

**FY 2013 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

The table below should be completed by program staff.

Date of COV: September 9–10, 2013
Program/Cluster/Section: Centers for Research Excellence in Science and Technology (CREST)
Division: Division of Human Resource Development (HRD)
Directorate: Directorate for Education and Human Resources (EHR)
Number of actions reviewed: 36 Awards: 25 Declinations: 11 Other: 0
Total number of actions within Program/Cluster/Division during period under review: 93 Awards: 25 Declinations: 66 Other: 2 (returned without review)
Manner in which reviewed actions were selected: All awards that were made during the review period were included in the sample. In addition, declined proposals ending in 1, 3, 5 or 9 were also included in the sample.

COV Membership

	Name	Affiliation
COV Chair or Co-Chairs:	Dr. Evelyn Hammonds	Harvard University
	Dr. Francisco C. Rodriguez	MiraCosta Community College District
COV Members:	Dr. Luciano Castillo	Texas Tech University
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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.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <p>Comments:</p> <p>The COV was very impressed by the comprehensive level of information in the merit review process. The review methods using panels of experts, subject matter experts for ad hoc review, site visits, and reverse site visits were deemed appropriate for the CREST program. The NSF as well as Program Officers (POs) should be commended for the integrity and transparency of the review process.</p> <p>The review methods are appropriate for the most part, and most proposals were reviewed by a good mix of seven to twelve reviewers, including ad hoc experts. HBCU-RISE proposals had 6 to 9 reviews. One proposal was reviewed by a separate I-cubed review panel consisting of 5 experts, a single Innovation through Institutional Integration (I-cubed) proposal (xxxxxxx). The COV felt that large proposals need a sufficient number of expert ad hoc reviewers who can speak to the science.</p> <p>While the overall review process and feedback appeared adequate, the tone and language used by some reviewers were a bit harsh. The COV would like to see increased concentration on the use of positive feedback and constructive criticism provided to the Principal Investigators (PIs). Constructive feedback on how to improve the proposal would be of particular value for PIs and institutions if a re-submission is planned.</p> <p>There was limited information provided in the electronic jacket on the outcome of site visits and reverse site visits.</p>	<p>Yes</p>

<p>Recommendation: The COV would like to see an item added to the review summary for recommendations that PIs could use to improve their proposals. The COV would also like to see an increased emphasis on objectivity in reviews. Instructions for all reviewers, including ad hoc reviewers, may need to be strengthened to ensure more consistency in reviews. Perhaps the webinar training or another method of instruction for all reviewers should include anonymous examples of both desirable and inappropriate reviews to improve the feedback that is provided to PIs. Additionally, the COV would like to see more PO notes and information from the site visits and reverse site visits provided in the electronic jackets.</p> <p>Data Source: EIS/Type of Review Module</p>	
<p>2. Are both merit review criteria addressed</p> <ul style="list-style-type: none"> a) In individual reviews? b) In panel summaries? c) In Program Officer review analyses? <p>Comments:</p> <p>Most of the panel and the PO summaries provided sufficient detail of both merit review criteria. The COV was impressed by the level of detailed documentation of the review process in the jackets (notes, minutes, correspondence etc.) provided by the POs and made available to the COV for review.</p> <p>Individual Reviews: The review instructions were very clear and specific about the need to address both merit review criteria. However, the COV noted that there was variability in the feedback provided to a PI between reviewers. In a few cases, individual reviewers gave a rating without enough justification or useful feedback for the PIs to improve their proposals for future submission. Additionally, some ad hoc reviews were too brief to be useful, or simply summarized the contents of the proposal without evaluating it.</p> <p>Recommendation #1: The COV would like to see more emphasis placed on feedback in the proposal ratings, hoping that more in depth advice will help PIs improve the quality of their proposals. This could be accomplished by more targeted training (see COV recommendation for review methods).</p> <p>Recommendation #2: The COV recommends introducing a form of internship for senior PhD students and post-doctoral fellows (e.g. those that are receiving NSF fellowships) to participate as panel review observers, thereby cultivating a new generation and larger pool of effective future reviewers.</p> <p>Panel Summaries: Although some of the individual reviews appeared vague,</p>	<p>Yes</p>

<p>most of the panel summaries were articulated well and contained sufficient depth of information for the PIs. However, there were differences in the level of detail provided between panels, and thus there is room for improvement.</p> <p>Recommendation #3: Perhaps it would be useful to include a section in the panel summary for “Suggested Areas of Improvement/Improvement Recommendations”, so that PIs can use those constructive suggestions to craft a better proposal for future re-submission.</p> <p>Program Officer: Overall, the POs are doing well. There appears to be some discontinuity in the review process when POs change between subsequent years, emphasizing the need to transfer crucial information from one PO to the next (e.g. through training seminars) to ensure an appropriate level of detail in the documentation of the review process by all POs. This consistency is particularly crucial for re-submitted proposals that were not funded previously.</p> <p>Recommendation #4: The COV would like to propose implementing training from departing POs to incoming POs to ensure that documentation standards are maintained by all POs involved in a given program.</p> <p>Data Source: Jackets</p>	
<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <p>Comments:</p> <p>Although most reviews included enough detail for a given rating, it was noted that several reviewers gave either negative or positive feedback without providing proper support or justification. The COV would like to see the NSF implement methods, not just in the HRD but across all divisions, that will encourage reviewers to provide more depth to their assessment of a given proposal (see Recommendation #3 above).</p> <p>Data Source: Jackets</p>	Somewhat
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <p>Comments:</p> <p>Most summaries from the panels show the consensus of the reviewers. The summaries were good, but there were inconsistencies noted between various panel review teams in the amount of detail provided to the PIs.</p> <p>Recommendation: The panel summaries need to provide more explicit and detailed information and recommendations to the PIs. The COV would like to see evaluations and specific recommendations that address the quality of the research, the management plans, and the integration of research and education in all panel summaries of CREST and HBCU-RISE proposals.</p>	Yes

<p>Data Source: Jackets</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), site visit reports (if applicable), program officer review analysis, and staff diary notes.]</p> <p>Comments:</p> <p>The transparent review process at NSF that is documented in the jackets gives enough detail and information about what transpired during the panel meetings and ad hoc review process. The COV had a glance of every step of the review process, including comments by the POs, review summary, correspondence and notes taken by the POs.</p> <p>The COV appreciated that the PO made the diary notes available in the jacket and showed how HRD resources were leveraged with those from the Experimental Program to Stimulate Competitive Research (EPSCoR) program. This shows initiative and leadership by the POs.</p> <p>The COV also noted many good summaries that supported the decisions made by the POs. However, there was some concern raised about certain decisions, particularly as they relate to phase II CREST renewal proposals. In some instances the panel review provided a lower score on some renewal proposals based on an expectation of a higher quality proposal as a result of a productive phase I center. Despite lower evaluations by the panel, these centers were renewed for a phase II CREST center.</p> <p>Recommendation: Part of the review for CREST phase II proposals should include a site visit by a COV that includes the PO and external experts prior to an award. The COV would appreciate reviewing the feedback and comments from those site visits. CREST centers should be expected to grow their capacity toward becoming a sustainable enterprise at MSIs. A clear articulation of such expectations should be included in the solicitation. An evaluation of the progress toward that goal should be included in the reviews of phase II proposals.</p> <p>Data Source: Jackets</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), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a</p>	<p>Yes</p>

<p>declination.]</p> <p>Comments:</p> <p>The COV was impressed by the high level of detail in some PO reports in justifying an award/decline decision. The COV did note that the final decision of the PO is not included in the summary.</p> <p>Recommendation: The PIs may never see the summary by the PO. A portion of the appropriate information would be useful for the PIs in understanding the award/decline decision better. The COV would also like to see more direct written feedback to the PI from the PO on how to improve future proposals.</p> <p>Data Source: Jackets</p>	
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <p>Comments:</p> <p>The COV felt that the overall merit review process is functional and working well. However, there is room for improvement, particularly with respect to communication between reviewers and POs, and between POs and PIs, as detailed in previous sections.</p>	

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>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>Although there was clear evidence that most reviewers have the necessary qualifications and expertise, the COV noted the challenge of finding experts that could review all sub-projects of a CREST proposal. For a given CREST proposal, a significant number of the ad hoc reviewers felt they were qualified to address only one sub-project and delivered a merit review that only pertained to that portion of the proposal. If CREST is maintained as a multi-project center,</p>	<p>Somewhat</p>

<p>the number of ad hoc reviews may have to increase so that an appropriate scientific review of all sub-projects is ensured.</p> <p>Reviewers are broadly distributed in terms of rank, location, and expertise. However, the COV would like to see more reviewers from national labs and from industry. It was noted that information about the rank and expertise of some reviewers was listed as not known. The COV wondered why that is the case, considering the ease with which such information can be obtained from a variety of online sources.</p> <p>Reviewer demographics should represent a snapshot of the population of STEM professionals. However, the current distribution is somewhat skewed. There was a relatively good gender mix, but still considerably more men than women served as reviewers. This record can be improved. The ethnicity of the reviewer pool was not representative of the current STEM population, and reviewers from certain states were underrepresented. More effort is required to include reviewers from those states and from underrepresented populations.</p> <p>Recommendation: The COV noted that reviewers primarily belonged to the CREST community and would like to see an increased representation of reviewers from Minority-serving Institutions (MSIs) outside of the CREST pool, particularly from Western and Southwestern states, in an effort to increase diversity and ensure unbiased opinions. Additionally, the COV would like to see more underrepresented reviewers, including female reviewers, represented.</p> <p>Data Source: Jackets</p>	
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <p>Comments:</p> <p>The COV found that NSF's conflict of interest (COI) resolution was appropriate, excellently managed, and effective. The NSF goes to great lengths to ensure there is not a COI and, if there is, that it is properly addressed. The COV noted sufficient documentation in the e-jackets regarding COIs and consideration of PO COIs in the process.</p> <p>Data Source: Jackets</p>	<p>Yes</p>
<p>Additional comments on reviewer selection:</p>	

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

MANAGEMENT OF THE PROGRAM UNDER REVIEW

1. Management of the program.

Comments:

The COV found the management of solicitation, review, etc. to be excellent. The transparency and integrity of the program management was impressive. Both the panel management and review process were clear and appropriate. The rationale for awarding only one CREST or one RISE per institution was clear.

The program solicitation should highlight targeted research areas as outlined in the National Academies Grand Challenges and/or major themes and thrust areas of particular importance to NSF and the nation, so that the portfolio of funded grants is better aligned with areas of national need. The COV noticed that there seem to be isolated MSIs with enhanced research capacity thanks to funding received through this program, whereas other, less competitive MSIs are left behind. The overall program would benefit from collaborations among institutions (nationally and internationally) that will broaden the impact of CREST grants and leverage resources. Finally, the COV noted a Dean, a Provost, and a Vice President for Research as co-PIs in one proposal and at least one administrator on several others. The COV was concerned that the contributions of administrators to the research proposed in the sub-projects may be somewhat limited. Furthermore, the COV believes that serving as PI/Co-PI provides important career development and leadership opportunities for less well established faculty.

The COV was concerned about budget cuts impacting the CREST program in future years, particularly the sustainability of research capacity at MSIs built by the CREST and RISE grants. Likewise, the effect of reduced funding on elevating infrastructure and research capacity of upcoming MSIs needs to be thought through. The COV noted limited evidence for site visits and their outcomes as well as some inconsistencies in program management over the years that were addressed in prior COV reports.

The COV developed the following recommendations for the CREST program management that could enable both the CREST program and individual CREST centers (existing and proposed) to evolve in the face of budget cuts and other challenges currently present in HRD.

Recommendation #1: The COV sees an opportunity for the CREST program solicitation to include the requirement that all outcomes be tracked by the institution. In addition, CREST centers should be required to explicitly report demographic information about the PhDs graduated and post-doctoral fellows supported, patents awarded, and competitive grants obtained by individual investigators that participated in the CREST-supported research. Furthermore, the COV would like to see the impact of CREST as it relates to society, the institution, and the PIs involved be clearly articulated in the submission, the reviews, and the outcomes reports.

Recommendation #2: Instead of requiring three sub-projects, the COV would like to see one major unifying theme in each center proposal to permit more focused and synergistic research efforts at

the institutions and to reduce the number of reviews, which are costly and time consuming. Furthermore, if a CREST is not productive in phase I, there should not be major motivation to fund a phase II proposal. The COV suggests that an oversight committee evaluate a selected number of CREST centers in their third year of funding and evaluate their likelihood of evolving into a phase II center. Continuation of phase II should clearly articulate impact of the phase I grant, novelty and vision of the renewal, and should be contingent on the outcome of a mandatory site visit.

Recommendation #3: The COV would like to propose a three-tiered application process for a CREST award that would streamline the application process and could eliminate non-competitive proposals prior to the investment of substantial effort by the PIs, the institution, reviewers, and the NSF:

- i. Letter of Intent
- ii. Pre-proposal
- iii. Full proposal (by invitation only)

Furthermore, a limit of no more than one administrator serving as PI or co-PI should be clearly articulated in the project solicitation.

Recommendation #4: The COV recommends that, to broaden the impact of a CREST award, more underrepresented groups participate as PIs and co-PIs. The COV further noted that CREST awards are clustered in a given area and coincide with RISE awards to the same institution. As an unintended consequence of this practice, many MSIs do not benefit at all from this program. Ideally any non-Research 1 (R1) institution with 25 percent minority student population should be eligible to apply to CREST only if it builds real partnerships with other MSIs. Furthermore, the COV would like to see theme-based or thrust-based collaborations and partnerships encouraged at the MSI level and with R1 institutions. Building capacity through meaningful collaborations among institutions should be a requirement that is expressed in the project solicitation. The COV believes that this strategy will strengthen the impact of investments that were made and expand the benefits of the program to help an entire region build capacity.

Recommendation #5: With consideration being given to budget cuts, and facing the possibility of not having the CREST competition every year, the COV recommends multiple award stages leading to a CREST center that emphasizes collaboration and capacity building towards forming a sustainable center in the future. The following stages are proposed:

1. A small partnership grant with multiple universities and/or across multiple disciplines within a single institution. This program will serve to build research capacity at smaller MSIs that are not yet competitive for a CREST. Only those MSIs that do not have CREST funding or that are expanding capacity to new areas of science should be eligible for this funding.
2. RISE-like pre-center grants for all MSIs (non-R1 HSIs, HBCUs, TCUs, etc.) prior to a CREST being established. This would allow those MSIs that are on the cusp of becoming competitive for a CREST grant to enhance their research capabilities and infrastructure. Only those MSIs that do not have CREST funding or that are expanding capacity to new areas of science beyond their current CREST center should be eligible for this funding.
3. An award for CREST partnerships with multiple institutions among MSIs and R1s. A clear institutional commitment and plan for sustainability of the research capacity that is being built with funds of the CREST/RISE program must be demonstrated (e.g. leveraging resources, building of research infrastructure and support systems, etc.). Because of the clear distinctions between the purpose of CREST and RISE-like grants, the COV recommends that institutions only be eligible to submit either a CREST or a RISE-like proposal in a given year.

Recommendation #6: The COV feels that the NSF must increase non-temporary management staff to provide much needed consistency and critical progress tracking through site visits for the CREST and HBCU-RISE programs.

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

Comments:

The COV would like to see more evidence of high-impact proposals and of scientific collaborations and initiatives (e.g. conferences) between CREST centers, particularly those that address the National Academies Grand Challenges, other areas of national need and interdisciplinary approaches to research challenges. (See Recommendation #5 above.)

Recommendation: The COV recommends building an initial infrastructure through partner collaborations among partnering MSIs. Funding would increase as capacity grows. Funding decisions should strongly consider the transformative nature of proposed research themes and their alignment with high priority areas (See also the recommendation to question 3 below.)

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

Comments:

There seems to be less emphasis on the area of research proposed and more on the capacity building effect of the funding on the institution. Interdisciplinary, novel-approach-type centers (projects) seem to be favorably reviewed and highly successful, with potential to be transformative (i.e. develop new areas of research). The program captured the essence of broader impacts reasonably well; however, the research themes do not necessarily reflect NSF priorities or national needs. The COV noted a disconnect between the research foci of the funded centers within the CREST portfolio and NSF's priority areas of research.

Recommendation: The COV proposes a realignment of CREST research themes to focus on NSF and national research priorities by strategically targeting upcoming solicitations in the areas of critical need. (See also the recommendation in question 2 above.)

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

Comments:

The COV was impressed by the level of commitment and detail provided in the response by the program administration. HRD tried to address many concerns of the previous COV and implement several 2010 COV recommendations. An example: on page one of the 2010 COV report, integration of well qualified reviewers and ad hoc experts had been requested; this recommendation has been implemented, as noted by the COV 2013.

The 2013 COV strongly agrees with the suggestion of the 2010 COV that site visits be conducted for CREST centers. The 2013 COV recommends such visits to include external experts and POs.

The response by POs seems to imply that panel visits will be adopted for CREST centers in their 3rd or 4th year. The COV did not see evidence in the jacket whether such visits have been implemented generally.

Several previous COV comments were discussed by the current COV and are repeated in this report

because they have not yet been addressed. An example: reviewer training issues. An addendum in the NSF response suggests that corrections have been made that address some of these points. The 2010 COV indicated that panel summaries seemed inconsistent. The 2013 COV noticed higher consistency in panel summaries and more in depth rationale for a given recommendation. However, although most reviews included proper feedback, the 2013 COV still saw some weak analysis reports by reviewers.

The 2010 COV raised concerns about the uniform performance measures of graduate students and post-doctoral fellows. The 2013 COV still shares the same concerns.

The 2010 COV suggested more participation of Southwest states in CREST / RISE was needed. HRD articulated that they are developing these programs. It is not clear to the 2013 COV which programs are being developed, because we still see considerable underrepresentation of Southwestern and Western states. Therefore, the same concerns remain in this program evaluation cycle. The COV acknowledges that while CREST Center awards may expand toward the Southwestern and Western U.S., institutional eligibility for HBCU-RISE is limited to Ph.D. granting HBCUs that are concentrated in the Eastern and Southeastern United States.

The 2010 COV expressed concern about a lack of participation of engineering departments in CREST. In the 2013 cycle, the COV noted good participation of engineering departments in the award portfolio.

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

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments:</p> <p>The COV noted a broad distribution of disciplines. However, in a few proposals the COV saw PIs and researchers from the same disciplines and departments. The balance of awards across disciplines does not necessarily reflect the priorities of NSF or those of the National Academies Grand Challenges.</p> <p>Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select the Funding Rate module to see counts of proposals and awards for programs. The Proposal Count by Type Report View will also provide a summary of proposals by program.</p>	<p>Somewhat Appropriate</p>

<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <p>Given recent budget cuts, the COV would like to see a RISE-like pre-center proposal prior to a CREST for which all non-R1 MSIs could compete (see recommendation #5 for Management of the Program). This two-tier approach would allow building research infrastructure, competitiveness, and capacity at MSIs prior to those institutions submitting a CREST proposal. The COV considers the benefit of the current CREST supplement awards to be minimal.</p> <p>Recommendation: To increase the impact of the supplement awards, the COV recommends that supplemental funding be re-directed for the development of partnerships or collaborations between institutions prior to a CREST or RISE-like proposal (see recommendation #5 under Management of the Program).</p> <p>Data Source: EIS/Committee of Visitors Module. From the Report View drop-down, select Average Award Size and Duration.</p>	<p>Appropriate</p>
<p>3. Does the program portfolio include awards for projects that are innovative or potentially transformative?</p> <p>Comments:</p> <p>The program portfolio does include projects that are innovative and potentially transformative. There are several examples of CREST centers that combine multi-disciplinary experimental approaches to answer complex questions. These centers have the potential to lead to new scientific discoveries and to develop into new scientific disciplines.</p> <p>The COV noticed that some CREST centers have been highly successful in hiring faculty that become NSF-CAREER awardees or Presidential Young Investigators and are on their way to becoming leaders at their institutions and in their fields. There was one exciting example of a CREST center that evolved into an Engineering Research Center (ERC).</p> <p>While there were several examples of centers developing transformative projects and innovative solutions, we would like to see more evidence of such successes among the CREST centers.</p> <p>Recommendation: The COV strongly encourages the NSF to find ways that increase the visibility of those accomplishments by aggressively publicizing success stories such as these and other accomplishments to audiences both within and outside of the NSF.</p> <p>Data Source: Jackets</p>	<p>Appropriate</p>

<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments:</p> <p>There are several examples of centers that encompass multiple disciplines. However, the individual sub-projects often seemed to be isolated research “silos” with little collaborative connections that would provide the envisioned synergy.</p> <p>Recommendation: To alleviate the lack of mutually beneficial interactions between sub-projects within a CREST center, the COV recommends restructuring the CREST centers and limiting the research to one overarching theme or thrust area that can be multi-disciplinary. The COV encourages multi-discipline centers to work with multiple institutions and exploit the combined strengths of the institutions to obtain maximum synergy between the disciplines.</p> <p>Data Source: If co-funding is a desired proxy for measuring inter- and multi-disciplinary projects, the Co-Funding from Contributing Orgs and Co-Funding Contributed to Recipient Orgs reports can be obtained using the EIS/Committee of Visitors Module. They are available as selections on the Report View drop-down.</p>	<p>Appropriate</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments:</p> <p>The COV noted that Western and Southwestern states are under-represented.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Proposals by State from the Report View drop-down.</p>	<p>Somewhat Appropriate</p>
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions?</p> <p>Comments:</p> <p>The COV found an imbalance of funded CREST programs between Masters and PhD granting institutions (i.e. a higher number of Masters than PhD granting institutions). The COV realizes that this imbalance likely reflects the types of MSIs that exist.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Proposals by Institution Type from the Report View drop-down. Also, the Obligations by Institution Type will provide information on the funding to institutions by type.</p>	<p>Somewhat Appropriate</p>

<p>7. Does the program portfolio have an appropriate balance of awards to new investigators?</p> <p>NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant.</p> <p>Comments:</p> <p>Yes, mainly in the supplements for HBCU-RISE. However, one does not necessarily expect large numbers of new PIs on CREST proposals because of the considerable experience required to manage and administer a large center.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Funding Rate from the Report View drop-down. After this report is run, use the Category Filter button to select New PI for the PI Status filter or New Involvement (PIs & coPIs) = Yes.</p>	<p>Appropriate</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments:</p> <p>Each program in the portfolio has projects that integrate research and education. The COV also noted funding for conferences and workshops that integrate K–12 activities.</p> <p>Data Source: Jackets</p>	<p>Appropriate</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups¹?</p> <p>Comments:</p> <p>The program portfolio clearly has a large impact on the ability of minority undergraduate populations to engage in research at their respective institutions and on the ability of MSIs to engage in high-level research. However, it was noted that from the demographic data available to the COV, most PIs and co-PIs as well as graduate students and post-doctoral fellows were not from underrepresented groups. The PI population of CREST proposals includes very few minorities, and the majority of the PIs are male. In order to build the capacity of the institution and to broaden the impact of</p>	<p>Somewhat</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.

<p>the financial investment, more effort should be made by the NSF and a commitment should be sought from the funded institutions to increase diversity in this area.</p> <p>Recommendation: NSF must strongly encourage plans that increase representation from underrepresented groups in the PI, post-doctoral fellows, and graduate student categories within each CREST proposal and explicitly state that expectation in the program solicitation.</p> <p>Data Source: EIS/Committee of Visitors Module. Select Funding Rate from the Report View drop-down. After this report is run, use the Category Filter button to select Women Involvement = Yes or Minority Involvement = Yes to apply the appropriate filters.</p>	
<p>10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports.</p> <p>Comments:</p> <p>To a large extent the program is relevant to increasing the capacity of MSIs. The COV would like to see some outcomes that show the impact on underrepresented minorities and an increased program emphasis on areas of national needs. The COV did see that funds are directed towards research in energy, biological systems, and nano-materials, and would like to see more centers that address key areas as they relate to the Grand Challenges reports and the strategic plan of the NSF.</p> <p>Data Source: Jackets</p>	<p>Appropriate</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p>	

OTHER TOPICS

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

As stated in the Management section above, the COV feels that the NSF must increase non-temporary management staff to provide much needed consistency and critical progress tracking through site visits.

The COV would like to see more international experiences for students and faculty in the programs, as well as internships with national labs. The COV would also like to see a statement in the program solicitation that strongly encourages plans for international exchanges and collaborations.

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.

There is currently no effort to track the graduates from each CREST and their potential impact on the STEM fields. NSF should engage each institution with a CREST award (current and matriculated) to report back on the successes of their graduates and their whereabouts. This endeavor will support the mission of HRD by highlighting institution-specific contribution to the STEM-related workforce development for the nation.

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

Strategies to leverage resources beyond the existing mechanism would be valuable, including cost sharing across divisions and even from the Department of Defense and the Department of Energy. CREST works with a few other directorates, but there was no evidence that many other directorates are reaching out to CREST through co-funding. The COV recommends that significant two-way co-funding strategies be explored across the relevant disciplinary divisions within the NSF and with other federal agencies.

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

Due to budget constraints, CREST proposals may no longer be solicited every year. It would be beneficial to re-evaluate the current funding model. The COV recommends that strong consideration be given to a multi-tiered funding program that consists of a grant opportunity equivalent to an HBCU-RISE for non-R1 MSIs to build the research capacity necessary to compete for state and federal funding. The COV envisions that such a RISE-like center would grow to be a multi-institution CREST center. Benefits would include building a research track record, developing capacity and credibility to collaborate with other partners, and accumulating the preliminary results that many ad hoc reviewers had requested.

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

The COV process is an in-depth review that requires significant time and resource commitment. The COV would appreciate more time for reviewing all material prior to the meeting at NSF. The COV would also like to review relevant documents of outcomes from site visits and reverse site visits to be included in the electronic jacket.

SIGNATURE BLOCK:

For the 2013 CREST COV
Dr. Luciano Castillo
Panel Chair