal, but there is no way to give advice regarding the value of the program goal itself. While this should not dominate COV attention, the COV is in an excellent position, after completing its work, to critique the overall goals and to suggest possibilities for future directions.

#### **SIGNATURE BLOCK:**

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For the ADVANCE 2008 COV  
Jane Daniels  
Chair