Impact of Proposal and Award Management Mechanisms Report

Advisory Committee Discussions

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What is the Context?

- **Between FY 2000-2005:**
  - The NSF budget increased by 44%.
  - The average size of research awards increased by 41%.
  - Research proposal submissions increased by nearly 50%.

- NSF budget increases were absorbed by the growth in the average award size, leaving little flexibility to respond to growing proposal submissions. As a result, the research proposal funding rate decreased by 29%, from 30% to 21%.

- Directorate level trends show significant variability in rate of change, degree of change, and starting and end points of change.
Findings: Causal Factors

- The increase in proposal submissions was due to an increased applicant pool and to an increased number of proposals per applicant.
  - Increased size and capacity of the research community
  - Loss of funding from other sources
  - Increased use by NSF of targeted solicitations in new areas
  - External institutional pressures
**External Institutional Pressures**

*Beyond the goal of making contributions to your area of science, to what extent do the following factors motivate you to submit research proposals to any funding source?*

**Question 23:**
Building/maintaining a grant record for academic tenure/promotion

**Question 24:**
Contributing to the institution’s research status/reputation

**Question 25:**
Supplementing or paying my own salary

**Question 26:**
Building/maintaining a research infrastructure
Findings: Impacts on Quality and Nature of Proposed Research

- Proportion of highly-rated proposals has not declined, however, the funding rate of highly-rated proposals has decreased.
- Analyzed attitudinal data to assess community perceptions about transformative research:
  - 56% believe to a great or moderate extent that NSF welcomes transformative research.
  - NSF is the predominant choice for submitting proposals with transformative research ideas.
  - Significant disconnect between proposer and reviewer perceptions about prevalence of transformative projects.
Findings: Impacts on Specific Groups

- The decrease in funding rate has not had a disproportionate effect on women, minorities, beginning PIs, or PIs at particular types of institutions.
  - Funding rates
  - Share of proposal and award portfolios
  - Maintaining funding beyond first award
  - Years between degree and first award
Findings: Impacts on Merit Review

- NSF’s peer review system is overstressed
  - Reviewer workloads have increased
    - Reviewer pool increased 15%, proposal load increased 50%
  - Increased use of panel-only review
  - Time spent on each review, as well as the thoroughness and quality of reviews, may be diminishing (based on survey data)
- Timeliness of proposal decisions did not decline, however PIs are increasingly dissatisfied with turnaround time
Community Perceptions About Funding Rates

More than 60% of survey respondents perceive that the level of competition at NSF is more intense than at other agencies.

Most survey respondents underestimated actual funding rates.

Nearly 49% of respondents estimate funding rates at 10% or lower.
How to Improve Funding Rates?

- Limit Proposal Submissions
- Increase Number of Awards
Limit Proposal Submissions

- Most funding opportunities do not limit submissions
- Of those that do, three primary mechanisms are used:
  - Preliminary proposals
  - Limiting proposals submitted by an institution
  - Limiting proposals by individual
Limit Proposal Submissions

- Institution limits primarily used for solicitations focused on infrastructure and instrumentation, centers and facilities, or education and training.
- When submission limits are used by research programs, primarily limit submissions by PI.
Increase Number of Awards

- Primarily accomplished by increasing availability of funds:
  - Two fiscal years of funds used for a single competition
  - Adjustments made to the balance of standard and continuing grants
    - Provides some flexibility in responding to increased proposal submissions, but can only be employed for a limited time, and with discretion
IPAMM Recommendations to NSF

Focus on developing strategies that are appropriate within the context of each unit, that balance long-term planning with the ability to respond to changing needs, and that help break the decline-revise-resubmit cycle for highly fundable proposals.

Improve communications with internal and external communities

- When implementing new management practices
- About sources of accurate NSF data

Update the IPAMM trends analyses annually, and periodically reassess the practices and policies of the directorates/research offices.
Current Status

- NSF Senior Management currently engaged in discussions of recommendations
  - Implementation initiated on some recommendations
- Reaching out to NSF staff to discuss the findings of the report
- Reaching out to external communities to begin a dialogue on the implications of the report
  - Alerted the NSF community about the report
  - Discussed issues with the Federal Demonstration Partnership
  - Engaging the Advisory Committees this Fall
“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”

--John Muir
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