

RESPONSE TO ECCS 2011 COMMITTEE OF VISITORS REPORT

The ECCS Committee of Visitors (COV) met at NSF on June 22-24, 2011. The COV was chaired by Dr. Margaret M. Murnane, from the University of Colorado at Boulder and Dr. Andreas Cangellaris, from University of Illinois at Urbana-Champaign. The COV included also ten other members from academe, industry and federal-government research labs. They provided NSF with a thorough independent evaluation of ECCS portfolio, the proposal and award process, and program operations and management for FY 2008-2010.

As a result of its review, the COV provided a number of findings and recommendations. The Division has taken action on these recommendations, as described below.

Recommendation 1:

“Low award rates: The COV is concerned that the increasing number of proposals (1400 annually) combined with low award rates (16% funding rate for unsolicited proposals) could impact the quality of proposals and reviews. If award rates continue to decrease, faculty may react by writing even more proposals, instead of developing and proposing their best ideas. Selection of the best proposals will be difficult, because review panels may also be influenced by low awards rates. Moreover, faculty workload may reduce the quality of engineering science, education, and broader impact in the US, particularly with the increased budget pressures at the state and federal levels.

The previous COV recommended that the annual award amount be raised to avoid underfunding research. Therefore decreasing award amounts to increase the funding rate is not a good strategy. Ideally, additional funding would address the low award rate, since high-quality proposals are currently rejected, and because NSF Engineering sees the most proposal pressure at NSF. Should this not be possible, it is vital that the division, the Directorate for Engineering and NSF act in a strategic and coordinated way. The COV supports the plan of ECCS to monitor progress in other areas of NSF Engineering to move towards a single grant deadline per year, or even to limit the number of proposals a PI can annually submit to any division within engineering.

This is all the more important because faculty workload may influence the quality of engineering science, education, and broader impact in the US, particularly with the increased budget pressures at the state and federal levels. NSF can help by understanding the drivers for the proposal pressure, and by educating universities, PIs, and reviewers that high-quality ideas and broader impact (appropriate to the funding level) are the gold standard at NSF.”

Action: ECCS has implemented a major change to partially address this concern: the submission windows for unsolicited proposals were reduced from two to one window per year. The rationale

for this move is that with one window per year, the number of submitted proposals would decrease while the quality of the proposals would, presumably, increase. The net effect would be improving the success rate. Also, program directors would have more time to organize and coordinate other activities, such as planning workshops and reach-out to technical communities. The net effect is expected to be a reduction in the reactive mode of operation and increasing the strategic component of ECCS activities

It should be noted that fully addressing this recommendation requires reallocation of significant resources and multiple years of adjustments and cultural changes.

Recommendation 2:

“Division workload and continuity: The significant growth in workload (from proposal pressure and the need to support interdisciplinary proposals) is stretching the ECCS PDs, whose number has not increased commensurately. Therefore, to maintain excellence in management and merit review it would be helpful if the number of ECCS program directors and science assistants increases – even if only a modest increase of one additional program director. It would also be very helpful for continuity and planning if ECCS had a Deputy Director, as is the case for other divisions within engineering.”

Action: This recommendation was partially implemented. The Division was granted permission to add a Deputy Division Director (DDD). As a result, Mrs. Sue Kemnitzer was recruited and joined ECCS as the DDD in April 2012.

To justify this recommendation, the COV raised the issues of continuity and planning. Time proved the COV was right in raising these points. Dr. Robert Trew was the ECCS Division Director (May2009-13). Mrs. Kemnitzer served as the interim Division Director before the new DD joined ECCS in August 2013. She kept the division functioning and took care of all day-to-day operation. She is also invaluable in maintaining policy continuity and serves as the corporate memory for the Division.

Recommendation 3:

“Understanding the broader impact merit review criterion: As is the case Foundation wide, there still appears to be confusion in the review base about what is meant by broader impact, and what high quality broader impact might look like. The PDs at ECCS and other divisions at NSF already inform panels in advance by directing them to appropriate web site locations. There is a need to continue and enhance these efforts by ensuring that every panel begins with a discussion of the merit criteria, including examples of what constitutes good “broader impact.” The COV believes broader impact is very important for NSF funded proposals. It can be in many

forms – such as effective outreach to K-12 or the public, increasing the number of women/URMs in ECCS at any level, technology or knowledge transfer to industry, solving a grand challenge problem that impacts other fields, or sparking new lines of experimental research which is motivated by theoretical breakthroughs. Perhaps a series of questions in the review form could prompt high-level critical evaluation of the proposal in terms of Broader Impact. (The COV has examples of such questions in the report). Such questions might help first-time panel members (25%) understand broader impact, while reminding senior reviewers to look for breakthrough, high-impact research with significant broader impact.”

ACTION: In January 2013, NSF implemented clarifications of the broader impact criteria and included more detailed description of these on the instructions to reviewers. The templates for written reviews were changed to include more specific questions for the reviewers to address. Both actions are expected to help improve the quality of reviewers’ assessment of the broader impact criteria. Program managers will also emphasize these new instructions when they brief reviewers at the beginning of each panel. Since ECCS moved to one window for submission of unsolicited proposals this year, Fall 2013 will be our first time to implement the new specifications for broader impacts on a large scale. We will monitor the process and results carefully.