

CORE QUESTIONS and REPORT TEMPLATE for FY 2016 NSF COMMITTEE OF VISITOR (COV) REVIEWS

Guidance to NSF Staff: This document includes the FY 2016 set of Core Questions and the COV Report Template for use by NSF staff when preparing and conducting COVs during FY 2016. Specific guidance for NSF staff describing the COV review process is described in the “COV Reviews” section of NSF’s Administrative Policies and Procedures which can be obtained at <https://inside.nsf.gov/aboutnsf/hownsfworks/rolesresponsibilities/Pages/Committee-of-Visitors.aspx>¹.

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

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

The Division or Directorate may choose to add questions relevant to the activities under review. Copies of the report template and the charge to the COV should be provided to OIA prior to forwarding to the COV. NSF staff should work with the COV members in advance of the meeting to provide them with the report template, organized background materials, and to identify questions/goals that apply to the program(s) under review.

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

For programs using section IV (addressing portfolio balance), the program should provide the COV with a statement of the program’s portfolio goals and ask specific questions about the program under review. Some suggestions regarding portfolio dimensions are given on the template. These suggestions will not be appropriate for all programs.

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

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

¹ This document has three parts: (1) Policy, (2) Procedures, and (3) Roles & Responsibilities.

**FY 2016 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)**

The table below should be completed by program staff.

Date of COV: June 15 th -16 th 2016		
Program/Cluster/Section: SBIR/STTR and Academic Cluster (PFI:AIR, PFI:BIC, I-Corps, and I/UCRC)		
Division: Industrial Innovation and Partnerships		
Directorate: Engineering		
Number of actions reviewed (SBIR/STTR): 373 (309 competitive proposals + 64 supplements)		
Awards:		
	Phase II	38
	Phase I	107
Declines:		
	Phase II	53
	Phase I	103
Supplements:		
	Phase II	37
	Phase I	27
Other:		
	Returned w/o Review	8
Number of actions reviewed (Academic): 214 (154 competitive proposals + 60 supplements)		
Awards:		
	PFI:BIC	5
	PFI:AIR	20
	I/UCRC & FRP	23
	I-Corps Teams	36
	I-Corps Sites	4
	I-Corps Nodes	3
Declines		
	PFI:BIC	18
	PFI:AIR	19
	I/UCRC & FRP	16
	I-Corps Teams	0
	I-Corps Sites	5
	I-Corps Nodes	2
Supplements:		
	PFI:BIC	1
	PFI:AIR	20
	I/UCRC & FRP	31
	I-Corps Teams	1
	I-Corps Sites	0
	I-Corps Nodes	7
Other:		

	Returned w/o Review	3
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Total number of actions within Program/Cluster/Division during period under review:

Awards	2,296
Declines	6,024
Supplements	1,241
Return w/o review	652
Continuing Grant Increments	290
Withdrawn	285
Other	92
Total	10,880

Manner in which reviewed actions were selected:

SBIR/STTR- Proposals were divided into Fiscal Year, then by SBIR and STTR, then by Phase I and Phase II, and finally by Award and Decline. The proposals were then randomly selected from each category based on the ratio of the total proposals to that category. Below are the categories and number of proposals per category:

<u>Category</u>	<u>Number of Proposals pulled per COV Member</u>
SMALL BUSINESS PHASE I AWD	12
SMALL BUSINESS PHASE I DEC	12
SMALL BUSINESS PHASE II AWD	4
SMALL BUSINESS PHASE II DEC	5
STTR PHASE I AWD	2
STTR PHASE I DEC	3
STTR PHASE II AWD	1
STTR PHASE II DEC	2

Academic: Proposals were divided into Fiscal year, and then were divided into program. Then proposals were then randomly selected from each category based on the ratio of the total proposals to that category. Below are the categories and number of proposals per category:

<u>Category</u>	<u>Number of Proposals pulled per COV member</u>
PFI-AIR	9
I/UCRC-	7
PFI:BIC	5
IUCRC FUNDAMENTAL RESEARCH-	2
I-Corps-Teams	8
I-Corps – Sites	2
I-Corps – Nodes	1

COV Membership

	Name	Affiliation
COV Chair or Co-Chairs:	Brij Moudgil	Professor; University of Florida
	Ann Savoca	Retired, Global Vice President of Technology and Innovation; Sealed Air Corporation
COV Members:	Academic:	
	Sajal Das	Chaired Professor and Department Chair Missouri University of Science and Technology
	Martha Mitchell	Professor; New Mexico State University
	Rominder Suri	Professor and Department Chair; Temple University
	Donald Leo	Chaired Professor and Dean; University of Georgia
	SBIR/STTR:	
	Susan Butts (ENG Adcom member)	Retired, Senior Director; Dow Chemical
	James Kassner	Retired, Vice President; Bayer Material Science
	John Tao	President; O-Innovations Advisors Former Vice President of Open Innovation at Weyerhaeuser
	Caralynn Nowinski Collens	CEO; UI Labs
	Ayman Fawaz	Principal; HWL Corp; Retired from Siemens
	Lisa Teague	Director of Research and Technology; Rolls-Royce
Rebecca Mahurin	Director, Technology Transfer Office; Montana State University	

**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.

<p align="center">QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS</p>	<p align="center">YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE</p>
<p>1. Are the review methods (for example, panel, ad hoc, site visits) appropriate?</p> <ul style="list-style-type: none"> • Program Directors follow a consistent approach in evaluating proposals. • The composition of the panels is appropriate to the focus of the Academic programs. • For SBIR/STTR proposals, there is a need to demonstrate technical feasibility in the context of a business model, even in Phase I. Therefore, the COV suggests that a minimum set of commercial criteria be established for Phase I SBIR/STTR proposals and that the standard NSF template provided to Phase I reviewers be modified to specify intellectual merit, broader impacts and additional commercial criteria. It is also suggested that the template provided to SBIR/STTR Phase II reviewers specify the relevant criteria for Phase II proposals. 	<p align="center">Yes</p>
<p>2. Are both merit review criteria addressed</p> <p>a) In individual reviews?</p> <ul style="list-style-type: none"> • For Academic proposals, reviewers addressed intellectual merit, broader impact and additional criteria where appropriate. • For some SBIR/STTR proposals, technical merit was better addressed than commercial feasibility. As mentioned in response to Question 1, the COV suggests that the commercial criteria be made more explicit for both Phase I and Phase II SBIR/STTR proposals. <p>b) In panel summaries?</p> <ul style="list-style-type: none"> • Most panel summaries addressed Intellectual Merit and Broader Impacts, as well as commercial criteria, where appropriate. Panel summaries for approved proposals were generally more detailed. More 	<p align="center">Yes</p> <p align="center">Yes</p>

<p>constructive comments could be provided to declined proposals, where appropriate.</p> <ul style="list-style-type: none"> • Some SBIR/STTR panel summaries did not sufficiently address commercial feasibility. It is recommended that the Program Directors ensure that all panel summaries include a rich commentary on all criteria. <p>c) In Program Director review analyses?</p> <ul style="list-style-type: none"> • The Program Director review analyses addressed the merit criteria including commercialization potential where appropriate, and are well justified. • The Program Director review analyses tend to be more comprehensive for 'awards' than 'declines'. In these cases, a very comprehensive panel summary becomes even more important. 	<p>Yes</p>
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<p>3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals?</p> <ul style="list-style-type: none"> • Majority of the reviewers provided detailed comments, while a few reviews were brief and with limited insight. • There is an expectation that reviewers provide substantive comments and it is the responsibility of the Program Director to emphasize this to the selected reviewers. 	<p>Yes</p>
<p>4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)?</p> <ul style="list-style-type: none"> • In general, panel summaries provided sufficient detail to justify the panel consensus. • Panel summaries for declined proposals tended to be less robust. The panel summaries should include explicit comments on critical issues (e.g., fatal technical or commercial flaws, opportunities for meaningful improvement) for all proposals. 	<p>Yes</p>
<p>5. Does the documentation in the jacket provide the rationale for the award/decline decision?</p> <ul style="list-style-type: none"> • The Program Director review analyses generally provide the most information and best rationale for the decisions. • The e-jacket should include a copy of the correspondence informing the PI of the decision to decline. 	<p>Yes</p>

<p>6. Does the documentation to the PI provide the rationale for the award/decline decision?</p> <ul style="list-style-type: none"> • In most cases there is enough documentation provided to the PI for the award/decline rationale. PIs receive the individual review comments and panel summary for both the awards and declines recommendations. It would be helpful for the PI to see more written suggestions for improving the proposal as appropriate. It is recommended that the Program Director emphasize this to the individual reviewers and also to the entire review panel. • In the case of some declines, the PI may request a debrief with the Program Director. There should be a 'box' to check in the e-jacket indicating that there was a verbal debrief. 	<p>Yes</p>
<p>7. Additional comments on the quality and effectiveness of the program's use of merit review process:</p> <ul style="list-style-type: none"> • The due diligence and professionalism on the part of the Program Directors is commendable. 	

II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
<p>1. Did the program make use of reviewers having appropriate expertise and/or qualifications?</p> <ul style="list-style-type: none"> • For the most part, panel members for the Academic programs as a whole had adequate expertise and qualifications. • For SBIR/STTR panels, the reviewers seemed to have more technical experience than commercial experience. The COV recommends that the constituency of the review panel be sufficient to address the commercial feasibility of the proposal. 	Yes
<p>2. Did the program recognize and resolve conflicts of interest when appropriate?</p> <ul style="list-style-type: none"> • There were no cases observed where a panelist with a conflict of interest participated in a panel review 	Yes
<p>3. Additional comments on reviewer selection:</p> <ul style="list-style-type: none"> • For self-nomination, the process is still for the investigator to contact a PD first; a self-nomination process for the PRIM database might broaden the reviewer base. • Outreach to minority groups and professional societies of underrepresented groups may help to increase the reviewer pool • Resource constraints in vetting the qualifications of the nominated reviewers might be in part alleviated by utilizing the current network of reviewers to assist in the vetting process. 	

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 management of the program, with regular meetings of the PDs with the Divisional Director seems to be effective.
- The PD's are the backbone of the program and they perform an excellent job. They are empowered to make decisions and aim to excel at a very challenging assignment. They are supported by a dedicated and knowledgeable staff.
- There is concern about the heavy case load for PD's based upon the number of proposals being processed and outreach activities.

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

Comments:

- The process of program portfolio review in the Academic Programs seems to be effective in providing responsiveness to emerging opportunities. This is demonstrated by the revisions to solicitations and other changes in the program over the last three years. Overall it seems reasonable, given the breadth of topics that are covered in the entire program.
- The SBIR/STTR COV subcommittee feels that the issue of portfolio management is extremely important; however the committee members are unable to answer the question based on the information provided in the data book.

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

Comments:

- Each PD conducts a portfolio review with IIP Management after each solicitation cycle. The list of questions covered in the review is comprehensive and seems appropriate for a given program area. The IIP should articulate the output of this process.

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

Comments:

- IIP actions addressed all of the previous recommendations to some extent. There was progress in expanding the pool of reviewers to include more women and underrepresented minorities, significant increase in number/percentage of new PI submissions, increase in award size and extensive utilization of pre-proposal tutorials and improved outreach efforts. IIP did not respond completely to the following COV recommendations:
 - Include more commercial reviewers.
 - Provide coaching in panel summary for declined proposals including citing educational resources.
 - Expand the pool of panelists: Response addressed only one avenue for self-nomination (via I-Corp) and did not address the other parts of the recommendation. And no evidence was presented on optimum size of panelist pool and how a focus on expansion might have addressed needs.
 - Include notations of entrepreneurial/commercial experience in PRIM.
 - Develop measurable targets for key IIP improvement efforts and share with key stakeholders.
 - Provide data on the impact of outreach efforts in attracting new PIs.

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

<p style="text-align: center;">RESULTING PORTFOLIO OF AWARDS</p>	<p style="text-align: center;">APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE</p>
<p>1. Does the program portfolio have an appropriate balance of awards across disciplines and sub-disciplines of the activity?</p> <p>Comments:</p> <ul style="list-style-type: none"> • It appears that awards include a broad cross section of disciplines/sub-disciplines. This is NSF's mission - and should continue to be important. • It would be helpful for the IIP to articulate a strategic intent with respect to the balance of awards across disciplines and track the portfolio changes against this strategic intent. 	<p style="text-align: center;">Yes</p>
<p>2. Are awards appropriate in size and duration for the scope of the projects?</p> <p>Comments:</p> <ul style="list-style-type: none"> • Most awards seem to be of appropriate size and duration. 	<p style="text-align: center;">Yes</p>
<p>3. Not Applicable</p>	<p style="text-align: center;">Not Applicable</p>
<p>4. Does the program portfolio include inter- and multi-disciplinary projects?</p> <p>Comments:</p> <ul style="list-style-type: none"> • By their nature, IIP programs are multi-disciplinary as necessary to achieve program success. 	<p style="text-align: center;">Yes</p>
<p>5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators?</p> <p>Comments:</p> <ul style="list-style-type: none"> • The IIP believes that the geographic distribution of awards is appropriate but doesn't provide criteria for the assessment so it is difficult for the COV to address this question. • The distribution of awards seems to align with population density but it may be more appropriate to normalize the number of awards with other criteria such as number of students or faculty associated with institutions of higher learning in a given state. 	<p style="text-align: center;">Yes</p>

<p>Data Source: EIS/Committee of Visitors Module. Select Proposals by State from the Report View drop-down.</p>	
<p>6. Does the program portfolio have an appropriate balance of awards to different types of institutions :</p> <ul style="list-style-type: none"> • For the current program portfolio, research universities have been most successful in competing for NSF funds. 	<p>Yes</p>
<p>7. Does the program portfolio have an appropriate balance of awards to new and early-career investigators?</p> <p>NOTE: A new investigator is an individual who has not served as the PI or Co-PI on any award from NSF (with the exception of doctoral dissertation awards, graduate or post-doctoral fellowships, research planning grants, or conferences, symposia and workshop grants.) An early-career investigator is defined as someone within seven years of receiving his or her last degree at the time of the award.</p> <ul style="list-style-type: none"> • There seems to be a good balance of awards across new and repeat PIs and across career stages. 	<p>Yes</p>
<p>8. Does the program portfolio include projects that integrate research and education?</p> <p>Comments:</p> <ul style="list-style-type: none"> • By their nature, the IIP Academic Programs integrate research and education. In addition, there are several educational supplements for both academic and SBIR/STTR. More outreach is recommended to academic centers to encourage the full utilization of educational supplements. 	<p>Yes</p>
<p>9. Does the program portfolio have appropriate participation of underrepresented groups²?</p> <p>Comments:</p> <ul style="list-style-type: none"> • There has been a modest increase in the percentage of competitive proposals with women involved over the period 2013-2015 and the success rate for these proposals is significantly higher than that for proposals without women involved. While the modest increase in the number of women engaged in SBIR/STTR projects is a positive 	<p>No</p>

² 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>indicator, there needs to be significantly more progress. The COV encourages the IIP to understand the underlying factors in the higher success rate and determine if they are scalable.</p> <ul style="list-style-type: none"> • There is very little improvement in the number of competitive proposals with minority involvement and the success rate for this group of proposals is lower than the success rate for proposals without minority involvement. There needs to be more progress in this area. • COV members were pleased to hear about plans for a Phase 0 pilot program and hope that this initiative is successful in attracting more women and underrepresented minorities into the entrepreneurial pipeline. 	
<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> <ul style="list-style-type: none"> • IIP is striving to meet the needs of its stakeholders and for the most part it has been successful in its mission. It remains relevant as evidenced by revisions to solicitations, alignment of program to national priorities as outlined in OSTP and NAS reports, launching new programs such as I-Corps, and sun-setting others. 	<p>Yes</p>
<p>11. Additional comments on the quality of the projects or the balance of the portfolio:</p> <ul style="list-style-type: none"> • The COV recommends that IIP take a more holistic approach to portfolio management including strategic intent as well as input and output measures. 	

OTHER TOPICS

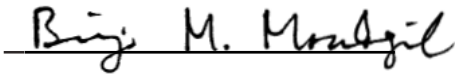
1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.
 - There is not much gender diversity at the Program Director level for SBIR/STTR programs. This should be addressed.
2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.
 - Toward the SBIR/STTR goal of increasing private sector commercialization, the COV recommends regular assessment of whether the program is uniquely filling gaps in the broader investment ecosystem (e.g., angels, VCs). With regular shifts in the funding landscape over the past two decades, such an assessment may affect portfolio approach.
 - The COV recommends more outreach be directed to tribal colleges to increase diversity.
3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

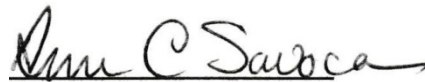
- It would be helpful for the NSF to integrate its various information management systems to enable divisions to better mine data, improve knowledge management and enable the collection of metrics which now isn't feasible or is manually intensive.
4. Please provide comments on any other issues the COV feels are relevant.
- It may be worth considering giving the PDs more discretion to pre-screen and provide more opportunities for return without review. This might help with better utilization of valuable review resources.
 - It is not clear if the outcome data includes information from grantees on whether the program is meeting their needs and what changes they would recommend.
 - Virtual panels, especially mixed panels, merit further discussion. The jackets do not contain information about whether panels are virtual, in person or mixed, so it is difficult for the COV to come to a conclusion about their relative effectiveness. It would be helpful if the following information is added to the data book:
 - i. Any correlation between the increased use of virtual panels and an increase in panel diversity.
 - ii. Any variation in the quality of the review process whether panelists are 'in person' or virtual.
 - The COV commends the IIP on continued progress to broaden the participation of women and underrepresented minorities in review panels. However, members believe more progress could be made in this regard and suggest implementing outreach efforts to build the reviewer pipeline, especially from underrepresented groups.
 - The COV recommends that areas of expertise in IIP databases be updated and harmonized so that common descriptors are used for submitting PIs and reviewers. This would facilitate identification of the pool of reviewers with the most appropriate experience to review a particular submission.
5. NSF would appreciate your comments on how to improve the COV review process, format and report template.
- It was helpful to divide the COV into two subcommittees to address SBIR/STTR programs and Academic Cluster programs separately.
 - Staging of the check-in calls and opportunity for Q&A in advance of the face to face meeting enabled the COV to run effectively.
 - The entire data book should be made available at the outset of the COV review process and include all of the information provided in this COV's final data book, including answers to questions asked by this COV.
 - To supplement the orientation material provided to the COV at the outset of the process, it would be helpful for the COV to receive a copy of the instructions/documents panel reviewers get to prepare them for their role including merit review criteria and any additional criteria specific to programs such as SBIR/STTR. The IIP should make the COV aware of the protocol for sharing feedback with PIs (e.g., PIs receive the individual reviews and panel summaries without attribution).
 - COVs should have access to output metrics (assessment), if possible by sector, at the outset of the process. It might inform the COV as to sectors which are more successful, PI experience/background that provides for better success rates, etc.
 - Include more background information about reviewers (e.g., commercial vs. technical reviewer, relevant area(s) of expertise) in the jackets.
 - Division and program level data/presentation should clearly outline the progress in meeting previous COV recommendations, e.g., what has been implemented and what is in progress.

- A COV report template should be tailored for IIP given that IIP programs are distinctly different from the other agency programs which focus on basic research.

The Committee of Visitors is part of a Federal advisory committee. The function of Federal advisory committees is advisory only. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the Advisory Committee, and do not necessarily reflect the views of the National Science Foundation.

SIGNATURE BLOCK:





For the FY 2016 NSF Committee of Visitors, Industrial and Innovation Partnerships
Brij Moudgil Co-Chair

Ann Savoca Co-Chair