



NATIONAL SCIENCE FOUNDATION

Date: June 3, 2015
From: Assistant Director, MPS
Subject: **Response to the Division of Astronomical Sciences Committee of Visitors Report**
To: MPS Advisory Committee

Please find attached the MPS Response to the Committee of Visitors (COV) report from the 17-19, December 2014 COV review of the Division of Astronomical Sciences. The review was thorough and insightful, and the findings will be very helpful to me and to the Division of Astronomical Sciences in fulfilling our responsibilities to the scientific community and to the nation.

The Division of Astronomical Sciences drafted the attached Response, and I concur with its content. I therefore adopt it as the official Response of the MPS Directorate. I hope the full MPS Advisory Committee finds this COV review and the MPS Response useful and acceptable.

Sincerely,

A handwritten signature in blue ink that reads 'F. Fleming Crim'. The signature is fluid and cursive.

F. Fleming Crim
Assistant Director, National Science Foundation
Directorate for Mathematical and Physical Sciences

Attachment: Response of the Division of Astronomical Sciences to the 2014 COV Recommendations

MPS Response to the FY 2014 Division of Astronomical Sciences Committee of Visitors Recommendations

Introduction

The Directorate for Mathematical and Physical Sciences (MPS) and the Division of Astronomical Sciences (AST) want to thank the members for their willingness to serve on the Committee of Visitors (COV) for MPS/AST, especially given that the meeting was held just before the holidays. The COV worked hard before, during, and after the December meeting, and we appreciated the chance to share with them our programs and the excitement of the research that is funded by the Division. We particularly thank the COV for the kind words expressed about the outstanding performance of our staff. This document is a response to the nine itemized recommendations in the COV report, described in the next section. These nine recommendations will be formally addressed in the subsequent annual response reports. In the section after that, we take into consideration the additional, non-enumerated recommendations in the body of the report. These will be addressed as appropriate in subsequent annual response reports as well.

Enumerated Recommendations and Responses

Recommendation 1: Rapidly recruiting additional AST POs and replacements for key AST staff must be a high priority for NSF.

AST agrees that additional personnel are necessary to relieve the high workload and mitigate risk, particularly as the complexity of the facilities it oversees continues to grow, as does the number of proposals it reviews. It recognizes that there are too many single-point failures because of a thin bench. The division will continue to request additional FTE. The AST management will also continue to expeditiously recruit and hire qualified POs as fast as possible whenever a position opens through replacement or new FTE.

Recommendation 2: We recommend that MPS work with NSF high-level management, the National Science Board (NSB), and—if appropriate—the Office of Management and Budget (OMB) to identify funding mechanisms for decommissioning facilities. This is not an over-the-horizon issue, as funding for decommissioning may be needed prior to the next COV.

AST is working with MPS to present this issue to the larger NSF in the context of the FY 2017 budget request.

Recommendation 3: We strongly encourage MPS to work with NSF management to enhance the Large Facility Office by recruiting and retaining a cadre of skilled professionals with expertise as scientific project managers so that they can be available to work with POs in times of increased contractually-based workload, such as MREFC starts, recompetitions, and facility divestments.

AST agrees that this would be beneficial but notes that currently the role of Large Facilities Office (LFO) is defined by the Office of Budget, Finance, and Award Management (BFA) and the Office of the Director.

Recommendation 4: We recommend that AST be given broad latitude to test and implement changes in IIP review and award administration processes, and to do so as quickly as feasible.

MPS is very supportive of its divisions piloting changes in the review and administration process, and several divisions have pilots underway. AST's approach has been to discuss these changes in the context of the Astronomy and Astrophysics Advisory Committee (AAAC), where the AAAC is attempting to assemble and assess proposal data across multiple agencies. AST has provided extensive statistical data on individual investigator proposals, and looks forward to concrete suggestions from the AAAC.

Recommendation 5: We recommend that AST pay particular attention to ensuring that sufficient computational astrophysics and/or astroinformatics expertise is present on all future review panels, or that it is provided via outside ad hoc reviews.

AST notes that there is some challenge in finding eligible reviewers in this emerging discipline. AST will continue to strive to select reviewers with the best capability to review the broad range of proposals that are being assessed by a particular panel.

Recommendation 6: We recommend that solicitations for MSIP proposals alternate between solicitation cycles either by proposal category or by requested funding level.

AST has been carefully considering this issue in detailed discussions as it plans its next MSIP solicitation.

Recommendation 7: We strongly recommend that the circumstances and period of any future re-competitions be strongly guided by a comprehensive cost-benefit analysis with delivered science being the main criterion.

MPS and AST understand the value of this approach. The NSB sets the recompetition policy, and MPS is working with NSF management to assess the impact of the current policy. AST develops the recommended duration of the awards for each facility by evaluating the scientific mission in the context of the guidance provided by the decadal surveys.

Recommendation 8: We recommend that AST continue to work with AGS, NASA's Heliophysics Division, and the solar research scientists to build a cohesive community that will become the future users for DKIST.

AST will continue the efforts it is already undertaking, including work with the groups cited in the recommendation to identify other opportunities for community building.

Recommendation 9: The COV recommends that AST personnel continue to try to improve the interface with XSEDE with the goal of reducing the proposal burden. One way to do this would be to allow simultaneous proposals for funding and computer time.

AST notes that the proposal burden for its scientific community who need XSEDE, as well as the limited access to these resources relative to need, were also recently discussed by the Committee on Astronomy and Astrophysics (CAA). AST plans to invite the mid-decadal review committee to suggest whether difficulties in accessing XSEDE time are damaging the ability to advance on decadal survey priorities, and to make any specific recommendations that they think might be appropriate. The Directorate for Computer and Information Science and Engineering (CISE) oversees the XSEDE allocation process, and AST will continue to explore possibilities for streamline the computing cycles allocation process.

Non-enumerated Recommendations and Responses

The 2014 COV also suggests that AST consider additional ways to encourage successful PIs to serve as panelists.

AST is proactively building its pool of reviewers, including successful PIs, as time and workload allow. For example, for most review panels it now allows the PIs to choose to participate either in person or remotely. It has also established a web link that allows scientists to sign up to volunteer to be reviewers, and mentions the opportunity and importance of this activity at all conference NSF town halls and other venues as appropriate.

[T]he COV recommends that AST compile statistics and track acceptance rates of proposals in traditional, virtual and mixed panels for the next COV.

AST will investigate the viability of addressing this recommendation.

AST should continue to follow [the] demographic[s of the number of proposals from minority PIs] to study the significance of this possible underrepresentation.

The COV noted that the number of proposals from minority PIs has remained at 4-5% level over the COV review period, consistent with rates from 2004. The COV was concerned that funding rates appear a bit lower than one would expect from the submitted population, but that it is hard to tell due to limited statistics. AST will continue to monitor this.

The COV recommends that AST consider whether or not [the practice of providing templates to panelists] should be a more uniform practice.

Some, but not all, Program Officers provide a template for the reviews that delineate the content of Panel Summary as a summary of the panel's discussion. The concern is that panelist reviews are sometimes not consistent with NSF policy, and it was felt that this might help build consistency. AST will consider adopting this as practice.

Finally, the COV notes that EXC is a very large program, and we recommend that

AST consider whether or not it may be useful to subdivide it.

AST will consider this as a part of its annual discussion about the Individual Investigator Programs.

[T]he COV requests that AST consider the feasibility of [providing a concise summary for each proposal decision to guide COV reviews].

The COV requested a concise summary for each proposal decision to guide COV reviews, noting that there were some technical problems with a few of the eJacket portfolios that were made available to the COV. AST will consider how best to address this concern while trying to minimize the workload impact on staff.

The COV concurs with the view that PLA should continue to be supported by AST, especially given the recent dramatic increase in exoplanet research.

AST agrees and will continue to support planetary and exoplanet research.

The COV is concerned that the PLA program has had difficulty attracting Program Directors from the planetary science community.

AST continues to seek ways to attract interest in the planetary science community, including proactively contacting those who have served as panelists and asking for names of good candidates.

Further discussion as to how to prioritize [the NSF-wide initiatives such as the INSPIRE] programs and how to ease the burden of running and/or advocating for them is recommended.

The COV noted that such special programs require an advocate and are incredibly time-consuming. The COV felt that the “dollar allocated per hour spent by the Program Director” was greatly disproportionate compared to AAG, for example. AST will continue to evaluate the relative importance and priority of participation in NSF-wide initiatives and investments in Individual Investigator Programs.

The Division should continue to investigate means of filling [the] funding gap [between the current allocation of ~\$15-20M per year to the Mid-Scale Innovations Program (MSIP) and the NWNH-recommended \$40M per year expenditure].

The allocations of \$14.15M actuals in FY 2014, \$12.9M planned in FY 2015, and \$18.72M requested in FY 2016, to the Mid-Scale Innovations Program (MSIP) remains well below the NWNH-recommended \$40M per year expenditure, where MSIP was its second-ranked priority in large ground-based projects. The COV was unclear to what extent the program can support any upper-limit proposals in the \$20M to \$40M range. AST will continue to work on this as budgetary constraints allow.

It would help to alleviate the pressure on the time and energy of the AST staff if the various recompetitions were not held simultaneously.

AST concurs, and has been working to separate the start dates and durations of the new Cooperative Agreements (CA) awards as appropriate for each facility as it is recompeted.

Overall the COV supports [the] approach [of developing partnerships for facilities recommended for divestment], but the AST Division should apply a cost-benefit assessment where the cost of staff effort both within AST and the facilities are considered.

AST has begun to move forward with the implementation of the 2011 Portfolio Review (PR) recommendations, and will continue to include cost-benefit assessment as a part of its divestment efforts.

A significant concern that has emerged over the past few decades—and which this COV shares—is the increasing reliance of [NRAO's Central Development Laboratory (CDL)] on work for others.

The CDL has been instrumental in developing new technology for use throughout the radio spectrum. AST will continue to closely monitor the workload at CDL with regards to outside work as a part of its normal oversight procedures.

[T]he COV is concerned that lack of continuity in the position of the NRAO Program Officer does not serve NRAO or the U.S. astronomical community well.

AST notes that it makes every effort possible to minimize PO changes unless appropriate, but must adapt to changing needs as the division and its staff evolve.

The COV urges AST and NRAO to consider seriously a means to address [the] concern [that NRAO is shifting to centimeter-wavelength facilities, and the U.S. astronomical community is losing access to millimeter-wavelength facilities while the European nations retain substantial mm-wavelength access is seen as key to competitive access to ALMA].

AST will work with NRAO to explore options to gain or enhance access to priority millimeter facilities.

[The COV members] encourage the NSF to explore opportunities that could lead to continued community access to these facilities up to the start of DKIST operations.

AST is actively engaged in pursuing opportunities to continue to provide access to ground-based solar facilities during the transition to DKIST operations.

[T]he COV recommends that every effort be made to optimize the remainder of [the LSST] project construction.

AST agrees that this is something that must be closely tracked, and the LSST Joint Oversight Group (JOG) between AST and DOE's Office of High Energy Physics (HEP) will continue to play the lead role in that effort.

[W]e urge the Foundation to continue to provide the resources necessary to meet the needs of the critically important ESM program.

The office of Electromagnetic Spectrum Management (ESM) is housed in AST, but serves the entire NSF. AST proactively recruits program officers for ESM from a broader pool of potential candidates for these searches, including engineers as well as scientists, and members of related national and international committees.

In order to limit the impacts of rapid changes (with ensuing cost escalation) on projects under construction, we recommend that the LFM process in place at project start be grandfathered in for the life cycle of the project.

AST and MPS agree that this can be an issue and are willing to work with the LFO to explore appropriate options.

We also recommend that individuals with management experience in the construction of large science facilities be permanently resident within NSF's Large Facility Office.

AST agrees that this would be beneficial but notes that currently the role of Large Facilities Office (LFO) is defined by the Office of Budget, Finance, and Award Management (BFA) and the Office of the Director.

If funding allows, we recommend that AST consider offering [a different] type of solicitation, [such as the National Institutes of Health (NIH) program for universities to develop broader training programs for graduate and postdoctoral training].

AST agrees that this is extremely important, and will develop such opportunities as funding allows.