FY 2011 REPORT TEMPLATE FOR NSF COMMITTEES OF VISITORS (COVs)

The table below should be completed by program staff.

Date of COV: September 12-13, 2011
Program/Cluster/Section: Informal Science Education/Lifelong Learning Cluster (ISE/LLC)
Division: Division of Research on Learning in Formal and Informal Settings (DRL)
Directorate: Education and Human Resources (EHR)
Number of actions reviewed: **Awards: 35** **Declinations: 35** **Other:**
Total number of actions within Program/Cluster/Division during period under review: **Awards: 160** **Declinations: 714** **Other:**
Manner in which reviewed actions were selected: The number of competitive ISE awards eligible for review was 160 and the number of declines 714. Seven groups of randomly selected awards and seven groups of randomly selected declines from those numbers were created, one group of each for each panelist, so each panelist had a total of ten total jackets assigned to them. In one or two cases COIs were identified by panelist after the assignment. Those subsequent jackets were then blocked from view and the panelists were allowed to select any other jacket from the list on the COV FastLane site.

INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process. Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question**.**

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
1. Are the review methods (for example, panel, ad hoc, site visits) appropriate? Comments: In general, the review process works exceptionally well for the ISE program. The reviews were comprehensive and for the most part high quality, including appropriate levels of detail and guidance. There were two minor issues that the COV noted. First, there is often variability in how reviewers interpret ratings, and while the NSF has done a good job of communicating the criteria in written materials to review panels there is occasional confusion. The COV would encourage program staff to have a general discussion of criteria at the outset of the panels, and be consistent in letting reviewers know that it is ok to modify their comments and adjust their ratings as part of panel discussions, if this is consistent with NSF panel rules. Second, when asking the PI for clarifications in the proposal as part of the negotiation process, Program Officers should clearly state their rationale. This will help to ensure that ISE continues its excellent track record of fairness and transparency.	YES
2. Are both merit review criteria addressed a) In individual reviews?	YES

b) In panel summaries? c) In Program Officer review analyses? Comments: Overall, the COV found that individual reviews, panel summaries, and the Program Officer review analyses address both merit review criteria: Intellectual Merit and Broader Impacts. The reviews, and in particular the panel summaries, provide valuable insights on the proposal's strengths and weaknesses. The review template is effective, dividing the criteria clearly and making it easy to tell that merit criteria are addressed.	
3. Do the individual reviewers provide substantive comments to explain their assessment of the proposals? Comments: The COV found that the majority of reviews were comprehensive, thorough, and focused. There are the occasional reviews that were too narrow and insufficient to be useful in providing feedback to the PI. The COV suggests that requiring written responses to subsections of each of the criteria could add more consistency and may prove to be helpful to ensuring a consistently high level of review.	YES
4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)? Comments: The COV found that panel summaries provided rationales, which were thorough and effectively summarized the major strengths and weaknesses of the reviews. Generally, there was consensus and consistency — but sometimes there were dramatic differences and variations among panel members – and the panel summaries did an effective job of highlighting differences of opinion.	YES
5. Does the documentation in the jacket provide the rationale for the award/decline decision? (Note: Documentation in jacket usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), Program Officer review analysis, and staff diary notes.) Comments: The COV found that Program Officers are at their best when dealing with the inconsistencies in some of the reviews. They are clearly experienced in knowing how to translate and summarize the diversity of opinion that review panels	YES

occasionally give rise to. The COV felt that It was most helpful when the Program Officer summary reflected comments made in the panel summary, and less helpful when the Program Officer provides his/her own summary. The latter sometimes had the consequence of reading like an additional review. Reviews were most effective when the Program Officer prioritized the most important issues, strengths, and weaknesses, from the more minor ones. Program Officers should always seek to clarify the relative value of the strengths and weaknesses, especially for proposals awarded. Often, more weaknesses were listed than strengths — and not all of the weaknesses listed were of equal weight.	
6. Does the documentation to PI provide the rationale for the award/decline decision? (Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the Program Officer (written or telephoned with diary note in jacket) of the basis for a declination.) Comments: The COV concurs that the Program Officers did an adequate job of providing a summary of the reviews and panels to the PIs. They also did a good job of explaining rating inconsistencies. The Program Officer review analysis that the COV found to be most effective were the ones that made strong connections to the panel review.	YES
7. Additional comments on the quality and effectiveness of the program's use of merit review process: The COV found that the Program Officers did an excellent job of justifying the decisions they made and frequently provided guidance that went beyond the intellectual merit of broader impact. The COV found that, in general, the broader impact criteria would benefit from additional clarity of what the NSF expects, particularly in relation to guidance on scaling, replication, and/or dissemination. The COV suggests that it would also be helpful to know which proposals were resubmissions and wonders whether there is a way to capture this in NSF data systems. The last COV panel suggested greater efficiency could be accomplished with respect to "time to final action." This COV panel did not have enough	N/A

information to confirm that sufficient progress has been made on this issue. The COV encourages further definition and examples of the “Innovation and Transformation;” more attention be paid to this category in the reviews.	

II. Questions concerning program structure and emphasis. Please address the following questions about program structure and emphasis and provide comments or concerns in the space below the question**.**

PROGRAM STRUCTURE AND EMPHASIS	**YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE**
1. Is ISE investing at a sufficient level and in ways to strengthen ISE field in the future, with respect to all categories of projects, especially those that contribute to educational infrastructure building and professional development (e.g., centers, networks, web-based tools)? Comments: The COV concurs that ISE has evolved in important respects as a program over the years and that its initiatives have had a significant impact on multiple audiences, particularly those that are underserved and underrepresented in the STEM disciplines. The increasing number of ISE submissions indicates that the field has grown tremendously over the years. Despite this growth, ISE's funding has remained flat. From 2008 – 2010 proposal submission increased by 50%, whereas ISE funding increased by only 1.5%. The COV strongly suggests that ISE pull together a top-level summary document that can be used internally with NSF leadership and externally with policymakers that illustrates the growth and impact of the ISE field. Data for such a document can be compiled from ISE program statistics and from publications such as the National Research Council's *Learning Science in Informal Environments*. It is apparent that the program, and in particular the Program Officers, are working hard to stay abreast of new directions and developments in the field. ISE has made an investment in networks and communities of practice (e.g., CAISE and Quest) — which are exemplars of capacity building and providing professional development for the field as a whole. It's important to utilize these initiatives to determine what the highest priority efforts are and to provide information on priorities that are of upmost importance for the different sectors that constitute the ISE field. The COV also encourages ISE to use these networks and communities of practice to gather input from the field on the most innovative and cutting edge practices. The COV recommends that an external review process (e.g., an expert panel) be undertaken for these initiatives to ensure their viability and effectiveness for the field as a whole.	YES

The COV applauds the work that has taken place to convene practice communities, such as the media producers meeting, which help to surface strategic priorities and better coordination in the media field. The COV recommends that ISE hold more of these kinds of convenings. One fruitful area is research and evaluation frameworks. The foundation community – lead by the Noyce and Moore Foundations – has not only been funding the creation of research and evaluation frameworks, but is holding a convening to bring together different stakeholders. The COV recommends that ISE program staff be active participants in this process and should contribute to the meeting with an analysis based on Program Officers' reviews of where the challenges and opportunities reside for the field as a whole.	
2. Does the organizational structure of panels and program tracks allow sufficient flexibility to foster the innovation and creativity of the field and various subsets or might this structure unintentionally limit project designs? Consider the following in your response: a. The organizational structure of the ISE solicitation for the period under review (e.g., project types including Research, CRPAs, Pathways, Full Scale Development, and Broad Implementation) b. The organizational structure of ISE panels and awards (e.g., media, exhibits, citizen science, youth/community, cyber-learning, and research). Comments: The COV concurs that the panel structure and processes work quite well. The projects have a lot of overlap in terms of their areas of focus on formats and concepts. The COV encourages ISE to rethink how panels are comprised so that they best reflect the multidisciplinary focus of the proposals. ISE may want to consider the fact that reviewer pools may be increasingly hard to populate. The level of expertise someone may need to be a reviewer is becoming more intense. Because most proposals have a minimum of four or five reviews, there is often variation in responses. The processes coalesce in the panel summary documents and they proved to be thorough, overall. The break-out of the tracks or project types is good (the tracks promote partnerships, by their very nature – e.g., Pathways, Full Scale Development, Broad Implementation) and the NSF should serve as a model to other organizations because the process is quite advanced in comparison to other organizations. Other tracks (such as a capacity-building track) are welcomed and appreciated for the future.	YES
3. Does the panel have any recommendations in the following areas:	

a. Strategies for integrating the ISE program more fully into the larger STEM education landscape (beyond informal science education and related institutions)? b. Strategies for growing the research component while integrating it into practice? c. Approaches for structuring the solicitation to help address the big challenges listed at the beginning (coherence, equity, etc.)? To support more involvement of STEM researchers (as described in the NSF Strategic Plan)? a. While the COV applauds collaborations with initiatives such as Transforming STEM Learning (TSL), more collaboration is encouraged across NSF (e.g., climate change education partnerships). Cross-agency and cross-directorate support is very important. Coordinating educational supports across settings could bridge ISE to STEM education. The "Transforming STEM Learning" initiative is important because it helps break down the walls that the field puts up on its own. Increasingly, the ISE field is working on creating experiences that span the continuum of learning opportunities for young people. b. ISE should support research capacity building by using its mechanisms of networks and communities of practice. Consider, for example, resources embedded into solicitations to add STEM experts into projects. Additionally, the ISE program has put significant effort into promoting research. The COV believes that further incentives should be provided to ISE investigators in research, evaluation, and non-academic positions to publish their ISE work in peer-reviewed research and evaluation outlets. One strategy the COV suggests is having explicit funds in a solicitation that could be optionally pursued and awarded to engage in research on a proposed (or perhaps a currently awarded) ISE effort — with this added expectation of more formally conducting and communicating research. This mechanism could also allow for a research collaborator, who might not have been included otherwise, to be formally included in an ISE project. c. Consider ways beyond CRPA (i.e., CAISE, current/potential PI's, etc.) to link with other science researchers. It would be helpful to embed within the RFP examples of the types of things listed when big challenges and the strategic plan are referenced. NSF could also support more involvement of STEM researchers, by possibly incentivizing the process with additional funding for the inclusion of science researchers (don't mandate — just reward). It would be good to look for ways beyond CRPA, such as linking to other NSF efforts	YES

outside of this directorate. In terms of approaches for engaging with ISE's big challenges, the COV had the following suggestions. In promoting continuity in learning, the efforts underway that pursue cyberlearning in ISE projects are the most promising in that they allow moments of learning to be connected and coordinated across places over time. The ISE program should consider promoting a collection of research awards in ISE focused on "cross-setting educational interventions" — efforts to coordinate learning for the same group across a range of learning environments. This is an area which would benefit from innovative R&D to identify productive models. In terms of promoting equity in ISE, very strong progress has been made on reaching underrepresented communities in funded ISE programs. One additional strategy to consider would be partnership development grants focused explicitly on cultivating a working relationship between an ISE institution and a diversity partner (e.g., a minority-serving institution, community organizations serving rural communities, etc.). Setting aside funds with this purpose could incentivize more of the important groundwork to develop a collaborative project. In addition, the COV strongly encourages that the NSF improve its data reporting and capture systems to reflect demographic information and geographic representation of co-PIs and sub-awardees.	

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 concurs that across the board, the management of the ISE program is strong. The COV appreciated that the management plan deals with the day-to-day — yet is also self-reflective in looking at strategies and longer-term program initiatives. Experts were often brought in when necessary. The self-assessment/review and management plans serve as a model for other organizations. There were several cases in the jackets we reviewed where Program Officers worked with other parts of the organization to leverage STEM program expertise or additional research and education expertise. This was a clear strength and sign of both effective management and leadership. Also, there is consistency throughout the entire ISE management process, which is impressive. In a lot of other federal agencies, there tends to be a lack of consistency. This proves that the ISE management plan works. We appreciate the inter-departmental, inter-directorate, cross-agency collaboration because it seeks out the best answers.
2. Responsiveness of the program to emerging research and education opportunities. Comments: The COV determined there was adequate responsiveness demonstrated in consideration of and action on the previous COV reviews and recommendations and this was well documented. This is an indication of attunement and alignment within the agency. The solicitations also appeared to be responsive to emerging research and education opportunities. The broader representation of PI's remains a concern. One productive strategy for doing this work involves having Program Officers travel to institutions with diverse PIs and work with them on grant development and networking with the ISE community. To this end, the COV recommends increased allocation of travel funds for this express purpose of diversifying the PI pool. The work of STEM and STEM education is improved when participants represent the broader demographic diversity of society (NSF, 2008; NRC, 2009). We commend the efforts that have been made by ISE staff to diversify the PI pool. The COV also recommends that there should also be more professional development opportunities for the Program Officers (e.g., to develop deeper understanding of ISE overall beyond their area of expertise); if this is currently happening, this should be better articulated.
3. Program planning and prioritization process (internal and external) that guided the development of the portfolio. Comments:

The COV was impressed with the Program Officers' knowledge or an involvement with both internal and external stakeholders who comprise their areas of expertise and practice communities. More could be done to use the networks and communities of practice to broadly inform and provide information that would enable Program Officers (POs) to set priorities that are genuinely reflective of and responsive to the field. CAISE, for example, is starting to do enough, but has a long way to go with the capacity building process and the planning/prioritization process. It can help more with capacity building and can contribute more to strategic planning.

Contributions of COVs also appear to have assisted with the external process. Contributions of the field are shown through proposals, special committees to/through POs, and the EHR advisory (also external).

Internal contributions include those of the Director — and ISE's relationship to other directorates supports this process.

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

Comments:

The responsiveness of the program to previous COV comments and recommendations is extremely strong. The issue of broader demographic representation of PIs is still a cause of concern. One of our recommendations is that there should be a specific capacity building effort focused on bringing a more diversified pool of talent into the ISE field. This could be incentivized in through the solicitation process, or pursued as a special initiative through CAISE.

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

RESULTING PORTFOLIO OF AWARDS	APPROPRIATE, NOT APPROPRIATE, OR DATA NOT AVAILABLE
1. Does the program portfolio have an appropriate balance of awards across disciplines and sub disciplines of the activity? Comments: There are two dimensions in considering the appropriate balance within the ISE portfolio – STEM disciplinary fields and the formats that are used to accomplish project deliverables. Further balancing efforts need to be made with respect to STEM fields (particularly physics, chemistry, and computer science). With respect to delivery formats, there is good distribution across various forms of delivery (media, exhibit, youth and community) with a clear, growing portfolio in the research arena — in keeping with the programmatic priorities of the program.	APPROPRIATE
2. Are awards appropriate in size and duration for the scope of the projects? Comments: The COV concurred that yes, overall, awards are of appropriate size and duration. However, the verdict is still out as to whether the new ISE structure (with five kinds of award) is working well. In general, the COV was impressed and felt that the new structure seems promising. Planning grants (Pathways) appear to be particularly generative of value. There is a good amount of work for a modest overall investment. The COV noted that media projects tend to be very expensive and attention needs to be paid to the quality of STEM within the shows, as well as the balance of media products within the portfolio.	APPROPRIATE
3. Does the program portfolio include awards for projects that are innovative or potentially transformative? Comments:	APPROPRIATE

The COV noted that science centers are the most common recipients of ISE grants, yet exhibit development projects receive less funding than media projects within the portfolio. Exhibit development is an arena where the COV felt more attention could be paid to innovation. In an age when audiences expect new things to unfold with regularity, ISE should encourage innovation in the exhibit development arena through experimentation with digital technologies and other strategies that create fluid rather than fixed experiences. The ISE program needs to stay focused on the value of the idea and the promise of the idea – transformative potential – rather than the actual implementation. The COV suggests that it is important for ISE to continue to try and define "transformative." It is not only about the newness of an idea, but can also be about how you choose to leverage and operationalize ideas in practice. As a strategy for helping the field to move forward, ISE should consider providing incentives for investigators in non-academic settings to publish their work in peer reviewed publications.	
4. Does the program portfolio include inter- and multi- disciplinary projects? Comments: Projects in the portfolio represent a compelling mix of interdisciplinary approaches that utilize a mix of media and distribution platforms to accomplish their work. As the program continues to emphasize the importance of research, increased emphasis on the inclusion of science of learning researchers in the mix will be important.	APPROPRIATE
5. Does the program portfolio have an appropriate geographical distribution of Principal Investigators? Comments: Based on the awarded state date, ISE could do much better in this area. Interestingly, 80% of all awards over a three-year period come from seven states, which represent 14% of all states. Twenty-one states do not receive funding during the same three-year period, representing 42% of all states. The COV strongly encourages NSF and ISE do a better job of capturing geographic information on co-PIs and sub-awardees. In addition, the COV encourages ISE to consider incentivizing collaborations that include drawing in co-PIs and sub-awardees from underrepresented regions of the country.	NOT APPROPRIATE

6. Does the program portfolio have an appropriate balance of awards to different types of institutions? Comments : It was difficult to tell initially if there was an appropriate balance of awards to different types of institutions, given how NSF collects and records this data. After explanation from the program staff, the COV determined that there is an appropriate balance of awards to different types of institutions.	APPROPRIATE
7. Does the program portfolio have an appropriate balance of awards to new investigators? NOTE: A new investigator is an investigator who has not been a PI on a previously funded NSF grant. Comments: The percentage of PIs that were new NSF awardees in FY08-FY10 was 47.5%. The COV concurs that this is adequate and commends ISE staff for their accomplishments in this area.	APPROPRIATE
8. Does the program portfolio include projects that integrate research and education? Comments: In general, the COV concurred that the majority of projects within the portfolio do an effective job of integrating research and education. The ISE efforts to promote more theoretically-grounded and systematic evaluation across the ISE portfolio are to be commended.	APPROPRIATE
9. Does the program portfolio have appropriate participation of underrepresented groups? Comments: The program portfolio includes the participation of various underrepresented groups. ISE awards targeted the following audiences: Urban environments: 77% Rural environments: 56% Underrepresented and underserved groups: 70% Low SES audiences: 67%	APPROPRIATE

Girls and women: 63% Persons with disabilities: 21% English Language Learners: 4% The COV concurs that these statistics represent impressive levels of outreach and engagement of underserved constituencies, with the exception of English Language Learners (ELLs).	
10. Is the program relevant to national priorities, agency mission, relevant fields and other constituent needs? Include citations of relevant external reports. Comments: The COV concurs that the ISE program staff has been exemplary in terms of focusing the substance of the ISE program activities on national and NSF trends and priorities. The solicitations make deep use of the ideas and opportunities outlined in relevant research and policy documents — e.g., *Learning Science in Informal Environments: People, Places, and Pursuits* (National Research Council, 2009); *Learning In and Out of School in Diverse Environments* (LIFE Center and UW Center for Multicultural Education, 2007); *Prepare and Inspire: K-12 Education in Science, Technology, Engineering, Math (STEM) for America's Future* (President's Council of Advisors on Science and Technology, 2010); and *Preparing the Next Generation of STEM Innovators* (National Science Board, 2010). The last two solicitations have explicitly pointed to the National Research Council report on learning in informal environments.	APPROPRIATE
11. Additional comments on the quality of the projects or the balance of the portfolio: Going forward, particularly for the museum field, ISE will need to pay attention to issues of family and inter-generational learning. The growing diversity of ISE audiences will also require the field to focus on ELLs and learning among diverse stakeholders. In addition, the area of citizen science is growing within the ISE field and has great promise for promoting the participation of citizens within contemporary science. ISE should consider funding more of these efforts, with a particular emphasis on innovative approaches. The COV encourages ISE to use the mechanism of networks and communities of practice to identify and solicit ideas for innovative and cutting edge practices from the field.	N/A

OTHER TOPICS

We would like to first state that we are very impressed with overall staff professionalism, their ability to look to the future, their continuous look at the "big picture" for improving the ISE program achievements, and the overall unwavering passion for continuing the wonderful vision of the program. We are inspired and encouraged by their efforts.

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

Very few projects focus on ELLs, which is a big gap and is a growing demographic in America. The previous COV talked about focusing on early childhood as well as those aged 50 and above. Early childhood accounts for a very small percentage and is something that may need to be improved.

It would also be helpful if there were more opportunities for collaboration across EHR.

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.

See comments in other sections.

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

Maybe EHR could provide some connections and guidance to broader impacts research (to work with other directorates within NSF)?

The COV suggests that, given that the pre-proposal is now optional, ISE continue to monitor the impact of that change in process on the quality and diversity of proposals.

The CRPA provides a great outreach opportunity to science researchers. We suggest exploring ways to enhance this initiative (e.g., increasing the size of the award, more guidance to reviewers, or more guidance to science PIs).

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

There are strong instances of collaboration (e.g., TSL) and we suggest that ISE explore more ways of K-12 formal education and informal education.

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

The COV panel would have appreciated a webinar to help navigate through the documents and orient the group towards a better understanding of the materials and the process. It would also be helpful to have a few more statistics (e.g., PIs from underrepresented groups).

It would have been useful to get the PowerPoint presented at the orientation meeting in advance. It would have also been useful to have a prioritized list of documents to make it easier to navigate through the documents and understand which ones to look at first. Many of the COV response documents were very vague and were hard to judge; more specific data needs to be presented for greater understanding. Maybe this could be presented in the form of another document in the future.

It would also be helpful to understand what progress has been made since the last COV and receive an update on the initial response to the prior COV.

Instructions (or a document) indicating the proper way to read a COV jacket would have helped a lot in this process and would have created an easier process for the panelists.

SIGNATURE BLOCK:

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For the 2011 ISE COV
Eric Jolly, Chair